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Review of clinical subject weightings

Report to HEFCE by J M Consulting

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1. Executive Summary

Funding background

1. Significant changes to government policy and funding for higher education require HEFCE to rethink current approaches to funding for teaching. At present, the majority of the public funding received by institutions comes via HEFCE, which provides funding for most HE courses, across a wide range of subjects and levels. When the new arrangements are fully established, HEFCE will be a minority funder of teaching, with an increasing proportion of funding coming from the Student Loans Company. The Government has indicated that it expects future funding priorities to be closely targeted at promoting public policy priorities and meeting unavoidable costs that cannot be met by a student-led funding system alone. In particular, these include the additional costs of higher-cost subjects at undergraduate and postgraduate levels such as medicine, science and engineering, which cannot be recovered through income from graduate contributions. This review is concerned specifically with clinical medicine, dentistry and veterinary science for teaching; and clinical medicine for research.
2. HEFCE has historically calculated a resource for each institution in proportion to its weighted student numbers. One of the ways HEFCE weights student numbers is according to their subject, as different subjects require different levels of resource: some subjects need laboratories and workshops while others are taught wholly in lecture theatres and seminar rooms. HEFCE currently defines four broad groups of subjects (or price groups) for funding, and sets relative cost weights for each group based on expenditure and full time equivalent (FTE) student data in different academic groupings known as 'cost centres'.¹
3. Historically, the assumed relativity for the clinical subjects was 4:1, derived from HESA expenditure data.² This 4:1 relativity was applied to total resource: that is, grant plus a low, historic assumed fee. If the actual fee that HEIs can now charge is considered, then the relative weighting of funding (grant + fee) actually received by institutions in 2009-10 is close to 3:1.

Overview of review of cost weights

4. Transparent Approach to Costing for Teaching (TRAC (T)) data show that the cost relativities of clinical medicine, clinical dentistry, and veterinary science range between 2.3:1 and 3.2:1 for teaching a HEFCE-fundable clinical student, relative to the cost of a humanities/social sciences student. The aim of this review is to establish whether these TRAC data, for subjects in which students are presently funded in price group A are reliable.
5. These cost relativities are combined average cost weights covering both price

¹ Guide to Funding; How HEFCE allocates its funds. September 2010/24

² Details available in the HEFCE website archives:
<http://www.hefce.ac.uk/learning/funding/fundmethod/>

group A and B students (clinical and pre-clinical): if price group B students and costs were excluded, the cost relativity for clinical medicine would move from 2.3:1 to closer to 3:1. (These relativities are expressed in relation to humanities/social sciences, and it may be more useful for future relativities to be expressed in relation to the physical sciences.)

6. It is worth noting that these relativities are averages of reported costs that show a wide variation (between institutions) within the clinical subjects. The 2009/10 TRAC data for the UK show the mean per student cost³ of clinical medicine was £13,706, of clinical dentistry £15,729, and of veterinary science £19,281. This led to cost relativities for the UK of 2.3, 2.6 and 3.2 respectively. Cost relativities for English institutions were almost the same at 2.3, 2.6 and 3.0 respectively. The variability of the mean cost within these three cost centres was marked (and greater than for any other cost centres).⁴
7. The reported costs and relativities also differ slightly depending on whether they are expressed in terms of the mean or median value (of all institutions with these subjects), whether UK or England only data are used, how outliers are excluded, and which year/s of TRAC data is used. The Teaching cost relativities noted above look slightly different from those published by HEFCE in 2010,⁵ which are figures for England only for three years to 2008/09 (with a different definition of outliers). These figures are shown in the table at the end of this summary. We refer to 2009/10 UK data in this report because these are the latest and most robust data that are familiar in the sector (published and used in benchmarking), but we focus particularly on England-only Teaching data for 2009/10. In Research we use 2009/10 data from the whole (UK) sample.
8. As we move into a new environment for funding, HEFCE need to know if they could rely on the TRAC data to inform future funding methods, and the purpose of the study was to test this. However, as the future funding method is not yet known, we have had to define the criteria for reliability in this study. Effectively, we would be able to say that the TRAC methods and the data they produce are reliable to inform the current funding method (i.e. fit for purpose) provided that there is not systematic and material variability of costs within the clinical subjects that only affects these clinical subjects (we give full definitions in the glossary). We note that TRAC data are only one piece of information that HEFCE would take into account in a funding method – for example the uncertainty in future NHS funding and knock-for-knock arrangements is also of great importance. Of course different criteria of reliability might be used for a different type of funding method – and we discuss this later.
9. This study focuses on whether any of the variability in costs noted above is due to the way that TRAC is specified or being implemented (rather than to real differences between institutions) and what this indicates about the reliability of the TRAC data to inform funding. The analysis we have done to answer this question is based on case studies at 16 universities (15 medical schools, 13 dental schools,

³ Average costs per student, covering all courses and all years, within each discipline. Subject-related costs, excluding non-subject-related costs, bursaries and scholarships, of HEFCE-fundable students.

⁴ Standard deviations based on England Subject-FACTS data for four years to 2009/10 of £4,180, £7,310 and £7,150 respectively, for the three subjects (see scatter graphs in Table 5 of Appendix D of this report).

⁵ HEFCE EP 06/2010 Review of subject price groups for 2010

and 4 veterinary science schools).

10. Our main conclusion is that while TRAC is capable of dealing with most of the extra complexities in universities' costs related to the clinical subjects, these are quite challenging for any costing system, and the data in these difficult clinical areas that are currently being reported by some institutions are not robust (i.e. not all TRAC requirements are appropriate or being met, and the impact on the reported costs may be material). In these few institutions, the student cost data at the level of clinical subjects (the focus of this review) are therefore not reliable, until improved. This only applies to the relatively low level of reporting costs per student, and does not affect the robustness of the TRAC data reported at an institutional level, or used in research project costing.
11. This lack of robustness in some institutions arises from factors that reflect the nature of the clinical subjects: the volume of clinical service costs in medical and dental schools (i.e. a third primary academic activity alongside teaching and research); the knock-for-knock relationship with the NHS in medicine and dentistry; the small size of many dental schools which poses challenges for academic time allocation; and the importance of commercial hospital and farm activity to veterinary science. While institutions are putting considerable effort into their TRAC data, some improvement in their practices would lead to more consistent and usable TRAC data to inform HEFCE funding policy.
12. We recommend that these improvements are made within the normal process of management of TRAC; and implementation of this will not be burdensome on institutions. We have estimated the likely impact of these improvements on the cost relativities. They will not change the broad picture of cost relativities noted above: they will reduce the cost relativities for medicine and dentistry, and increase that for veterinary science, but all should remain broadly within the range of 2:1 to 3.5:1 (further details below).
13. There are two areas affecting data reliability which are broader than TRAC implementation issues: namely the use of two price bands in funding – clinical (price group A) and pre-clinical or non-clinical (price group B) – which most institutions are unable to replicate in their costing; and the treatment of parts of reimbursed academic salaries and other costs under knock-for-knock. The first is not an issue for TRAC and would need consideration by HEFCE in a broader context. TRAC data on the clinical subjects could be improved if all institutions gained a better understanding of the way knock-for-knock works for them – a start towards this could be made by improving the allocation of income. Attention to these two areas could further improve the usefulness of the TRAC data (without threatening the knock-for-knock arrangements).
14. The study also looked at research cost relativities (RCR) for medicine (not dentistry or veterinary science). This is covered below. From TRAC one can calculate a total research cost relativity for medicine of 3.8; compared to a HEFCE funding weight of 1.6. The essential conclusion is that, subject to the qualifications given in the TRAC-RCR report⁶, the TRAC total research cost relativity is robust and could be used to inform the research funding method.

⁶ Review of research cost relativities based on the Transparent Approach to Costing: Report by J M Consulting to the UK higher education funding bodies

http://www.hefce.ac.uk/pubs/rereports/2011/rere09_11/

15. We should note that, while TRAC data for both Teaching and Research could help to inform future HEFCE funding, they would be applied to separate funding allocations – for Teaching and Research – which cover all subjects, not just those in the clinical areas. It is therefore important to see the funding in clinical areas as part of a whole picture – with HEFCE grant funding for teaching alongside fees (and bursaries), and alongside research funding (from HEFCE and other funders) as well as alongside NHS funding in medicine and dentistry. There is currently great uncertainty over the NHS element of funding, and HEFCE will no doubt wish to proceed cautiously in any changes it makes to its funding for clinical subjects.

Main areas for improvement in teaching cost relativities

16. In our work with sixteen case study universities, we were impressed by the considerable work that institutions put into implementing TRAC, and producing robust data. However, there are particular costing challenges in the clinical area as noted above which are probably more acute than in other subjects, and which any costing system, including TRAC, would struggle fully to address. In addition, some institutional practices in the way TRAC is implemented are adversely affecting reliability of the data.

17. The most significant of the suggested areas for improvement are as follows:

- a. The division of medical funding into clinical and pre-clinical years does not reflect a clear distinction in the curriculum, and most institutions are unable to split their costs in this way. The available cost data would better inform a single merged funding band.
- b. Some institutions are allocating their costs incurred in clinical service delivery (O(CS)) in medicine and dentistry contrary to the intention of the TRAC guidance, and are thereby overstating their costs of teaching. This is a complex area, and the TRAC guidance could be improved. This is more significant for medicine than for dentistry.
- c. The treatment of contributions to academic staff and other costs made by the NHS and HEFCE is inconsistent and tends to overstate teaching costs. In respect of clinical academics' clinical excellence awards separately funded by HEFCE or the NHS, more consistent cost allocation can be achieved, improving the TRAC data. This affects both medicine and dentistry.
- d. The significant (in cost terms) issue of reimbursed salaries and other costs is more challenging as it is within the area of knock-for-knock, which TRAC does not attempt to unpick. This partly overlaps with the issue at (b) above, but is a separate issue needing a more fundamental review; this is not within the remit of this study. TRAC does encourage institutions to improve their understanding of knock-for-knock (and a few institutions have done this). Better understanding in this area, initially shown by a slightly different allocation of income in the annual TRAC reports, would further improve the usefulness of the TRAC teaching data.
- e. The cost data in schools of dentistry can be affected by the small size of some dental schools. This can have the effect of making academic staff time data less robust, and proper reasonableness checks should be made.
- f. There is inconsistent treatment of costs associated with commercial activity in

veterinary science schools which adversely affects the reliability of TRAC data.

18. There is scope within the current framework of TRAC to improve the reliability of the teaching cost data by addressing several of the points above (b, c, e, and f), which are effectively about inconsistent implementation and can therefore be dealt with through the normal TRAC process. While we do not have consistent information from all our case studies, we have modelled the likely impact of making these improvements using the best data we have obtained and making reasonable assumptions about extrapolation to sector level. Details of this are shown in Chapter 3.
19. Our best estimate based on this evidence is that making these (routine) improvements to TRAC implementation will reduce the reported costs of teaching in medicine by 10-20%, i.e. leading to a cost relativity close to 2:1. This estimate assumes that the current knock-for-knock arrangements, and funding from the NHS, continue, which may not be appropriate assumptions. The impact on dentistry and veterinary science will be different as described below.
20. Action on item (a) is a broader issue which would require a change in the funding method, and should not be driven solely by considerations of reliability of cost data. However, if HEFCE chose to merge the clinical and pre-clinical teaching funding groups (A and B) into a single combined funding band, this would make TRAC costs more useful.
21. Reimbursed salaries and other reimbursed costs (item d) are very significant for some of these institutions (much more so in medicine than dentistry) but any action on this would need to be taken with care as it could appear to be unpicking knock-for-knock and changing the basis on which TRAC has operated since 1999. We do not suggest this, but instead suggest making TRAC data more useful by showing income more clearly.
22. If HEFCE wanted to determine the absolute costs of clinical medicine and dentistry teaching, it would be necessary to get some handle on the knock-for-knock issue (through improved understanding of knock-for-knock, not by “unpicking” the principle). This would need further study with a different level of engagement and cooperation from institutions and the NHS.

Dentistry and veterinary science teaching, and medical research

23. **Dental schools** are usually much smaller than medical schools, based within a dental hospital and, in contrast to medicine, students provide significant clinical treatment as part of their education. In costing terms, this is simpler than most medical schools, with a smaller proportion of salary costs reimbursed by the NHS. However, the smaller size of schools means that academic time allocation data will be less robust unless it is validated and moderated by appropriate internal checks by academic managers. At present, we were told that heads of dental schools do not feel empowered by their institutions to do this (they are often part of a larger medical school).
24. There is a wide range of variability of dentistry costs between institutions, but as our investigation covered ten of the thirteen English dental schools, our findings are representative of the sector. We calculate that the poor quality of the academic staff time data might lead to up to +/-7% variation in per student costs (which can be corrected) in any affected institution, and the consistent allocation of O(CS)

costs might reduce costs by up to 10%, again in any affected institution. These, by themselves or in aggregate, may or may not be material. We cannot model this for the whole sector, but the TRAC guidance could be improved which would lead to more reliable data. As for medicine, it would be helpful to alter the way income is reported, to gain a better understanding of some aspects of knock-for-knock in dental schools (although it is very different from that in medicine).

25. Overall therefore, the current TRAC cost relativity of clinical dentistry might be reduced (but less significantly than for medicine) if these improvements are made, to around 2.5:1.
26. **Veterinary science** differs in that there is no NHS relationship or knock-for-knock, and institutions have to provide their own clinical environment. However, there is also a wide variation in costs (even greater than for dentistry) and this is partly due to the small number of institutions, with differences in the types of institution (e.g. some with franchised provision, or very low student numbers, and one other institution which dominates the sector – with 40% of the provision).
27. There are usually very significant (in cost and income terms) farm and animal hospital businesses associated with veterinary science teaching and the TRAC guidance on how to treat these is not as helpful as it could be. If (as we believe) they are a necessary resource for teaching (and research), then most of their costs should be a cost of teaching (or research). We found case study institutions adopting very different principles to allocate these costs. This could readily be rectified by improved guidance, and will tend to increase the costs of teaching. The combination of doing this and excluding the extreme outliers in cost terms could lead to an increase in the cost relativity for veterinary science, at a level which could bring it to around 3.5:1 (i.e. above the effective current funding weight).
28. In terms of **medical research**, the Research Cost Relativity methodology (TRAC-RCR) is designed to derive a cost relativity for research. As research costs and academic staff FTEs are used by the research councils for their funding, they are calculated robustly, and they are a particular focus of the Research Councils UK (RCUK) quality assurance procedures. That means that the total costs of Research, and academic FTEs, should in general, be robust. With the research cost relativity, the areas of uncertainty are much smaller than for clinical teaching discussed above (the O(CS) of academic researchers has only a small impact on research as this time is generally allocated to Teaching or Other, not to Research). Any small inconsistencies or variability introduced by the way TRAC-RCR is implemented are unlikely to be material to the overall cost relativity.
29. The main area of concern here relates to the exclusion of clinician time in the denominator which, if included (reflecting either knock-for-knock, or the funding method), could have a significant effect. Other concerns and qualifications relating to the use of the RCR data were described in detail in the TRAC-RCR report and apply equally to clinical as to other subjects.
30. The individual cost relativity for institution-own-funded research reported in the TRAC-RCR report (see also Table 5 in Appendix D of this report) is not robust but this does not detract from the robustness of the overall RCR for total research. The total research cost relativity calculated from TRAC is 3.8, compared to a funding cost weight of 1.6.

Conclusion and recommendations/suggestions

31. We conclude that HEFCE can rely on the indication from TRAC that the clinical teaching cost relativity for combined price group A and B students for medicine is close to 2:1, that for dentistry around 2.5:1, while that for veterinary science is around 3.5:1. TRAC uses a particular set of methods to account for some aspects of the knock-for-knock arrangements, and any use of the data should be made in the context of these methods, and of the uncertainties of the future funding from the NHS.
32. The fact that standard deviations are large in these clinical subjects reflects real variability in the costs which is partly due to the nature of these subjects and the relatively small number of schools in dentistry and veterinary science. This variability does also indicate that robust costing in these subjects is a challenge, but this does not necessarily mean that TRAC is unsuitable as a method, or is incapable of being implemented reliably. As we have described, there are significant areas where institutions could be helped to implement TRAC more consistently, at very low burden, and this should be done.
33. We recommend that these improvements to TRAC implementation (which can be facilitated by improved guidance and support managed by the TRAC Development Group, or TDG) are implemented as part of the normal management of TRAC. This is likely to reduce the cost relativity for medicine by at least 10-20% , reduce that for dentistry by a smaller amount, and increase that for veterinary science by up to 20% (depending on the method selected). However, the TRAC data will continue not to show many of the implications of the knock-for-knock arrangements.
34. This and other action by TDG might help to increase verification and review of TRAC costs in institutions and therefore improve the overall robustness of data. Therefore it would be helpful if TRAC (T) results continue to be collected nationally, and reviewed by HEFCE on a periodic basis. This will no doubt be considered as part of HEFCE's fundamental review of TRAC.
35. We suggest that if there is no broader reason not to do this, the pre-clinical and clinical funding bands are merged so that institutions are able to record costs that are directly relevant to the funding band, and data quality is improved.
36. We suggest that if HEFCE wishes to investigate absolute costs of high-cost subjects (as opposed to cost relativities which are the subject of this report), some further consideration should be given to the implications of this, including ways of getting a better understanding of the resource flows under knock-for-knock without upsetting the relationships at the heart of these clinical subjects.
37. As noted above, HEFCE will wish to consider these TRAC teaching cost relativities alongside other information on research funding and NHS contributions when they consider their future funding of these subjects.

Summary table

Cost relativities from TRAC data

This shows the headline figures, the (marked) variability that exists between costs reported by different institutions, and the (small) differences introduced by different data years and statistical summary approaches. The figures in bold are the UK 2009/10 figures published in the TRAC (T) benchmarking.

