

# The Education and Training of Medical and Health Professionals in Higher Education Institutions

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# **The Education and Training of Medical and Health Professionals in Higher Education Institutions**

## **Introduction**

1. This report uses data collected by the Higher Education Statistics Agency (HESA) from Higher Education Institutions to investigate the education and training of medical and health professionals in the UK's universities and colleges, and the relationship between the NHS and the higher education system. Whilst these data cannot provide a full picture they provide an important window into a subject that has not previously been widely studied.
  
2. The report consists of two separate but related investigations into:
  - The way in which universities and colleges are funded for training health professionals and the implications of the different funding regimes for the nature of provision
  - The extent to which, a decade after its absorption into the HE sector, nursing has become a 'normal' academic subject
  
3. A third section stating overarching conclusions concludes the report. Supporting evidence and analysis can be found in the six supporting annexes, available on the HEPI website.

## Section A: Funding systems – inequalities, the role of planning and markets<sup>1</sup>

### Funding mechanisms and their consequences

#### Nursing<sup>2</sup>

1. Throughout the late 1990s and the early years of the current decade, pre-registration nurse training and the training of members of the allied health professionals (AHPs) has been commissioned directly from universities and colleges by NHS organisations, through competitive bidding processes.

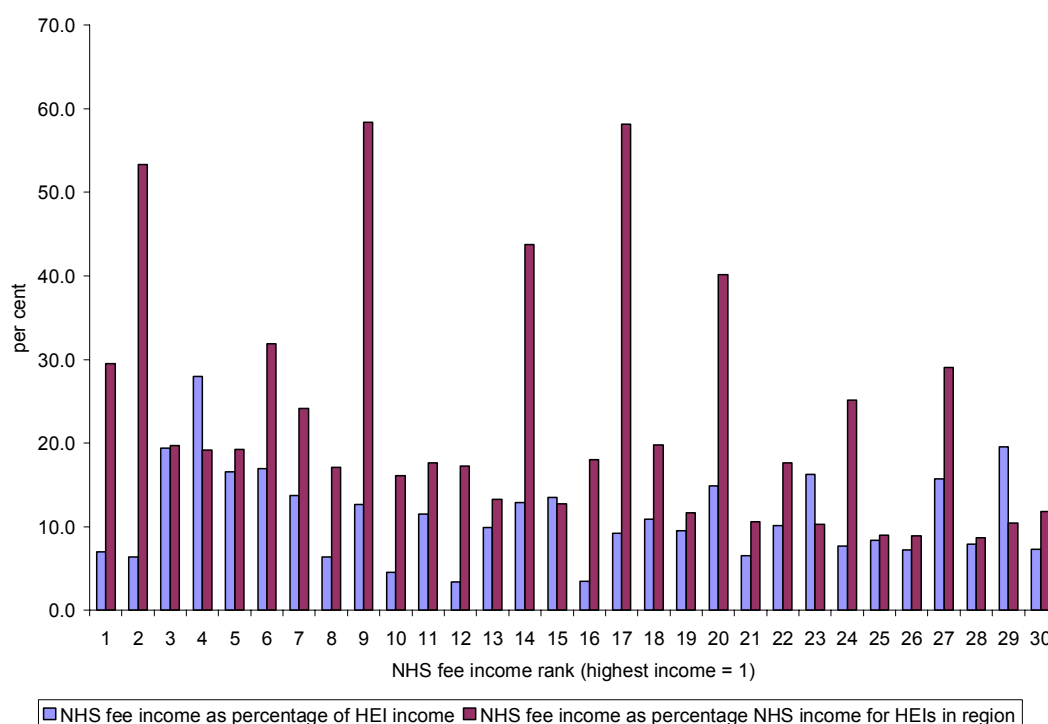
2. It is notable that, in bidding to and negotiating with commissioning bodies, some Higher Education Institutions (HEIs) appear to have been in a stronger position than others. Figure 1 shows NHS fees as a proportion of each HEI's total income (the light bars) and as a proportion of total NHS fee expenditure in the relevant government office region (the dark bars). The first is a measure of the institution's dependence upon the NHS and the second of the NHS' dependence upon the institution. Where the dark red bars are substantially taller than the light blue, this indicates that an HEI is less dependent upon the NHS than the NHS is upon it.

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<sup>1</sup> This study benefits from the fact that Professor Sir David Watson generously shared the evidence gathered by himself and Brian Ramsden to inform the Universities UK Joint Longer-term strategy group and health committee seminar *Partners in care* held in April 2004. While that analysis has not been directly used here there is considerable overlap between the seminar papers and some of the sections in this report and have found them a valuable reference point.

<sup>2</sup> For further detail see annex A1

Figure 1<sup>3</sup>: NHS fee income as percentage of total income and as a percentage of NHS income for the region 2002-03



Source: HESA

3. It is clear that some institutions are in a much stronger position vis a vis their local commissioning bodies than others. Over time, one would expect that the more fortunate institutions would be in a position to negotiate more favourable terms than the less fortunate. In the absence of any surplus capacity in the system, unregulated competition for training contracts is likely to lead to a redistribution of resources from the worst-placed to the best placed institutions, probably in the form of higher fee payments.

4. That said, whilst providers may enjoy differing amounts of pricing power, the operation of the system to date suggests that the system has been managed by commissioning bodies in such a way as to produce stability, as Table 2 demonstrates

Table 2: 30 institutions receiving most DH/NHS fee funding in 2002-03

Institution also in top 30 in 2001-02	29
Institution also in top 30 in 1998-999	27
Median change in rank 1998-99 to 2002-03	3

Source: HESA

<sup>3</sup> For reasons of data access this analysis excludes London Metropolitan University (LMU) and its predecessor institutions. This means that, in figure 1 there are five London institutions whose share of regional NHS fee income is inflated by the absence of LMU data. Even without LMU, London is exceptional for the low levels of concentration of NHS fee income; it is probable that were LMU data available, London would furnish some striking examples of institutions whose dependence upon the local NHS is greater than the dependence of the local NHS upon them

5. The relatively low risks for providers are even more apparent when examining the 30 institutions receiving the greatest fee income in 1998-999. Of these, one institution saw its fee income fall by 4 per cent between 1998-999 and 2002-03. Two others saw increases of roughly 10 per cent - broadly equivalent to inflation. The other 27 saw substantial real terms increases in DH/NHS fee income.

6. What is more, even year on year drops in income are rare. On only two occasions between 1998-999 and 2002-03 did an institution suffer a drop in its NHS fee income equivalent to more than 1.5 per cent of its total revenue. This illustrates that, in an environment characterised by a limited number of suppliers, very little excess capacity and a single purchaser both sides have behaved in a way designed to ensure stability. This is probably for the best but it suggests that, whilst the commissioning of research is contractual (giving the NHS as the client real control over what is provided) the market does not in any real sense set prices or create meaningful competition as far as training places are concerned. This is not an inherently problematic situation so long as the limitations of the market as a mechanism for price setting and quality improvement are understood and the necessity for strategic management of the nation's investment in health professional training is accepted.

7. Recent HEPI research suggests that the proportion of school leavers obtaining the qualifications necessary to access Higher Education is no longer growing. This, combined with a sharp drop in the number of 18-19 year old in the UK population after 2010, may well result in a fair amount of spare capacity in UK HEIs in the medium term. Long-term contracts from public sector bodies (such as NHS Workforce Development Organisations) may appear increasingly attractive to institutions struggling to recruit a static or falling population of potential students.

8. In 2001 the National Audit Office (NAO) reported on the training of nurses and allied health professionals. It concluded that:

- There were substantial variations in the rate of funding per student received by different institutions for health professional training
- There was a need for greater predictability in the system to ensure that institutions could invest in health professional training with confidence.

9. Furthermore, according the NAO, the NHS itself did not have the power to review and compare the costs and prices of different providers, each of whom had a confidential contractual relationship with one of thirty-nine commissioning bodies. They also found NHS bodies frequently underestimated staffing needs leading to under-recruitment and under-investment. With neither buyers or sellers having any information about prices charged elsewhere and with no co-ordinated workforce planning this seems to have been a perfect example of a pseudo-market carefully engineered to lack any of the benefits normally expected either from planning or from market competition.

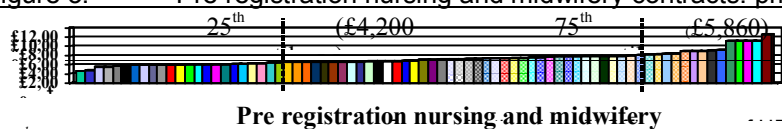
10. In response to the NAO report the NHS is planning to move towards a system of benchmark pricing and rolling contracts designed to provide HEIs with the confidence to

invest. It is ironic that this should be happening at the point when HEIs' ability to turn down relatively unfavourable contracts is about to become weaker than it has been in recent years. However, there remains the risk that some of the more strongly placed providers will see their incomes fall as a result of benchmark pricing (because they will previously have been best placed to charge higher rates) and will withdraw from nursing education.

### Variation between nursing departments

11. The concern is not purely theoretical. There is evidence that a minority of institutions have, in the past secured rates of funding well in advance of the norm. In 2001 the National Audit Office (NAO) undertook an enquiry into the training of nurses and members of the Allied Health Professions<sup>4</sup>. In the course of this enquiry it undertook a survey of HEIs which established the existence of large disparities in the funding per student received by different providers. The extent of the disparities is shown in the table below, taken from the NAO report.

Figure 3: Pre registration nursing and midwifery contracts: price per student<sup>5</sup>



12. These disparities are not surprising in view of the fact that each contract was separately – and confidentially, as well as competitively – negotiated. Nor is it surprising that the NHS has responded by planning to move to a system of standard contracts and standard prices. It needs to be observed however that this approach is radically different from that which is tolerated in the training of doctors (see next section).

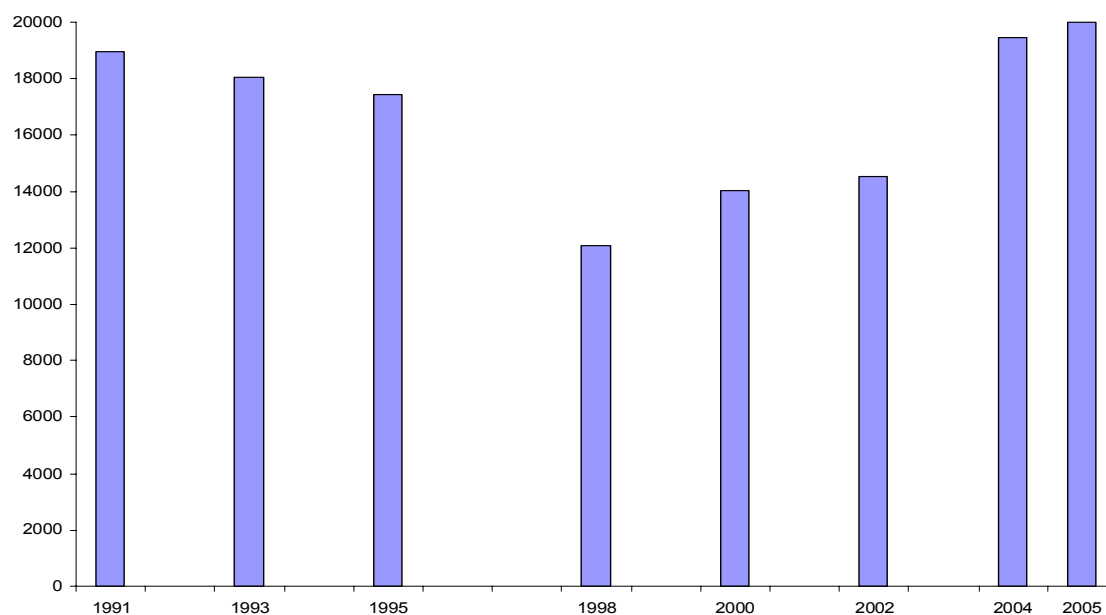
13. Given the lack of alternative providers it is important to the NHS not to drive suppliers out of the market and, additionally, not to impose a level of volatility which might deter investment in additional capacity. It does appear that the devolution of the commissioning of training to local/regional bodies rooted in service delivery has led to

<sup>4</sup> Educating and training the future health professional workforce for England (National Audit Office 2001). Available at: [http://www.nao.org.uk/publications/nao\\_reports/00-01/0001277.pdf](http://www.nao.org.uk/publications/nao_reports/00-01/0001277.pdf)

<sup>5</sup> There is no definitive dataset on the levels of unit funding received by each institution. The NAO were instead obliged to conduct an ad hoc survey of institutions to obtain the data charted here

short-termism. The past fifteen years have seen a 'boom and bust' pattern of recent years in which training numbers first fell then rose dramatically as figure 4 shows:

Figure 4: UK trained nurses: initial registrations 1991-2005



Source: Nursing and Midwifery Council

14. At the same time the need for some competitive pressure is suggested by the high variation in dropout rates found by the NAO - at least insofar as this is considered an indicator of uneven quality. It is to be hoped that the new arrangements represent a reasonable compromise between these objectives. If they are to do so, the commissioning system will need to be monitored from the centre and actively managed where the sum of local decisions produces outcomes which are not in the national interest.

### *Medicine & dentistry*

15. In medicine and dentistry the situation is very different. Institutions can depend upon strong demand for places from highly qualified applicants. But the costs of medical training (and the rates of funding provided by the HE funding councils) mean that it is effectively impossible for the number of places to be increased unless the additional costs are underwritten by government: it is implausible that students could ever meet more than a fraction of the costs of their training (see table 3). This means that, in practice if not in theory, any expansion of places will have to be centrally planned and financed with an eye to the workforce needs of the NHS. Despite this, medicine and dentistry are largely funded through the HE funding system<sup>6</sup> which limits the ability of the

<sup>6</sup> Universities are funded by the HE funding bodies for teaching in medicine and dentistry and receive funding for research which is dependent upon performance in the Research Assessment Exercise. They also compete for research grants from organisations such as the Medical Research Council and medical research charities as well as from private sector organisations and overseas sponsors. In addition to these funds, the Department of Health supports the contribution of NHS organisations to medical training through the Service Increment For Teaching (SIFT), which is distributed to teaching hospitals on a historical basis, in recognition of their contribution to the training of doctors and dentists. There is no equivalent funding stream for nurses and other health professionals.

Department of Health to control costs in order to ensure the development of the largest number of doctors possible for the resources available. The UK has relatively few physicians<sup>7</sup> compared to other countries and is highly dependent upon overseas trained doctors with 31 per cent of practising doctors born outside the UK<sup>8</sup>. Given the costs of training, it seems unlikely that this will change under the current system without either a fall in costs of training or the dedication of very considerable additional earmarked funds to support an increase in numbers of funded students.

16. In medicine and dentistry, the state has effectively underwritten very high costs - funding at a high rate for a long period. There is no need for institutions to compete for students because demand from qualified applicants always exceeds the supply of places and there is a high level of research funding available from a variety of sources. This is in contrast to nursing where universities and colleges are funded directly by NHS commissioning bodies on a contractual basis giving them less freedom and less security, where standard professional qualifications are obtained at sub-degree (rather than postgraduate) level, where there is no funding for in-service training partners, where demand cannot be depended upon and where there is little research funding.

17. These differences reflect societal choices (even student demand, it must be assumed, is related to salary levels set by the state). It is worth noting, however, that whilst medicine and dentistry are in some senses more extensive and multi-dimensional than most academic subjects with longer undergraduate programmes, research embedded in all departments and a fully funded and recognised clinical element in addition to teaching and research activity. Section B argues that the opposite is true of nursing.

#### Resources devoted to training: variation between professions<sup>9</sup>

18. In order to establish the difference between the UK state's investment in the training of nurses on the one hand and doctors and dentists on the other, estimates have been produced of the cohort size (the number of students embarking on pre registration study in Higher Education Institutions with the aim of achieving basic professional qualifications)<sup>10</sup> and the financial resources available to the universities that provide their training.

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<sup>7</sup> See annex A2

<sup>8</sup> Eastwood et al *Loss of Health Professionals from Sub-Saharan Africa: the pivotal role of the UK*. in *The Lancet* Vol 365 no. 9474.

<sup>9</sup> For further detail see annex A3

<sup>10</sup> The procedure used to estimate cohort size from available breakdowns of the student population is described in annex A3



Table 4: Comparison of resources available to departments of nursing, medicine and dentistry

	Estimated financial resources available to departments providing training 2002-03 (£m) <sup>11</sup>	Cohort size (first year undergraduates 2003-04)	Expenditure per student <sup>12</sup>
Clinical medicine and dentistry (HESA cost centres 1 and 2)	2,152	9280 <sup>13</sup>	£231897
Nursing and paramedical studies (HESA cost centre 5)	1,005	35138 <sup>14</sup>	£28602

Source: HESA

19. These figures need to be interpreted carefully. Much post-registration training in medicine and dentistry is provided by organisations outside the HE system and is therefore not included in the figure for financial resources devoted to training. The figures here, therefore, almost certainly represent a substantial underestimate of the difference in the amount the state provides to those who deliver the training of each doctor and dentist on one hand on the training of each nurse on the other. Furthermore, under the arrangement known as 'knock for knock' NHS organisations and medical and dental schools make use of one another's facilities and staff without attempting to place a value on the contribution of each to the work of the other. The net value to each medical school of knock for knock arrangements is entirely opaque<sup>15</sup>.

20. These figures reflect the much lower student:staff ratios needed to teach medical and dental students, as well as the more expensive facilities. The cost of training is

<sup>11</sup> This figure is the sum of expenditure by relevant academic departments, their estimated use of services provided centrally by the university or college and the SIFT funding provided by the Government to compensate teaching hospitals for the costs they incur supporting the education and training of medical and dental students. It does not include expenditure incurred in pursuit of research grants and contracts but may include spending on other 'unfunded' research or on the salaries of staff whose salaries are from general funds and who are substantially employed in research. However it should be remembered that the research grant provided by the funding councils amounts to less than 10 per cent of the estimated available resources so the general conclusions drawn in this section are unaffected by these considerations.

<sup>12</sup> This is not necessarily expenditure on each student. It is a ratio of the amount spent by the university in the subject area concerned to the number of students present in that subject.

<sup>13</sup> UK and non-UK domiciled students. The total number of UK domiciled first year students was 8275.

<sup>14</sup> Low estimate of number of unqualified UK domiciled first year undergraduates embarking on pre-registration study. Recorded numbers of undergraduate nursing students include very large numbers of professionally qualified nurses undertaking further study who are excluded from the estimate. The total number of first year nursing undergraduates is 88900.

<sup>15</sup> These figures assume that 'knock for knock' has a neutral effect on each medical school.

inevitably relevant to the strategy adopted by the UK Government in sourcing trained professionals: it means that the option of recruiting heavily from abroad will be harder to forego in medicine than in nursing (though it is to be hoped that the UK Government would accept a responsibility to finance the training of new professionals to replace those recruited from developing countries). The risks to the UK of dependence upon potentially unstable supply of overseas professionals are self-evident. (The impact of this dependency upon the source countries is an even more important issue but outside the scope of this report). The relationship between the costs of training, the supply of professionals and the international market for clinical professionals is an issue which merits further study.

#### Variation between medical and dental schools<sup>16</sup>

21. It is not possible to produce definitive measures of the resources available to individual medical schools because of the opacity of 'knock for knock' arrangements. It is, however, possible to establish what the position would be if we assume that knock-for knock affects each medical school equally and that the expenditure and staffing recorded by each medical and dental school is an accurate reflection of the total financial and human resources available to it.

22. On this basis it is possible to say that there are large variations in the resources available to English medical and dental schools. For example, even discounting staff on research-only contracts, Oxford<sup>17</sup> has two and a half times more staff than Liverpool (and three other medical schools). UCL spends nearly three times as much pro rata its student numbers as St. George's Medical School and two and a half times more than Nottingham even though the expenditure figures exclude expenditure spent in fulfilment of research grants and contracts. Similar variations in resourcing are evident between dental schools despite the fact that research income in dentistry is much lower and therefore has less power to skew the results.

23. To some extent these figures will reflect differences in HEFCE grant arising as a result of differential research funding but it is certainly not the case that all of the differences between medical schools can be explained this way. If they could then the differences would be expected to disappear when research activities and research staff are excluded from the calculations. The ratios shown above of expenditure to student numbers exclude research expenditure associated with grants and contracts – that is most research activity - yet the best endowed institution still appear to be spending three times as much per student as the worst; and the ratios staff to students shown above exclude researcher grade staff – who, as they are half the total staff in departments of

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<sup>16</sup> For further detail see annex A4

<sup>17</sup> These figures and those given in annex A4 are included to illustrate the degree of variability in departmental expenditures and staffing. This in turn is significant because it suggests that the opacity and complexity of existing funding arrangements is creating outcomes that would be hard to justify in a rational system (though this is hard to demonstrate precisely because of that opacity and complexity); and this in turn supports the case for reforming the funding of medical, dental and health professional education. These figures should not be used to draw conclusions about the total inputs to the teaching process in individual medical and dental schools - in the absence of detailed information on the contribution of NHS staff and facilities to the teaching activities of each school, and of information on the actual share of available resources spent on teaching research and other activities (as opposed to the funds allocated for each) such comparisons are unsafe.

clinical medicine must be assumed to provide most of the sector's research manpower – yet the best resourced institutions still come out as having two and a half times as many staff as the worst.

24. Looking at the issue another way, it seems unlikely that the skewed distribution of funding council research grant (QR) can on its own account for these inequalities. To illustrate the point, if the eighteen largest medical schools in England are divided into two groups - the nine with the highest expenditure per student and the nine with the lowest - then the first group would, collectively, have had to have spent £241m<sup>18</sup> less in order to bring their expenditure per student down to the level of the second group. The difference in QR funding between the members of the two groups in actual fact is only £76m<sup>19</sup>. It therefore seems implausible that differences in QR funding can on their own account for the difference in expenditure between the two groups.

25. The disparities are also not caused by differences in the proportion of pre-clinical and clinical students. Under the HEFCE funding model, clinical students in medicine and dentistry (those in the last three years of an undergraduate course and most postgraduates) attract a higher rate of funding than pre-clinical students. An institution with a higher proportion of clinical students (one which, for example, assumed responsibility for students initially enrolled elsewhere when they reached the clinical stages of their training) would therefore be expected to spend more per student than one with a lower proportion. However, the nine lower spending English HEIs in 2002-03 had a marginally *higher* ratio of clinical to pre-clinical students than the nine higher spending HEIs (2.1:1 as opposed to 2:1 for the higher spenders). It is safe to say, therefore, that this is not the cause of the disparity between the two groups.

26. Such inequalities as are not explicable in terms of research funding and research activity could have many explanations: differential levels of income from fee-paying students, differential levels of input from the NHS side or simply inconsistent practice in the completion of data returns. The data do not allow straightforward conclusions to be drawn about the differences in the cost of medical training, the variations in cost between different providers, and the difference in the cost of training doctors on the one hand and other health professionals on the other. The data are incomplete because of the extraordinary lack of transparency surrounding support (both cash and in-kind) provided by the NHS to medical and dental schools but on the basis of the available data, there are indications that the present system may be throwing up perverse results, with some providers funded at a much more generous rate for doing the same job. What is undeniable is that it is simply not possible at present for the Government to know if it obtains value for the very substantial resources expended by medical schools.

27. In 2002-03 the new medical schools created in the most recent expansion had only just opened. It would not be meaningful to make a statistical comparison between new and established schools until the new schools enrolled several cohorts, met exceptional

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<sup>18</sup> 2002-03 figures. This calculation is based not only on direct departmental expenditure recorded by HESA but also on the presumed usage of central university services by each medical school.

<sup>19</sup> Based on HEFCE 2002-03 QR funding data for units of assessment 1,2,3 and 5 available on the HEFCE website.

set-up costs and reached a full staffing complement. It is however worth highlighting the fact that, to the extent that established schools benefit from historical understandings and accumulated capital the new schools will be at a disadvantage; and they will conversely find it easier to strip out costs embedded in more established schools. It would not, therefore, be surprising to discover that the new medical schools have staffing and expenditure levels lower even than the least favoured of the established schools. That is certainly what they believe.

## Section B: Characteristics of nursing as a discipline in UK universities and colleges<sup>20</sup>

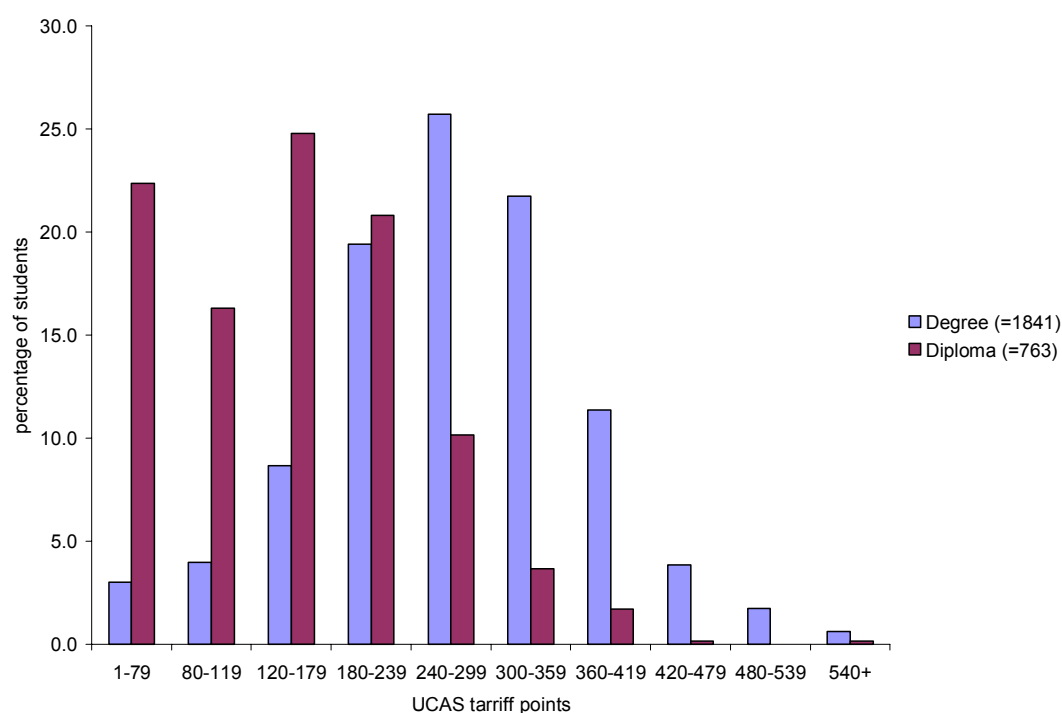
28. It is striking how little the study of nursing appears to have been 'academicised' by its move into the Higher Education sector.

### Qualifications

29. Full-time degree students whose highest entry qualification was A level represented only 4 per cent of all nursing undergraduates in 2003-04. The diploma remains – and is likely to remain - the standard entry qualification for the nursing profession.

30. Data on entry qualifications for nursing undergraduates are patchy. However, a comparison of degree and diploma nurses *whose highest previous qualifications were A levels or equivalent* suggests that the degree and diploma routes attract different kinds of student. There is no guarantee that current rates of entry to the nursing profession could be sustained if the degree became the standard entry qualification.

Figure 6: Entry grades of nursing degree and diploma students whose highest entry qualifications are A levels or Scottish Highers



Source: HESA

31. There are signs that increases in the numbers of nursing students reflect an increase in the supply of places rather than shifts in student demand, which, if anything

<sup>20</sup> For further detail see annex B1

may be falling. Either it is becoming easier to secure a place to study nursing or some means has been found to discourage applications from less well qualified applicants.

Table 7: Applications to the Nursing and Midwifery Application Service (NMAS)<sup>21</sup>

Entry Cycle	Forms received <sup>22</sup>	Successful (per cent)	Unsuccessful (per cent)
1999-000	39034	14819 (38)	19507 (50)
2000-01	45677	15734 (34)	24496 (54)
2001-02	37314	15560 (42)	17719 (47)
2002-03	32585	15810 (49)	13324 (41)

Source: NMAS

32. What is more, the need for new UK trained nurses is likely to increase<sup>23</sup>. In 2004 27 per cent of registered nurses were aged 50 or over whilst only 10 per cent were aged under 30. A decade earlier things were very different. In 1994 the number of registered nurses under 30 was higher than the number aged 50 or over. This suggests that any moves which would restrict access to the nursing profession are extremely unlikely.

33. It is therefore hard to imagine nursing becoming a degree-entry profession in the near future. In order to replenish the nursing profession training numbers will need to increase and it is far from clear that sufficient numbers could be enrolled in degree-level programmes.

#### Continuing professional development

34. An enormous amount of the teaching activity of UK nursing departments is not associated with study for degree or diploma level qualifications. This can be glimpsed in the published statistics. Whilst there were only 2,401 (UK and overseas domiciled) first year part-time diploma students in nursing in 2003-04 there were a total of 44,960 UK domiciled first year part-time students studying for qualifications other than first degrees. A large majority of these students held previous higher level qualifications: of those whose highest qualification on entry was known 85 per cent held HE or professional qualifications<sup>24</sup>; and it is reasonable to suppose that most of these were employed nurses undertaking further professional training.

#### Research

35. Levels of research funding in nursing remain low relative to the HE sector as a whole. The table below compares HEFCE research funding allocations based upon RAE

<sup>21</sup> NMAS processes applications for nursing diplomas. It does not process applications for degree courses or CPD programmes and not all diploma students will apply through NMAS.

<sup>22</sup> Includes forms cancelled before being sent to institutions and forms withdrawn before any decision taken. For this reason the totals amount to less than 100 per cent.

<sup>23</sup> See annex B2

<sup>24</sup> Interestingly, 78 per cent of part-time *first degree* students whose entry qualifications are known also held higher or professional qualifications (8440 out of 10360). It seems likely that many are diploma-qualified nurses attempting to obtain degree qualifications.

results in nursing with the total expenditure of nursing departments and makes a similar comparison for the Higher Education sector as a whole. The results show that research is a much less prominent feature of academic life in nursing departments than in academic departments generally.

Table 8: Expenditure and research funding of English HEIs 2002-03 (£m)<sup>25</sup>

	Departments of nursing	All academic departments	Nursing as a percentage of total
Total Expenditure	401	5703	7.0
HEFCE research funding <sup>26</sup>	6.2	940	0.7

Source: HESA

### Staff grades

36. Compared to the HE sector as a whole, staff in nursing departments are much less likely to be in 'researcher' posts – indicating that there is insufficient funded research activity to support the employment of large numbers of postdoctoral researcher. Moreover, staff on 'academic grades' are much less likely to be on senior grades than those in the wider HE sector.

Table 9: Staff grades in nursing and all academic departments in UK HEIs

	Departments of nursing 2002-03 ( per cent)	All academic departments 2003-04 ( per cent)
Researchers	645 (7)	33190 (22)
Lecturers	5370 (60)	54045 (36)
Senior lecturers and researchers/Professors	1658 (19)	38270 (25)
Other	1240 (14)	24725 (16)

Source: HESA

37. Nurse training has become embedded in the HE sector without acquiring the profile of a typical subject of study. The profession it serves continues to admit most UK entrants on the basis of sub-degree qualifications, nursing schools are clearly organised in such a way as to enable them to provide enormous amounts of CPD and research is a marginal activity.

38. The UK's universities and colleges already operate in a manner similar to an in-house training organisation, providing a flexibility not always associated with providers of higher learning. There is little sign that the movement of nursing into HEIs has resulted in credentialism, or that research is replacing teaching as the central preoccupation of

<sup>25</sup> These figures are for direct departmental expenditure only and, unlike the figures in tables 3, do not include an element designed to reflect departmental use of services and facilities provided by the institution.

<sup>26</sup> Includes mainstream QR, PGR supervision, transitional funding for research students in 3b rated departments and London Extra Costs

academic staff. On the basis of these data, it would be hard to argue that academic values are conflicting with the needs of the service. This may explain the abandonment of the NHS University: it may be that universities and colleges were delivering health professional training on a model sufficiently similar to that envisaged for the NHSU to undermine the latter's viability as a provider. There remains, however, a very strong case for a national body taking a properly co-ordinated approach to the commissioning of training – a case set out in section C.

39. This may reflect the funding arrangements. Nurse training in universities has been funded by the NHS on the basis of confidential contracts negotiated by local and regional NHS bodies and autonomous HEIs (the system is being reformed to provide institutions with the confidence necessary to make long-term investments but the data presented in this report reflect the effects of the old system). This model gives the purchaser much greater control over the nature of provision than the 'block grant' funding mechanism which underpins other academic subjects. To the extent that universities and colleges may increasingly assume a role as the training academies for other areas of public sector the experience of direct commissioning in the health sector is likely to be much studied. The experience of nursing education suggests that this may prevent university departments from following a typical academic model – and focuses them on providing training relevant to service needs.

40. Whatever its causes, the experience of nursing demonstrates that it is possible to move the training function for a major public sector profession into the HE sector successfully without it acquiring all the characteristics of traditional academic disciplines. It is important not to confuse what is essentially an issue of taxonomy ('is it really Higher Education if there is little or no research going on?') with the practical issue of whether HEIs are capable of taking on a major public sector training function in the absence of large-scale research funding (which they clearly are). That is not to deny that it is in the national interest to provide more funding for nursing research in universities – but that is a separate issue from the viability of professional training within the HE sector.



## Section C: Conclusions

41. The state has an inescapable planning function with regard to the education of health professionals. It is the customer of UK nursing departments, and it provides the bursaries which enable students to pursue their studies. As far as medical and dental students are concerned, the advent of top-up fees will raise no more than a fraction of the costs of clinical education: with demand strong the key factor limiting medical student numbers will continue to be the willingness of the UK state to invest in training. In medicine and dentistry, therefore, as much as in nursing, it is not possible to argue that the responsibility to oversee the investment of public funds can be evaded on the grounds that the medical student, rather than the Government is the customer and seeking some kind of market solution: where the government is in effect a monopsony purchaser it cannot depend on others to ensure that price and quality are appropriate and that adequate capacity is sustained.

42. The question, therefore, is not whether planning or market solutions should be employed but how the state can best look after public investment in health professional training.

### What should be done?

#### Is there a need to restructure the funding of medical and dental training to ensure greater accountability for public funds?

43. Minimally there needs to be a national accounting exercise establishing what public monies and other contributions go into medical and dental education (all funding and use of NHS facilities), who receives them and how the quality and quantity of output relate to the inputs. Best practice should be identified and the least efficient providers asked to explain why their performance differs from the most efficient. The exercise should not be one sided: if it discovers that some providers are under-resourced with implications for other activities within the HEI and for the sustainability of the medical school, this too should be addressed. Such an exercise must look at the distribution and use made of SIFT monies as well as HEFCE funding for teaching in clinical subjects. Ideally, those responsible for this accounting exercise would report to a national body with the power to restructure funding mechanisms on the basis of the results. Whether or not it should sit under the Department of Health is something to be considered.