Teaching	Clinical medicine	Clinical dentistry	Veterinary science
TRAC mean cost per student 2009/10 (UK)	£13,706	£15,729	£19,281
Lower quartile of above	£12,193	£12,717	£13,460
Upper quartile of above	£15,967	£18,043	£23,516
Cost relativity (to band D) based on above data	2.3	2.6	3.2

Cost relativity (to band D) 2009/10 England	2.3	2.6	3.0
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Cost relativity based on mean of 4 years to 2009/10 data for England	2.4	2.6	3.0
Cost relativity based on median of 4 years to 2009/10 data for England	2.5	2.5	3.0

Main TRAC implementation issues that we have identified for improvement:			
• Allocation of O(CS) costs	material	potentially material	N/A
• Treatment of merit awards funded by NHS or HEFCE	not material	not material	N/A
• Academic staff time in small schools	N/A	potentially material	N/A
• Treatment of commercial activity	N/A	N/A	material

Our estimate of new reported cost relativity for Teaching if these items are all dealt with consistently and as TRAC guidance intends	near to 2.0	around 2.5	around 3.5
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Medical Research	
TRAC–RCR UK sample, 2009/10 Cost relativity for Total Research Costs: cost/academic FTE in clinical medicine compared with humanities/social sciences	3.8

2. The purpose and nature of the study

Remit and study method

- 2.1 This report describes the findings of a review of the Transparent Approach to Costing (TRAC)⁷ costs of teaching in clinical subjects (medicine, dentistry and veterinary science) and in clinical medicine research, in English higher education. The aim was to investigate and explain the variations (between institutions) in the allocations of the TRAC costs of clinical teaching and research, and hence to test the reliability of using these costs to inform funding policies.
- 2.2 This study had a very specific focus on the reliability of the actual (historic) relative costs of clinical subjects incurred by higher education institutions (HEIs) and measured by TRAC (in 2009/10). We worked with case study departments in 16 HEIs (including 15 clinical medicine, 10 dentistry, and 4 veterinary science departments). These are not identified in the report, to help ensure confidentiality. We are grateful to all these institutions for their contribution.
- 2.3 The terms of reference for the study and details of the steering group and project management are in Appendix A. The steering group, chaired by Professor Peter Kopelman, met three times in July, September and October 2011, and brought a range of additional experience and expertise to the study.
- 2.4 Although they are interesting and important issues, this study did not look at:
- the adequacy of funding (issues of efficiency, over-stretch or sustainability);
 - costs incurred outside the HEIs – e.g. in National Health Service (NHS) Trusts;
 - the absolute level of clinical teaching costs, or that of the comparative (price group D) subjects used in the HEFCE funding weightings;
 - factors in different disciplines or institutions – such as teaching strategies, pedagogic techniques, student profiles, institutional infrastructure or resources – which lead to differences in costs which are correctly reflected by TRAC.
- 2.5 It should be noted that this study was commissioned to be completed in a tight timescale and the selection of case study institutions was made in a way that reflected a sensible selection, but was not intended to be a representative sample of the sector. Our contact with these institutions was over the summer period, and almost entirely with TRAC managers rather than more senior staff. These investigations were supported by the steering group which included a vice-chancellor, three finance directors, three heads of department or faculty, a representative of the Medical Schools Council, and a TRAC manager, as well as representatives from HEFCE.

⁷ TRAC is the standard costing system used in higher education – described later in this chapter and in Appendix B.

- 2.6 Some institutional TRAC managers were able to respond much more fully to our requests for data than others, and, although we had follow-up contacts with almost all institutions, we had limited possibility to enter into a more prolonged dialogue. We are confident that these conditions were appropriate and satisfactory given the remit of the study (to test reliability of cost relativities within the context of the current funding method), and the data modelling we did was based on ranges of possible variations to the reported TRAC results under different assumptions and scenarios. However, if HEFCE wished to extend this type of analysis (for example to calculate “best-values” of actual costs of teaching in different clinical subjects), some further investigation and analysis would be required.
- 2.7 This report is written in a way that is intended to be accessible to the non-technical reader, but it has to be recognised that costing in the clinical area is necessarily a complex subject. Also, the political interest in the funding of medicine (in particular) has led us to give a rather full review and commentary on all the relevant factors – including some not strictly within the narrow remit of TRAC costing.
- 2.8 Further information on TRAC is in Appendix B; a table showing the costing factors considered in this review is in Appendix C, and tables of key data are in Appendix D.
- 2.9 Unless indicated otherwise, all references to tables in this report are to those in Appendix D.

Funding policy background

- 2.10 The costs of both teaching and research in clinical subjects are widely understood to be significantly higher than those in “non-high-cost” subjects (such as humanities) sometimes called “classroom-based” subjects; and, of teaching, in “laboratory-based” subjects such as biosciences, physics etc.
- 2.11 The funding of both teaching and research by HEFCE might aim to reflect these higher costs, but other factors are important as well as costs.
- 2.12 For teaching, the clinical subjects in HEFCE price group A have a formal weighting of 4 in the teaching funding model, relative to classroom (price group D) subjects like the humanities.⁸ However, this reflects a historic level of fee assumption of £1,225. This assumed fee has been used in HEFCE’s grant calculation since 1998 (up-rated annually for inflation). A move to raise the fee assumption to £3,000 in 2004 proved unpopular with institutions, which argued that it was up to individual HEIs to determine how the additional student tuition fee income should be distributed, and this should not influence grant calculations.
- 2.13 When comparing funding with TRAC costs, it is necessary to add the actual fee received by HEIs (£3,375 in 2011/12) to the level of grant for price group A subjects (£13,335 in 2011/12), to arrive at a total funding of £16,710 (which can then be compared to a cost per student produced from TRAC (T)). This

⁸ e.g. see September 2010/24 Guide to Funding. How HEFCE allocates its funds.

total funding represents a weighting of 2.9 when compared with the grant plus fee (£2,325 + £3,375 = £5,700) for price group D subjects, hence close to 3:1.⁹

- 2.14 We therefore refer to a current price weighting of about 3:1 for price group A students in this report when comparing funding with cost weightings. We note that the price weighting of 3:1 is not strictly comparable with TRAC (T) costs, as TRAC (T) excludes bursaries and scholarships, whilst they have not been deducted from the gross grant plus fee funding; and the price weighting is for a different year.
- 2.15 We also note that this ratio compares price group A subjects with price group D subjects. The main focus for HEFCE funding is now on price groups A and B, and a more useful ratio in the future might be that between those two price groups
- 2.16 In terms of funding, the clinical subjects are not allocated separate 'long-course' funding by HEFCE. Any higher costs of these longer courses are included in the TRAC (T) cost relativities, and in the funding relativities.
- 2.17 As the future public funding for teaching will be substantially reduced, and focussed in part on the "high-cost" subjects, it is important for HEFCE to understand and have confidence in the cost relativities between subjects so that they can ensure that the limited subsidy available is well directed.
- 2.18 For HEFCE research funding, the 'cost weight' for 'high-cost' subjects classified as group A, is lower at 1.6 compared to the lowest cost group (group C). This is applied to both clinical and high-cost laboratory subjects such as physical sciences and engineering.¹⁰
- 2.19 We note that other changes in the funding environment might change the costs allocated to teaching and research, for all subject areas, and we do not consider the impact of these in this study. They include
 - changes in the numbers funded by the NHS or privately (non-publicly funded teaching or NPFT) – if the numbers fall, the costs of publicly-funded teaching or PFT students are likely to rise at least in the short-term;
 - changes in HEFCE funding outside the main recurrent grant e.g. for specialist institutions, long courses, and so on;
 - changes in levels of bursaries and scholarships awarded by institutions;
 - any reductions in NHS funding of trusts (e.g. Service Increment for Teaching – SIFT); or in the funding to HEIs provided by trusts and Strategic Health Authorities (SHAs).

⁹ This weighting of about 3:1 is reflected in HEFCE's consultation on teaching funding: 'Teaching funding and student number controls' June 2011/20. Paragraph 100 refers to a rate (for the grant) of £10,000 for 'new regime' price group A students for 2012/13. This, plus the maximum regulated fee of £6,000-£9,000 gives a total proposed funding for price group A students of £16,000-£19,000. This can be compared with nil grant, and the same fee, for price group D students – a total for price group D students of £6,000-£9,000. This produces a ratio between price group A and D of about 2.7:1 (slightly lower than the 2.9:1 shown above for 2011/12, as the fee will be higher).

¹⁰ Paragraph 148. HEFCE's Guide to Funding. September 2010/24

TRAC and the cost of clinical subjects

- 2.20 TRAC is used throughout UK higher education. A description of TRAC, written for non-technical readers, is given in the TRAC “Policy Overview”, which is available on the HEFCE website¹¹. TRAC provides the cost data from which relativities, or cost weights, between subjects, can be derived.
- 2.21 The main annual TRAC methodology has been in use for a decade, across every higher education institution in the UK. TRAC is a national activity-costing system, which draws on expenditure information in institutions’ audited accounts and derives the costs of the primary activities of Teaching (T), Research (R) and Other (O) (which covers other primary activities such as clinical services). The costs of Support (S) activities are separately calculated and reallocated to T, R, and O as appropriate).
- 2.22 TRAC lays down an approach that is based on a set of common principles and some clearly-defined minimum costing requirements¹² (which all institutions have to implement) but allows institutions flexibility in the details of the way they implement these minimum requirements. Many HEIs choose to go beyond the minimum. There is a wide range of methods used to collect academic staff time (a key driver of costs), but all must meet the minimum requirements. Similarly, institutions can choose cost drivers in other areas, but again they must adhere to common principles and requirements.
- 2.23 Within TRAC, there is a specific application for costing teaching called TRAC for Teaching (TRAC (T)). This uses cost data and cost drivers from the annual TRAC system to produce the ‘subject-related costs of HEFCE-fundable Teaching’. These costs, together with student numbers produced for reports for the Higher Education Statistics Agency (HESA) are used to derive the average annual cost per full-time-equivalent student of teaching a HEFCE-fundable student in each HESA academic cost centre. This cost is called Subject-FACTS.
- 2.24 There are 41 HESA cost centres and sub-cost centres reported under TRAC (T). The relevant costs for this study are those in HESA academic cost centres CC01 (clinical medicine); CC02 (clinical dentistry) and CC03 (veterinary science).
- 2.25 Further information on TRAC, including quality assurance arrangements, the working of academic time allocation, and the way that TRAC costs of Teaching and Research are derived (and how the relativities are calculated) is provided in Appendix B.
- 2.26 All English institutions (and those from Scotland and Northern Ireland) have provided data under TRAC (T) for four years – since 2006/07. TRAC (T) data for the UK referred to in this report refers to data from these three countries.
- 2.27 In Tables 7-8 in Appendix D we show the components of teaching and research costs across some of our case study institutions. This shows that academic time spent directly on teaching is actually a minor cost element in

¹¹ Policy Overview of the financial information needs of higher education and the role of TRAC. A report prepared for the Financial Sustainability Strategy Group and the TRAC Development Group by J M Consulting July 2009

<http://www.hefce.ac.uk/finance/fundinghe/trac/tdg/FSSGJuly2009.pdf>

¹² Statement of Requirements. <http://www.jcpsg.ac.uk/guidance/require/>

clinical teaching (often around 12%). Other large costs of teaching include a share of the Support time of academics (including scholarship), department costs, and central services (including academic support, libraries and information technology), and the cost of other clinical services (O(CS)) provided to the NHS or animals.

- 2.28 TRAC allocations of O(CS) in medicine and dentistry are based on the assumption that the services provided to the NHS broadly represent the cost of services provided by clinicians and other NHS staff to the institutions, once reimbursed salaries have been taken into account. However, there are major flaws in this approach, as discussed below.
- 2.29 The largest cost by far in Research is the direct cost of research grants and contracts, including the costs of research assistants, (often about 60%, although this varies widely by institution – see Table 8 in Appendix D). There is very little O(CS) being allocated to Research. Research costs include all the costs allocated to ‘Institution-Own-Funded Research’ (I/O), and we discuss problems caused by this category of activity below.
- 2.30 The TRAC (T) data for the UK for 2009/10 – called Subject-FACTS – is given in Appendix D (Table 5). The mean per-student cost of medicine in 2009/10 was £13,706. For dentistry the mean was £15,729, and for veterinary science, the mean was £19,281. The variation around these means was very significant – e.g. for medicine the interquartile range was nearly 30% of the mean, and for veterinary science it was over 50%.
- 2.31 This high variability of costs between institutions is a feature of these clinical subjects. In a 2010 publication¹³ HEFCE published scatter graphs of the TRAC (T) costs and HEFCE-fundable student numbers for each HESA cost centre. Scatter graphs for the three clinical subjects, updated to cover four years to 2009/10, are shown after Table 5 in Appendix D. The standard deviations in the three clinical subjects are larger than in all other cost centres, and this is most marked for dentistry and veterinary science, and is discussed below.
- 2.32 Table 5 gives cost relativities for Teaching. The UK data for 2009/10 shows cost relativities calculated on the mean give 2.3 for clinical medicine; 2.6 for clinical dentistry; and 3.2 for veterinary science. There are other ways of calculating the cost relativities (these are all shown in Table 5). For England:
 - the cost relativities are 2.3 for clinical medicine; 2.6 for clinical dentistry; and 3.0 for veterinary science;
 - the published HEFCE analysis used the most relevant, latest, data then available – for the three years to 2008/09 for institutions in England. It used a method for excluding outliers (slightly different from that used in the UK benchmarking); and the cost relativities were calculated on the median, not mean. This resulted in cost relativities of 2.5 for clinical medicine; 2.3 for clinical dentistry; and 2.9 for veterinary science;
 - the data was updated for this study – to cover the four years to 2009/10 for institutions in England. This resulted in cost relativities of 2.5 for clinical medicine; 2.5 for clinical dentistry; and 3.0 for veterinary science;
 - if the same four year figures were used, but the cost relativity calculated on the mean, not the median, the cost relativities become 2.4 for clinical medicine; 2.6 for clinical dentistry; and 3.0 for veterinary science.

¹³ HEFCE EP 06/2010 Review of subject price groups for 2010

- 2.33 This again shows that the greatest variability is in the dentistry and veterinary science figures, and we discuss this in Chapters 4 and 5. However, overall, the message given by the different methods is consistent – the clinical medicine and clinical dentistry cost relativities for Teaching currently shown by TRAC are below the funding weight of 3:1; and veterinary science is about the same as the funding weight.
- 2.34 The research cost relativities data – TRAC-RCR – for 2009/10 is given in Table 6 in Appendix D. This also shows that the research funding cost weight of 1.6:1 does not reflect the costs as currently shown by TRAC. This is discussed in Chapter 6.

Reasons for the review

- 2.35 The issue for funding policy is that the costs reported by TRAC relativities lead to cost relativities in the range of 2.3 to 3.2, some of which are well below the funding relativity of 3.0. HEFCE needs to have confidence that this difference is real rather than an artefact of the way TRAC is being implemented.
- 2.36 The HEFCE funding weightings were established many years ago. The only cost data available at the time to inform their establishment was that in HESA, which is reported in a significantly different way from cost data in TRAC. (For example, HESA expenditure data does not divide Teaching and Research expenditure, so assumptions had to be made about Teaching costs.) Other factors are likely to have been as important, including arrangements with the NHS, and the structure of the main teaching provision (i.e. the extent to which parts of the courses are taught by clinical staff, and/or in clinical environments).
- 2.37 Over the last ten years, there have been major changes in medical and dental teaching, including new consultants' contracts; changes in course curriculum, the range of courses on offer (intercalated, masters, foundation degrees, graduate entry, etc.) and in the General Medical and General Dental Councils' requirements; and new funding and organisational arrangements throughout the NHS.
- 2.38 In higher education there have also been significant changes which affect all subjects, including those under review here. The changes include new collaborative arrangements; growth in research; increased pressures on academic staff time; new methods of teaching and learning; new quality assurance (QA) arrangements including the national student survey; a wider range of students with new or increased needs for support; and the increased market ethos in higher education which is associated with, but not solely driven by, the introduction of student tuition fees.
- 2.39 Neither of these is intended to be a comprehensive list of changes in clinical activity or in higher education as a whole, but they do illustrate some of the influences on the costs of activities over the last decade that may have affected the cost weights between subjects.
- 2.40 In research, there has been a major change in the way that government bodies (in particular Research Councils UK – RCUK) fund research. This resulted from the government's Dual Support Reform in 2003/04 which led to a change from funding on the basis of 100% of direct costs plus some overheads, to the present basis of funding 80% (broadly, for RCUK) of full economic costs as established using TRAC (TRAC fEC). This means that the research costs not directly funded by research sponsors, to which HEFCE funding contributes, have changed.

Profile of the clinical subjects

- 2.41 Tables 1 to 4 in Appendix D show the size of teaching and research provision in the case study institutions for the three subjects under review: clinical medicine; clinical dentistry and veterinary science). Some key points are:
- a. In 2009-10 medicine accounted for 74% of the clinical student numbers, dentistry 15% and veterinary science 11%¹⁴;
 - b. The costs of clinical research are much higher than those of clinical teaching (i.e. for many universities with medical schools, medical research is a significantly bigger activity than medical teaching: from three to ten times as big in most of our case studies).
 - c. The importance of Medicine to many case study institutions (in six case study institutions the total cost of clinical medicine is 20% to 40% of total institutional costs);
 - d. The smaller size of Dentistry and veterinary science schools (in eight case study institutions student numbers in their dentistry or veterinary schools are on average a quarter of those across the medical schools).
- 2.42 The profiles of medicine, dentistry and veterinary science vary significantly, in terms of:
- their size: as shown above, dentistry and veterinary science in most institutions are much smaller than medicine in terms of student numbers and costs;
 - their organisation (in particular, whether they are a discrete department or school, with most staffing and non-pay costs recorded separately from other subjects);
 - and the range of activities carried out. There is comparatively less research in dentistry and veterinary science compared to medicine; more charitable research activity in medicine than in the science disciplines; less NPFT in all three subject areas compared to sciences; and fewer consultancy/income-generating activities ('Other' in TRAC) in medicine and dentistry, if clinical services provided to the NHS are excluded.
- 2.43 In veterinary science, there are extensive 'by-products' or 'businesses' associated with the primary higher education functions of teaching and research. These can lead to significant income generation.
- 2.44 Both medicine and dentistry operate with a set of complicated and often obscure relationships with many entities in the NHS or Department of Health (DH). This is illustrated by:
- clinical academics¹⁵ in universities carrying out clinical services (programmed activities);
 - the reimbursement of some clinical academics' salaries and awards by the NHS to reflect the clinical services;

¹⁴ Source: HEFCE, ASG. The data given in the rest of this paragraph are from Appendix D.

¹⁵ We refer throughout this report to 'clinical academics' as clinical consultants on university contracts, whose pay costs are allocated as part of TRAC, and who would complete a time allocation survey as part of this (unless they are on clinical teaching contracts, or research-only contracts). We use the term 'clinicians' to refer to clinical consultants on NHS contracts (only) whose pay does not therefore form part of the pay costs in universities.

- the reimbursement of other expenditure by the NHS (e.g. for student placements);
 - clinicians in NHS Trusts, and elsewhere, such as General Practitioners (GPs), assisting with Teaching and Research;
 - some shared use of estate, facilities, health professionals and support staff;
 - and some shared management and administration.
- 2.45 It is further complicated by the receipt of funding by NHS Trusts from the DH, or directly by the university from SHAs (SIFT in the case of medicine) to cover the increased costs of service caused by education/training. Some individuals consider that part of this is passed on to the partner HEI by way of reimbursed salaries or awards (others believe it is wholly retained by the NHS to cover the increased costs to service of teaching, and other funding is used to pay for the clinical services provided by HEI staff).
- 2.46 The total relationship is thus characterised by a complex exchange of services and funding across the HEI-NHS boundary, and the nature of this and the way it is perceived varies between HEIs with medical and dental schools. Under the so-called knock-for-knock principle, no attempt is made (at local or national level) to cost or charge for these services.
- 2.47 This interface with the NHS, and the complexity and variability of the transactions that occur across the HEI-NHS interface, has significant consequences for the costs reported under TRAC. This was recognised when TRAC was designed in 1999, and there are TRAC methods designed to deal with this complexity. The extent to which these methods are followed, and their appropriateness, is one of the main issues we review in this report.
- 2.48 It has always been a principle within TRAC that no attempt would be made to unpick knock-for-knock. (TRAC did however encourage institutions to gain a better understanding of what is received from the NHS and it is perhaps disappointing that relatively few have used this to inform TRAC.) It was not the aim of this study to identify whether knock-for-knock arrangements are 'in balance' or even what their constituent elements are. The only costs under review are those incurred by HEIs. As knock-for-knock has not been unpicked in many institutions, we found (as we expected) that the allocation of many clinical costs is not evidence-based (despite the considerable work institutions undertake in their TRAC models). We explain the impact of this on the figures in this report.
- 2.49 Further discussion of the features of dentistry and veterinary science education is in Chapters 4 and 5.