44. Given that the primary concern of such a body would be to ensure adequacy of output of trained medical professionals and value for the resources devoted to this, it might be logical for such a body to sit under the DH which is responsible for medical manpower. However, it should be remembered that at present the support for medical and dental education channeled through the HE funding councils is much more transparent, has a more rational basis and is no less accountable than that channeled through the NHS through SIFT and knock for knock arrangements. The HE funding bodies are less subject to other pressures on funds and in that respect are better equipped to manage a long-term investment. While it may be true that the Department of

Health is in a better position to ensure oversee and recognise the contribution of NHS organizations to training alongside that of universities and colleges it would need to make very significant reforms before assuming the functions of the he funding bodies in funding medical and dental education. In the absence of which there would be a strong case for a transfer of funding responsibility in the opposite direction.

Should the training of nurses and allied health professions be commissioned or funded at local or national level?

45. The rationale for commissioning health professional training at local (strategic health authority) rather than national level is open to question. It is hard to see how patients or taxpayers benefit from a state of affairs in which no-one is responsible for ensuring that the best use is made of national training capacity and of the pool of prospective students or to ensure that nationally the commissioning of training places reflects the need for qualified staff. It would be particularly dangerous to create a situation in which the performance of the service is monitored at a national level with no corresponding attention being given to each StHA's contribution to replenishing health professions. Were such a situation to become entrenched, the tendency to sacrifice training to more immediate service needs would be amplified.<sup>27</sup>

46. Theoretically, the one advantage of local commissioning is that it gives the StHA the ability to ensure that service contracts oblige trusts to provide in-service support for training, but the record here is patchy: there is a chronic shortage of trainers and indications that poor quality is a contributory factor in poor retention rates.

Should the commissioning of the training of nurses and allied health professionals be the responsibility of the NHS?

47. A good case can be made for ensuring that the funding of some Continuing Professional Development is responsive to service priorities so long as major nationally dictated programmes of CPD are funded, organised and rolled out nationally. It is very hard to see how the public interest is served by making pre-registration training compete for funds with service delivery. This inevitably leads to a 'boom and bust' pattern of training activity which is wasteful and disruptive. For this reason it is almost certainly the case that an 'arm's length' agency of the Department of Health, or another body independent of the NHS, could do a better job of commissioning training than NHS organisations.

48. The key question is not who should fund medical, dental and health professional training but how. Ideally, those responsible would be in a position to:

- Estimate the number of places required on the basis of: long-term national workforce planning assumptions which take account of attrition rates for students in training; retention rates for professional staff; and the 'excess' number of staff needed to prevent the occurrence of large numbers of unfilled vacancies in key posts.

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<sup>27</sup> See annex B2 for a fuller account of the reasons why it would be prudent to sustain training numbers at a high level..

- In seeking to ensure an adequate supply of professionals, develop a strategy covering the principal supply side issues (the development and distribution of training capacity in HEIs, its alignment with capacity to support training in NHS organizations, and, in the case of nursing the stimulation of student demand)
- Ring-fence training and education budgets
- Ensure that the pre-registration training of professionals is planned and funded with reference to national rather than local needs
- Relate inputs (in terms of funding and in-kind contributions) to outputs and in doing so establish which providers are providing value for money

## **Annex A: Funding systems – Inequalities, the role of planning and markets**

This annex supports section A of the HEPI report *The Education and Training of Medical and Health Professionals in Higher Education Institutions*. It contains the detailed analysis and reasoning from which the conclusions presented in the main report are drawn.

It is divided into four sub-annexes:

### Annex A1: The mutual dependence of English HEIs and the NHS

Annex A1 investigates the relationship between NHS commissioning bodies and Higher Education Institutions. It considers the very different bargaining power enjoyed by HEIs in negotiating contracts with NHS bodies and establishes the extent to which the system has been managed by both sides to provide stability rather than dynamism.

### Annex A2 Numbers of physicians per dollar spent on health: international comparison

Annex A2 shows how the UK employs fewer physicians relative to its spend on health than most advanced countries

### Annex A3 Inputs and outputs in nursing and clinical subjects

Annex A3 considers the relationship between the resources available to university departments of nursing on the one hand and medicine and dentistry on the other and their NHS partners and relates this to student numbers to build a picture of society's investment in the training of the different professional groups.

### Annex A4: Measures of the resourcing of UK medical and dental schools

Annex A4 presents evidence of the teaching load of the 23 largest UK medical and dental schools and contrasts it with the resources available to them in an attempt to build up a picture of the variability in the resources available to them.

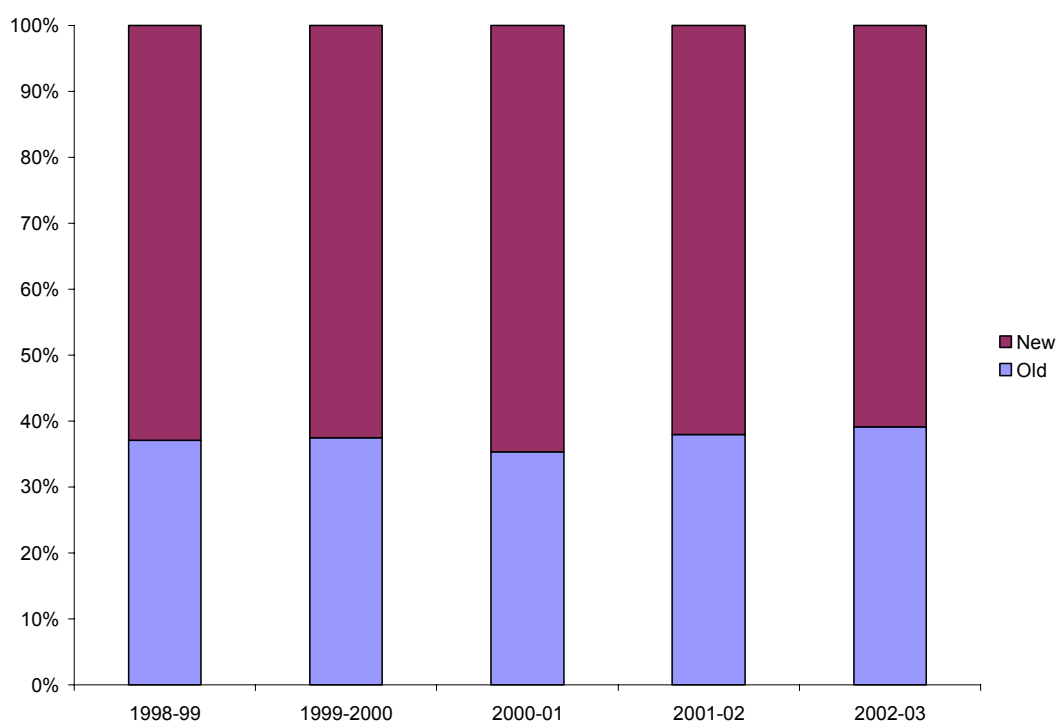
## The mutual dependence of English HEIs and the NHS

This annex investigates the relationship between NHS commissioning bodies and Higher Education Institutions. It considers the very different bargaining power of HEIs enjoyed by HEIs in negotiating contracts with NHS bodies and establishes the extent to which the system has been managed by both sides to provide stability rather than dynamism.

### Distribution of NHS fees – new and old universities

1. Over the period 1998-999 to 2002-03, new (post-92) universities accounted for between 60 and 65 per cent of NHS fee payments<sup>28</sup> in the HE sector. The degree of stability at sub-sectoral level reflects what is generally a very high level of stability across the system

Figure A1: Share of NHS fee income – old and new universities (top 30 fee recipients in England)

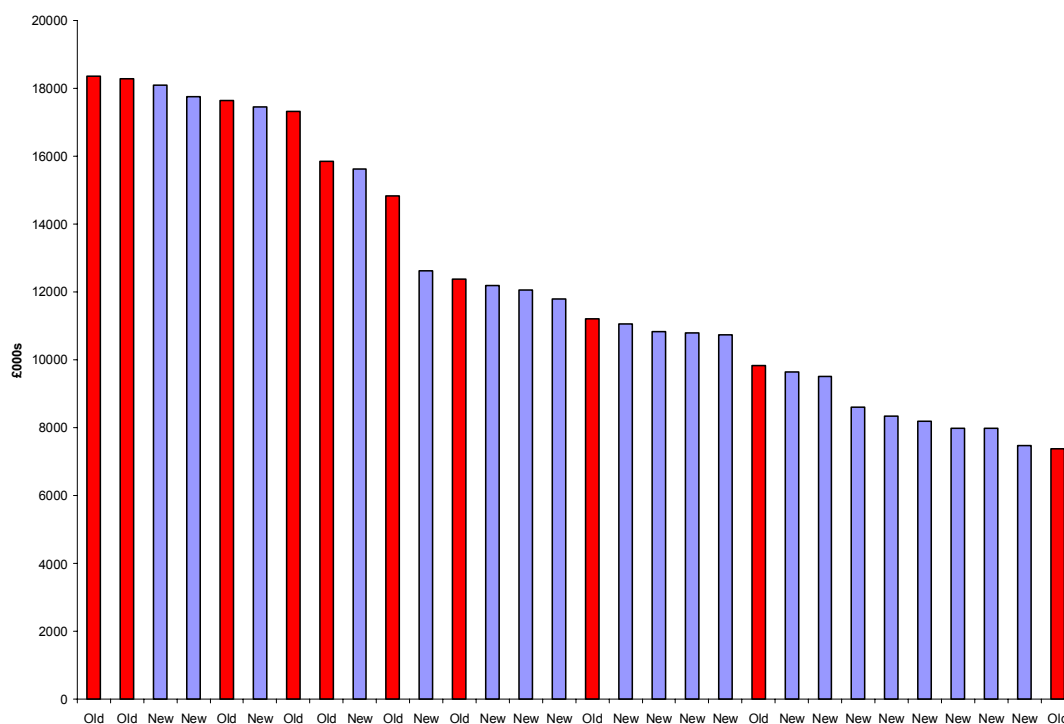


Source: HESA

2. Figure A2 shows the income received by the 30 English institutions with the highest NHS fee income in 2002-03. The red (dark) columns represent pre-1992 (old) institutions and the blue (light) columns post-92 (new) institutions (the latter group including colleges of higher education as well as new universities). It is immediately clear that older institutions are well represented amongst the leading providers.

<sup>28</sup> Teaching in nursing and other health related professions is funded through direct fee payments from the NHS. Medical and dental education is funded separately through the Higher Education funding system.

Figure A2<sup>29</sup>: NHS fee income in £000s for 30 English HEIs with the highest income from NHS fees in (2002-03 shown in rank order of NHS fee income)



Source: HESA

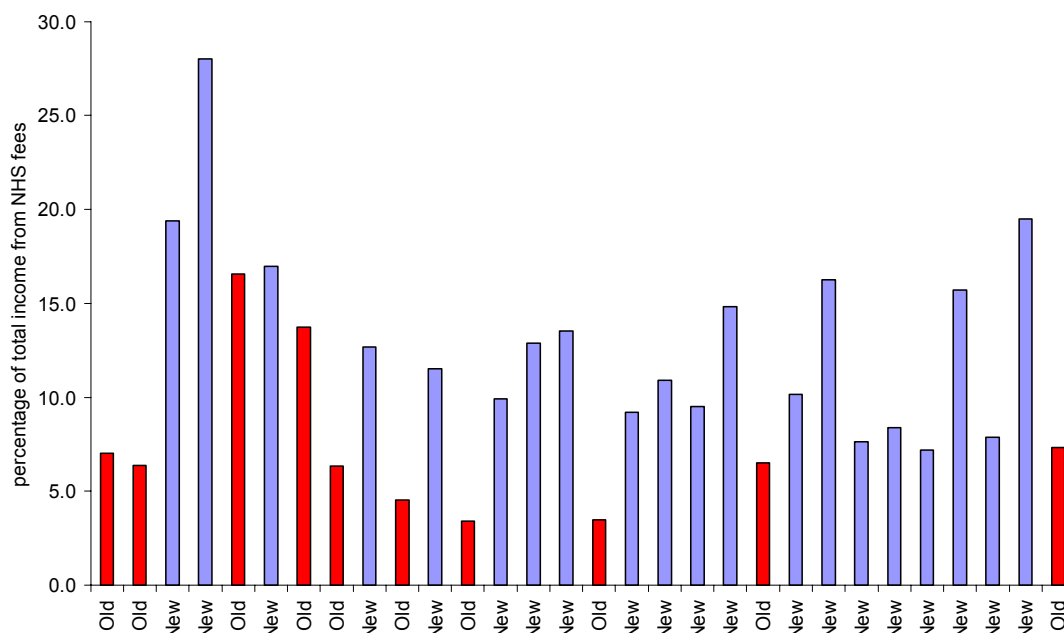
### Negotiating strength of universities

3. The Department of Health is in the process of attempting to establish benchmark prices for the training of nurses and other health professions. It is entirely rational for the NHS to attempt to contain the risk of price rises, whilst guaranteeing all providers a viable price.

4. There are risks in this strategy for the NHS, however. A substantial amount of nurse training takes place in institutions which are in a position to limit their involvement in the sector if conditions become unfavourable. NHS income remains a small proportion of the total income for some of the institutions which do the most work for the NHS as figure 3 shows. These institutions have been in a position to drive a hard bargain with the NHS. If benchmark pricing affects their ability to claim a premium, they may walk away from nursing education.

<sup>29</sup> For reasons of data access, the analyses illustrated in figures A1, A2 A3, and A4 exclude London Metropolitan University and its predecessor institutions. This means that, in figure A4 there are five London institutions whose share of regional NHS fee income is inflated by the absence of LMU data. Even without LMU, London is exceptional for the low levels of concentration of NHS fee income; it is probable that were LMU data available London would furnish some striking examples of institutions whose dependence upon the local NHS is greater than the dependence of the local NHS upon them.

Figure A3 NHS fee income as percentage of total income for 30 English HEIs with the highest income from NHS fees in 2002-03 shown in rank order of NHS fee income



Source: HESA

5. As might be expected, old universities tend to be much less dependent upon NHS fee income than new universities and this itself is important. Old universities heavily involved in nursing education tend to be those with medical schools – which tend to be the most prestigious institutions. They are in a strong position to choose their areas of expansion without fearing that their plans will be constrained by lack of student demand<sup>30</sup>. If other areas appear more attractive than nursing, therefore, they will tend to be in a position to take advantage of this.

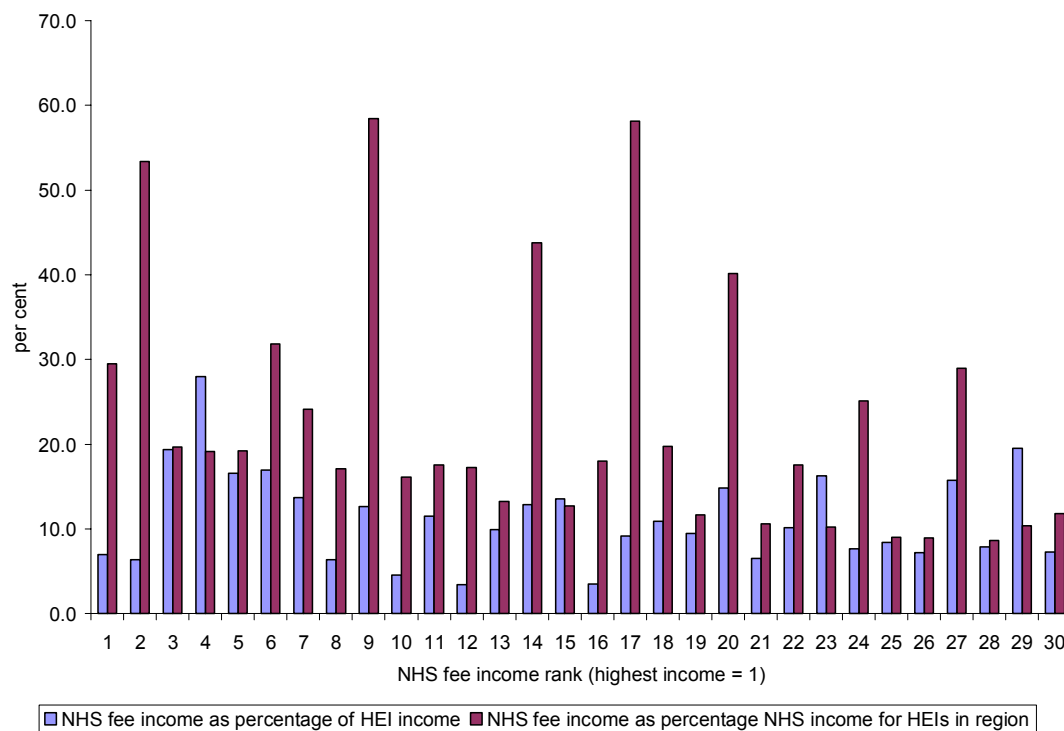
6. In some cases the dependence of the NHS upon the institution is much greater than the dependence of the institution upon the NHS. (The converse is also true but this is arguably of less significance because the NHS needs to utilise the entire capacity of the HE sector). Figure A4, below again shows the thirty institutions with the highest income from NHS fees, showing their NHS income as a percentage both of their own income (the blue - light - bars) and of the NHS spend in their region's<sup>31</sup> universities (the red – dark - bars). The size of the blue bar therefore is a measure of the institution's dependence upon the NHS; the size of the red is a measure of the dependence of the NHS within the region upon the HEI. The circumstances of individual institutions depend, of course, upon many factors not shown in this chart, but in general terms those institutions for whom the blue bars are close to or greater than the size of the red are in a

<sup>30</sup> Although they could be constrained by the willingness of the HE funding bodies to provide additional funded places

<sup>31</sup> Government office regions, rather than the old NHS regions have been used in this analysis.

relatively weak position vis a vis the NHS; those for whom the red are much larger than the blue are in a strong one. The first group are likely to benefit from the continuation of competitive tendering; the second group to suffer.

Figure A4: NHS fee income as percentage of total income and as a percentage of NHS income for the region 2002-03



Source: HESA

## Stability

7. Fortunately for highly exposed HEIs, the downside risks associated with NHS funded university teaching appear to be low and instances of substantial falls in revenue from the NHS to be rare – which perhaps reflects the point that the NHS has little choice but to use all of the available training capacity in HEIs.

### Measures of concentration

8. One indicator of the stability of the system is the level of concentration. This does not pick up shifts between individual institutions but it does indicate whether there are changes in the distribution of funding. As table A5 shows, the level of concentration has been very stable.



Table A5: Number of institutions receiving 75 per cent of DH/NHS fee income (England)

1998-99	27
1999-00	28
2000-01	27
2001-02	28
2002-03	29
1998-99 to 2002-03	28

Source: HESA

9. What is more there has been little change in the identity of the 30 institutions receiving the most funding

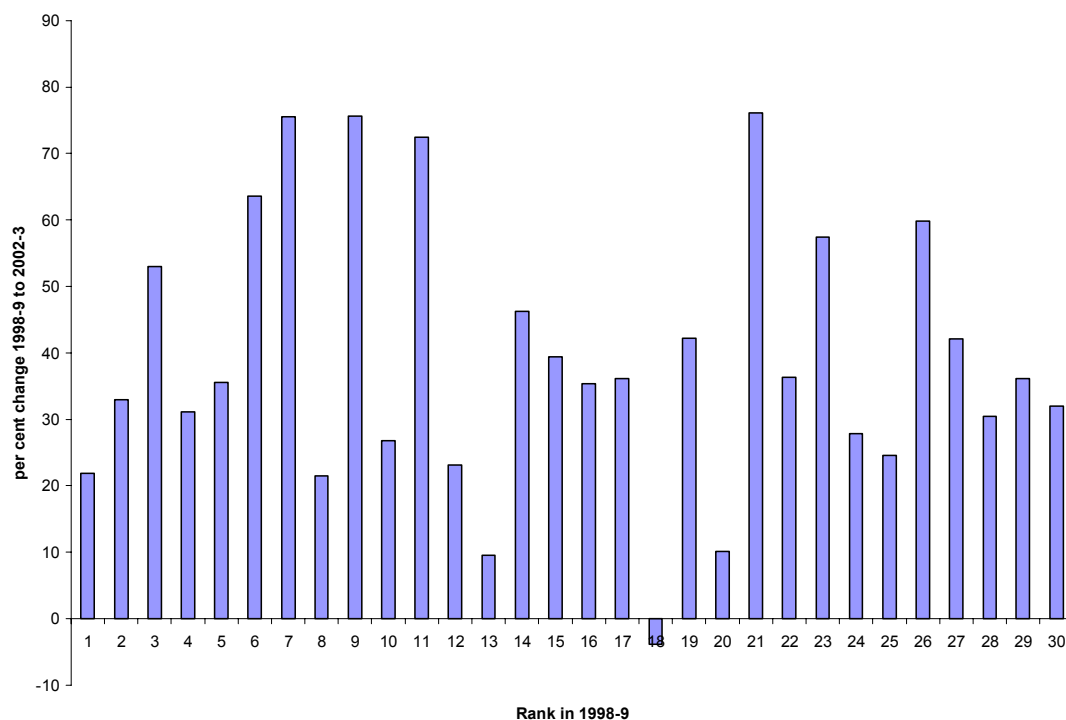
Table A6: 30 institutions receiving most DH/NHS fee funding in 2002-03

Institution also in top 30 in 2001-02	29
Institution also in top 30 in 1998-99	27
Median change in rank 1998-99 to 2002-03	3

Source: HESA

10. The relatively low risks for providers are even more apparent when we examine the 30 institutions receiving the greatest fee income in 1998-999. As figure A7 shows, one institution saw its fee income fall by 4 per cent between 1998-999 and 2002-03. Two others saw increases of roughly 10 per cent - broadly equivalent to inflation. The other 27 saw substantial real terms increases in DH/NHS fee income.

Figure A7: Changes in DH/NHS fee income 1998-999 to 2002-03 (columns represent the top 30 recipients of DH/NHS fees by value in England in 1998-999)



Source:HESA

11. It is reasonable to expect short-term fluctuations to even out over a period of five years. However, further examination reveals few examples even of *year-on-year* falls in income amongst the leading providers (defined here as the thirty English institutions with the highest DH/NHS fee income in 1998-999). There were twelve instances of such falls in the period 1998-999 to 2002-03 out of a possible 120 (in the remaining 108 cases income from the NHS increased year on year). The mean value of the twelve falls was £1.388m. Excluding one outlier from the calculation the mean fall was £613m. One fall represented 10 per cent of the institution's total revenues for the previous year; another represented 5 per cent. In all other cases the figure was less than 1.5 per cent.

12. This demonstrates that, whilst fluctuations in fee income from DH/NHS sources had the potential in the period 1998-2003 to seriously affect the financial stability of institutions, they very rarely did so. The data will not tell us to what extent this was the result of the inherent stability of the system, or a conscious attempt to manage instability on the part of institutions and funders or pure good fortune but the apparent absence of downside risks is remarkable in itself.

13. It seems most likely this reflects the shortage of capacity in health professional education and training and indicates that HEIs are in a stronger position in negotiating contracts with the NHS than might be supposed. UK Universities and colleges are run on narrow margins and have an instinctive and (in the circumstances) rational preference for stability; the NHS has no alternative suppliers outside the HE sector and has an interest in ensuring that its suppliers have sufficient guarantees of funding to allow them to invest in maintaining or expanding capacity. It is therefore unsurprising that there are moves

towards formalising what appears to be a pre-existing, if implicit, understanding: that, there should be no nasty surprises on either side.

## Numbers of physicians per dollar spent on health: international comparison

This annex shows how the UK employs fewer physicians relative to its spend on health than most advanced countries

1. There is no shortage of well-qualified applicants for medical and dental training places (notwithstanding the views of some academics on the ability of the secondary sector to prepare them for higher study). Given the strength of demand and the high proportion of overseas trained clinicians in the UK<sup>32</sup> it is, on the face of it, surprising that numbers of places have not increased to reflect and accommodate surplus demand. This may, of course, be because the Government, as the ultimate funder of most medical training, considers that the benefit that the public would derive from the presence of a larger number of trained medical professionals in the UK is outweighed by additional training costs.
2. It is not because the UK has a surfeit of physicians. Even with very large numbers of overseas practitioners, numbers are relatively small. Of the thirty countries scoring highest on the UN Development Index the UK has the third highest health spend *relative to the number of physicians* (or to put it another way, the third lowest number of physicians relative to its spend on health). As table A8 shows, the two countries below the UK are the USA and Canada, so this may indicate something about the culture and organisation of healthcare in the Anglophone North Atlantic countries. It suggests expenditure on other aspects of health care (eg medication) rather than on doctors and/or that the amount spent per physician on salaries, training and other benefits precludes the employment of higher numbers.

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<sup>32</sup> According to a recent article in The Lancet (Eastwood et al in vol. 365 no. 9474), 31 per cent of clinicians active in the UK are from overseas

Table A8 Spend on health per physician (selected countries)<sup>33</sup>

Rank <sup>34</sup>	Country	Health spend per capita (public + private) in US\$	Physicians per 100 000 population in US\$	Health spend per physician (US\$ 000s)
1	USA	4887	279	1752
2	Canada	2792	187	1493
3	UK	1989	164	1213
13	France	2567	330	778
14	Germany	2820	363	777
26	Spain	1607	329	488
27	Italy	2204	607	363

Source: UNDP<sup>35</sup>

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<sup>33</sup> figures calculated by dividing reported per capita (public and private) spend on health by number of physicians per person.

<sup>34</sup> Based on ranking the thirty territories (29 countries and Hong Kong) with the highest scores in the UN development index in terms of the amount of money spent on health services for each physician. The USA is ranked 1 which indicates that it has the highest spend on health *relative to its number of physicians*.

<sup>35</sup> UNDP Human Development Report 2004 available at [http://hdr.undp.org/reports/global/2004/pdf/hdr04\\_HDI.pdf](http://hdr.undp.org/reports/global/2004/pdf/hdr04_HDI.pdf)

## Inputs and outputs in nursing and clinical subjects

This annex considers the relationship between the resources available to university departments of nursing on the one hand and medicine and dentistry on the other and their NHS partners and relates this to student numbers to build a picture of society's investment in the training of the different professional groups.

1. There are several measures of teaching inputs to university departments. Clinical departments are extremely difficult to analyse in this way because they differ from other disciplines in three important respects:

- They work closely with NHS entities to deliver medical and dental education often sharing the same facilities and staff. It is not therefore safe to assume that levels of staffing or expenditure in university departments fully capture the resources available for medical education<sup>36</sup>.
- Clinical academic staff salaries tend to be much higher than other academic salaries, with implications for the relationship between staff numbers and the total level of investment
- They undertake more research (by value) than other subjects and employ large numbers of staff not directly involved in teaching. It is doubtful whether research only staff and facilities can be held to contribute to teaching *capacity* although there is an argument that they enhance teaching *quality* by enriching the academic environment. Nursing departments, by contrast receive very little research funding relative to their teaching load and employ very few research only staff.

2. Precise measurement of the levels of capacity and investment in medical education is not possible using currently available data. It is possible, however, to use a series of measures, each with its own weaknesses, to gain a general sense of the very different situations in nursing and clinical subjects.

### HE Staff numbers

3. The Higher Education Statistics Agency (HESA) counts numbers of academic and comparable staff employed by UK Higher Education Institutions. This measure includes staff whose posts are funded by other bodies but excludes staff active in the institution but not employed by it - eg. NHS-employed clinicians. It will not reflect the large difference in salary between clinical academics and academics in other disciplines. HESA does break staff down by grade and excluding staff on 'researcher' and 'other' grades is a crude means of excluding staff with minimal teaching responsibilities and arguably gives a more accurate picture of the amount of teaching capacity.

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<sup>36</sup> Teaching hospitals are funded by the NHS for their contribution to medical and dental education. There is no equivalent funding for NHS Trusts to support their contribution to nursing education.

4. Table A9 shows that, even without taking into account the contribution of NHS staff to medical and dental education, the medical and dental departments employ more staff than nursing departments. It also shows that clinical staff in nursing departments are scarce, whereas they appear to make up the majority of teacher researchers in medicine and dentistry.

Table A9: Estimated full time equivalent (FTE)<sup>37</sup> staff numbers in clinical subjects and nursing 2002-03.

	Estimated FTE staff numbers (numbers of FTE clinical staff in brackets)	
	All staff	Professor, senior lecturer/researcher/lecturer grades only
Clinical medicine and dentistry (HESA cost centres 1 and 2)	17727 (6220)	7701 (4970)
Nursing and paramedical studies (HESA cost centre 5)	8025 (44)	6438 (43)

Source: HESA

#### Financial resources devoted to medical and dental education

5. HESA expenditure figures, like its staff figures cover only expenditure within HEIs. Medical and dental education in particular is essentially a shared activity involving the HE and health sectors so the HESA figures will not capture the full investment in medical and dental education. They also exclude spending of hypothecated research funds.

6. HESA provides figures for spending in academic departments. In 2003-04 such spending accounted for 48 per cent of the total expenditure in HEIs *excluding spending on fulfilling research grant and contracts*. Academic departments are themselves consumers of services provided centrally by the institution so it is arguable that the figures should be scaled up to reflect their usage of these services. The analysis in table A10 below shares these central expenditures amongst academic departments in proportion to their in-department expenditure.

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<sup>37</sup> FTEs are estimated on the basis that all staff recorded as full-time are worth 1 FTE and all staff recorded as part-time are worth a mean of 0.5 FTE

Table A10: Resources available for university courses in clinical subject and nursing 2003-04 (£m)

	Expenditure excluding research grants and contracts		Other available funds	Total
	Expenditure in academic departments in 2003-04 (n)	Including presumed usage of central services (n/0.48)	NHS support to hospitals for use of clinical facilities in training	
Medicine and dentistry <sup>38</sup>	737	1519	633	2152
Nursing <sup>39</sup>	487	1005	0	1005

Source: HESA

### **Relationship of teaching resources to student numbers**

7. It is instructive to compare the resources available to clinical and nursing departments with the size of each cohort<sup>40</sup>.

#### Defining the cohort size in nursing

8. The definition of cohort size is complicated by the fact that the undergraduate population includes large numbers of post-registration nurses undertaking further study. There were 88905 UK domiciled first year nursing undergraduates in UK universities. Of these, 51 per cent of those whose entry qualifications are known already held non-graduate Higher Education or professional qualifications (the grouping including those holding nursing diplomas or other sub-degree nursing qualifications). If we simply assume that the nursing cohort consists of the remaining 49 per cent of the first-year undergraduate population, this gives a cohort size of 43663.

9. Alternatively, we could assume that the nursing population consists of the number studying for nursing diplomas plus those degree students who do not already hold sub-degree HE qualifications. There were 25107 first year diploma students in 2003-04 and 20660 first degree students. As with the overall undergraduate population, 51 per cent of

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<sup>38</sup> Student numbers based on numbers in medicine and dentistry (all sub-categories) in HESA staff record; staff and expenditure numbers based on total for HESA cost centres 1 and 2

<sup>39</sup> Student numbers based on numbers in nursing in HESA staff record; staff and expenditure numbers based on total for HESA cost centre 5 (nursing and paramedical studies)

<sup>40</sup> HESA counts students on the basis of subject codes rather than departmental cost centres which means that comparisons between resources and student numbers can be difficult. However, clinical and nursing education are highly regulated and tend to be carried out within departments of nursing, dentistry and medicine making comparisons more instructive than they would be in some other contexts.



the degree students whose qualifications were known held non-graduate Higher Education or professional qualifications and can be presumed to be qualified nurses. This leaves 49 per cent of the degree cohort (10031) to be added to the diploma students giving a total of 35138<sup>41</sup>.

10. In order not to overstate what are, by any measure, enormous differences between the resources available for nursing education and those available for medical and dental education the analysis in table A11 uses the lower estimate of 35 138 for the nursing cohort.

11. For the medical and dental cohort, the analysis simply takes the total number of UK domiciled first year students in medicine and dentistry recorded in UK institutions in 2003-04: 9280 students. Non-UK students are included on the basis that many will be paying full fees and are therefore contributing to the departmental resources shown in table A10 above. It is arguable that this skews the comparison with nursing for three reasons: the nursing figures include only UK domiciled students; many non-UK medical students will be from within the EU and will not be paying full fees and not even the high fees charged to non-EU clinical students fully reflect the cost to the UK taxpayer of training a medical student<sup>42</sup>. However, as with the definition of the nursing cohort assumptions have been made which will tend to understate the disparity in resources between nursing and clinical subjects so as to remove and risk of overstating what are already very large differences.

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<sup>41</sup> This is almost certainly an underestimate because it excludes students who are not registered as studying for formal qualifications but are undertaking credit bearing study with the aim, ultimately of achieving professional qualifications (this group will include, for example, healthcare assistants studying part-time with the undeclared or unrecognised aim of achieving nursing qualifications). Many such students however will ultimately enrol in degree or diploma courses and would therefore become part of a subsequent cohort so it is probably safest to exclude them

<sup>42</sup> International students are rarely charged much more than £15000 per annum or £75000 over the course of a typical 5 year undergraduate course

Table A11: Resources, staffing and the size of the student cohort (nursing and clinical subjects)

	Estimated financial resources available to departments providing training 2002-03 (£m) <sup>43</sup>	Estimated staff FTE 2002-03 (teaching grades only)	Cohort size (first year undergraduates 2003-04)
Clinical medicine and dentistry (HESA cost centres 1 and 2)	2152	7701	9280 <sup>44</sup>
Nursing and paramedical studies (HESA cost centre 5)	1005	6438	35138 <sup>45</sup>

Source: HESA

12. From these figures can be derived figures for financial resources relative to the size of the pre-registration cohort as shown in Table A12 below.

Table A12: Resources per student in cohort (nursing and clinical subjects)

	£s per student
Clinical medicine and dentistry (HESA cost centres 1 and 2)	231897
Nursing and paramedical studies (HESA cost centre 5)	28602

Source: HESA

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<sup>43</sup> This figure is the sum of expenditure by relevant academic departments, their estimated use of services provided centrally by the university or college and the SIFT funding provided by the Government to compensate teaching hospitals for the costs they incur supporting the education and training of medical and dental students. It does not include expenditure incurred in pursuit of research grants and contracts but may include spending on other 'unfunded' research or on the salaries of staff whose salaries are from general funds and who are substantially employed in research. However it should be remembered that the research grant provided by the funding councils amounts to less than 10 per cent of the estimated available resources so the general conclusions drawn in this section are unaffected by these considerations.