The case study institutions

- 2.50 We looked at data from 16 case study institutions: 13 were full case studies (with a visit, and their data was modelled), three were partial case studies (no visit, and their data is not generally included in the detailed analysis).
- 2.51 Key characteristics of these case studies are:
- a They include the largest and smallest institutions, in terms of their medical provision, in the sector;
 - b Along with members of the study's Steering Group, they represent all dentistry schools.
 - c Half of the institutions have collaborative arrangements with other HEIs, or a further education college, in the clinical subjects.
 - d Two of the 16 case study institutions are specialist institutions (as defined by HEFCE).
 - e Thirteen of the institutions reported costs in medicine.
 - f Of the thirteen institutions reporting costs in medicine, eleven are in TRAC peer group A, with one each in peer groups B and C (the peer groups are an indication of institutions' research-intensity: with A the most research-intensive).
 - g Four of the institutions are new medical schools.
 - h Four of the institutions reported costs in veterinary science – half of the institutions in England reporting costs in this subject.

Reasons for variation in costs of clinical teaching

- 2.52 As noted above, there is a range of costs within any subject and this is illustrated in the HEFCE paper on the review of subject price groups already referenced. Some of these variations are caused by factors that are generic to all subjects including size of institution; history and character; research-intensity; student profile; nature of estate (e.g. city centre vs. campus vs. multi-site); scale of non-public sources of income; and of course the nature of the strategies being pursued by the institution in areas like academic development, capital investment etc.
- 2.53 None of the above are unusual or any indication of issues with TRAC, which appropriately reflects such differences in cost as demonstrated by the HEFCE scatter graphs. As already noted, the range is wider in clinical subjects than in others. This could be due to inherent diversity of costs, or to problems with costing in the clinical areas.
- 2.54 Within the clinical subjects, we have noted a range of factors that could lead to differences in costs between institutions, but which do not mean that the TRAC average cost data is unreliable or not fit for purpose. These include:
- final years of the start-up of a new medical and dental school;
 - significant increase in NHS-funded courses in a dental school;
 - portfolio or size of a medical school (e.g. with no biomedical sciences degrees running alongside the first years of the Bachelor of

Medicine/Surgery – MBBS; and a dental school providing only postgraduate education (not the Bachelor of Dental Surgery – BDS));

- variations in the number of clinical academics, and whether they are full-time or part-time, or paid by the session;
- number of Trusts and GP practices, and geographical spread, involved in the teaching experience;
- type of research;
- differences in the curriculum;
- type, size and commercial nature of institution-funded hospital and farm businesses.

- 2.55 These factors form part of the context for our review of clinical cost relativities, (but they are not part of the review directly since again, they can be reflected in TRAC costs in a reliable way). However, in the context where the variability in costs of the three clinical subjects (particularly of dentistry and veterinary science) is larger than many/most other subjects, it is relevant and interesting to consider why this is so.
- 2.56 The relatively small number of institutions reporting dentistry and veterinary science provision is a major driver of this cost variability (see Chapters 4 and 5). The costs reported by each partner of a collaborative arrangement are often not a good reflection of the actual costs of the whole provision – when the numbers of institutions are small, this affects the sector averages in that discipline (see Chapters 4 and 5).
- 2.57 The amount of teaching carried out by NHS clinicians under knock-for-knock, and the extent to which estates and other resources are recorded in institutions accounts, also lead to considerable variability. In veterinary science, the different sizes (and types) of farm and hospitals leads to variability. In general, the presence of a significant third primary academic activity (clinical service delivery) in these clinical departments has led to inherent differences in costs.
- 2.58 In clinical subjects, this range of variability in academic activity and the resources needed to support it are more challenging to an HEI-based costing system like TRAC. The premise of our work is that TRAC is successfully picking up and reflecting some of the true variability in costs (and in this respect is reliable), but that there are some additional challenges in operating TRAC in this environment and some inconsistency of practice arises from these. We examine this inconsistency in detail in the next chapter, and consider its implications for future funding policy.

3. Reasons for variability in TRAC clinical costs

- 3.1 This chapter reviews the significance of the factors which we have found to have the greatest impact on the reliability of TRAC cost relativities of the clinical subjects. This is a generic discussion of these items, and is primarily related to the costs of the largest clinical subject – medicine. A summary of the impact of these factors on the costs of clinical medicine teaching is at the end of the chapter. The specific issues in the costing of dentistry teaching, veterinary science teaching, and medical research are covered in more detail in Chapters 4, 5, and 6.
- 3.2 As already noted, some variability in clinical costs between institutions is to be expected and is not an indication that costing data are unreliable. The focus of the study is on factors that might influence the reliability of TRAC clinical costs at sector level when used to inform the HEFCE funding models for teaching and for medical research.
- 3.3 The full list of factors we have considered is given in a table in Appendix C, 'Factors affecting variability'.
- 3.4 The main factors which we have concluded are potentially significant for HEFCE funding policy or are of sufficient interest to justify discussion here are as follows:
- a. The split of the funding of clinical teaching into pre-clinical and clinical years. (Relevant to all three subjects; discussed in Chapters 3, 4 and 5.)
 - b. The impact of clinical services provided to the NHS by academic staff ('clinical academics') in medical and dentistry schools, and associated with this:
 - the treatment of reimbursed salaries where the NHS funds part of the costs of clinical academics in medical and dental schools;
 - the treatment of academic staff and other costs of teaching which are wholly funded by the NHS in medical and dental schools;
 - costs covered by specific HEFCE funding.(Relevant to medicine and dentistry; discussed in Chapters 3 and 4.)
 - c. The treatment of costs of scholarship and the allocation of costs to institution-own-funded research in TRAC. (Relevant to all subjects; discussed in Chapter 3 only.)
 - d. The robustness of cost data in small dentistry and veterinary science departments (discussed in Chapters 4 and 5).
 - e. The inconsistent treatment of costs associated with commercial activity in veterinary science schools (discussed in Chapter 5).
- 3.5 We review (a) to (c) below. We finish by summarising the impact on clinical medicine.
- 3.6 Chapters 4 and 5 cover issues in veterinary science and dentistry, in particular (d) and (e).

a. Identification of the clinical element of teaching

The issue here relates to the variability in the way that institutions split teaching costs into clinical and pre-clinical years, which are at present funded differently. The allocation of student numbers to the two price groups A and B is done according to guidelines laid down by HEFCE and is in theory consistently defined. However, almost all case study institutions are not able to split their teaching costs in the same way on a reliable basis.

- 3.7 There is no agreed definition which enables clinical and non-clinical Research to be distinguished. However, in Teaching, students are currently classified as either pre-clinical (price group B) or clinical (price group A). The rules for this are laid down in HESES 10 2010/11 (HEFCE October 2010/26):
- the final three years of a MBBS (or equivalent first-registrable qualification) are defined as clinical and classified as price group A; all other years, (whether foundation degree, the rest of a five-year undergraduate (UG) degree, an intercalated year, or the first year of a graduate entry programme) are generally classified as price group B;
 - in dentistry, the final four years of the BDS (or equivalent) are returned as price group A;
 - in veterinary science all five years are returned as price group A.
- 3.8 We understand that these rules were not wholly based on the clinical component of the individual courses¹⁶, but also took into account to some extent levels of contribution from the NHS, and other factors.
- 3.9 Clinical medical and clinical dental postgraduate taught students can also be included as price group A if the course meets the following three criteria:
- i. The course bears very high costs that are comparable to the clinical unit of resource.
 - ii. A substantial proportion of the staff teaching time contributed to the course is provided by medically or dentally qualified, university funded clinical academic staff who hold honorary contracts with the NHS. This includes general practitioners.
 - iii. Nearly all of the course is taught in a clinical environment.¹⁷
- 3.10 Despite this reference to a clinical experience in specific years of a course, in practice, courses and student experiences differ. Sometimes, the medical curriculum reflects the HESES definition – with some of the first two or three years taught alongside biomedical science courses, for example. However, in many institutions, there is often a clinical component in the first couple of years of a clinical undergraduate degree. For example, clinical academics are involved in teaching; medical students are introduced to clinics; and in dentistry there is significant patient involvement.
- 3.11 Although there is no doubt that the clinical elements in health are considerably stronger in the final three years (with placements in clinical environments; significant involvement of clinical academics, clinicians or GPs; and in dentistry

¹⁶ HESES 10: “The treatment of medical and dental students on HESES does not necessarily reflect how the programme is delivered.”

¹⁷ HESES 10 Annex L.

direct patient care), there is considerable blurring between clinical and pre-clinical education in the first years. As stated above, this varies by institution.

- 3.12 We also note that not all institutions return all of their medical student numbers under Cost Centre 01. In both medicine and dentistry, intercalated students might be included under CC01 (or CC02), or elsewhere. In medicine many institutions do not return all of their pre-clinical students under CC01, and one case study institution did not return any pre-clinical MBBS students to that cost centre.
- 3.13 Finally, we note that the distinction between postgraduate and undergraduate student, and short and long course provision, (classifications recorded in HESES and in the student numbers used in TRAC) is not helpful in identifying the type of student on a degree course leading to registration, nor their cost.
- 3.14 We found only one case study institution which considered that the allocation of their medical provision between the clinical and pre-clinical years was done robustly. (They calculated that the cost of teaching a clinical student in their institution was nearly 20% more than their cost of teaching a pre-clinical student B, which itself was 40% higher than the sector average for biosciences.) No other institution had the information to make this calculation, whether as part of or outside of TRAC. It would require significant effort – in effect ‘bottom-up’ course costing, to do this; and variations in courses means that a large number of institutions would need to be involved on a consistent basis to provide reliable data that could reflect the sector as a whole.
- 3.15 There appear to be three options for identifying costs at a price group level, as follows:
- a. Bottom-up course costing, as discussed in the paragraph above. We dismiss this method as the burden is unlikely to be justified, particularly with the current direction from Government to simplify TRAC¹⁸.
 - b. Identifying price group A costs by using a proxy, based on the aggregated cost of relevant sciences (biosciences, anatomy, and perhaps even humanities) to remove all price group B students from CC01. This is illustrated in Table 9 in Appendix D. It leads to a price group A cost of £16.9k and a cost relativity of 2.8.
 - c. Using a combined A/B price group.
- 3.16 In terms of (b), this would assume that the current classification of students to price groups B and A is correct (which we question above), and ignores the fact that some of the early price group B years are likely to be higher cost than in biosciences (if nothing else, due to some involvement of clinical academics). However, any under or over statement of cost relativities caused by this would then benefit price group A provision in the same universities (except where there is a collaborative partnership; or significantly different proportion of graduate entry to school leavers).
- 3.17 It would form a very poor proxy in dentistry. For illustrative purposes only we calculated that using biosciences as a proxy for price group B would change the cost relativity from 2.6 to 2.9. See Chapter 4.
- 3.18 A different and more radical approach would be to eliminate the need for this step by identifying a unified price group A/B (and using this in the teaching funding model) based on the aggregated cost of price groups A and B. This

¹⁸ HEFCE are currently carrying out a review of TRAC to this end.

would require identification of all relevant medical, dental and veterinary science students (probably by JACS code¹⁹ or module, if reliable). A decision would be needed as to whether or not to include foundation degree students, and all intercalated year students.

- 3.19 TRAC data for CC01-CC03 could be used to inform the cost relativities. (The TRAC data could be adjusted to include the medical students reported elsewhere, and adjusted to correct unreliable elements, as recommended elsewhere in this report.)
- 3.20 This would lead to 'rough justice' where a university has a higher volume of postgraduate taught programmes (including graduate entry), as a higher proportion of their price group A students would be funded at the unified A/B rate, than in other institutions.
- 3.21 It would potentially reduce the funding in dentistry compared to medicine (due to the higher proportion of price group A students in dentistry). It would reduce the funding to veterinary science even more. However, if three separate price groups were used this would not happen.
- 3.22 The radical solution above – to merge the A and B funding bands (and possibly establish three different price groups for these three subjects) – is arguably wider than the remit of this study. The Steering Group and HEFCE may wish to consider this in the broader context of future plans for the funding of teaching. However, this would simplify the current costing arrangements (an objective of the government's White Paper "Students at the heart of the system") and would improve the reliability of cost relativities. From the narrow perspective of the remit of our study, we would support this change.

b. The impact of clinical services provided to the NHS by academic staff ('clinical academics'); and of animal care

The issue here is a large and difficult one. In all these clinical subjects, there is a third major academic activity – clinical service delivery – which is mainly recorded under TRAC as O(CS). The issue is the way in which the costs incurred in this activity are recorded in TRAC, and the extent to which they are or are not allocated by some institutions as a cost of Teaching, and matched with income

TRAC has always had a policy of not unpicking the knock-for-knock arrangements with the NHS. The TRAC Guidance requires that time of clinical academics whose salaries are reimbursed is treated as O(CS), not as Teaching, to recognise the significant resource contributions to Teaching that institutions receive from the NHS.

The level of academic salaries and other costs in medical schools that are reimbursed by the NHS can be very significant in some institutions, and is not currently a consistent factor affecting the allocation of costs in TRAC. If it was, the costs of clinical teaching might fall significantly. This only reflects part of the knock-for-knock arrangements, and there is a real problem here with a great diversity of relationships with the NHS. This is exacerbated by the different ways

¹⁹ Joint Academic Coding System, HESA

that institutions choose to reflect this within the TRAC guidance.

In veterinary science, animal care can also lead to significant income, and the cost allocations are not recognising this in consistent ways. This is covered in Chapter 5.

- 3.23 As described above, clinical academics in clinical departments typically provide services to the NHS which, under the knock-for-knock arrangements, are deemed to be broadly balanced in value by the services provided by the NHS to university activity (e.g. teaching and research provided by NHS clinicians, space in hospitals, access to patients, etc).
- 3.24 This is complicated further with:
- the use (to varying extents) of part-time consultants (who hold separate contracts with the NHS), hourly paid consultants and GPs, who do not account for their clinical services time in university TRAC systems (in accordance with the TRAC Guidance);
 - the receipt by most institutions of reimbursed salaries – occasionally deemed to match the programmed activities carried out by the universities' clinical academics, but more often not obviously reconciled, or allocated to the same place in TRAC. These can be very significant in size. The income is always allocated to Other, in accordance to the TRAC Guidance. The Guidance also requires that the clinical services time of these staff is allocated to Other, along with Support costs, but this is not done by many institutions;
 - the receipt by most institutions of reimbursed distinction award/additional doctor hour payments where the university often considers themselves to be an agent (i.e. it is not their cost). The costs and income are sometimes but not always matched and allocated to Other, or kept off the Income and Expenditure Account totally (their allocation to Other, if they are in the Income and Expenditure Account, complies with TRAC Guidance);
 - the receipt by some institutions of reimbursed costs, often to cover student placements, where the income is generally allocated to Other, but not matched with any cost. The costs are allocated to Teaching. There is no TRAC Guidance in this area;
 - the receipt by all institutions of HEFCE funding to recognise the additional payments that need to be made for consultants' pay, general practitioners' pay and pension compensation, as a result of NHS pay policies. As per the TRAC Guidance, all institutions leave these payments in the TRAC costs and they therefore form part of the costs of Teaching, Research and Other.
- 3.25 The TRAC Guidance obviously only reflects one approach to reflecting clinical services, reimbursed salaries and knock-for-knock in TRAC. However, it was a carefully designed approach, accepted when TRAC was being introduced.
- 3.26 As stated above, it was a TRAC principle that knock-for-knock did not have to be unpicked before cost allocations were made. However, it did direct institutions to gradually understand the impact of knock-for-knock, and reflect these in their cost allocations.
- 3.27 Few HEIs have done this. Cost allocations are therefore made in a way that either reflects the TRAC Guidance; or one that deliberately results in a higher cost of Teaching.

- 3.28 All HEIs identify the time their clinical academics spend on clinical services (called O(CS)), whether or not students are present, or research is being done. Practice in the allocation of costs of this O(CS) time between Teaching (T), Research (R) or Other (O), varies widely between institutions. These are shown diagrammatically at the bottom of Table 10 in Appendix D and are:
- allocate the O(CS) time of the clinical academics whose salaries are partly or wholly reimbursed to Other; allocating the balance to T or R (method A in Table 10);
 - allocate costs of reimbursed salaries to O, and the balance of O(CS) to T or R (method B);
 - allocate all O(CS) to O, assuming that the reimbursed salaries are designed to cover this clinical activity (method C);
 - allocate all of O(CS) to T (method D);
 - allocate some O(CS) to R, based on a costed involvement of NHS clinicians in research projects – the balance then to T (method E);
 - allocate O(CS) to T and R, on the basis of the academic time already directly allocated to T, R and O (another example of method E).
- 3.29 Smaller variations in cost allocation exist in other areas such as:
- allocating O(CS) costs to all students, PFT students or just to HEFCE-fundable students (i.e. not allocating any of these costs to NPFT, or PFT sponsored for example by the NHS);
 - attributing all Support costs to the O(CS) time, or only some of them;
 - encouraging clinical academics to record their time on programmed activities (PAs) on an hour-for-hour basis (i.e. 4 PA hours out of 10 on clinical activity would result in 40% of their time being recorded under O(CS), regardless of whether they work for 37 or 45 hours in that week). This is very unlikely to happen if a 24/7 diary method of time allocation is used. It may or may not happen when a 'period-based' time allocation method is used and clinical academics recall their last three months of work.
- 3.30 The treatment of the time on clinical services, the reimbursed pay costs of clinical academics, and other reimbursed costs, has a significant impact on the costs of Teaching in medicine and dentistry. This impact is increased as academic staff time is a driver for many department or central service costs which have been allocated to the medical school or departments.
- 3.31 The size of this is illustrated in Table 10, which shows that O(CS) currently makes up between 0% and 29% of the costs of teaching.
- 3.32 We evaluate the impact of three changes to these figures, below. The first two (i) and (ii) would bring all institutions into compliance with the Guidance. The third (iii) arguably should be in the TRAC (T) Guidance already.
- 3.33 The sample sizes used to produce these figures are small. If the Subject-FACTS, or Research cost/academic full-time equivalent (FTE), figures were to be adjusted for these, more robust calculations should be made, involving institutions. However, we have made some illustrative calculations, to assess the possible impact of the adjustments.

i) Transferring the O(CS) costs of staff whose salaries are partly or wholly reimbursed to Other

- 3.34 This is currently done by two of eleven case study institutions. Two others are reflecting an understanding of knock-for-knock in their allocations already. Therefore about two-thirds of the case study institutions should have allocated more costs into Other than they have.
- 3.35 As most of the O(CS) costs are currently allocated to Teaching, this affects Subject-FACTS, but has a minimal impact on the RCR. (In Chapter 6 we consider whether clinical academics' use of PAs to determine their O(CS) time would impact on the RCR.)
- 3.36 It is difficult to quantify exactly the effect on Subject-FACTS of transferring some of the O(CS) costs to Other. We used three different techniques for evaluating the magnitude of this type of correction to the figures. These were:
- for the four institutions who are following the Guidance, calculating the percentage of Subject-FACTS that has been excluded by the allocation of O(CS) pay costs to Other. This was about 20%;
 - excluding all of the O(CS) pay costs that are currently allocated to Teaching. Based on six of the seven institutions not following the Guidance, this reduced their Subject-FACTS by an average of 15%;
 - excluding the same proportion of O(CS) costs that are excluded by the two institutions reflecting reimbursed salaries, above, plus that of a third institution that could tell us the amounts. This would reduce Subject-FACTS by an average of 10%.
- 3.37 The range behind these figures is wide and the samples are small. However, the effect will always be to reduce Subject-FACTS. The results from the three techniques described above are close enough to imply that the impact might be around a 10-20% reduction in Subject-FACTS.
- 3.38 A relevant part of Support costs should also be excluded, again in accordance with the Guidance. If these are 50% of the pay cost of O(CS) time (as identified in three case study institutions), this would lead to a 15-30% reduction in Subject-FACTS costs.
- 3.39 If methods used by the case institutions are broadly representative of the sector, these deductions might apply to two-thirds of the sector.
- 3.40 Overall, therefore we estimate that transferring the O(CS) pay and associated Support costs of clinical academics whose salaries are partly or wholly reimbursed, from Teaching to Other, might reduce the average Subject-FACTS by 10-20%.

ii) Transferring the costs of distinction awards etc that are wholly reimbursed by the NHS to Other

- 3.41 These costs should be allocated to Other (along with the income) – if they are in the institution's Income and Expenditure Account. The impact on each institution's Subject-FACTS might be a reduction of about 4% (based on four institutions' figures, see Table 14, column (a), in Appendix D). Three out of eleven case study institutions do not already transfer these reimbursed costs to Other – just over a quarter of the case study institutions. **If this was the case with the same proportion of institutions in the sector, the impact on the sector average Subject-FACTS would be 1% reduction.**
- 3.42 This would also reduce the costs in TRAC-RCR. However, the impact would be even lower, as salaries are a much lower part of the RCR figures. It does not affect the academic FTEs in the RCR calculation.

iii) Transferring the costs of distinction awards etc that are partly funded by HEFCE to Other

- 3.43 There is separate funding from HEFCE for clinical academic consultants' pay, senior academic general practitioners' pay, and the additional costs of NHS pensions. The TRAC (T) Guidance should have included these in non-subject related costs, to be excluded from Subject-FACTS. As it did not, all institutions left these costs in their Teaching and Research (and O(CS)) figures. They total about 5% of academic salaries. **Removing them would reduce Subject-FACTS by about 2%, and RCR by about 1%.** (See Table 14, column (b), in Appendix D.) They do not affect the academic FTEs in the RCR calculation.

Reflecting knock-for-knock better in the cost allocations

- 3.44 In addition to the above improvements to institutions' application to TRAC, it is important to gain a better understanding of the cost implications in universities of knock-for-knock. Note this is already a requirement of TRAC – it was actually one of the key recommendations in the original Transparency Review Report to SEBCC.²⁰
- 3.45 Two institutions (of eleven) allocate some of the costs of reimbursed salaries to Other, and another two already reflect their university's side of knock-for-knock arrangements in their cost allocations. Although another institution does a little towards this, in effect, three-quarters of our case studies do not sufficiently reflect knock-for-knock in their cost allocations.
- 3.46 It was outside the scope of this study to quantify this. It would be important to do so if HEFCE's new funding method required a reliable figure for the total cost of Teaching in clinical medicine.

²⁰ Transparency Review of Research – Report to the Science and Engineering Base Coordinating Committee commissioned by the Joint Pricing and Costing Steering Group: J M Consulting Ltd, June 1999.

3.47 Some obvious elements for review would be as follows:

- estates costs of teaching, in hospitals, where these are not currently recharged to universities;
- clinicians' time in direct teaching, or university management, where this is not currently recharged to universities or covered by SIFT within the Trusts;
- any other costs that are not deemed by the Trusts to be covered by SIFT;
- the clinical academics' salaries that are currently being reimbursed, as well as the specific non-pay costs funded by the NHS (Trusts or SHAs) (for placement costs, for example). These are currently included in Subject-FACTS in nearly three quarters of the case study institutions. Based on eight institutions' figures, these amounted to an average of nearly 40% of Subject-FACTS (assuming, rather broadly, that the costs are all currently allocated to Teaching). (See Table 14, column ©, Appendix D.)

If this assumption was correct, just removing the reimbursed costs from Subject-FACTS would lead to reduction of nearly 30% in the average Subject-FACTS across the case study institutions. Of course, this funding may also cover other costs such as Postgraduate Medical Deaneries, or some reimbursed research posts, which would reduce the impact on Subject-FACTS. However, as O(CS) costs, and reimbursed non-pay costs, are generally allocated to Teaching, Subject-FACTS is likely to bear most of any reduction.

We reiterate that this figure should be considered as purely illustrative, and that it only covers part of the knock-for-knock picture. It is included only to indicate the importance of understanding knock-for-knock better if the total costs of Teaching are required. This would need to encompass both current arrangements and the future funding levels that Trusts and SHAs may be able to provide.

3.48 We so far have described the potential magnitude of reimbursed costs on Subject-FACTS. If any of these costs were currently allocated to Research, and related to pay, then their removal would reduce both Research pay costs and academic FTEs. In that case, the RCR will increase (the impact of the reduction in academic FTEs on RCR is far greater than the impact of the reduction in pay costs).

3.49 In terms of the impact on academic FTEs, we note in Chapter 6 that clinicians' time on Research (part of the knock-for-knock arrangements) should be considered in the denominator of the RCR calculation if they are a volume measure in the Research funding method.

3.50 There are likely to be other aspects of knock-for-knock, specific to institutions, that have not been considered here.

3.51 The following box describes one of the case studies (institution n) that reflects their (and their five Trusts') understanding of their knock-for-knock arrangements in medicine, and reflected this in TRAC cost allocations.

<p>Specific services and resources provided by the university</p> <p>Clinical services provided by clinical academics are charged to the five Trusts according to job plans (i.e. 4 PAs of an assumed 10 PAs a week would mean 40% of the academic's salary is recharged). If the academic works longer hours this does not affect the amount recharged. Sometimes an academic has 12 PAs in their job plan, in which case 4/12th of their salary would be recharged. Students may or may not be present in these clinical sessions. Knock-for-knock is not completely unravelled in that some charges are made on a 50% basis, where they should perhaps be 60% or 40%. This clinical services time is charged to Other in TRAC.</p> <p>Hospital management services provided by clinical academics are charged as they form part of job plans.</p> <p>University support costs attributable to the time of academics (e.g. scholarship/administration; estates; support staff; central services) are not recoverable; but are recharged to Other.</p> <p>No university estates costs are charged from the university to the Trust.</p> <p>There are very few charges made to Trusts for administrative and other support staff in universities supporting Trust activities. These would only be made directly (i.e. specified individuals) but are rare.</p>
<p>Specific services and resources provided by Trusts</p> <p>Teaching and Research provided by clinicians in Trusts to the university, whether directly, or in support of teaching and research, are charged to the university. These are much smaller in number than the academics' clinical services charges.</p> <p>Dedicated space in Trusts used to support Teaching and Research is charged to the university.</p>
<p>Activities not covered under these arrangements</p> <p>SIFT funding is received to cover the costs of student placements with GPs, and other direct Teaching expenditure. The income is received by the university, which then accounts to Trusts (or the SHA) for the expenditure. No administrative costs are reimbursed. Costs are allocated to Teaching.</p> <p>Clinical excellence awards which are 100% reimbursed are charged to the Balance Sheet, and do not affect costs (or income) at all.</p> <p>There are no general reimbursed salaries/'non-core funding'.</p>

- 3.52 The two institutions that have gone some way to unpick knock-for-knock and reflected an understanding of this in their TRAC allocations show Subject-FACTS that are around 5-10% below the sector average.

Overall impact of clinical services

- 3.53 We note that the estimates in i), ii) and iii) above are mutually exclusive, and can be added (they all contribute to a reduction of at least 10-20% in Subject-FACTS).
- 3.54 However, if knock-for-knock is more completely reflected in the cost allocations, that would replace i). The areas covered in ii) and iii) would be in addition.
- 3.55 Knock-for-knock arrangements are of course dependent upon continuing levels of SIFT funding, and Trusts' and SHAs' policies towards funding clinical academics' salaries, and placement costs.
- 3.56 We discuss knock-for-knock in dentistry schools in Chapter 4.

- 3.57 In Chapter 7, we give a summary of how TRAC guidance could be reinforced or adjusted to improve the consistency of cost allocations, and a better understanding of some of the knock-for-knock issues. We reinforce the Guidance as it currently stands (allocating distinction awards reimbursed by the NHS to Other; and O(CS) costs of reimbursed salaries to Other) and recommend two new changes. They involve identifying and improving allocations for the income from the NHS; and allocating distinction awards funded separately by HEFCE to non-subject-related teaching. These are a low burden to institutions.
- 3.58 In veterinary science there is a different issue with clinical services, which are primarily carried out for teaching or research purposes. However, significant income can be generated as a 'by-product' of these activities. These might arise from animal care (for clients), specialist advice, or farm operations (e.g. the sale of milk). This is covered in detail in Chapter 5.

c. The allocation of costs to scholarship and to Institution-Own-Funded Research (I/O) in TRAC

This issue affects all subjects, not just the clinical subjects. It relates to the well-understood difficulties in achieving a consistent and fairly representative allocation of academic staff time into the categories of scholarship and I/O (i.e. research without an external contract or sponsor). Action has been taken (through reminders and advice to TRAC managers), but it is probable that some institutions are still understating time on scholarship and overstating that on I/O research. We decided it was important to consider the potential impacts of this here, even though it is likely to affect all subjects and so to have reduced impact on cost relativities.

- 3.59 There are two areas of concern here. Firstly, regarding the overstatement of I/O; secondly, regarding the allocation of the costs of scholarship between Teaching, Research and Other.

Institution-Own-Funded Research

- 3.60 It has been well-known for many years, both nationally and at institution level, that some academics have most likely been overstating the time they spend on I/O (research without an external sponsor). A number of initiatives, leading to changes in the TRAC Guidance, have sought to address this – mainly by emphasising the importance of scholarship²¹ as a separate category. This has had some effect, but many institutions believe their Research costs are still overstated, and their scholarship costs understated.
- 3.61 We found two examples where institutions had made 'high-level' adjustments to their TRAC data to ensure that the figures finally reported were 'fair and reasonable'. These had a material impact on the costs of Teaching (in one case increasing it by over 10%). However, in both examples, the adjustments

²¹ Maintaining or enhancing skills or knowledge, but not carrying out original research as defined by Frascati

were made to all subject areas, so the cost relativities for that institution (and the sector as a whole) are unlikely to have been significantly affected.

- 3.62 In Research, these adjustments had a number of effects.
- 3.63 One institution removed costs from the I/O and Postgraduate Research (PGR) categories, to make those two activities break even. (The costs were transferred to Teaching.) In Research this:
- reduced the costs in I/O and for PGR; and thus the overall costs of Research. This would not have been material for the latter – it is not clear whether it was material for one or both of I/O or PGRs;
 - reduced the academic FTEs in the denominator of the cost/FTE calculation (this was specifically done). This would have increased the cost/FTE in I/O and in total Research.
- 3.64 This would have happened across all cost centres.
- 3.65 In the second institution, a transfer was made of a percentage of academic staff time from I/O to scholarship to ensure the latter was showing 10% (the time academics were expected to spend on scholarship). This would have increased the costs of Teaching – but only by the proportion of ‘understated’ scholarship now allocated to Teaching.
- 3.66 In Research, it would have reduced the costs of I/O and the academic FTEs in the I/O denominator. Costs would not have been reduced as much (with some scholarship allocated back to Research). Again, this would have happened across all cost centres. The impact in each cost centre would have been affected by the amounts of time the academics originally recorded against scholarship.
- 3.67 Other institutions have been encouraging their academics to record time against scholarship rather than I/O, but believe there is further to go.
- 3.68 It is not possible to quantify robustly the amount of I/O that could more appropriately be recorded against scholarship either by institutions making high-level adjustments, or by academics recording more time against that category.
- 3.69 We can, however, give an idea of the magnitude of the effect of changing these figures. By way of illustration, we restated I/O academic research FTEs for the sector, setting the ratio of I/O FTEs to total Research FTEs at the (current) lower quartile (LQ) for all institutions currently above this (so three-quarters of institutions had their costs and FTEs reduced). We assumed these FTEs, and costs, were moved to scholarship, and that all this was allocated to Teaching (we consider this below).
- 3.70 These assumptions deliberately illustrate an extreme case, which is unlikely to apply to most institutions in the sector. However, it is useful to show the probably maximum impact on any institution. The assumptions led to a reduction in total Research costs of 1%, and a reduction in academic Research FTEs of 6%. The total Research cost/academic FTE increased by 6%. We note that the Research costs and academic FTEs of the ‘baseline cost/FTE’ in the social sciences/humanities would increase further under this method, as I/O is a larger component of the total. The RCR in clinical medicine is therefore likely to decrease, but not materially so.
- 3.71 The transfer of these newly-branded ‘scholarship’ costs to Teaching would increase the costs in Subject-FACTS (some would be allocated to non-HEFCE fundable Teaching). Again, this would happen also with the Group D

comparator subjects, whose costs would also increase. Therefore, the cost relativity for clinical medicine Subject-FACTS is unlikely to be materially affected.

- 3.72 This is an extreme example, and many institutions would not agree that it is an appropriate adjustment. However, it gives a useful illustration of the impact of this type of change.
- 3.73 **Overall, we conclude that a correction to remove any overstatement of I/O and understatement of scholarship is unlikely to be material for the cost relativities for either Research or Teaching.**

Allocation of the costs of scholarship

- 3.74 Many institutions do not separately record time on scholarship activity – it is part of Support for Teaching, Support for Research, or general Support categories. However, TRAC has encouraged institutions to separately record it, to encourage academics to enter time here rather than in I/O.
- 3.75 Different methods are used to allocate the costs of scholarship, for example:
- on the basis of time recorded directly against Teaching, Research and Other;
 - 100% to Teaching (as it is deemed to be part of Support for Teaching);
 - as part of the allocation of other Support costs. This is used where it is recorded as part of other general Support categories.
- 3.76 We found that it made up 1% and 5% of the costs of Teaching in two of our case study institutions (the first of which had allocated all costs to Teaching; the second had done this and had also transferred some costs from Research). If this was all allocated to Teaching, in all institutions, it would increase the cost of Teaching, but not materially. In addition, this would apply to all subjects. It would impact more on higher cost subjects, due to the higher ratio of academic staff to students. **The relativities are unlikely to be significantly affected.**
- 3.77 In Research, scholarship made up less than 1% of the costs of Research (three case study institutions). A reduction in this figure (it is unlikely to be increased) **would not have a material impact on the costs of Research, or the relativities between subjects.**

Other factors affecting variability

- 3.78 This chapter has discussed three areas that affect variability in some depth. During our investigations, a much wider range of cost allocations and potential factors were actually reviewed.
- 3.79 These additional reviews included, for example:
- the type of academic staff time system used;
 - the mapping of staff, students, and costs, in academic departments schools and faculties to the HESA academic cost centres;
 - changes in procedures between years;

- changes in student populations between years;
 - any points raised in audit or assurance reviews;
 - results in benchmarking;
 - consistency with the ‘reasonableness’ of different sets of reported figures, when considered together; and
 - the main cost drivers that were used to allocate costs. In this context we note that TRAC models might involve the allocation of central service costs (for example) analysed into say 38 cost totals, and allocated to up to 41 cost centres and sub-cost centres, at each of eight levels (institution, faculty, department; and Teaching, Support, PFT, HEFCE-fundable Teaching, subject-related Teaching). As these allocations are well-established in TRAC, (and most are covered in the TRAC Statement of Requirements, and subject to formal QA processes) this study focussed on how clinical subjects might be different.
- 3.80 From this extensive review, we identified a number of factors that might have influenced our conclusions and explored these in more detail in our case study visits. We describe these briefly in Appendix C ‘Factors influencing variability’.
- 3.81 Many of them, such as for example how the costs of circulation spaces like corridors are allocated to Teaching, Research and Other, do lead to different results. But these are acceptable under TRAC. Some factors, such as the use of weighted or un-weighted academic staff time to allocate pay, are applicable to all subjects, therefore the impact on the cost relativities for clinical subjects is not material. Other factors are only relevant in a couple of the case study institutions and would not be material for the average cost relativity across all case study institutions. For these reasons they have not been discussed in this chapter, and only a brief note is given in the Appendix.
- 3.82 Some factors are not relevant to, or are not material to, medicine, but affect dentistry or veterinary science. In particular, we found that the way collaborative arrangements were reported by individual partners meant that their individual figures were often not a reliable representation of the costs of their provision, or were not robust. This does not have a material impact on the costs of medicine, as the institutions with collaborative arrangements form only a small part of the total provision, so collaboration does not have a material impact on the average costs (whether calculated as a mean or median). It does impact on the average costs for dentistry and veterinary science, and we discuss this in Chapters 4 and 5.

Summary of reliability of TRAC for costs of clinical medicine

- 3.83 In medicine, the costs should reflect the TRAC Guidance. This would mean that the O(CS) of staff whose salaries are partly or wholly reimbursed, plus reimbursed distinction awards, should be excluded from Teaching costs. In addition, the TRAC (T) Guidance should require the costs funded through the HEFCE specific consultants' pay allocations to be excluded from Subject-FACTS. These improvements in TRAC implementation might lead to an overall reduction of at least 10-20% in Subject-FACTS.
- 3.84 This reduction might be more if all reimbursed salaries and other costs were also deducted from the Teaching figures, but this is part of knock-for-knock and not therefore included as a TRAC requirement. TRAC requires an improved understanding of knock-for-knock to inform cost allocations – and to help this we recommend that the income associated with these reimbursed costs should be allocated across activities, and reported separately. This would help institutions and funding bodies to understand the impact of these figures.
- 3.85 Overall, the TRAC cost relativities are below the current funding weight of 3:1. This is a reliable indication of their level.
- 3.86 When presenting this data it would be useful if the cost relativity (a combined price group A/B figure) could be compared more directly with the funding relativity (3:1 is the funding relativity for group A alone).
- 3.87 We note that medicine is a large part of many institutions, and if the TRAC cost relativities adjusted for clinical services, are used to influence the funding weights, this could have a significant impact on institutions' Teaching funding in this subject area.