<sup>44</sup> UK and non-UK domiciled students. The total number of UK domiciled first year students was 8275.

<sup>45</sup> UK domiciled only

13. These figures need to be interpreted carefully. Much post-registration training in medicine and dentistry is provided by organisations outside the HE system and is therefore invisible to this analysis. The figures here, therefore, almost certainly represent a substantial underestimate of the difference in the UK state's investment in the training of each doctor and dentist on one hand and on the training of each nurse on the other.

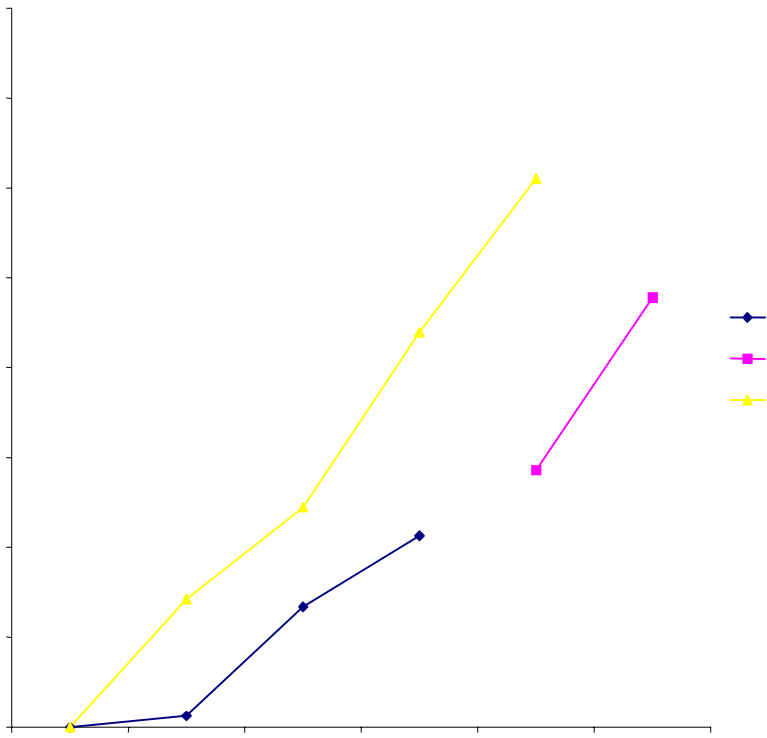
#### Trends in expenditure and student numbers

14. The difference in the resources available for clinical and nursing education appear to be widening rapidly. There are also issues for HEIs. Even once it is accepted that the training of doctors and dentists requires more inputs than the training of nurses it still appears that the per capita resources available to university nursing departments are falling whilst the resources available in medicine and dentistry are increasing.

15. In medical and dental schools, whilst student numbers have increased over recent years, expenditure has increased much faster. This will, in large part, reflect the initial costs associated with the establishment of new medical schools and the expansion of existing ones as well as the increase in the amount of funding provided for research.

16. The analyses below use total student numbers rather than cohort size. This is a more sensitive measure of the total teaching workload of academic departments.

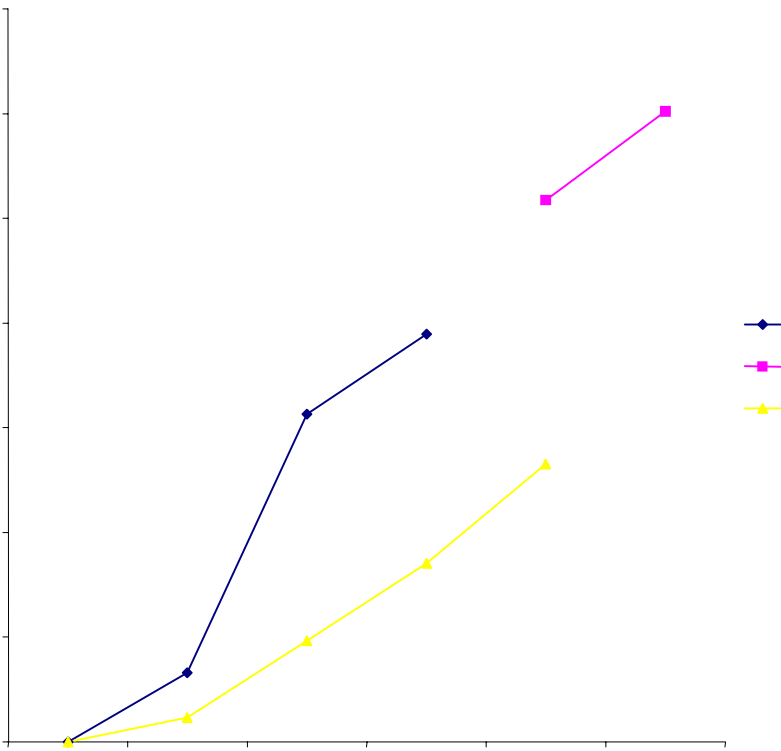
Figure A13a: Growth in expenditure and student numbers in medicine and dentistry (1998-99=100)



Source: HESA

17. In nursing, the picture is very different. Not only have the one-off costs associated with creating the capacity for additional students not been funded but the rate of expenditure is rising much more slowly than student numbers.

Figure 5b: Growth in expenditure and student numbers in nursing (1998-99=100)



Source: HESA

18. It is unclear to what extent these discrepancies reflect decisions taken by institutions and to what extent they reflect those of funders. Rates of funding for nurse education are contractual and it seems unlikely that many institutions would enter into contracts which obliged them to take unlimited numbers of students in return for a fixed payment.

## Measures of the resourcing of UK medical and dental schools

In this annex the teaching load of the 23 largest UK medical and dental schools is contrasted with the resources available to them in an attempt to build up a picture of the variability in the resources available to them

These are not measurements. They are, as has been stated, proxy measures which are intended to show the degree of variability in the resources available to UK medical schools. They are included to make a general point: that the resources available to UK medical schools are very different.

### Measures of staffing

#### Staff on teacher/researcher grades per student

1. This is a rough and ready measure of staff student ratio. It should be remembered, however, that career grade is an imperfect indicator of job role and that the proportion of time teacher/researchers devote to teaching will be extremely variable. The contribution of staff employed in the NHS but not by the HEI will also be invisible in this analysis.
2. In general, the best resourced institutions would be expected to have the highest numbers of teaching staff (generally staff on contracts covering both teaching and research) relative to student numbers, although it is perfectly possible that some institutions will have large numbers of staff in teaching roles on other career grades which would not show up in the analysis<sup>46</sup>.

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<sup>46</sup> This almost certainly explains the position of the University of Cambridge at the foot of the medical table: Cambridge, uniquely, has large numbers of clinical staff on researcher grades (of 491 clinical staff on researcher grades in the UK 268 are employed by Cambridge). It is possible that this enables it to rely more heavily on researchers to support teaching activity than can other institutions.



## Medicine

Table A14a: Staff on teacher/researcher grades per student (medicine)

Numbers of staff in HESA cost centre 1 (clinical medicine) on professorial, senior lecturer/researcher or lecturer grades in 2002-03 divided by estimated FTE students in pre-clinical medicine and clinical medicine in 2003-04.

1	Oxford	0.28
2	UCL	0.27
3	Imperial	0.24
4	Sheffield	0.21
5	Kings	0.20
6	Newcastle	0.20
7	Edinburgh	0.20
8	QMW	0.19
9	UWCM	0.19
10	St Georges	0.18
11	Dundee	0.18
12	Leicester	0.18
13	Soton	0.16
14	Glasgow	0.15
15	Nottingham	0.14
16	QUB	0.13
17	Manchester	0.13
18	Birmingham	0.13
19	Aberdeen	0.13
20	Bristol	0.12
21	Liverpool	0.11
22	Leeds	0.10
23	Cambridge	0.09

3. Compared to Oxford at the top of the table, there are nine institutions which have less than half the number of staff relative to students. With the exception of Cambridge, most of the institutions at towards the bottom of the table are located in major English provincial cities.

Table A14a: Staff on teacher/researcher grades per student (dentistry)

Numbers of staff in HESA cost centre 2 (clinical dentistry) on professorial, senior lecturer/researcher or lecturer grades in 2002-03 divided by estimated FTE students in pre-clinical dentistry and clinical dentistry in 2003-04.

1	UWCM	0.22
2	UCL	0.16
3	Edinburgh <sup>47</sup>	0.15
4	Dundee	0.14
5	QMW	0.13
6	Glasgow	0.11
7	QUB	0.11
8	Kings	0.11
9	Liverpool	0.11
10	Leeds	0.10
11	Manchester	0.10
12	Newcastle	0.09
13	Birmingham	0.09
14	Sheffield	0.09
15	Bristol	0.07
	<b>UK</b>	<b>0.11</b>

4. Staff ratios tend to be lower in dental schools although there is considerable overlap. The difference may be explicable by different levels of research activity amongst staff on teaching grades (if lecturers in medicine are expected to undertake more research than lecturers in dentistry more – all other things being equal - would be needed to teach the same number of students).

5. Dental schools are rather heavily clustered with nine of the fifteen having between 0.9 and 0.11 staff per student. UWCM at the top of the table is something of an outlier. This is what one might expect because dentistry does not have the same volume of grant-funded research as medicine which means there are no obvious reasons for large differences between schools.

Clinical staff on teacher/researcher grades per student

6. This is a rough measure of the clinical academic input into medical/dental education. It differs from measure 1a only in that nonclinical staff on teaching grades are excluded. As with the previous measure, the figures for Cambridge are distorted by that institution's large number of clinical staff on researcher grades, those staff being invisible to this analysis.

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<sup>47</sup> Edinburgh educates a small number of postgraduates in its dental institute. It is considerably smaller than other institutions listed in these table. It would be optimistic to rest any generalisations about the system as a whole upon the position of Edinburgh in these tables.

7. The contribution of clinical staff not employed by the institution will also not show up on this analysis.

Table A15a: Clinical staff on teacher/researcher grades per student (medicine)

Numbers of clinical staff in HESA cost centre 1 (clinical medicine) on professorial, senior lecturer/researcher or lecturer grades in 2002-03 divided by estimated FTE students in pre-clinical medicine and clinical medicine in 2003-04.

1	Oxford	0.26
2	Imperial	0.16
3	UCL	0.15
4	St Georges	0.14
5	Edinburgh	0.14
6	Newcastle	0.14
7	Leicester	0.13
8	QMW	0.13
9	Sheffield	0.13
10	UWCM	0.12
11	Kings	0.12
12	Nottingham	0.10
13	Dundee	0.10
14	Soton	0.10
15	Glasgow	0.08
16	Manchester	0.08
17	Bristol	0.08
18	Aberdeen	0.08
19	Liverpool	0.08
20	Birmingham	0.07
21	QUB	0.07
22	Leeds	0.07
23	Cambridge	0.06

8. As Table A15a shows, the University of Oxford is clearly exceptional in the numbers of clinical academic teachers it employs. Even discounting Oxford, the institutions at the top of the table have, by this measure, twice the clinical presence of those at the bottom.

Table A15b: Clinical staff on teacher/researcher grades per student (dentistry)

Numbers of clinical staff in HESA cost centre 2 (clinical dentistry) on professorial, senior lecturer/researcher or lecturer grades in 2002-03 divided by estimated FTE students in pre-clinical dentistry and clinical dentistry in 2003-04.

		Clinical T/R staff per student
1	UWCM	0.15
2	Edinburgh	0.13
3	Dundee	0.11
4	UCL	0.10
5	QUB	0.10
6	QMW	0.09
7	Manchester	0.08
8	Liverpool	0.08
9	Leeds	0.08
10	Kings	0.08
11	Newcastle	0.07
12	Sheffield	0.07
13	Glasgow	0.06
14	Birmingham	0.06
15	Bristol	0.05
	Total	0.08

9. As table A15b shows, clinical staff ratios are generally lower in dentistry than in medicine although, again, there is considerable overlap.

Total staff per student

10. This is the simplest measure of staff/student ratio. It makes no allowance for the level of research activity and, unsurprisingly, the most research intensive institutions appear at the top of the list, their numbers presumably boosted by large numbers of research staff.

11. The contribution of clinical staff not employed by the institution will also not show up on this analysis.

Table 16a: Total staff per student (Medicine)

Estimated FTE academic staff in clinical medicine (clinical and nonclinical, all grades) divided by estimated FTE students.

	Total staff per student
1 Oxford	0.99
2 UCL	0.80
3 Imperial	0.58
4 Cambridge	0.58
5 Kings	0.46
6 Dundee	0.44
7 Newcastle	0.41
8 Aberdeen	0.40
9 St Georges	0.40
10 Edinburgh	0.39
11 QMW	0.38
12 Sheffield	0.36
13 Manchester	0.36
14 Soton	0.35
15 UWCM	0.32
16 Glasgow	0.32
17 Birmingham	0.31
18 Bristol	0.30
19 Leicester	0.29
20 QUB	0.27
21 Leeds	0.25
22 Nottingham	0.23
23 Liverpool	0.21

12. Table 16a shows that using this crude measure, the range of staff:student ratios is very wide. The crude staff/student ratio at Oxford is more than four and a half times that at Liverpool. This is far greater than the discrepancy in expenditure per student. This will, in part, be a consequence of the exclusion of expenditure relating to research grants and contract from the expenditure figures which will mean that some of the costs associated with grant-funded posts will not be reflected in the expenditure figures.

Table 16b. Total staff per student (dentistry)

Estimated FTE academic staff in clinical dentistry (clinical and nonclinical, all grades) divided by estimated FTE students.

	Total staff per student
1 UWCM	0.28
2 UCL	0.26
3 Dundee	0.20
4 Kings	0.20
5 QMW	0.19

6	Glasgow	0.16
7	Liverpool	0.15
8	Edinburgh	0.15
9	Leeds	0.15
10	QUB	0.14
11	Newcastle	0.13
12	Sheffield	0.12
13	Manchester	0.12
14	Birmingham	0.11
15	Bristol	0.09
	Total	0.16

13. A comparison of tables 16a and 16b reveals that the ratio of staff to students is much lower in dentistry than in medicine. This reflects the inclusion of research grade staff (who are excluded from the preceding tables). There are many fewer of these staff in dental schools than in medical schools.

### **Measures of expenditure**

#### Expenditure per student

14. Another means of understanding the resources available to medical and dental schools is to use expenditure data.

15. The figures below do not take account of support and services provided by the NHS. It is almost certainly the case that some institutions receive a greater net benefit from collaboration with the NHS than others.

16. The HESA expenditure figures used in this analysis exclude expenditure incurred in fulfilment of research grants and contracts. However, institutions undertaking greater amounts of directly funded research are also likely to undertake more research supported by general funds which in turn will attract revenue through the funding councils' research funding systems.

Table 17a. Expenditure per student (medicine)

Expenditure in 2002-03 divided by estimated FTE student in clinical and pre-clinical medicine in 2003-04.

Expenditure calculated by taking spending in cost centre 1 (clinical medicine) and dividing by the proportion of institution's overall expenditure (excluding expenditure on research grants and contracts) which is spent in academic departments.

		Expenditure per student
1	UCL	50103
2	Oxford	42348
3	Imperial	38223
4	Newcastle	35208
5	Kings	34845
6	Edinburgh	31985
7	Sheffield	30469
8	Dundee	30363
9	UWCM	28436
10	Glasgow	28129
11	Cambridge	27886
12	QMW	27840
13	Leicester	27840
14	QUB	25731
15	Manchester	24259
16	Leeds	22806
17	Bristol	22008
18	Birmingham	21407
19	Aberdeen	21305
20	Soton	21034
21	Liverpool	20678
22	Nottingham	19421
23	St Georges	16930

17. Institutions with a high proportion of students in the later (clinical) years of pre registration training will attract higher average rates of funding. In 2003-04 Liverpool, Newcastle and UWCM taught only clinical students (which makes Liverpool's low expenditure in 2002-03 particularly striking). By contrast over 50 per cent of students at Nottingham and Cambridge were pre-clinical. The great majority of taught postgraduate medical students are returned as clinical; so those with high numbers of taught postgraduates will also have higher average revenues. However, there is no general tendency for institutions with the highest proportion of clinical students to have higher expenditure which means that, whilst this factor may explain the positions of some institutions in the table it cannot explain the overall degree of variability. Expenditure associated with research grants and contracts is excluded from the analysis which means that the additional revenues associated with research students will not be fully reflected in the table.

18. The position of St George's hospital medical school may be a false one. As a single faculty institution, St George's will not depend upon services provided centrally by the institution in the same way as other medical schools. The calculation attributes a proportion of central expenditures to each medical school which may have the effect of making St George's spend appear lower than other institutions.

19. Leaving aside St. George's it is notable that UCL spends more than two and a half times more per student than Nottingham.

Can QR explain the difference in the expenditure per student of English medical schools?

20. An interesting question about the wide variations in expenditure per medical student revealed in table 17a is the extent to which it can be accounted for by differences in research funding. The expenditure figures used exclude expenditure incurred in fulfilling research grants and contracts so different levels of funded research cannot explain the variation but HEIs also receive unhyphenated research grant (QR) from the Higher Education Funding Councils. QR is allocated in a highly selective manner on the basis of results in the Research Assessment Exercise (RAE).