4. Findings on clinical dentistry

Key characteristics of dental provision

- 4.1 Both clinical service provision, and research, underpin teaching in dentistry. The degree leading to professional accreditation as a dental surgeon is commonly called the Bachelor of Dental Surgery (BDS).
- 4.2 Programmes are commonly five years, the last four of which are returned under price group A in the current teaching funding method. There are opportunities for a foundation year or an intercalated year (which are returned as price group B). Graduate entry programmes are four years, all of which are price group A (these form a significant part of provision).
- 4.3 Although the majority of students at most institutions are doing the BDS or equivalent, there are sometimes significant numbers of students on other programmes run by the dental school: dental care professionals such as dental nurses or technicians; or postgraduate training (whether for the higher training of specialists in dentistry or for continuing education). Where students are fundable by HEFCE, costs and students are in Subject-FACTS; where they are fundable by the NHS, they are not.
- 4.4 In 2009/10, 11% of dentistry students in England were reported as post graduate taught (PGT), and 89% as undergraduate (UG).
- 4.5 In 2009/10,) 78% of dentistry students (FTEs) were reported as price group A; 22% as price group B.
- 4.6 Total costs and student numbers reported against dentistry are much smaller than in medicine, as shown in Tables 1 and 4.²²
- 4.7 Dental schools are usually based within a dental hospital, a reflection of the integrated nature of their teaching provision. They are generally part of a large Faculty of Medicine or equivalent, but are a self-contained department or school.
- 4.8 Students on dentistry courses are sometimes taught by other schools; students on other courses are sometimes taught in the dentistry school. For example, of the 400 student FTEs returned by institution m under CC02, 75% were taught by the School of Oral and Dental Science; and 25% were taught by five other schools (anatomy, biochemistry, clinical sciences, cellular and molecular medicine and pharmacology). Costs are generally transferred in (or out) at the average cost of those schools. As a result, in this institution, transferred-in costs covering 3% of the dental student FTEs reflected the higher (average) cost per student of a clinical medicine discipline, other transferred-in costs reflected the lower (than clinical) costs of science subjects.
- 4.9 Students are present during dental clinical sessions, and as part of their education and training carry out much of the treatment, closely supervised by qualified dentists. This is different from medicine.
- 4.10 In year 1 there is a particular focus on basic biomedical sciences and a high proportion of time is spent in classrooms or laboratories. However, there are

²² We use the term medicine to refer to activities reported in CC01, dentistry to refer to activities reported in CC02.

still clinical elements in that first year, with clinical academics undertaking some of the teaching, and the ethos of 'campus to clinic' is built into the curriculum often from the first week.

- 4.11 In years 2 to 4 students obtain clinical training and treat patients, alongside and as part of their academic learning. They use the full range of dental units, clinical skills laboratories, outpatient clinics, operating theatre and associated surgical units that are part of a dental hospital and its specialities.
- 4.12 Clinical academics are mostly registered dental surgeons. A high proportion of teaching and clinical training is done by university staff. However, many clinical academics are on part-time university contracts (with Trust or private practice contracts covering the rest of their time). As a result many academics may only carry out Teaching, and therefore do not participate in the TRAC academic time survey – all their time would be allocated to Teaching, irrespective of whether it is in a clinical session.
- 4.13 The time recorded against Other (Clinical Services) is often greater than it is in medicine (the percentages of time shown in Table 7b are higher than those shown in Table 7a – note that the institutions are different). This is due to the amount of time students (and the clinical academics) spend in clinics, and the amount of teaching that clinical academics do, rather than clinicians. Reimbursed salaries are often a smaller proportion of total costs than in medicine.
- 4.14 Many clinical academics are on contracts with job plans that cover 10 PAs a week. (Some have more than 10.) A full-time clinical consultant academic will normally be contracted for 5 university PAs, and 5 NHS PAs. The latter may cover direct clinical care and supporting professional activities (SPAs) which underpin direct clinical care (e.g. "participation in training, medical education, continuing professional development, formal teaching, job planning, appraisal, research, clinical management and local clinical governance activities"). This contract can put pressure on academics as they seek to deliver their teaching and research (and administrative and management) commitments as well as their clinical activities. However, although this can lead to longer hours being worked in a week, TRAC only allocates the costs that are incurred, in proportion to any hours worked. No notional cost of these longer hours are built in to TRAC. (See also Appendix B.)
- 4.15 This contract illustrates the integrated nature of a clinical academic's academic and clinical activities, with some of the 5 PAs 'for the NHS' being used for teaching and research. TRAC time allocation methods do not capture this well, as we describe below.

Reported Subject-FACTS

- 4.16 Eighteen HEIs reported dental teaching provision, in CC02, across the UK, in 2009/10. Table 5 shows the mean Subject-FACTS reported in UK benchmarking was £15,729, with a median of £15,923. The inter-quartile range shows values within +/- 20% of the mean, fairly typical of many cost centres.
- 4.17 Table 13 shows the Subject-FACTS for the thirteen HEIs in England (2009/10), with a mean of £16,105.

- 4.18 The rolling average of English institutions (four years to 2009/10) produces a mean of £14,140 (median of £13,440) (see scatter graphs at the end of Table 5).
- 4.19 There is more variability in the data for dentistry than for medicine. The standard deviation for dentistry calculated for the rolling average of English institutions (four years to 2009/10) is very high at £7,310.
- 4.20 Despite this, the cost relativities are fairly consistent. As Tables 5 and 13 show, cost relativities calculated on the mean show 2.6 from most sources: UK benchmarking data for 2009/10; England-only data for 2009/10; and a four-year England average.
- 4.21 However, this masks a greater degree of variability between individual years. The three-year England rolling average (mean) to 2008/09 is 2.3, compared to the four-year rolling average to 2009/10 of 2.6 (above). The same is shown with cost relativities calculated on the median: three- and four-year England rolling averages show 2.3 and 2.5 respectively. The difference from year to year is at least part due to the small number of institutions and the poor quality of some of the data, particularly in the smaller institutions. We cover this below.
- 4.22 Nonetheless, all these are still consistently and significantly less than the 3.0 weight used in the current funding method for teaching. As with medicine, this funding weight only applies to price band A students, whilst the cost relativity reflects a combined A/B provision.
- 4.23 It is not really practical to define students as clinical or pre-clinical in a way that reflects their course, as clinical input to teaching starts in year one. However, it is useful to calculate an indicative cost solely covering price band A students, for better comparison with the current funding relativity for price band A. By way of illustration we use the same method as that shown for medicine in Table 9. This uses biosciences as a (very poor) proxy to remove the price band B students from the total costs. The mean price band A Subject-FACTS shown in Table 13 (England, 2009/10, £16,105) becomes £18,221; and the cost relativity becomes 2.9 rather than 2.6 – i.e. the same as the current funding weight.
- 4.24 The TRAC (T) data covers all institutions; it is representative of the sector. The key question is whether the average is usable in a funding method. This study sought to understand whether the results reflect reliable figures; that is, whether any of the variations are due to unreliability in the TRAC data.
- 4.25 As stated elsewhere, we do not explore variations due to the different approaches taken by institutions (for example, different types of dental school or differences in the curriculum) which would also lead to variability. However, we note in this context that this can have a significant impact on costs.
- 4.26 For example, one of our case study institutions (b) only offers postgraduate provision (i.e. not leading to the first registration as a dental surgeon), in a very research-focussed school. It has the lowest student numbers of our case studies (but they are almost all clinically-based, and thus returned under price group A). This institution shows their Subject-FACTS sitting above the upper quartile (UQ). However, this only happens in one of our case studies, which has very small volumes, so it does not materially affect the sector mean.

Our case studies

- 4.27 Our review covered ten of the thirteen English institutions reporting teaching costs in dentistry.
- 4.28 The thirteen institutions reported Subject-FACTS of £11,018 to £36,982 (Table 13). The ten institutions we studied reported Subject-FACTS of £11,018 to £30,721 and therefore covered much of the spectrum of costs being reported.
- 4.29 In dentistry, the factors materially affecting the variability of reported costs are slightly different from those in medicine. This arises because of the small number of institutions in dentistry – so any problems in one might affect the overall average. Of the thirteen institutions in England, we exclude three from the calculations for sector average based on the following reasoning:
- two of our case study institutions (e and d) ran a joint medical and dental school. Due to their agreed cost- and profit-sharing arrangements, and their interpretation of TRAC, they reported incorrect data which should be excluded. (Whilst this also applies to their medicine figures, as there are so many more institutions in medicine, their exclusion did not have a material impact on the sector average);
 - a third English institution (not a case study) which has the highest Subject-FACTS also had the lowest student numbers. They do not report any students in price group A. Their data should also be excluded;
 - the institution above was in a collaborative arrangement with one of our case studies (institution k). It taught 1/5th of the students of institution k. Our case study institution therefore included these student numbers, and included costs that were the fee+grant transferred to their partner. As institution k's own cost/student was very low (compared with others), this actually increased the cost/student they reported. But as the students were funded at price group B, and this only happened in one institution we looked at, there is no material impact on the sector mean.
- 4.30 Excluding the institutions mentioned in the first two bullet points – the two reporting incorrect data and the institution with only price group B students – leaves ten English institutions. Excluding these three HEIs has the impact of reducing the average (mean) Subject-FACTS for 2009/10 from £16,105 to £15,881. Of these ten HEIs, eight were case studies in this review (The other two institutions were represented on the Steering Group, but their data did not directly inform the findings from this study.)

How Subject-FACTS were derived

- 4.31 We asked a wide range of questions to establish how the costs had been derived. We found that dentistry is generally managed as a fairly self-contained school within a larger faculty (often medicine). There is some cross-school teaching, e.g. on medical modules, but the student FTEs and their costs of teaching are returned under the same, appropriate, cost centres.
- 4.32 Our questions about cost drivers (see Appendix C) covered dentistry.
- 4.33 We note that a higher proportion of dentistry costs are allocated to Teaching, than in medicine – Table 3 shows that it is common for 60% of costs to be allocated to Teaching in dentistry, with most of those then reported as subject-

related costs (and therefore forming part of Subject-FACTS. (In medicine only 10-30% of costs are allocated to Teaching, see Table 2.)

Volatility in data year on year

- 4.34 There has been considerable volatility in the data year on year. Figure 7d shows that four of eight case study institutions experienced material changes in their Subject-FACTS from 2008/09 to 2009/10. However, three of these (showing changes of +19%, +10% and +65%) resulted from changed methods that improved the 2009/10 data: only one showed a significant decline (-15%) - and this had not been correctly calculated (significantly increased student numbers had not been properly reflected in the cost drivers).
- 4.35 We note that the overall change in the mean for the eight institutions in the year to 2009/10 was (just) not material at +9%. Even with this small number of institutions, the changes broadly balanced each other out.
- 4.36 In seven out of eight institutions, the 2009/10 data is considered by the TRAC manager to be more robust than that in 2008/09. However, there are still problems about its inherent lack of robustness that arise from the small size of the dentistry school (relative to other schools in the universities) and the integrated nature of teaching and clinical services in dentistry. We discuss these problems with the data below.

Time allocation

- 4.37 In the eight case study institutions we identified that four were using TRAC time allocation data in 2009/10 that was not robust (a problem that did not affect medicine, as the staff numbers there are so much larger):
- one (institution h – the institutional references in this paragraph are not the same as those used in Appendix D used a diary method to record academic staff time (each academic completed five diary weeks over three years), which meant data which was both old and not statistically robust was used in 2009/10. Changes in staffing and students had been significant over those three years.
 - two (institutions g and k) also used sampling to produce data that, although more current, was not statistically robust for the dental school. The type of data was acceptable for annual TRAC as it was statistically robust for large departments; but not for small schools such as dentistry, where there may be only 40 academics.
 - a fourth institution was using data (collected from all academics, covering the whole year) that was a year old. Again, there had been significant changes in staffing and students over the year which meant the data could not be considered robust.
- 4.38 Two of the four institutions with time allocation data that was not robust (g and k) reported Subject-FACTs that were on or below the LQ. One institution (a) was above the UQ. However, only one of these three institutions (g) showed the opposite results in Research (i.e. Subject-FACTS below the LQ in Teaching, and Research costs per staff FTE above the UQ in Research) which

would imply that the split between Teaching and Research is particularly suspect for that institution.

- 4.39 This lack of robust time allocation data is fairly easily corrected – and TRAC Guidance does require this. A fifth institution (n) not listed above, was also using a sampling method that was not robust for their (relatively smaller) dental school, however, the head of their school of dentistry reviewed and adjusted the time allocation data each year as required.

Potential lack of robustness from poor quality time allocation data

- 4.40 We note that around 60-70% of academic staff time in dentistry is eventually allocated to Teaching in many institutions (directly, through transfers of O(CS), plus allocations of Support time). Table 7b shows the proportion of pay costs included in subject-related costs. If time (and therefore cost) was under or overstated by 10%, **this would lead to a change of +/- 4% or +/-5% in the Subject-FACTS for affected case study institutions. This would be increased, to about +/-7%, with apportioned support costs.** There is no way of knowing whether this would add to or reduce the average Subject-FACTS since it would depend on whether academic staff time is under or overstated. This issue would not affect all institutions. A change of 7% is not in itself material.
- 4.41 A change of time allocated to Teaching of 20% becomes material, but this is unlikely with high level of Teaching time being recorded fairly consistently across the sector.

Recording time and costs of clinical services

- 4.42 The treatment of time spent on clinical services (O(CS)) is material. Clinical academics charge time to O(CS), but their approaches to this initial allocation vary considerably. TRAC Guidance itself allows much of this. The approaches used by institutions include:
- allocating clinical services time where the patients are on the students' list to Teaching, and all other O(CS) time to Other;
 - allocating clinical services time to Teaching (or Research) where the primary time is Teaching (or Research);
 - allocating time to O(CS) where the primary purpose is to provide patient care, even if students are present – “would the session have taken place if the students were not present?” (institution a);
 - allocating time to O(CS) based on their job plan (i.e. 5 PAs out of 10). This might lead to 5/10ths (half) of their time being allocated to O(CS), even where the academics worked longer than a 37 hour week – although TRAC time allocation methods seek to prevent this – and might lead to SPAs involving teaching being allocated to O(CS);
 - collecting time on Support for O(CS) separately e.g. “unpaid time of private practice in university time, where part of contract of employment, unpaid time spent on clinical professional committees”;

- allocating all the costs of 'clinical lecturers' to Teaching (they do not participate in the time allocation survey);
 - instructing part-time clinical academics only to record their time spent on 'university activities' – but there are limited checks to ensure that they do not record clinical time against O(CS).
- 4.43 This variation in approaches in the treatment of time spent on O(CS) led to inconsistencies in building up a total time (and cost) of O(CS). This was exacerbated by differences in the methods institutions subsequently used to allocate the time recorded against O(CS) to Teaching, Research and Other:
- Institutions b, m, p, and g allocate all time recorded against O(CS) to Teaching;
- Institution n – allocates 90% of O(CS) time to Teaching, 10% to Research;
- Institution a allocates O(CS) time in proportion to the direct time on Teaching and Research;
- Institution h allocates 40% of O(CS) time to Teaching for those staff whose salaries are partly or wholly reimbursed, with 60% to Other: and allocates 100% of O(CS) time to Teaching for all other staff. This was based on the policy derived for clinical academics in medicine (dentistry was not specifically considered). It led broadly to a 50:50 split;
- Institution k – allocates 90% of O(CS) time to Teaching, 10% to Other.
- 4.44 Hidden behind this are differences in methods used to allocate support services to O(CS) time, and then to Teaching; and whether the O(CS) time allocated to Teaching is allocated to NPFT and to non-HEFCE fundable PFT, as well as to subject-related costs.
- 4.45 We identified that the pay cost of O(CS) time in six institutions ranges from 1 to 20% of subject-related costs, or from £273 to £6,160 per student (Tables 7b and 7c). As a result of the use of many different recording techniques and allocation methods described above, and different staffing profiles, these figures are not consistently defined or produced.
- 4.46 We note, however, that despite the significant differences in the proportions of academic cost that is allocated to O(CS), to Teaching and to Support for Teaching, overall, the proportion of total pay that was allocated to Teaching was remarkably consistent at around 60-70 .
- 4.47 We looked at the impact of standardising the allocation of O(CS) costs – for example by bringing all pay costs of O(CS) into subject-related costs. These increased the average mean Subject-FACTS (of our eight institutions) by only 2%. This was of course low as most of the O(CS) costs are already in Teaching. This is not material. We do not suggest that this would produce more reliable figures, as it ignores knock-for-knock.

TRAC Guidance

- 4.48 TRAC Guidance in medical and dental schools has an approach to recognising knock-for-knock. This is only one of a number of possible methods, but it was accepted when TRAC was designed. It requires institutions to allocate the O(CS) time of academics whose salaries are reimbursed to O; and to allocate the costs of distinction awards, additional doctor hours (ADHs) etc that are wholly reimbursed to O as well. It does not give guidance on where to allocate other costs (e.g. placements) that are being funded by SIFT.

- 4.49 None of this is done consistently by institutions, and therefore the costs in most institutions are overstated. We could not establish, in the timescale available for this study, what the reimbursed funds in dentistry actually covered, let alone the total O(CS) costs in dentistry which are often buried in Teaching (see above). Therefore we could not assess what the impact of the proper implementation of TRAC – allocating the O(CS) elements of reimbursed pay costs, and reimbursed distinction awards to Other – would be.
- 4.50 So instead we considered what the maximum impact of the correct implementation of TRAC guidance might mean for dentistry.
- 4.51 We note that all pay currently recorded as O(CS) accounts for 13% of Subject-FACTS (Table 7c, data from six institutions). If all staff recording time as O(CS) charged this time to O, this would reduce Subject-FACTS by 13%. If support on that time (administration, secretarial time, estates, central services) was also recharged, this would mean a reduction in Subject-FACTS of perhaps 20%. However, it would not be appropriate to deduct all of the O(CS) costs, as not many of them relate to staff whose salaries are partly or wholly reimbursed.
- 4.52 It was difficult to establish what salaries were reimbursed. Some dental departments receive SIFT or non-core funding from the NHS or SHA to pay for placements or reimburse salaries. These are very different from the totals allocated to O(CS). We note that the reimbursed costs that had been left in subject-related costs on average account for 9% of the subject-related costs across seven of our case study institutions. (See Table 10. This is an indication of the size in those institutions only – we did not obtain this data from all our case study institutions, and as it varied from 0 to 22%, this should not be taken as representative of the sector.)
- 4.53 This implies, however, that it is very unlikely to be appropriate to deduct the full costs of O(CS) from Subject-FACTS.
- 4.54 Therefore, overall, we estimate (on imperfect data) that **Subject-FACTS would be reduced, but probably by less than 10%**, in affected institutions, by deducting the O(CS) costs of reimbursed salaries from Teaching. This is not material.
- 4.55 However, a much better approach would be to inform the cost allocations through a better understanding of knock-for-knock.

Knock-for-knock

- 4.56 An alternative approach, which would introduce more consistent and more reliable figures, as discussed for clinical medicine, is to understand at least some aspects of knock-for-knock better. This was not part of the scope of our study, and would require a much bigger exercise to do adequately. We can only note at this stage that:
- knock-for-knock in dentistry is very different from that in clinical medicine;
 - it is likely to involve an increase in costs as some institutions stated that they are housed in a dental hospital, but receive no or minimal recharges for that space;
 - there may be some charges from clinicians in Trusts who are involved in Teaching;
 - offsetting this would be a reduction in pay costs, to reflect the clinical work carried out for the NHS, that can be recharged;

- and there would be a reduction in other costs that are being reimbursed by the NHS.