21. There are eighteen English medical schools in the analysis. In 2002-03 the nine schools with the highest expenditure per student spent an average of £35 954 per student. The nine schools with the lowest expenditure spent £21 618. These figures are based on the assumption that university departments consume central services provided by the institution in proportion to their own direct spending and therefore that non-departmental expenditure (other than that associated with research grants and contracts) should be attributed to them on this basis.

22. There were an estimated<sup>48</sup> 16 838 FTE students in the first group. Had this group spent the same per student as the second group their expenditure would have been £241 million less than it actually was.

23. For the purposes of research funding and assessment, research was in 2002-03 divided into 68 'units of assessment'. Units of assessment 1,2,3 and 5 together approximate to HESA cost centre 1 (clinical medicine).

24. In 2002-03 the Higher Education Funding Council for England allocated £108m to institutions in the first group on the basis of their RAE results in units of assessment 1,2,3 and 5. Institutions in the second group received £32 m – a difference of £76m.

25. Clearly the £241 million 'extra' spent by the first group cannot be explained solely by the additional £76 million received in QR. Other factors must account for their apparent ability to spend more money relative to their student numbers.

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<sup>48</sup> Estimate based on the assumption that all full-time students represent 1FTE and all part-time students, 0.5FTE. A small number of students in medicine and/or dentistry who are not identified in the published HESA data as either medical or dental students ('other studies in medicine and dentistry') are excluded from the analysis, although it is likely that some are medical students.



Table 17b. Expenditure per student (dentistry)

Expenditure in 2002-03 divided by estimated FTE student in clinical and pre-clinical dentistry in 2003-04.

Expenditure calculated by taking spending in cost centre 2 (clinical dentistry) and dividing by the proportion of institution's overall expenditure (excluding expenditure on research grants and contracts) which is spent in academic departments.

		Expenditure per student
1	Edinburgh	48813
2	UCL	36505
3	UWCM	34058
4	Leeds	27743
5	Kings	24364
6	QUB	22638
7	Glasgow	19219
8	Newcastle	18760
9	QMW	18005
10	Dundee	17875
11	Birmingham	17869
12	Liverpool	17750
13	Manchester	16846
14	Sheffield	16344
15	Bristol	14921

26. Whilst the result for Edinburgh is potentially misleading (Edinburgh has a small postgraduate dental institute) it is striking that the disparities shown in Table 17b between the institutions with the highest and lowest expenditure is as marked in dentistry as in medicine. The basis on which these figures are calculated (excluding expenditure incurred in fulfilment of research grants and contracts but including other research expenditure) indicates that medicine and dentistry are more similar in the resources devoted to teaching and the variability between institutions than previous tables might suggest.

2bi. Expenditure per staff member

27. This has been included as a proxy for the amount of non-financial or research support received by each medical school. An institution which is able to employ a large number of staff relative to its income can be assumed to have other sources of financial and non-financial support not visible in its expenditure figures. Such support might include research funding or net benefit from collaboration with NHS organisations.

28. By definition, the institutions at the top of Tables 18a and 18b are those whose expenditure:student ratio is low relative to their staff:student ratio. Those who prefer

expenditure to staff numbers as a measure of medical school resourcing will want to disregard this table.

**Table 18a Expenditure per staff member (Medicine)**

Expenditure in 2002-03 divided by estimated FTE staff numbers in clinical medicine in 2002-03.

Expenditure calculated by taking spending in cost centre 1 (clinical medicine) and dividing by proportion of institution's overall expenditure in academic departments.

		Expenditure per staff member (lowest first)
1	Oxford	42662
2	St Georges	42739
3	Cambridge	47842
4	Aberdeen	53651
5	Soton	59868
6	UCL	62300
7	Imperial	65560
8	Manchester	67674
9	Birmingham	68172
10	Dundee	69294
11	Bristol	73579
12	QMW	73833
13	Kings	75457
14	Edinburgh	82753
15	Sheffield	84582
16	Newcastle	85923
17	Nottingham	86260
18	UWCM	88713
19	Glasgow	88967
20	Leeds	92143
21	Leicester	95053
22	QUB	97080
23	Liverpool	100525

29. The results shown in Table 18a are not particularly surprising. They show, for example that Oxford (as one of the institutions with the lowest expenditure relative to staff numbers) is able to employ large numbers of staff relative to its total expenditure. This, may however, reflect its grading structure as much as cross-subsidy from the NHS and elsewhere. Oxford is unusual in having a high proportion of staff at the lower teacher researcher grades. Across UK medical schools 25per cent of staff on teaching grades (professors senior lecturer/researchers and lecturers) are professors. In Oxford, the figure is only 8per cent<sup>49</sup>. It will also reflect research income: staff employed as a result of

<sup>49</sup> Based on figures from the 2002-03 HESA staff Cost centre 1 clinical medicine record using a part-time conversion factor of 0.5. On this basis, there were 7074 FTE staff at professor, senior lecturer/researcher and lecturer grades of whom 1796 were professors. In Oxford the figures were 326.5 and 26.5 respectively.

research contracts are included in the measure but expenditure incurred in fulfilment of those contracts is not. Therefore institutions with high levels of research income will appear 'cheaper'.

Table 18b Expenditure per staff member (dentistry)

Expenditure in 2002-03 divided by estimated FTE staff numbers in clinical dentistry in 2002-03.

Expenditure calculated by taking spending in cost centre 2 (clinical dentistry) and dividing by proportion of institution's overall expenditure in academic departments.

		Expenditure per staff member
1	Dundee	88637
2	QMW	93580
3	Liverpool	117747
4	Glasgow	122306
5	UWCM	122322
6	Kings	124256
7	Sheffield	135909
8	Manchester	141696
9	UCL	142327
10	Newcastle	143213
11	Birmingham	159174
12	Bristol	160107
13	QUB	165591
14	Leeds	186170
15	Edinburgh	325423

30. Table 18b demonstrates that the level of variability amongst dental schools is as great as amongst medical schools even though the differential impact of research funding will be less (because there is less research funding in dentistry). This suggests that we can perhaps be confident that the figures reflect a real disparity in the level of support provided to dental schools, whereas the figures for medicine almost certainly include a large 'research effect'.

31. The discrepancy between medical and dental schools almost certainly reflects two related factors: the higher proportion of clinical staff in dental schools (see tables 19a and 19b) and the lower levels of research activity which, as noted above, make institutions appear 'cheaper' because of the nature of these indicators.

## Measures of clinical intensity

### Clinical staff percentage (medicine)

32. Medical and dental schools require a mixture of clinicians and non-clinicians to undertake their teaching and research. The percentage of clinical staff in a medical or dental school is a measure of the extent to which the staff on faculty grades (ie. those most likely to have teaching responsibilities) are grounded in practice. To put the figures into context, for funding purposes the last three years of an undergraduate medical course are considered to be clinical, meaning that 40% of a typical five year undergraduate course is pre-clinical.

### Table 19a: Clinical staff percentage (medicine)

Numbers of clinical staff in HESA cost centre 1 (clinical medicine) on professorial, senior lecturer/researcher or lecturer grades in 2002-03 divided by total staff numbers on professorial, senior lecturer/researcher or lecturer grades in 2002-03 expressed as a percentage

		Clinical faculty percentage
1	Oxford	92
2	St Georges	79
3	Nottingham	75
4	Leicester	75
5	Edinburgh	72
6	Liverpool	69
7	Newcastle	69
8	Leeds	68
9	Bristol	67
10	Imperial	67
11	Cambridge	65
12	QMW	65
13	UWCM	64
14	Soton	63
15	Manchester	63
16	Sheffield	61
17	Kings	59
18	Aberdeen	59
19	Dundee	57
20	Birmingham	57
21	QUB	56
22	UCL	55
23	Glasgow	55

33. It is very noticeable from table 19a that in every UK medical school at least 55 per cent of staff at lecturer, senior lecturer/researcher and professorial grades are clinicians. This is a high figure and may give some comfort to those concerned about the clinical presence in medical education.

34. It is much harder to make inferences concerning the ways in which models of medical education differ between institutions on the basis of these data.

**Table 19b Clinical staff percentage (dentistry)**

Numbers of clinical staff in HESA cost centre 2 (clinical dentistry) on professorial, senior lecturer/researcher or lecturer grades in 2002-03 divided by total staff numbers on professorial, senior lecturer/researcher or lecturer grades in 2002-03 expressed as a percentage

		Clinical faculty percentage
1	QUB	86
2	Edinburgh	83
3	Newcastle	80
4	Manchester	80
5	Sheffield	78
6	Bristol	78
7	Dundee	76
8	Leeds	75
9	Liverpool	75
10	Kings	72
11	Birmingham	72
12	QMW	70
13	UWCM	67
14	UCL	63
15	Glasgow	56
	Total	72

35. Table 19b shows that on average dental schools have a higher proportion of clinical staff than medical schools although the difference is not huge. The pattern is, once again, uniform. In all but two dental schools more than two thirds of staff on teaching grades are clinicians.

### **Measures of research capacity**

#### HEFCE research funding per student

36. In tables 20a and 20b below, HEFCE research funding is used as a proxy for the resources available to support research from general funds. As might be expected given the selectivity of research funds, the variability is higher than on any of the other measures.

Table 20a: HEFCE research funding per student (English medical schools only)

Total HEFCE research funding<sup>50</sup> in clinical medicine 2005-6 (funding data current in March 2005) divided by estimated FTE student numbers in 2003-04<sup>51</sup>

1	Oxford	18532
2	UCL	13678
3	Imperial	12856
4	Cambridge	9653
5	King's	7549
6	Sheffield	5108
7	Manchester	4888
8	Newcastle	4809
9	Birmingham	4321
10	Southampton	4182
11	St George's	2749
12	Liverpool	2338
13	Bristol	2271
14	Leeds	1926
15	Leicester	1699
16	QMW	1374
17	Nottingham	854

Table 20b. HEFCE research funding per student (English dental schools only)

Total HEFCE research funding<sup>52</sup> in dentistry 2005-6 (funding data current in March 2005) divided by estimated FTE student numbers in 2003-04<sup>53</sup>

1	UCL	8132
2	King's	6242
3	QMW	5449
4	Sheffield	2202
5	Bristol	2004
6	Manchester	1652
7	Leeds	1198
8	Liverpool	1059
9	Birmingham	918
10	Newcastle <sup>54</sup>	0

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<sup>50</sup> This consists of four of the five elements of HEFCE QR: mainstream QR+research degree programme funding+best 5\* allocations+London Extra Costs in RAE units of Assessment 1,2,3 and 5 which HEFCE identifies with HESA cost centre 1 (clinical medicine). The fifth element of HEFCE QR, capability funding, is not available in medical subjects.

<sup>51</sup> Using a part-time conversion factor of 0.5.

<sup>52</sup> This consists of four of the five elements of HEFCE QR: mainstream QR+research degree programme funding+best 5\* allocations+London Extra Costs in RAE units of Assessment 4 (clinical dentistry). The fifth element of HEFCE QR, capability funding, is not available in dentistry.

<sup>53</sup> Using a part-time conversion factor of 0.5.

<sup>54</sup> The University of Newcastle made a submission to the 2001 RAE in dentistry and achieved a grade which attracts funding from HEFCE but did not have any dental students in 2003-04.

### Researchers per student

37. Table 21 shows the extent to which dental schools are less research intensive than medical schools. Staff on researcher grades are used here as a proxy for funded research activity. The direct comparison between medical and dental schools in the same HEI is instructive. All the medical schools in the table have a higher ratio of researchers to students than all the dental schools; and all have at least twice the proportion of researchers as the dental school in the same institution (in some cases over ten times as much).

Table 21. Researchers per student (English dental schools ranked and shown with medical schools in the same institution)

		Researchers per student	Med school in same HEI
1	UCL	0.07	0.40
2	Kings	0.06	0.22
3	UWCM	0.06	0.13
4	Dundee	0.05	0.21
5	Liverpool	0.04	0.09
6	Leeds	0.03	0.14
7	QMW	0.03	0.16
8	Newcastle	0.03	0.19
9	Sheffield	0.03	0.14
10	Glasgow	0.02	0.14
11	Birmingham	0.02	0.18
12	Bristol	0.02	0.24
13	QUB	0.02	0.10
14	Manchester	0.01	0.17
15	Edinburgh	0.00	0.19
16	Total	0.04	0.20

## **Annex B: Characteristics of nursing as a discipline in UK universities and colleges**

This annex supports section B of the HEPI report *The Education and Training of Medical and Health Professionals in Higher Education Institutions*. It contains the detailed analysis and reasoning from which the conclusions presented in the main report are drawn.

It is divided into two sub-annexes:

### Annex B1 Characteristics of nursing as a discipline in UK universities and colleges

Annex B1 presents the material underpinning the analysis in the main report of the demographic profile of nursing as an academic discipline and the ways in which it differs from other health related studies and disciplines studied in Higher Education more generally.

### Annex B2 The need for UK-trained nurses

Annex B2 presents material relevant to the likely requirement for new UK-trained nurses to work in the UK health sector over the coming years.



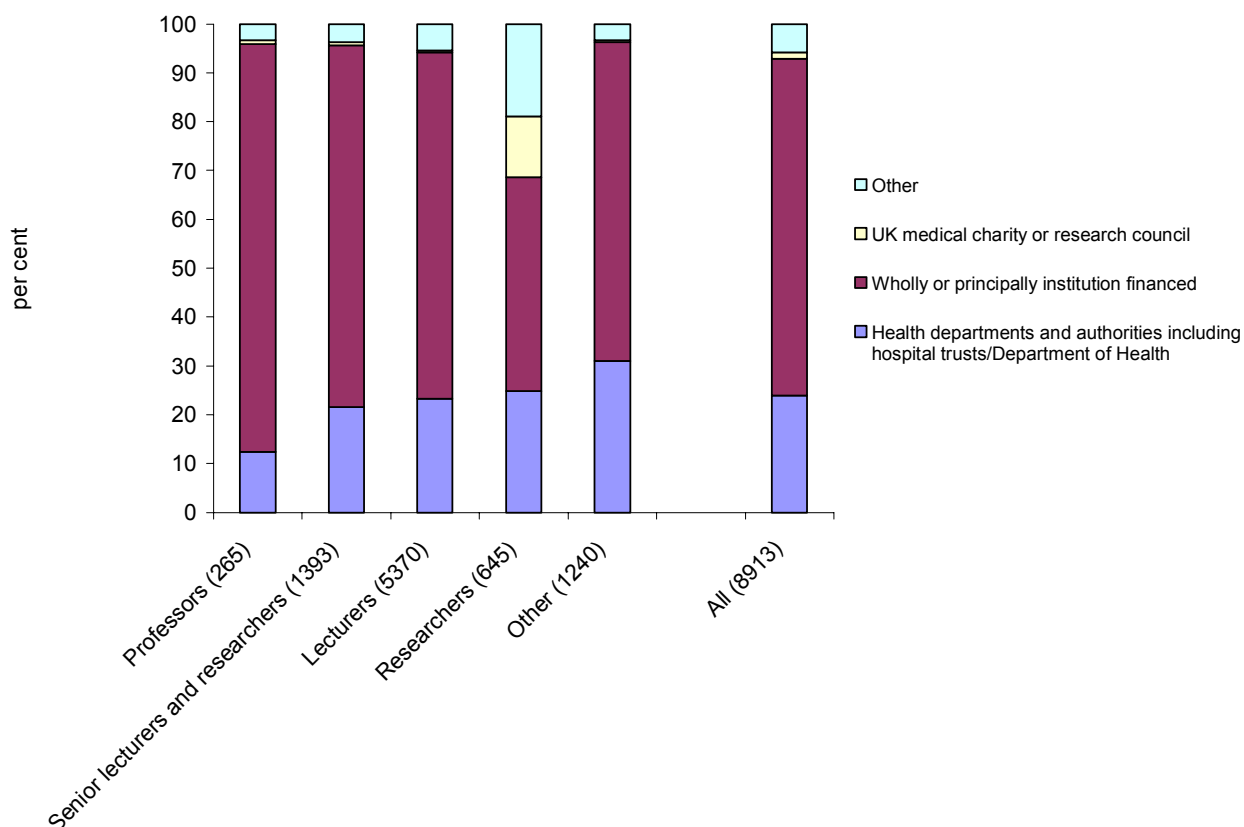
**Characteristics of nursing as a discipline in UK universities and colleges**

This annex profiles nursing as an academic discipline in UK universities looking at the characteristics of its staff and student body. It concludes that the pattern and organisation of nursing education is distinctive and that there is little sign that it is becoming a 'typical academic discipline.

Staff

1. In 2002-03 HESA counted a total of 8913 academic staff in nursing and paramedical studies.
2. The pattern of funding for academic staff in nursing is not dissimilar to that in dentistry, with just under 70 per cent funded principally or wholly by the institution. Low levels of funded research activity in nursing are reflected in the fact that only 1 per cent of nursing academic posts (and only 12 per cent of researcher posts) are funded by research councils or medical charities.