Conclusion

- 4.57 Dentistry and medicine are very different subjects, with different costs.
- 4.58 In dentistry, Subject-FACTS is not robust in some institutions because of the quality of the academic time allocation (as sample sizes are often inappropriate due to the small size of dentistry schools). However, this is only likely to impact Subject-FACTS by up to +/-7 and for only some institutions – which is unlikely to be material for the sector average figures.
- 4.59 A second important area is to ensure that the TRAC Guidance is implemented with regards to allocating the O(CS) time of staff whose salaries are reimbursed to Other. A very broad, imperfect, estimate, is that this might reduce Subject-FACTS by up to 10%, which is only just beginning to be material. However, this cannot be calculated for the whole sector at this stage.
- 4.60 These two adjustments could change the reported Subject-FACTS by between +3% and -17% in an institution (although these figures imply a degree of precision which is not supported in the data currently available). These would not apply to all institutions, and so the change to Subject-FACTS for the sector would be less. Overall, therefore, we conclude that average Subject-FACTS for dentistry relative to price group D would be more reliably stated at around 2.5, i.e. slightly below its current value of 2.6.
- 4.61 We recommend that institutions are asked to ensure their heads of dentistry validate the time allocation figures each year, and that the TRAC Guidance is followed with the O(CS) time of reimbursed staff being allocated to Other, along with appropriate Support costs. As for medicine, it would also be helpful for institutions to reflect more of their understanding of the university side of knock-for-knock in TRAC allocations, in particular the impact in income of reimbursed salaries and other costs. We make these recommendations in Chapter 7.

5. Findings on veterinary science

What is veterinary science?

- 5.1 The inclusion of veterinary science (HESA academic cost centre CC03) in this study reflects the clinical training that is inherent in the undergraduate programmes accredited by the Royal College of Veterinary Surgeons (the profession's governing body). The typical entry first-registration course is called BVSc (Bachelor of Veterinary Science).
- 5.2 Programmes are commonly five years, all of which are returned under price group A in the current teaching funding method. As with medicine and dentistry, there are opportunities for a foundation year and an intercalated year (which are returned as price group B).
- 5.3 In 2009/10, 87% of the veterinary science student FTEs were reported as price group A; 13% as price group B. Only the Subject-FACTS calculated for the combined A/B provision is referred to here, as any split of costs reported by institutions is not reliable.
- 5.4 As with medicine and dentistry, clinical service provision and research underpin teaching. As there is no outside partner like the NHS, this leads to a high-technology and capital-intensive type of teaching.
- 5.5 As well as the normal academic teaching facilities, subject-specific facilities include one or more veterinary hospitals, veterinary practices, and farms. In our three main case studies these were all part of the university. (Other private practices and farms are also likely to have provided placements and clinical experiences).
- 5.6 Typically a veterinary school has a small animal hospital, and often an equine hospital. Small animal hospitals have operating theatres and associated surgical suites, reception areas, consulting rooms, kennels and isolation wards, MRI, CT scanners, clinical laboratories, and radiography and endoscopy suites.
- 5.7 There are also different types of farm. This might include beef cattle, sheep, pig and equine facilities. University veterinary surgeries or practices involve farm and stable visits and advisory services as well as small animal clinics.
- 5.8 These facilities offer practical classes for students in both pre-clinical and clinical stages, surgical exercises used for teaching or research, and facilities for research projects. BVSc students depend upon these resources, as do students of veterinary nursing and other veterinary clinical staff. Farms can also be used for teaching students on Agriculture programmes (which are not returned under the veterinary science cost centre CC03).
- 5.9 Universities generally seek to produce commercial income from their hospitals, veterinary practices and farms. This can derive from patient care (whether provided by a practice or in a veterinary hospital), advice (e.g. to farmers), research (leading to commercially produced medicines), and produce from the farms (such as milk). However the extent to which the commercial potential can be maximised depends on how it has been established, and run. Most of these facilities have teaching and research as their primary purpose, not

commercial business activity. Additional costs (on top of those required to support teaching or research) are incurred when any of these facilities are run as commercial businesses. The capacity of academic clinicians is limited by their commitments to formal teaching and research. Commercial levels of charging are less likely to be attainable when students are present.

- 5.10 A further consideration is the need to offer a sufficient number and variety of clinical cases, and a sufficient range of sophisticated specialist services. These are necessary to ensure that the type of referrals (from private veterinary practices) or contacts (from farmers and animal owners) give the opportunities necessary for students to experience and participate in. This means that the clinical services carried out by the university veterinary surgeons and their staff may not all form part of a direct student experience, but are a necessary part of the teaching facilities. If there is no student (or research) involvement this does not necessarily mean it is carried out with the aim of producing commercial income.
- 5.11 Community and professional needs also drive the range and type of expertise offered by the university-owned veterinary facilities. They must provide a sufficient service to vets and farmers in their region, or outside this, depending on their specialties.
- 5.12 There are other ways of providing access to hospitals and farms, and specialist expertise (private practice and farms as described above; specialist educational networks).

Reported Subject-FACTS

- 5.13 There is a high degree of variability in the reported costs of veterinary science teaching. Eleven HEIs across the UK reported veterinary science teaching provision in cost centre CC03 in 2009/10. However, two of these have very low student numbers (less than 10 FTEs) and so were excluded from further analysis. The average (mean) Subject-FACTS reported in UK benchmarking for the remaining nine institutions was £19,281, with a median of £18,711. The inter-quartile range was however high (compared to other cost centres) at 52% of the mean Subject-FACTS.
- 5.14 We note that despite this wide range, the cost relativities are not widely diverse. Tables 5 and 12 show cost relativities from UK benchmarking for 2009/10 of 3.2; England-only institutions show 3.0 in 2009/10; and the four-year rolling average to 2009/10 for England-only institutions also shows 3.0. These are calculated on the mean. If calculated on the median, the three- and four-year England rolling averages to 2008/09 and 2009/10 are 2.9 and 3.0.
- 5.15 The sector figures are dominated by one institution which teaches over 40% of students in England, and therefore strongly influences the mean. There is a relatively small difference between the mean and median.
- 5.16 The rolling average of English institutions calculated across the four years to 2009/10 shows a standard deviation calculated across the four years at £7,150, which is high. Normally, in statistical terms, this level of standard deviation would mean that the sample data is not a representative sample of the sector. Here, as the data covers all institutions, it is actually representative of the sector.
- 5.17 This study sought to understand whether this range of results is due to any unreliability in the TRAC data. As stated elsewhere, it does not seek to explore

variations due to the different approaches taken by institutions (for example, different farm and hospital arrangements) which would also lead to variability. The range shown in the data (subject to our findings on TRAC, below) might question the use of an average Subject-FACTS to inform funding (but it is difficult to see an alternative if a single cost relativity is to be used in the funding method).

Our case studies

- 5.18 Our case studies covered two of the eight English institutions reporting veterinary science teaching. However, we also examined two others (not as full case studies) in the course of the study.
- 5.19 The eight English institutions reported Subject-FACTS of £3,733 to £26,824 (see Table 12). The four institutions we studied reported Subject-FACTS of £4,788 to £21,634 and therefore covered much of the spectrum of costs being reported.
- 5.20 We found that the institution with the lowest Subject-FACTS of our case studies (£4,788) did not show the actual costs incurred in teaching students. It did not actually teach veterinary science itself; the students were taught under a collaborative arrangement at a further education college. The costs reported in Subject-FACTS were the part of the fees+grant transferred to the college (following TRAC Guidance). They did not represent the actual cost of teaching that programme. It had the lowest student numbers of the English sector. This is one of three institutions (of the eight) who have very low student numbers and report all this provision under price group B. Their data does not represent the costs of a BVSc course. These institutions should all be excluded from the Subject-FACTS used to inform the teaching funding method.
- 5.21 Excluding these three institutions from the eight institutions in England leaves five institutions with BVSc or equivalent provision, showing Subject-FACTS ranging from £13,460 to £26,824. The average (mean) subject-FACTS of these five institutions is £18,026 (compared to £18,074 for all eight institutions).
- 5.22 We looked at three of these five institutions, including the institution with the lowest Subject-FACTS (£13,460) and the one with the second-highest (which was 20% below the highest).
- 5.23 These all had schools of veterinary science, with hospital/s, veterinary practice/s and farm/s. None reported teaching provision in Agriculture, and almost all of the veterinary facilities supported the BVSc teaching provision (and some Research).

How Subject-FACTS were derived

- 5.24 As with medicine and dentistry, we asked a wide range of questions to establish how the costs had been derived. As with dentistry, we found that veterinary science is generally managed within a fairly self-contained school, within a larger faculty (often medicine). There is some cross-school teaching, e.g. on science modules, but the student FTEs and teaching costs are returned together under the appropriate cost centres. The costs of the hospitals etc. were managed by the schools. One exception to this was a wholly owned subsidiary set up to provide veterinary services (hospitals, farm practices) on a

commercial basis that operated separately from the university veterinary school (but was a key element of it).

- 5.25 Our questions about cost drivers covered veterinary science, and did not uncover anything material that made the TRAC data unreliable, apart from a single, and major, area.
- 5.26 This related to the allocation of the costs of hospitals, practices and farms. The TRAC Guidance permits considerable variability in these allocations – and as the Guidance is not actually being followed in some institutions, there is even more variability.
- 5.27 The TRAC Guidance (Annex 14) states:

Farms and woodlands

It is assumed that the farms comprise only a small part of a larger institution; and the primary purpose is to provide facilities for R and T. In this case some commercial activity would also be carried out (O) but not as economically or efficiently as it could have been without R and T. In this case:

- estimate, where possible, the extra costs incurred because of the commercial activity (i.e. over and above those required for R and T) - and attribute them to O
- attribute the remaining costs to Support to R and T according to use.

Veterinary schools

Veterinary schools frequently provide sessions to private fee-paying clients. Students may be present:

- if the primary purpose of a session is to teach students, then it **should** be attributed to T;
- if the primary purpose is to provide treatment to patients then it **should** be attributed to O (even if students happen to be present);
- if the primary purpose is unclear, then the session could be attributed to O (clinical services) and re-attributed between T, R and O using some proxy, such as income (e.g. T funding/R funding/charges to clients).

- 5.28 This means that institutions were empowered to use different approaches in the allocation of the costs of farms and veterinary schools. The TRAC Guidance for farms is based on the premise that the primary purpose was to support Teaching and Research, and only the additional costs incurred to generate commercial income were to be allocated to Other. However, the TRAC Guidance for veterinary schools focuses only on academic sessions (e.g. clinical services), and instructs institutions to identify the 'primary purpose' of each session, or use an income-based proxy. It does not specifically cover the full costs of veterinary hospitals (nurses, wards, specialist equipment, medicines, reception, etc). The Guidance is therefore not very helpful.

5.29 Not surprisingly, institutions are actually allocating these costs using a wide range of methods, and this has a material impact on their Subject-FACTS.

<p><i>Institution m – very few farm and hospital costs are included in Subject-FACTS</i></p> <p>Most of the non-pay costs of the farm (£0.3m) are allocated to CCO3 Teaching and make up 4% of Subject-FACTS. Income (approximately £0.3m) is allocated to Other.</p> <p>The costs of the veterinary hospital (£5m including allocated central services) are allocated incorrectly across the institution, and only 2% of those costs are in CC03 Teaching. These make up 1% of Subject-FACTS. Income (approximately £5m) is allocated to Other.</p> <p>Nearly £8m is allocated to Subject-FACTS, which is nearly 30% below the English (five institution) mean.</p>
<p><i>Institution k – a significant part of farm and hospital costs are included in Subject-FACTS</i></p> <p>The direct costs of the farm and veterinary hospital (£5m) are allocated to Other.</p> <p>The clinical services time of academic staff and support staff totals £14m and is allocated 90% to Teaching and 10% to Research.</p> <p>All other costs associated with the farm and veterinary hospital are allocated to Teaching and Research in accordance with the time allocation survey (TAS) and other cost drivers.</p> <p>Commercial income (approximately £24m) is allocated to Other.</p> <p>Nearly £13m of costs is allocated to Subject-FACTS, which is 17% above the English (five institution) mean.</p>
<p><i>Institution r – reflects primary purpose, so the hospital and farm costs are split between Teaching, Research and Other</i></p> <p>The costs of the hospitals and farms total over £20m. These are allocated according to the “primary purpose” of each activity (such as clinical session).</p> <p>They make up about half the costs of Subject-FACTS. Nearly 65% of the hospital costs are allocated to Teaching, and nearly 20% to Other.</p> <p>Subject-FACTS is on the sector mean. This institution’s costs and student numbers dominate the calculation of the mean.</p>

5.30 As a result of these separate approaches, and the type of commercial activities carried out, institutions report very different levels of surplus in their ‘Other’ category. As their primary business is Teaching and Research, which would normally direct how these activities are managed and how commercially successful they are, commercial income (less direct costs) could be considered a ‘by-product’ of institutions’ Teaching and Research activity.

Conclusion

5.31 The TRAC data contains inconsistencies which could be removed by:

- excluding the three English institutions that have low student numbers and that do not return any numbers against price group A (and show low Subject-FACTS);
- standardising the approach to the allocation of clinical services (hospitals, veterinary practices and farms).

5.32 We considered four approaches to standardising clinical services:

- a. Assume most of these costs are attributable to Teaching (as in institution k) after an appropriate allocation to Research, and with direct costs of commercial activities allocated to O. This would have the impact of increasing Subject-FACTS. For institution m the very maximum this would add is 60% to Subject-FACTS, which would bring it 30% above the current mean. It is more difficult to estimate this for institution r but taking one-third of the costs they currently allocate to Other would add 20% to their Subject-FACTS. This might bring all three case study figures to something around **20% above the current mean**. This is indicative only, and would need institutions to calculate their own figures if it is to be relied upon.
 - b. Alternatively, the costs could be attributed using primary purpose, as for institution r (which is on the mean). This would increase the costs of institution m (by less than 30%) to something closer to the mean and reduce the costs of institution k, again to something closer to the mean. The resulting sector mean might not be significantly different from the **current mean**. This option allows considerable judgement to be made, and would lead to more variability in the sector figures than with the other option.
 - c. Half the costs could be allocated to **Other, and the rest to Teaching**. This would reduce the costs of institution k and increase the costs of institution m. The costs of institution r might be increased. It is unlikely that any of these changes would be as much as 20%. **The mean would increase**, but not as much as in (a). **However**, there is little science in this approach.
 - d. Allocate all costs to Other, with only the additional costs required to carry out Teaching (and Research) allocated to Teaching (and Research). Institution m shows a Subject-FACTS cost similar to one that would be calculated on this basis – **well below the mean**. Other institutions' costs would reduce. However, we do not suggest that this approach should be taken as the primary purpose of these facilities is Teaching and Research and they are necessary costs of those primary functions.
- 5.33 Overall, therefore, the Subject-FACTS of the three case study institutions with BVSc courses, could be made more consistent by standardising the methods used to allocate the costs of farms and hospitals. If any of the options (a) to (c) were adopted, there would either be a very minimal impact on the average (mean) subject-FACTS or an increase of up to 20%, depending on the option chosen.
- 5.34 The relative cost of veterinary science to price group D would be between 3.0 (the current relativity) and 3.6, depending on the method chosen.
- 5.35 We recommend in Chapter 7 that method (a) is adopted. This was endorsed by the Steering Group for the study. It would increase the average Subject-FACTS, and the cost relativity, by approximately 20%, to around 3.5:1.

6. Clinical medicine research

- 6.1 This chapter should be read in conjunction with Chapters 2 and 3 of this report, and with the TRAC Research Cost Relativity (RCR) report. It is assumed that readers are familiar with these, and we do not generally repeat material here.
- 6.2 Our study looked at the research cost relativities calculated for the HESA academic cost centre for clinical medicine (CC01). All references are to this data, and to 2009-10, unless otherwise stated. Our study did not cover Research costs in dentistry (CC02) or veterinary science (CC03).
- 6.3 These costs were returned under the RCR exercise. Two years of RCR figures have been produced, by a sample of institutions across the UK.
- 6.4 RCR data were produced by 46 institutions that represented 80% of the Research costs (reported in annual TRAC) for the UK sector. RCR data for clinical medicine were reported by 31 institutions (across the UK).
- 6.5 Twelve of these institutions were case studies for this study. They included most of the institutions with the highest research volumes, and they made up 63% of the total costs of Research in CC01 for the 31 institution sample. (They represented 75% of the total costs of Research in CC01 for the 24 English institutions participating in the RCR.)
- 6.6 The twelve case studies showed an average 'total research cost per academic FTE' (total cost/academic FTE) of £1,155k. This was 8% higher than the average for the RCR sample (before any outliers were removed).
- 6.7 One of our case studies was treated as an outlier in the RCR benchmarking exercise (institution c) as its cost was so high. Another (institution d) has a collaborative arrangement that meant its reported figures – the lowest of our case studies – were incorrect (this also applied to its Teaching figures; and those for dentistry).
- 6.8 Excluding those two institutions, the ten other case studies showed a total cost/academic FTE ranging from £674k to £1,226k. Their average (mean) cost/academic FTE is very close to that of the full sample of HEIs (excluding the outliers).
- 6.9 Table 6 shows the 2009/10 benchmark results. Excluding outliers, these show an average total cost/academic FTE for clinical medicine of 3.8 relative to a group of humanities and social science cost centres (group v) (note that the definition of group v (the baseline) is different from that used in the current research funding method, and has no authority outside of RCR). Nonetheless, it is indicative of the scale of the relativity, which is significantly higher than the relativity used in the current funding method for research of 1.6 for high-cost laboratory and clinical subjects (figures for other, individual high-cost laboratory subjects are also significantly higher than the 1.6 used in the current funding method).
- 6.10 Table 6 shows relativities by research sponsor type. Issues around the choice of cost relativity are covered in detail in the RCR report, but we do specifically discuss the validity of the separate research sponsor type figures below as well.

Clinical and non-clinical research

- 6.11 We note that during the pilot phases of the RCR work an attempt was made to allocate costs between clinical and non-clinical research. Institutions found they could not do this, not the least because there is no definition of these terms. Therefore the figures for CC01 are a mixture of both.

The RCR methodology applied to clinical medicine

- 6.12 The RCR methodology takes the Research costs and academic FTEs as calculated for annual TRAC and TRAC fEC. These are calculated robustly, and, as the Research Councils rely on them for their funding, they are a particular focus of the RCUK quality assurance procedures. That means that the total costs of Research, and academic FTEs, should in general, be robust. We specifically asked, and received reassurance, from each institution that there were no outstanding assurance (or internal audit) issues that had a material impact on the figures. (We note that some of the issues we have raised in Teaching arise in the implementation of the TRAC (T) methodology, which is not subject to the same assurance reviews as Research.)
- 6.13 The two outliers described above do not run counter to this statement. The institution with the higher total cost/academic FTE is an outlier in the indirect and estates cost rates used in research project costing. The institution with incorrect data due to their collaborative arrangements calculates and applies (robust) research overhead rates based on the activity in the joint school, not in the individual institutions.
- 6.14 The main issues peculiar to the RCR methodology (as opposed to the annual TRAC methods) relate to:
- a) The requirement to allocate direct project costs, Support costs of Research, along with the academic staff involvement on that activity, to the same cost centre.
 - b) The exclusion of research assistants – RAs (and research fellows) – from the denominator of the cost/academic FTE calculation.
- 6.15 These of course apply to all disciplines. We considered whether the nature of clinical medicine made the figures less robust than those in other disciplines.

Matching costs and academic FTEs

- 6.16 In only one of our case study institutions were there any concerns about the matching of project costs, associated Support costs, and academic staff FTEs. These can arise with anatomy, pharmacology or biosciences being part of the medical faculty. However, as universities generally record project costs against the 'home department' of the lead principal investigator (PI), they are considered to be aligned well. No institution had investigated how well Co-Investigators (Co-I) were aligned – and there are no attempts to move the research time of Co-Is from non-medical faculties to the medicine cost centre CC01, or vice-versa. It is not known how much this might affect the clinical medicine figures, or whether it is material. It of course affects all disciplines.

- 6.17 Clinical medicine is a large part of many institutions (Table 1 shows CC01 costs are 20%-40% of total institutional costs for six of our case studies). Most clinical medicine costs come from departments or schools that are allocated solely to CC01. As a result of this size, and direct allocation, the average figures in CC01 are likely to be more reliable than those of small departments or ones that are spread across many cost centres. Again we reiterate that matching costs and FTEs was not considered to be of concern by the case study institutions, apart from one. Therefore we conclude that it is unlikely to have a material effect on the CC01 RCR.

The academic FTEs used in the denominator

- 6.18 FTEs, calculated from academic staff time that has been recorded directly to Research, form the denominator of the RCR calculation. This means that it excludes academic staff time on Support including scholarship and time on Teaching, as calculated for annual TRAC and TRAC FEC. There are three points of relevance to RCR.

Research fellows are excluded from the FTEs

- 6.19 The denominator excludes the time of staff on research-only contracts, i.e. RAs and research fellows (unlike TRAC FEC, where they are included in indirect rate calculations). We note from data collected for the pilot stages of the RCR review that the institution that is an outlier in RCR (it had a very high total cost/academic FTE) had an unusually high proportion of research fellows in its 'research assistant' numbers, across the institution as a whole. Research fellows are included as a volume measure in the current research funding method. It means that the total cost/academic FTE for this institution is overstated, if used to calculate relativities for the funding model.
- 6.20 We did not have the data for all our case studies; nor could we ascertain the impact solely for clinical medicine in the time available for the study. However, although this does provide one explanation for higher total cost/academic FTE figures in CC01, this would also lead to higher figures in other discipline areas that employ large numbers of research fellows, so is unlikely to have a material effect on the CC01 RCR.

Clinicians are excluded from the FTEs

- 6.21 Clinicians may act as Co-Is on medical research projects. Their FTEs and their costs are not generally in the RCR (there are two exceptions to this, which we cover under O(CS) below). This means that the denominator may be relatively lower than in other disciplines, where the Co-Is are on the university payroll and therefore included. This means that the total cost/academic FTE for CC01 would be overstated. However, this only matters if clinicians are included as a volume measure in the research funding model (they should then also be included in the denominator used to calculate the cost/academic FTE for Research, if possible, to try to ensure as much consistency with the calculation of the RCR used in research funding). We do not know what clinician numbers are involved here.

Academic time training and supervising PGR students are excluded

- 6.22 Although the RCR methodology excludes academic time supporting PGRs, two case study institutions included it in error. This had a material impact on their total cost/academic FTE calculations. However, one was already an outlier and their figures had been excluded. The other, although a case study for this review, was not actually a participant in the RCR sample. There was an automatic check on this calculation in the RCR reporting, so it should have been picked up by most institutions. If an error had been made, it would apply to all disciplines and the overall impact on the clinical RCR would be lessened. Overall it is unlikely to have a material effect on the CC01 RCR.

Allocations of costs to Research

- 6.23 The total research cost/academic FTE is based on the Research costs that have been allocated to Research in annual TRAC. No adjustments are allowed to this figure when TRAC-RCR figures are (subsequently) produced.
- 6.24 Costs are driven in annual TRAC to Research (and Teaching and Other) using cost drivers. The choice of cost drivers for support staff, circulation space, non-pay departmental costs, libraries etc will affect the volume of cost allocated to research. However, the cost drivers follow TRAC Guidance, the allocations are deemed robust, and they are subject to the QA reviews of annual TRAC and TRAC fEC. They would also be consistently used across disciplines (generally speaking), so would not have a material impact on the CC01 RCR.
- 6.25 There are specific issues surrounding clinical services and scholarship, which we covered in some detail in Chapter 3. Their relevance to Research is discussed further below.

Clinical services

- 6.26 For Research, we looked at the potential understatement of Research costs and FTEs, if O(CS) was being overstated and almost all costs and time were allocated to Teaching or Other. This could happen if (a) academics are recording their time based on PAs, e.g. 4/10; and (b) academics are working more than 37 hours a week, e.g. 48 hours. The first would not happen in institutions with TRAC diary systems, and would not be done by all clinical academics (TRAC instructions tell them not to). We do not have reliable and consistent information across the case study institutions on hours.
- 6.27 However, to illustrate the potential impact, we made an estimate based on a broad assumption: that O(CS) was recorded as 4/10ths (40%) of time, rather than $4/10 \text{th} \times 37/48 \text{ hours a week}$ (30%) – i.e. 10% of total time had been allocated to O(CS) in error. We assumed that this applied to half the clinical academics, and clinical academics made up half the academic staff. We corrected it by making a transfer of this time (now, 2.5%) to Research pay costs and Research FTEs. Academic pay is about 14% of total Research costs (Table 7d) – so the increase would not be material. The increase in academic FTEs of around 3% is slightly more noticeable, and would reduce the RCR by nearly that amount. However, this is still not material.

- 6.28 In Chapter 3 we looked at three other adjustments to O(CS) which would make TRAC more reliable. We summarise the likely impact on the RCR here:

Transferring the O(CS) costs of staff whose salaries are partly or wholly reimbursed to Other.

- 6.29 Although clinical academics who do Research also carry out clinical activities, most of their O(CS) costs are currently allocated to Teaching.
- 6.30 The case studies used widely varying methods of allocating O(CS), as covered in Chapter 3. Eight did not allocate any O(CS) time to Research: four allocated some of it. Two of these sought to reflect the Research time received from clinicians in doing so. The O(CS) included in Research costs is shown in Tables 8 and 10 – minimal, in every institution. It is so small that the impact of O(CS) on academic FTEs is also not material.
- 6.31 Therefore any O(CS) allocations to Other would affect Subject-FACTS, but would have a minimal impact on RCR.
- 6.32 Even incorporating a better understanding of knock-for-knock in O(CS) allocations would be unlikely to affect Research. Two institutions we investigated did not allocate O(CS) to Research, because they incorporated cost allocations that reflected their understanding of the university side of knock-for-knock. Both had minimal recharges of clinician time to Research from their Trusts (so they affected neither the costs nor the FTEs in the total cost/academic FTE calculation).

Transferring the costs of distinction awards etc that are wholly reimbursed by the NHS to Other

- 6.33 We identified in Chapter 3 that this only applies to a quarter of institutions; and that the impact on the sector average Research costs would be less than 1% (see Table 14, column (a), Appendix D). It does not affect the academic FTEs in the RCR calculation.

Transferring the costs of distinction awards etc that are partly funded by HEFCE to Other.

- 6.34 As we stated in Chapter 3, the TRAC (T) Guidance should have included these in non-subject related costs, to be excluded from Subject-FACTS. As it did not, all institutions left these costs in their Teaching and Research (and O(CS)) figures. They total about 5% of academic salaries. Removing them would reduce Subject-FACTS by about 2% and Research costs by about 1% (see Table 14, column (b), Appendix D). They do not affect the academic FTEs in the RCR calculation.

Reflecting knock-for-knock better in the cost allocations

- 6.35 We note that if a better understanding of the university side of knock-for-knock was reflected in the costs, this might possibly lead to additional costs being

recharged from Trusts to Research for clinicians' time (although, based on two institutions' experiences, this is unlikely).

However, it might also lead to:

- recharges for estates costs – which would increase the RCR. As estates are about 10% of research costs, costs in this area would need to double to be material;
- the costs of reimbursed salaries and other reimbursed items being allocated to Other, rather than being left in Teaching or Research. It was outside the scope of this study to quantify the impact of this. Illustrative figures were considered in Chapter 3. It is unlikely that this will have a material impact on Research, as most of the costs (whether through O(CS) or other areas) are currently allocated to Teaching, and would be removed from that activity;
- If the reimbursed salaries do reduce Research pay costs and academic FTEs, the RCR will increase (the impact of the reduction in academic FTEs on RCR is far greater than the impact of a reduction in pay costs);
- other implications for costs, not identified or investigated in the scope of this study.

Scholarship vs. institution-own-funded research

- 6.36 There is a potentially major issue about the overstatement of the costs of I/O, and the understatement of the costs of Scholarship. We covered this in some detail in Chapter 3.
- 6.37 We found that if this was the case, it would reduce both Research costs and Research academic FTEs. The impact on the denominator would have approximately six times the impact of that on costs – so the cost/academic FTE figure in clinical medicine would increase. However, this is unlikely to be material.
- 6.38 It would have an even greater impact in the 'baseline' subjects (humanities and social sciences), so their cost/academic FTE figure would also increase – but to a greater extent.
- 6.39 The overall impact might be a decrease in the RCR for clinical medicine, but it would not be material.

Allocation of costs to research sponsor types (I/O and RG&C)

- 6.40 This study looked at the costs returned separately under the two research sponsor types of Institution-Own-Funded (I/O) – research without an external sponsor – and Research Grants and Contracts (RG&C) – externally sponsored research. It did not look specifically at the costs reported for the training and supervision of Postgraduate Research Students (PGR), although this was covered indirectly as part of the review of cost drivers and allocation methods.
- 6.41 It of course also looked at ‘total research cost’/academic FTE figures, which did include all PGR costs in the numerator, but not the time of academic staff spent in their training and supervision in the denominator.
- 6.42 Costs are allocated to Research and to CC01, which we covered above. They are also allocated to the different research sponsor types. We found three important variations in the ways that this ‘second-tier’ allocation is made, which means that it is not reliable. The overall costs and FTEs in Research may be reliable (and robust, in TRAC terminology), but the allocation to research sponsor type is not. The following describes why:

The treatment of RAs

- 6.43 Research Assistants who are on projects are directly allocated to the project, and are automatically included as a cost of Research for the appropriate research sponsor type (Research Councils, charities, etc). However, the costs of RAs who are between contracts are treated differently in institutions. They can be:
- included in the time allocation survey undertaken by academics;
 - allocated according to academics’ time allocation data;
 - allocated to Support;
 - allocated to I/O.
- 6.44 The sector RCR benchmarking data showed that the number of RAs reported in the I/O figures varied from 0 to 128 – but these figures did not seem to always match with the costs in I/O. More work would have to be done in this area if these figures are to be reliable.

Costing of the PGR sponsor type

- 6.45 This was not part of this study, but it has been obvious in TRAC data for many years that the costs of PGR training and supervision are not robustly prepared. TRAC Guidance has recently been strengthened in this area, and some institutions are confident of their figures – but they are very much in the minority. Most would agree that their PGR costs are understated.
- 6.46 The misallocation of costs would not affect the total costs of Research (it is an internal Research allocation issue, not an issue about allocating time between Teaching and Research). Because the costs of PGR training and supervision are not being correctly allocated to PGR, this means that the costs in I/O and

external RG&C are overstated, as are the academic FTEs. It could therefore impact on the academic FTEs used in the denominator of the total cost/academic FTE calculation, as they exclude the academic time on PGR activity. Therefore the academic FTEs in the RCR denominator could be understated; and as academic FTEs impact more on the cost/academic FTE than costs, the cost/academic FTE in clinical medicine could be overstated.

- 6.47 This would apply to all discipline areas, so the impact on the RCR for clinical medicine itself would be lessened. We note that as there are more PGRs (relative to academic FTE time on I/O and RG&C) in the humanities and social sciences than in clinical medicine it would, if anything, increase the RCR for clinical medicine.

Attribution of Support costs across the research sponsor types

- 6.48 Institutions use different sets of cost drivers to allocate Support costs to Research (and Teaching) – a first-tier allocation – but this is allowed under TRAC. We found little that led to unreliability in the resulting Research costs. However, different cost drivers are often then used to allocate the Research Support costs to the different research sponsor types – a second-tier allocation. These, strangely, often do not reflect the first-tier cost drivers. So some costs can be driven to Research based on staff FTEs, both academic and RAs. But within Research, RAs are then often ignored in the second allocation tier. This means that I/O costs are overstated.
- 6.49 We illustrate this with a breakdown of the costs of one set of I/O Research figures in Table 11, which shows an I/O cost per academic FTE of £389k. It looks high in various respects (estates costs alone are twice the normal estates rate in Research). Another of our case studies reported very low cost/academic FTE in I/O of £101k, which is equally unlikely to be correct (although their initial investigation confirmed they were happy with it). It is difficult to justify the wide variation in cost/academic FTE in I/O reported across the sector – £101k to £1,557k per academic FTE (this includes figures excluded from benchmarking as they are considered to be outliers). The interquartile range is much narrower at £265k to £535k.
- 6.50 As further illustration we note the very wide variation in the cost/student in PGR reported in RCR benchmarking (TRAC-RCR results for 2009/10 show a range of £8k to £149k per PGR student FTE; and an interquartile range, shown in Table 5 in Appendix D, of £16k to £36k per PGR student FTE.)
- 6.51 None of this detracts from the reliability of the total costs and total academic FTE figures. It means however that the individual cost/academic FTE figures produced for each research sponsor type are not reliable. The same no doubt applies across all disciplines.

Conclusion

- 6.52 The TRAC-RCR methods used to calculate the cost relativities for Research in clinical medicine are reliable for total Research costs. The figures for I/O Research are not reliable. The same may apply to other disciplines.

6.53 We identified several areas which might be affecting the reliability of the total Research RCR in clinical medicine:

Issue considered (? indicates that it may not be a issue at many institutions)	If corrected, impact on clinical medicine			And impact on cost/FTE in humanities/social sciences	So, impact on clinical medicine RCR
	Costs	Academic FTEs (greater impact than on costs)	Cost/academic FTE		
More I/O time should be recorded as scholarship?	Reduced	Reduced	Increased	Increased (more)	Reduced?
Removal of HEFCE-funded distinction awards etc	Reduced	-	Reduced	-	Reduced
Removal of NHS-funded distinction awards etc	Reduced	-	Reduced	-	Reduced
Removal of O(CS) time of reimbursed staff	Reduced	Reduced	Increased	-	Increased
Correction of methods (PAs) used to record O(CS)?	Increased	Increased	Reduced	-	Reduced?
Identification of more academic staff time on supervision of PGRs?	-	Reduced	Increased	Increased (more)	Reduced?
RAs between contracts are in FTE denominator, or are not?	-	+/-	+/-	+/-	+/-?
Co-Is in other 57 depts. included in FTE denominator, or not?	+/-	+/-	+/-	+/-	+/-?

6.54 Overall, despite this seemingly large number of factors, we note that it is doubtful whether some are appropriate to many institutions. Further, academic staff time, Research costs and FTEs are subject to particular scrutiny in the RCUK QA process. None are likely to impact significantly on the RCR, and they will anyway offset each other to some extent. Their impact is further muted as many also impact on the baseline humanities/social sciences figures, reducing the impact on the clinical RCR (even sometimes reversing it). Overall we consider that the impact on the total clinical RCR is very unlikely to be material.

6.55 The impact of reflecting knock-for-knock better in academic staff time allocations is not known. Including the time of clinicians would increase the denominator and reduce the RCR, perhaps significantly.

6.56 The exclusion of research fellows in the denominator might, as reported in the RCR report, have had a significant impact on some institutions' RCR results. This is not a matter just for clinical medicine.

7. Changes to TRAC Guidance

- 7.1 This chapter makes recommendations for changes to the TRAC minimum requirements, as required by the terms of reference for the study. These recommendations flow directly from the findings and discussions in Chapters 2 to 6.
- 7.2 We note that HEFCE is carrying out a review of TRAC, and this study does not attempt to second-guess the findings from that. It may of course inform the review, as we have found that TRAC Subject-FACTS (and RCRs) can be relied upon to provide useful information for the funding methods, should they be required. The TRAC Development Group may wish to defer final consideration of the recommendations until the HEFCE review of TRAC is complete.
- 7.3 Our recommendations assume the continuation of the current depth and coverage of TRAC methods and TRAC Guidance, which of course may change following the review.
- 7.4 It also assumes that the current principles and methods of recognising knock-for-knock in medicine and dentistry continue to be applied in TRAC – i.e. it is not a requirement for knock-for-knock to be 'unpicked'.
- 7.5 Whilst the following recommendations apply only to the three clinical subjects, some might also be relevant to other subject areas (e.g. the review of time allocation results and Subject-FACTS, in small departments). That would be a matter for the TRAC Development Group to consider.
- 7.6 The recommendations are of two types: reinforcement and clarification of existing areas, and small adjustments and changes. None require new collection of data (e.g. time allocation), and thus they should not add to the burden on academics imposed by TRAC. They should add to the overall reliability, and in some areas, robustness, of TRAC (T) and TRAC-RCR information. They will not affect the overall robustness of TRAC fEC (where we have not found any issues of concern).
- 7.7 The points described here would require a small amount of work by Heads of School in two areas – validation of time allocation surveys; and, in the medical and dental schools, clarification of what is covered by the reimbursed salaries and other costs funded by the NHS. In veterinary schools their assistance in identifying the extra costs of commercial activity would be necessary. We hope that this study will also encourage academic managers to look closely at the costs they are reporting, particularly for Subject-FACTS, and test them for reasonableness.
- 7.8 This does not cover all the work that would be required if a full cost (to HEIs) of Teaching was required.

Reinforcement of existing TRAC Guidance

7.9 These points are already minimum TRAC requirements, but they need reinforcing because they are not always being followed.

- The O(CS) costs of staff whose salaries are partly or wholly reimbursed by the NHS should be allocated to Other.
- When this is done, an appropriate allocation of Support costs should be made to O(CS), including Support time of academics.
- The costs of distinction awards etc that are wholly reimbursed by the NHS should be allocated to Other, unless they are not part of the institution's Income and Expenditure Account.
- Reasonableness checks and validation of Teaching and Research results should be carried out by academic and finance managers. This should include time allocation surveys and Subject-FACTS data, where one or two small departments have a significant impact on the results for one cost centre.
- In dentistry, all Clinical Services activity should be allocated to OCS(T) or OCS(O), not straight to Teaching (to help ensure it is all visible).
- O(CS) should be recorded as a proportion of total time worked, not on the basis of (say) 4/10ths of time, reflecting PAs. This should apply even in institutions where all of O(CS) is allocated to Other as clinical services are 'recharged' to the NHS.
- O(CS) allocated to Teaching should be allocated just to Subject-FACTS, and not to NPFT or non-HEFCE-fundable PFT (this will make the cost allocations easier to follow and understand).
- Clinical student numbers in cost drivers should not be weighted for PG taught vs. UG taught or standard vs. long courses without very careful thought, as it is unlikely to be relevant for most students on first registration courses.
- Care should be taken when selecting appropriate cost drivers, in particular regarding: circulation space; the application of academic staff time figures to gross pay before direct charges have been deducted; the use of individual time used to allocate their own pay – which may be appropriate in many cases, but needs to be reviewed where small samples of time are available for an individual; and the inclusion of RAs in staff cost drivers when Research costs are attributed between research sponsor types.
- There should be a clear policy on whether part-time academics (e.g. in dental schools) should be included in time allocation surveys or not, and if so, it should be made clearer that they should not report their non-HEI activities.
- Institutions should try to understand their I/O cost per academic better, to ensure that it is reasonable.