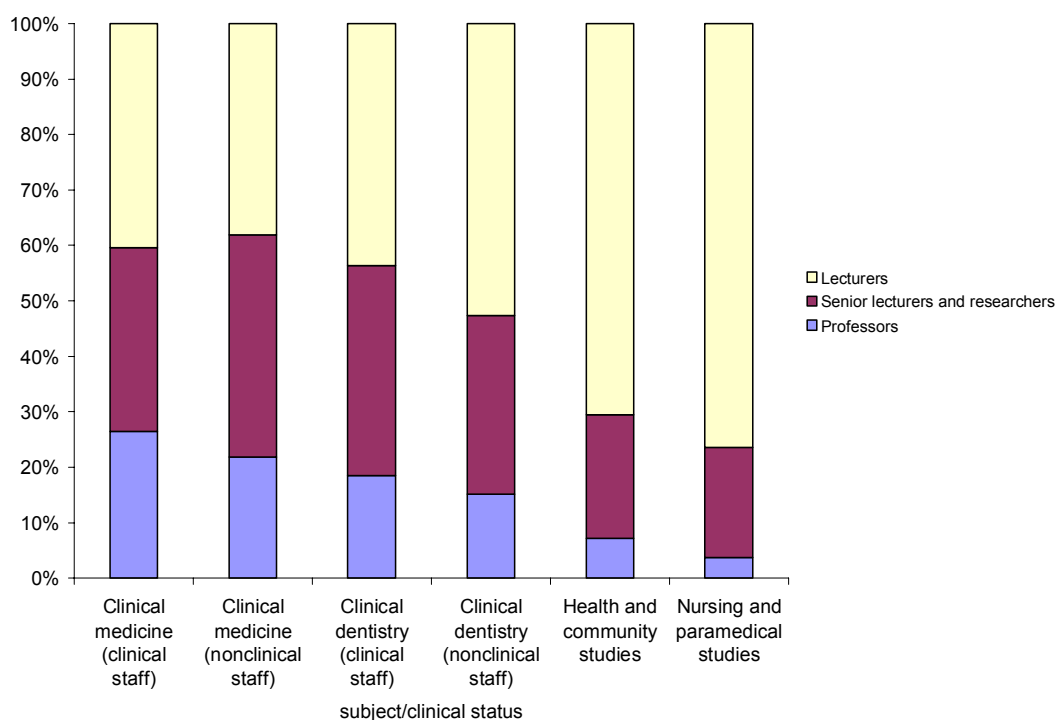
Figure B1 Funding sources for academic staff in nursing:



Source: HESA

3. The breakdown of nursing academics by job grade indicates that, compared to medical and dental academics, they are much more likely to be on the lecturer grades and less likely to be on professorial or senior grades.

Figure B2: Lecturers, senior lecturers/researchers and professors in health related subjects by grade



Source: HESA

### Students

4. Table B3 shows that numbers of first year nursing undergraduates have increased by 27 per cent since 2000-01, reflecting a sharp increase in recruitment, the full effect of which is yet to be felt in numbers of registrations.

Table B3: First year nursing students 1998-99 to 2003-04

	First Degree			Diploma <sup>55</sup>			Total
	Full-time	Part-time	Total	Full-time	Part-time	Total	
1998-999	4931	9788	14719	16679	6665	23344	38063
1999-000	5589	9003	14592	16885	5088	21973	36565
2000-01	5517	8695	14212	18178	4378	22556	36768
2001-02	6330	11885	18215	19210	4175	23385	41600
2002-03 <sup>56</sup>	7236	10371	17606	22983	3884	26867	44473
2003-04	9335	12138	21473	22706	2401	25107	46580

Source: HESA

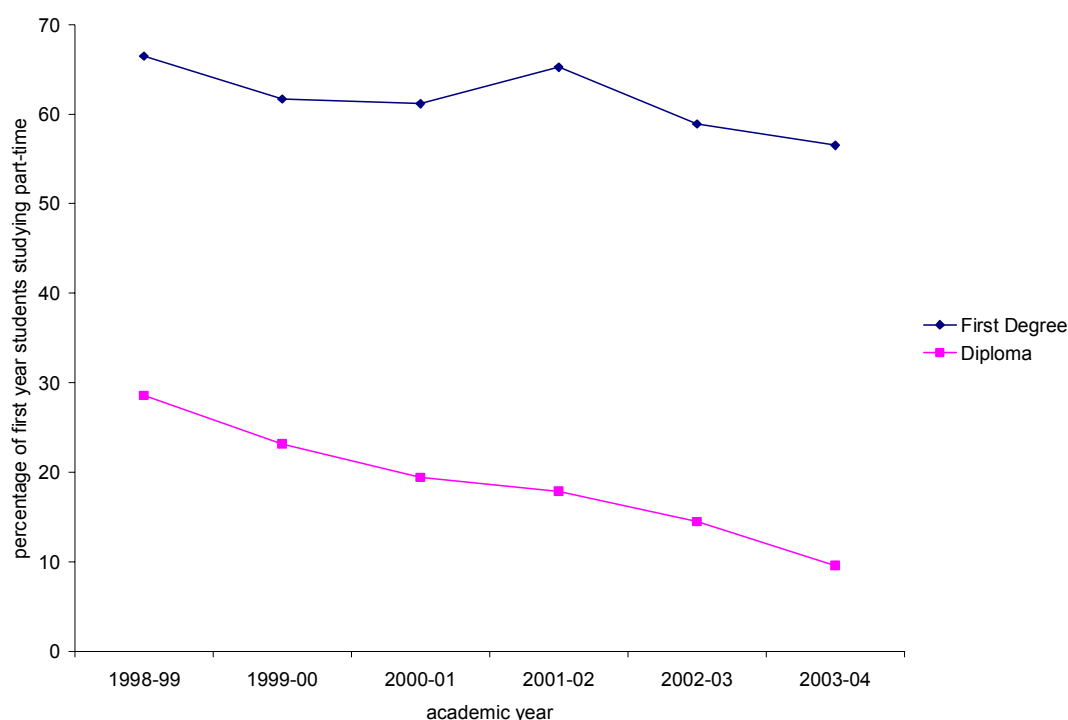
<sup>55</sup> Diplomas leading to professional registration only

<sup>56</sup> The subject classifications used by HESA changed in 2002-03 making it unwise to make comparisons with earlier years – though it is arguably safer to do so when looking at a population of students whose qualifications lead to a particular professional registration.

5. Figure B4 shows that the period since 1998-99 has also seen a dramatic fall in the proportion of students studying part-time. In 1998-99 29 per cent of nursing diploma students studied part-time; by 2003-04 the figure was 10 per cent. This represented a 'loss' of 4264 part-time diploma students at a time when overall numbers were increasing (though many of these may have opted for full-time study in preference to part-time study). Numbers of part-time degree students increased but at a much slower rate than full-time numbers resulting in a fall in the proportion of degree students studying part-time.

6. This may be the result of full-time study becoming attractive to applicants who would previously have studied part-time. Alternatively, it may indicate a substantial number of what might be termed 'lost vocations'.

Figure B4: Proportion of nursing entrants studying part-time 1998-99 to 2003-04

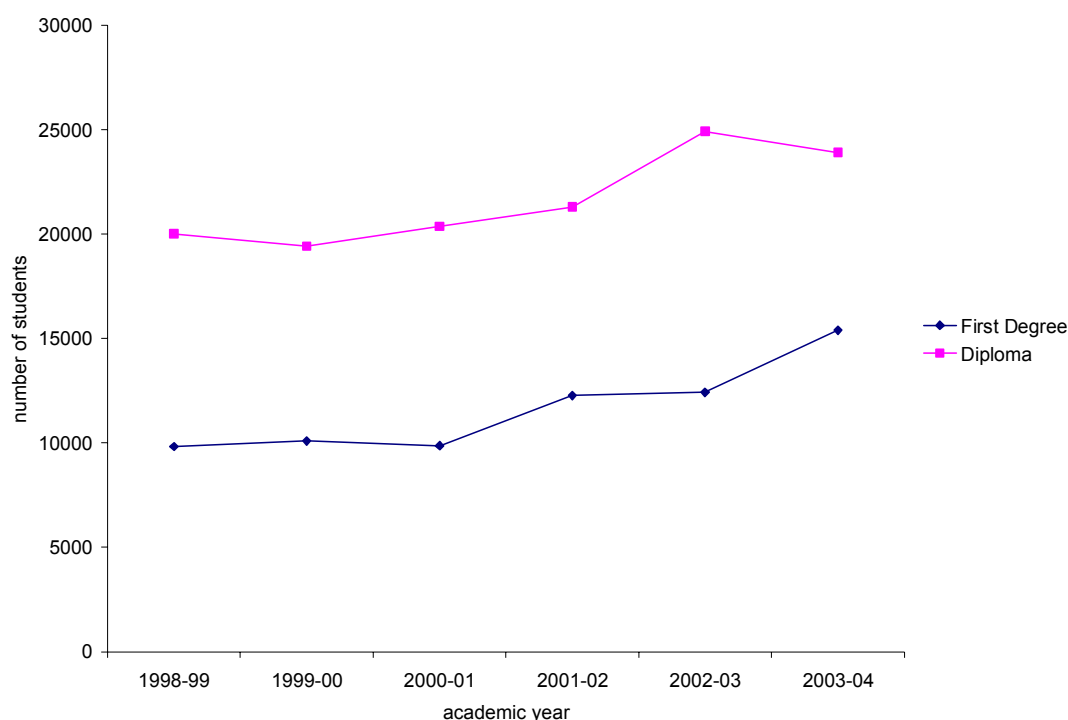


Source: HESA

7. There has also been an increase in the numbers of degree students relative to diploma students (though in absolute terms the increase in diploma students is only marginally less than the increase in degree students). The numbers charted in figure B5 do, however, require careful interpretation: in particular, it is worth remembering that degree students includes two distinct groups – those enrolled on three year degree programmes and those already in possession of diplomas undertaking additional study to obtain a degree qualification. That said, they do suggest that the proportion of nurses qualified to degree level (and therefore, one might assume, the average amount of study per nurse) is increasing. It is a matter for the nursing profession, the NHS and the regulatory authorities to establish whether this is necessary or merely desirable. From the

point of view of the training function the key point is this: as the level of training increases, more investment is required to produce the same number of professionals.

**Figure B5: Numbers of degree and diploma students**



Source: HESA

8. In addition to first degree and diploma students, there are very large numbers of qualified and practising nurses undertaking further professional training in UK Higher Education institutions. Whilst there were only 2401 (UK and overseas domiciled) first year part-time diploma students in nursing in 2003-04 there were a total of 44960 UK domiciled first year part-time students studying for qualifications other than first degrees. A large majority of these students held previous higher level qualifications: of those whose highest qualification on entry was known 85 per cent held HE or professional qualifications<sup>57</sup>; and it is reasonable to suppose that most of these were employed nurses undertaking further professional training. The education of these students is part of the work of university nursing departments and it is therefore important not to ignore them in considering the relationship between training capacity and student numbers.

<sup>57</sup> Interestingly, 78 per cent part-time *first degree* students whose entry qualifications are known also held higher or professional qualifications (8440 out of 10360). It seems likely that many are diploma-qualified nurses attempting to obtain degree qualifications.

Table B6: Part-time UK domiciled First year nursing students: highest qualifications on entry

<b>Highest qualification on entry</b>	<b>Qualification aim</b>	
	<b>First degree</b>	<b>Other Undergraduate</b>
UK first degree, other graduate or equivalent	1035	4875
Other HE or professional	7405	27505
A Level or Scottish Higher	420	1105
GCSE/O Level or equivalent	105	475
Access courses	55	175
Other known qualification	1340	3810
Not known/not required	1280	7020
<b>Total</b>	<b>11645</b>	<b>44960</b>

Source: HESA

9. The figures for full-time students do not suggest that there are large numbers of students undertaking short courses on a full-time basis. There are a total of 23 285 first year students who are not studying for first degrees. This compares with a total of 22 706 diploma students (a figure which, admittedly includes international students).

10. The figures in table B7 below also indicate how far nursing is from becoming a traditional graduate entry profession – and therefore what a radical change would be required to transform it into one. In 2003-04, 3710 students whose highest qualification were A level or Scottish Higher began full-time or part-time study for nursing degrees. This is just under 8 per cent of the number of first year degree and diploma students and just over 4 per cent of the total number of first year nursing undergraduates. The A level student who leaves school to study a degree course in nursing is a rarity in UK nursing departments: degrees remain a qualification pursued by nurses who already hold professional qualifications..

Table B7: Full-time UK domiciled First year nursing students: highest qualifications on entry

<b>Highest qualification on entry</b>	<b>Qualification aim</b>	
	<b>First degree</b>	<b>Other Undergraduate</b>
UK first degree, other graduate or equivalent	705	1315
Other HE or professional	2270	2070
A Level or Scottish Higher	3290	8260
GCSE/O Level or equivalent	370	3410
Access courses	1185	3360
Other known qualification	625	1910
Not known/not required	575	2960
<b>Total</b>	<b>9015</b>	<b>23285</b>

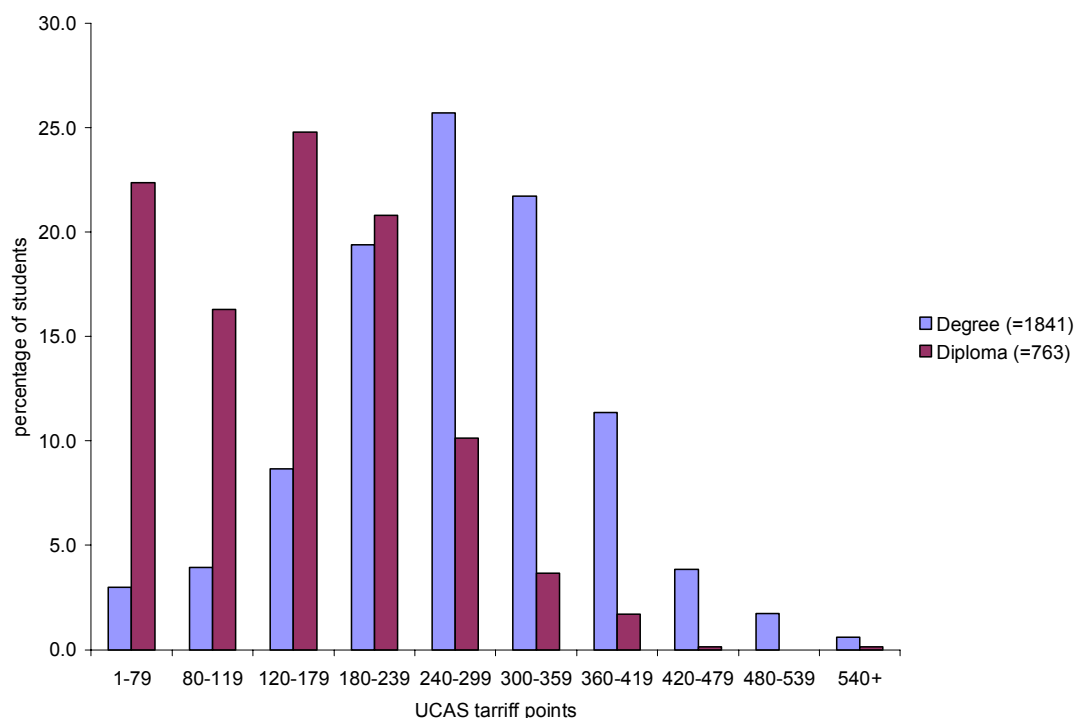
Source: HESA

11. There is little sign that young aspirant nurses have a strong preference for degree qualifications which will transform nursing into a degree-entry profession: nursing remains a diploma-entry profession with large numbers of entrants subsequently undertaking further study in pursuit of degree qualifications.

#### Characteristics of pre-registration degree and diploma students

12. Higher Education Institutions are required to return data on the highest qualifications obtained by students funded by the HE funding bodies. These data are optional for NHS funded students (including nursing diploma students and some degree students). There is, thus, a highly incomplete dataset on the previous educational attainments of degree and diploma students. It is neither a large nor a scientific sample of the population and needs to be approached with caution. Figure B8 shows UCAS tariff points for recorded students whose highest qualifications were A levels, Scottish Highers or equivalent vocational qualifications. This automatically excludes degree students already holding a diploma and therefore presents a straightforward contrast between the 'degree entry' and 'diploma entry' nurses.

**Figure B8: UCAS Tariff Points of Nursing Entrants whose highest qualification was A level or equivalent (2003-04)**



Source: HESA

13. If these figures are representative of the totality of degree and diploma students, there must be serious doubts as to whether any move towards degree-level entry to the nursing profession is compatible with current levels of recruitment.

14. These figures paint a picture of student population with an unusual mix of educational backgrounds, largely part-time with high numbers studying for diplomas, other sub-degree qualifications or undertaking CPD. If there were large numbers of young students or international students, however, we would expect to find them concentrated amongst the full-time student population. Looking at Table B9, it is, therefore, striking how few full-time nursing students are of an age which suggests direct progression from other full-time education into nursing education and how close the total number of students is to the numbers of UK domiciled students (shown on the bottom row of Table B7), indicating very low levels of international students studying nursing full-time in UK universities and colleges.

**Table B9: Full-time first year nursing students by age (all domiciles)**

	<b>20 or below</b>	<b>21 or above</b>	<b>Total</b>
Full-time first degree	2805	6525	9335
Full-time other (incl. diploma)	7030	16945	23980

Source: HESA

## Research

15. Levels of research funding in nursing remain low relative to the HE sector as a whole. Table B10, below, compares HEFCE research funding allocations based upon RAE results in nursing with the total expenditure of nursing departments and makes a similar comparison for the sector as a whole. The results show that research is a much less prominent feature of academic life in nursing departments than in academic departments generally.

Table B10: Expenditure and research funding of English HEIs 2002-03 (£m)<sup>58</sup>

	Departments of nursing	All academic departments	Nursing as a percentage of total
Total Expenditure	401	5703	7.0
HEFCE research funding <sup>59</sup>	6.2	940	0.7

Source: HEFCE/HESA

## Conclusion

16. It is not the purpose of this report to debate whether it is desirable for nursing departments to have a greater emphasis upon research, for nursing departments to employ a higher percentage of professors and senior lecturers or for the duration, intensity and level of pre-registration training to be changed. What is striking about the figures presented in this section is the extent to which – in demographic terms - nursing in universities continues to resemble a public sector training function rather than an academic discipline. The movement of training into Higher Education Institutions does not seem to have led to what might be termed ‘academic drift’: levels of research funding remain low relative to teaching income; numbers of senior appointments have been limited; the system has accommodated vast numbers of professionals undergoing continuing professional development and has not led to qualification inflation; young, full-time degree students remain rare as do international students.

17. Those who fear the downsides of the academic model (increased credentialism; increased focus on things which are not immediate priorities for the service; loss of control of costs) may regard this as a success. It certainly seems likely to encourage other public sector professionals to look at the way nurse training is funded (through NHS training organisations on a contractual basis) as a way of moving training into the HE sector without losing control. It does however imply that the potential benefits of the academic model (creation of flexible graduate professionals, increasing the appeal of the profession to well-qualified young applicants, development of a body of research and scholarship informed by practice) are also not being realised.

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<sup>58</sup> These figures are for direct departmental expenditure only and, unlike the figures in tables 3, do not include an element designed to reflect departmental use of services and facilities provided by the institution.

<sup>59</sup> Includes mainstream QR, PGR supervision, transitional funding for research students in 3b rated departments and London Extra Costs





## The need for UK-trained nurses

This annex addresses the likelihood that the NHS will require large numbers of nursing recruits in the coming years and that, international recruitment notwithstanding, this is likely to necessitate increased numbers of UK-trained nurses.

1. Superficially, the nursing profession appears to be growing. Between 1996 and 2005, the number of registrations increased by 27 866 or 4.3 per cent.
2. That growth, however, is a very recent phenomenon. Table B11 shows that in 2005, the number of registration was only 569 higher than it had been in 2003 and for most of the years before 2003 it was lower. The apparent increase is therefore the result of a very strong net increase in the years 2004 and 2005 which may or may not be sustained. There is no upward trend over the period as a whole: the mean number of registrations over the period was 645 449, just 438 higher than the number of registrations in 1996.

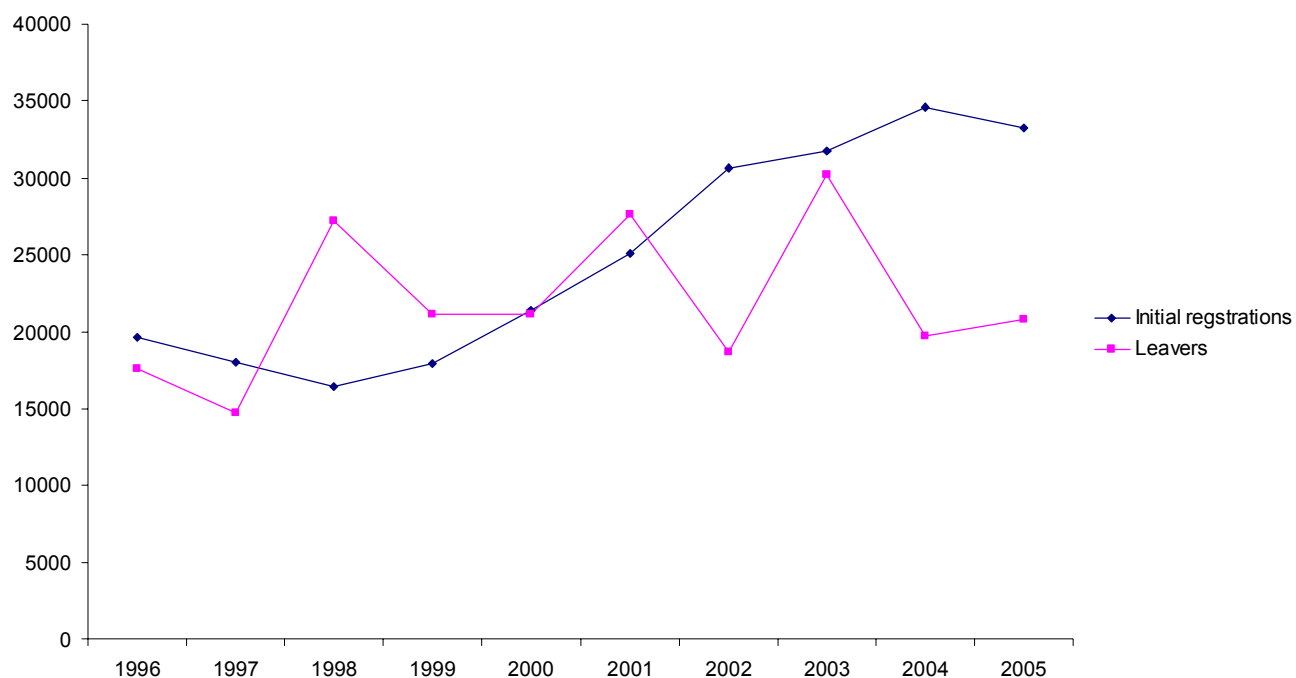
Table B11: Effective registrations on the register of the Nursing and Midwifery Council

Year	Effective registrations (as of 31 March)	Year	Effective registrations (as of 31 March)
1996	645011	2001	632050
1997	648240	2002	644024
1998	637449	2003	645580
1999	634229	2004	660480
2000	634529	2005	672897

Source: NMC

3. Another way of looking at the data is to look at initial registrations and those leaving the register. Two things are immediately apparent from figure B12: firstly that numbers leaving the register are surprisingly volatile and consequently that it is too early to say on the basis of this data whether the strong net recruitment to the profession over the last two years will be sustained.

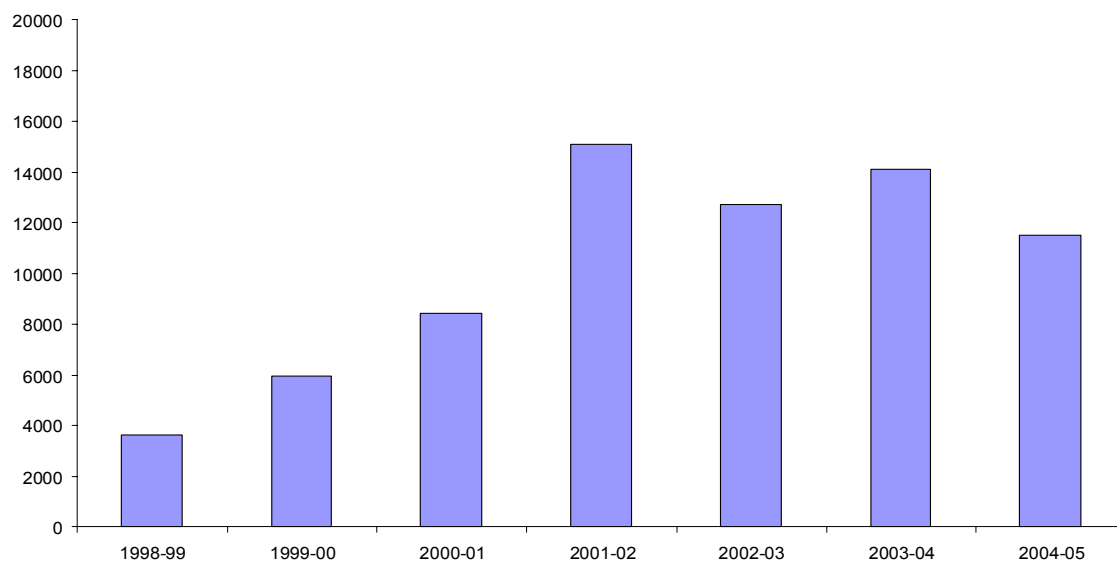
Figure B12: Initial registrations and numbers leaving the register in the year to 31 March



Source: NMC

4. There are good reasons to suppose that it will be difficult to sustain current levels of new registrations without maintaining numbers of UK trained nurses at high levels. As Figure B13 shows, the first few years of this century have seen unprecedented numbers of overseas nurses registering in the UK. This is the result of extremely rapid growth in the years leading up to the peak year of 2001-02. Although numbers are still high by 2004-05 they were 3587 (24 per cent) lower than in 2001-02

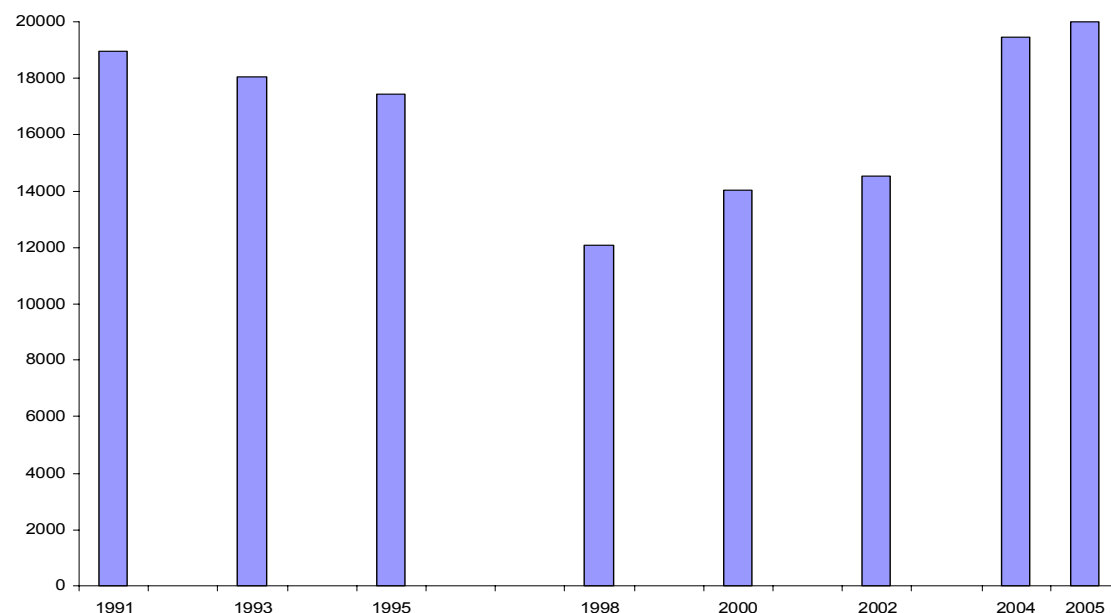
Figure B13: Initial registrations from overseas (excluding EU)



Source: NMC

5. By contrast, registrations from within the UK<sup>60</sup> (shown in Figure B14) dipped sharply in the late 1990s before recovering as the post-1997 increase in training places took effect.

Figure B14: Initial registrations (UK-trained staff)



Source: NMC

<sup>60</sup> These numbers include UK-trained new registrants who completed their training in the UK having come from overseas

6. It is clear from these figures that, the UK remains heavily dependent upon overseas recruitment to replenish the nursing professions and that any substantial fall in the numbers coming from overseas will affect overall numbers unless there is a corresponding rise in UK-trained initial registrations. Equally, though, it would be imprudent to assume that overseas recruitment will continue to play as important a role in replenishing the nursing profession as it has in recent years: mass recruitment from overseas is a very recent phenomenon with correspondingly shallow roots and there are already indications that it may already have peaked.

7. Leaving aside the possibility that numbers of overseas registrations may be on a downward trend, there are other reasons to suppose that numbers of UK trained nurses may have to be sustained at current high levels, or even increased.

8. UK nurses are getting older. In 1996, 20.6 per cent were aged 50 or over; by 2005 the figure was 28 per cent - a 36 per cent increase. If this translates into a 36 per cent increase in the numbers leaving the register over the next decade, the implications could be serious: Between 1996 and 2005, 218889 nurses left the register – a 36 per cent increase would add 78630 to this number. That projected increase in leavers is equal to 11.7 per cent of the total number of registrations in 2005.

9. Next to nothing is known about the propensity of overseas nurses to remain practicing in the UK (because mass recruitment from overseas is such a recent phenomenon). Since the turn of the century between a third and a half of the annual intake currently have come from overseas, if (as it reasonable to assume) they typically stay in practice in the UK for a shorter period than UK trained nurses, this will, increasingly have an effect upon the rate at which nurses and midwives leave the register over the coming years.

10. Numbers of young (under 30) nurses are collapsing, partly, it must be supposed, as a result of people tending to join the profession later in life. In 1996, 16.9 per cent of nurses were aged 29 and under; by 2005, that figure had fallen to 10.2 per cent. If entrants to the profession are getting older this may improve retention in the short term (because older entrants may be less likely to make rash career choices) but in the long-term it is likely to cut the length of time each trained nurse spends in practice in the UK and therefore to increase the number of nurses the UK needs to train.

#### Volatility

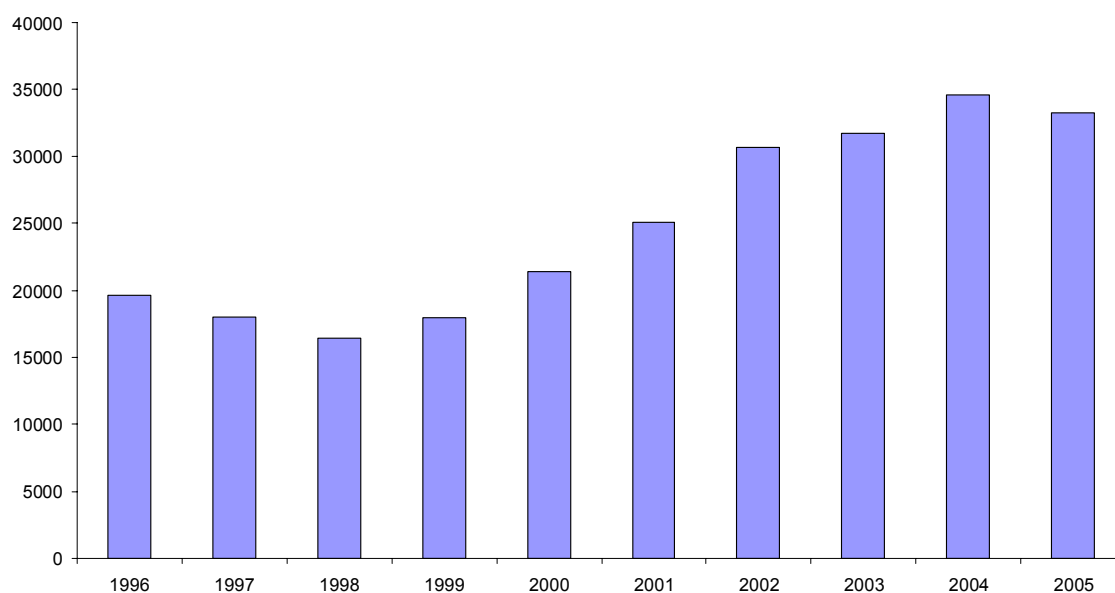
11. Thus far, this section has discussed the adequacy of current training numbers. It is, however also worth considering the strains placed upon the system by volatility – strains which could entirely be avoided if training numbers were determined on the basis of long-term national workforce planning assumptions.

12. As we have seen, the number of UK-trained staff entering the nursing profession has been subject to something of a 'boom and bust' cycle over the past decade (see figure B14 above). Were this to repeat itself there is no guarantee that the UK HE sector could successfully expand (and contract) without suffering serious disruption especially if

local commissioning meant that the impacts were concentrated in particular geographical areas and particular institutions. Given that there are no alternative providers in the wings, there is a real risk that, the next time the tap is turned off, it will prove difficult to turn it back on again<sup>61</sup>. There is similarly no guarantee that NHS organizations could find space in their budgets for the additional trainers and allowances of staff time that will be required of them if numbers of student nurses fluctuate violently.

13. There must also be a question mark over the ability of the service to cope with fluctuating numbers of newly qualified entrants. Between 1998 and 2004 the number of initial registrations doubled. It is hard to believe this did not have an impact upon the service.

Figure B15: Initial registrations 1996-2005



Source: NMC

14. It is equally difficult to imagine that the increase in overseas recruitment from 3 621 in 1998-99 to 15064 in 2001-02 had no impact upon the service especially as prevalence of different nationalities varies from year to year. In order to understand what any professional can offer it is helpful to know what they know, how they have trained and the context in which they have worked. A very rapid increase in overseas recruitment will increase the frequency with which senior nurses and managers lack these advantages in relation to a significant number of their staff.

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<sup>61</sup> The HE sector did not feel the full effect of the downturn in nurse training in the mid 1990s because training was in the process of being transferred to the sector and many HEIs were in a position to ensure that they did not assume responsibility for nurse training capacity on terms which made it unviable. Since then, they have built up capacity as demand has increased and would be solely responsible either for sustaining or reducing that capacity in the event of a downturn. The ability of the HE sector to sustain nurse training capacity in the event of another downturn is essentially untested.

15. The volatility in the numbers entering practice and the balance between UK-trained and overseas entrants suggests a reactive approach to training and recruitment – with decline through the mid to late 1990s followed by panic recruitment from overseas and a drive to reinvest in training. Even if the result is that numbers entering the profession over the period are adequate (which is far from clear), it is hard to believe that this ‘boom and bust’ approach is good for the healthcare in the UK.