New TRAC Guidance

- Distinction awards etc that are funded separately by HEFCE should be deducted as a non-subject related costs. (Note: some will be left in Research.)
- Institutions with joint medical schools should make an adjustment to non-subject related costs in TRAC (T) to ensure costs and students, as well as research costs and academic FTEs, are matched in each partner institution's returns. The same method of calculating and reporting Support costs should be used in both institutions (and in the joint accounts).
- Where material, RAs between contracts should be allocated to the areas in which they are working – Support, Teaching, and/or I/O. If the latter, they should be included as direct FTEs in the indirect/estate rate calculations.
- A better understanding of the impact of knock-for-knock should be reflected in HEI TRAC allocations, by matching the costs of reimbursed items with the NHS income:
 - the income for reimbursed salaries of staff carrying out a range of activities (and completing time allocation surveys) should be allocated to Other, as at present (reflecting the O(CS) costs allocated there, above);
 - where staff salaries are reimbursed and they work on one activity (e.g. research, or clinical lecturing) the income should be allocated to that activity;
 - other income (such as for student placements) should be allocated to Teaching (as they are a cost of the activity of Teaching);
 - in general, the income for specific activities (e.g. research, Postgraduate Deanery) should be allocated to the activity (e.g. Research, Other) – where the cost should also have been allocated.
- A redesigned Section C.3 of TRAC (T) should then be completed by all institutions returning figures to CC01 or CC02. This would no longer record the details of where O(CS) has been allocated. It would show income from the NHS received for (reported against) both Teaching and O(CS), and show the total costs of Teaching and of O(CS). This section should be mandatory for institutions with medical or dental schools. This would allow better understanding – by institutions and funders – of some of the impact on HEIs' income and costs of knock-for-knock.
- Institutions with veterinary schools should allocate farm and hospital costs to Teaching and Research. This would include all infrastructure costs of the farms and hospitals (including, for example, clinical sessions carried out when students are not present, but which are necessary to maintain a full range of specialities/cases). Only the extra costs incurred to generate commercial income from veterinary school activities should be allocated to Other.

Implementation

- 7.10 We recommend that the TRAC Development Group is asked to take these recommendations forward. They could be part of the minimum requirements that institutions follow when reporting at the end of 2011-12 financial year subject to the timing of the HEFCE review of TRAC.
- 7.11 As with all of TRAC, the changes should be made across the UK. Institutions in Scotland and Northern Ireland, and any in Wales following TRAC (T) methods, should be consulted to ensure that the references to SIFT, reimbursed salaries etc, are relevant.
- 7.12 If the TRAC Development Group feels it would be more appropriate to delay implementation until the HEFCE review of TRAC is completed, then in the meantime institutions could be alerted to this study and the recommendations in this chapter. Institutions could then, if they wished, implement most of the changes noted here. The only exceptions would be the two that require changes to the report pro-formas: the different reporting of income for reimbursements which would require a revised Section C.3 on TRAC (T); and the treatment of distinction awards funded by HEFCE as a non-subject-related cost.

Glossary

Academics	Academic staff who carry out a range of activities (i.e. Teaching, Research, Other) and therefore complete TRAC time allocation schedules.
ADH	Additional doctor hours
AST	Academic staff time, allocated according to staff time surveys.
BDS	Bachelor of Dental Surgery. This or an equivalent qualification is the entry-level first professional degree for registration as a “dentist” and “dental surgeon” with the General Dental Council.
BVSc	Bachelor of Veterinary Science. This or an equivalent qualification is the entry-level first professional degree for registration as a veterinary surgeon with the Royal College of Veterinary Surgeons.
CC01, CC02, CC03	Cost Centre. Activities (represented by costs, students, staff) attributed to HESA academic cost centres 01 (clinical medicine), 02 (clinical dentistry), and 03 (veterinary science).
Clinical academics	Clinical consultants on university contracts, whose pay costs are allocated as part of TRAC, and who complete a time allocation survey as part of this (unless they are on clinical teaching contracts, or research-only contracts). We use the term ‘clinicians’ to refer to clinical consultants on NHS contracts (only) whose pay does not therefore form part of the pay costs in HEIs.
Clinical medicine, clinical dentistry	See CC01, CC02. These cost centres also include non-clinical research, and pre-clinical teaching.
Clinicians	Clinical consultants on NHS contracts (only) whose pay does not therefore form part of the pay costs in universities.
Co-I	Co-investigator.
Cost/academic FTE	The calculation for the Research Cost Relativity. Research costs as produced by annual TRAC, divided by the direct time academics allocate to Research (i.e. not Support time).
Cost/student FTE	Where the students are taught students, this is the calculation for the Teaching cost relativity. See Subject-FACTS. A Research cost/PGR student relativity is separately calculated as part of TRAC-RCR.
Cost centre	HESA academic cost centre. Sub-cost centres are the additional analyses used in TRAC (T) that reflect the funding method (e.g. clinical medicine (A) and clinical medicine (B)).
Cost relativity	See cost weights. These are expressed as a figure (i.e. 3.0) or as a ratio (3:1). In both cases they represent the size of the clinical subject cost per student or staff compared to that for humanities/social sciences (3 compared to 1, in this example).
Cost weight	Or cost weighting, or cost relativity. The ratio of the cost/student (in Teaching) for clinical subjects to that of humanities/social science subjects. In Research, this is called the Research Cost Relativity. The term ‘cost weight’ is used in the HEFCE funding method for Teaching, but is called price weight or funding weight in this report for clarification.
DH	Department of Health
FAP	Funding Assurance Programme
fEC	Full economic costs. A term in TRAC used to define the research costs on projects produced under TRAC fEC.
Fit for purpose	See reliable.
FSSG	Financial Sustainability Strategy Group
FTE	Full-time equivalent numbers of staff or students.

GPs	General Practitioners.
HEI	Higher education institution.
HESA	Higher Education Statistics Agency.
HESA academic cost centre	Subject groups defined by the Higher Education Statistics Agency (HESA). HEIs map their department or school costs, students and staff numbers onto HESA academic cost centres. This is done differently for HESA reporting and for TRAC reporting.
HESES	Higher Education Students Early Statistics Survey
I/O	Institution-own funded Research. A research sponsor type defined by TRAC. Research where there is no external sponsor.
JACS	HESA's Joint Academic Coding System
Knock-for-knock	A complex exchange of services and funding across the university-NHS boundary. In TRAC, no attempt is made (at local or national level) to cost or charge for these services.
LQ	Lower quartile
Materiality	Based on the TRAC definition: a variation is not material if it has an impact of less than 10% on the item being costed – which in this study is the teaching cost relativity for any of clinical medicine, clinical dentistry or veterinary science, or the research cost relativity for clinical medicine.
MBBS	Bachelor of Medicine, Bachelor of Surgery. This or an equivalent qualification is the entry-level first professional degree for the practice of medicine and for registration with the General Medical Council.
Medicine	The activities in a school or faculty of medicine, which are attributed to CC01. This therefore does <u>not</u> include dentistry. It may include some activities in other schools or faculties, if these are attributed to CC01.
NHS	National Health Service.
Non-HEFCE-fundable	Costs allocated to publicly funded Teaching under TRAC (T) that are not fundable by HEFCE. They may be fundable by other public bodies e.g. the NHS.
Non-subject related	Costs allocated to HEFCE-fundable Teaching which do not vary by subject. They include the extra costs of long courses, widening participation, and historic buildings etc, which are funded separately by HEFCE. Funding is used as a proxy for costs, and removed from HEFCE-fundable costs to arrive at Subject-FACTS. Non-subject related costs also include bursaries and scholarships which are removed from HEFCE-fundable costs to arrive at Subject-FACTS.
NPFT	Non-publicly funded teaching. This plus Publicly-funded teaching make up the teaching costs in annual TRAC.
O	See Other.
O(CS)	Other (Clinical Services). Clinical activities of clinical academics. Also includes NHS management and other NHS-related activities. In veterinary schools. it covers clinical work for animals. It forms part of Other, but is often reallocated to Teaching or Research. Is sometimes defined further as O(CS)(O) and O(CS)(T) where Other or Teaching are the primary purpose of the clinical activity.
Other	One of the primary activities of HEIs. A term described in detail in TRAC and used in time allocation surveys. This includes clinical services.
PAs	Programmed activities. Used in clinical academics' job plans to describe the clinical services components required by the NHS. Often 4 out of 10 PAs in a week (but there may be more than 4, and more than 10). These activities are not the same as

	those allocated to O(CS) in TRAC, as other clinical management and Support activities are also allocated to O(CS); and clinical academics often work more than the 10 scheduled PAs in a week.
PFT	Publicly funded teaching. This plus non-publicly-funded teaching make up the teaching costs in annual TRAC.
PGT	Postgraduate taught student. The costs and FTEs of these students, if fundable by HEFCE, are part of Subject-FACTS.
PGR	Postgraduate research student. This term is used to refer to a full-time equivalent PGR, or the PGR research sponsor type used in annual TRAC. This covers the HEIs' costs of training and supervising PGRs.
PI	Principal investigator
Price group or band	A term used in the HEFCE funding model. This relates to a group of subjects, which are funded at the same price weight. The clinical price group A in Teaching relates only to the higher cost students in clinical medicine, clinical dentistry and veterinary science. Price group B in Teaching relates to non-clinical students (or pre-clinical) in the clinical subjects, and many science subjects. Price group D (humanities, social sciences) gives the comparator with other price groups to calculate the cost weights and price weights. In Research, price weights cover three subject groups – laboratory and clinical (A); intermediate (B); and other (C). Price weights are the ratio of price group A with C. In TRAC-RCR, there are five subject groups, and the cost relativity is of clinical subjects (i) with humanities/social sciences (v).
QA	Quality assurance.
R	See Research.
RAs	Research assistants. Researchers who are 100% allocated to Research. Includes research fellows.
RCR	Research Cost Relativity. Research costs divided by academic time on Research.
RCUK	Research Councils UK.
Reliable	For this study, this term is defined as the TRAC concept of fit for purpose. In this study the test is whether the resulting data (e.g. cost/FTE or cost relativity) is fit for the purpose of informing the current teaching or research funding models used by HEFCE (if required). This is a lower standard than robustness (see robust). 'Fitness for purpose' is used in TRAC (T) and TRAC-RCR to ensure that data which may not be robust in TRAC terminology can still be relied upon to inform the funding methods. In this study the data is considered to be reliable if it is just as likely for variations in the data, caused by a lack of robustness, to appear in other cost centres i.e. there are not material and systematic variations that only affect the clinical subjects.
Research	One of the primary activities of HEIs. A term described in detail in TRAC and used in time allocation surveys.
RFI	Return for financing and investment. Part of the TRAC costs
RG&C	Research Grants and Contracts. A set of research sponsor types defined by TRAC. Research funded (at least partly) by Research Councils, UK charities, UK government departments, the European Community, UK industry/commerce, other organisations and other governments.
Robust	Based on the TRAC definition. Data is robust if it meets TRAC minimum requirements, as specified in the Statement of Minimum Requirements – within the acceptable levels of

	<p>materiality (see above). TRAC requires that data on academic staff time allocation is robust at the level of subject group (clinical subjects, in this case) and not at the level of individual departments or cost centres e.g. dentistry.</p> <p>Funding bodies require that the data produced for annual TRAC and TRAC fEC is robust.</p> <p>However, data produced for TRAC (T) and TRAC-RCR (which report at the level of cost centres) may not be robust. (This will depend on the particular methods used by each institution.)</p>
	Despite this, there are still minimum requirements to be met when producing TRAC (T) and TRAC-RCR data. These have been designed to produce data that is fit for purpose (or 'reliable').
S	See Support.
SEBCC	Science and Engineering Base Coordinating Committee
SIFT	Service Increment for Teaching.
SHA	Strategic Health Authority.
Subject-FACTS	The average annual full economic cost of teaching a HEFCE-fundable full-time-equivalent student in a HESA academic cost centre.
Subject-related cost	The subject-related costs of HEFCE-fundable Teaching, which are the costs used to calculate Subject-FACTS (see Appendix B).
Support	Activities or expenditure in HEIs that are carried out to support the primary activities of Teaching, Research and Other.
SPAs	Supporting professional activities. A terms used in job plans.
TAS	Time Allocation Survey
Teaching	One of the primary activities of HEIs. A term described in detail in TRAC and used in time allocation surveys.
T	See Teaching.
TRAC	The Transparent Approach to Costing. A set of methods used across the sector to produce costs of Teaching, Research and Other activities. Annual TRAC produces high level costs. Other methods include TRAC-RCR, TRAC (T) and TRAC fEC.
TRAC fEC	See fEC.
TRAC-RCR	TRAC Research Cost Relativities. The TRAC model used to produce the cost relativities for Research.
TRAC (T)	TRAC for Teaching. The TRAC model used to produce the costs of a student – Subject-FACTS.
UG	Undergraduate
UQ	Upper quartile

Appendix A: Terms of reference for the study and Steering Group membership

Terms of reference for the consultants' study

To carry out a review of the reliability of TRAC data for the highest cost subjects, focussing on teaching costs for clinical medicine, dentistry and veterinary science; and research costs for clinical medicine only. HEFCE are seeking this information primarily to inform the review of their teaching funding method, as well as helping them decide whether TRAC data are useful in reviewing the cost weights used in their current research funding method.

Exploring the teaching costs for clinical medicine, dentistry and veterinary science (price group A subjects).

- a. To establish whether the TRAC (T) data for subjects presently funded in band A are robust and reliable.
- b. In particular, to consider whether there are any issues (such as the long hours worked by clinical academics, the splitting of costs between teaching and research, and services provided across the HEI-NHS interface) that have distorted the data.
- c. If so, to advise how the data used for funding purposes can be improved and better understood. In the short-term there may be a short-term adjustment to the TRAC (T) weighting for clinical subjects. In the longer term there may be clarifications in the TRAC guidance for HEIs that will enable better understanding of the relationship between income and costs and thus better data collection. (Not a core part of the work, but advice will be provided if it emerges in the course of the study.)
- d. To consider the extent to which costs are recognised in the data returned under TRAC (T) that are funded through particular allocations – specifically, those that recognise clinical consultants' pay, senior academic GPs' pay, and the NHS scheme.

Exploring the research costs for clinical medicine (only):

- a. To establish whether the cost and staff time data reported on research in clinical medicine through the sample study are robust and reliable. In particular, to establish the robustness of the following:
 - i. institutions' attribution of clinical and other staff cost and time between teaching and research, particularly in relation to scholarship activity;
 - ii. the time and costs allocated to 'other' clinical services;
(These two requirements are the same as the requirement for teaching, above.)
 - iii. indirect and estates costs between externally funded research (RG&C) and institution/own funded research (I/O); and
 - iv. mapping of larger departmental costs (such as a department that spans clinical and biomedical research) to cost centres.

Terms of reference for the Steering Group

The steering group for the review of clinical subject weightings will:

1. Steer the work of external consultants who are reviewing the significance of TRAC data to inform the highest cost subjects
2. Establish whether the sector-wide TRAC teaching and research data for the highest cost subjects are reliable for a funding method
3. Provide advice to HEFCE to determine whether current TRAC methodology will continue to be useful in determining the cost weights used in funding from 2012/13 onwards.

Steering Group membership

Professor Peter Kopelman	(Chair) St George's, University of London
Professor Farida Fortune	Queen Mary, University of London
Professor Michael Greaves	University of Aberdeen
Jeremy Lindley	University of Exeter
Andrew Dyer	Royal Veterinary College
Katie Petty-Saphon	The Medical Schools Council
Bob Rabone	University of Sheffield
Mike Smith	Sheffield Hallam University
Ewa Szyrkowska	Imperial College
Tracy Allan	Project Manager, HEFCE
Sarbani Banerjee	Learning & Teaching policy, HEFCE
Davina Madden	Research policy, HEFCE
Heather Williams	Finance Consultant, HEFCE
Melanie Burdett	JM Consulting
Jim Port	JM Consulting

Appendix B: TRAC and calculation of TRAC (T) and TRAC-RCR costs and cost relativities

- 7.13 This Appendix gives a brief overview of the Transparent Approach to Costing (TRAC), and three of the costing methods within TRAC: those for reporting annual high-level figures (annual TRAC), the costs of Teaching (TRAC (T)), and cost relativities for Research (TRAC-RCR). A more comprehensive description is given in the report 'Policy Overview of the financial information needs of higher education and the role of TRAC'. This report was prepared for the Financial Sustainability Strategy Group and the TRAC Development Group by J M Consulting July 2009 and is available at:
<http://www.hefce.ac.uk/finance/fundinghe/trac/tdg/FSSGJuly2009.pdf>
- 7.14 TRAC was introduced throughout the UK higher education sector in 1999 as a Government accountability requirement, but also to support institutional management. It is an activity costing system. It takes institutional expenditure information from published financial statements, and applies cost drivers to allocate these costs to academic departments and to activities. This process, called annual TRAC, results in a set of high-level figures being produced each year, for each institution across the UK. This shows the income, cost and surplus/(deficit) for Teaching, Research and Other activities.
- 7.15 Underlying these figures is a set of very detailed methods and processes. Many HEIs have invested significant effort and expertise into implementing TRAC. TRAC costing models are a complex set of methods using a range of cost drivers designed to allocate the annual costs of an institution:
- to Teaching, Research and Other activities;
 - to publicly-funded and non-publicly funded Teaching, within the overall Teaching activity;
 - to the subject-related costs of HEFCE-fundable teaching within the publicly-funded Teaching activity;
 - to Institution-own-funded and Research Grants and Contracts 'sponsor types' within the overall Research activity;
 - and all of the above, to departments and then to HESA academic cost centres.
- 7.16 TRAC includes two TRAC adjustments – an infrastructure adjustment to help ensure that institutions' estates costs are presented on a similar accounting base; and a return for infrastructure and adjustment to take into account long-run sustainable costs. Both these adjustments are formally defined in TRAC, and costs reported in all subject areas include them. The RFI is likely to be replaced by a new "required surplus" factor as a result of the recent national review of assessing sustainability. (See the report "Assessing the sustainability of higher education institutions" prepared for the Financial Sustainability Strategy Group by J M Consulting June 2011, available at <http://www.hefce.ac.uk/finance/fundinghe/trac/fssg/>)
- 7.17 TRAC has comprehensive Quality Assurance mechanisms which are summarised in the box below.

The quality assurance of TRAC

All HEIs have been subject to an external assurance review of their implementation of TRAC, carried out in the joint higher education funding bodies/RCUK Quality Assurance and Validation (QAV) exercise undertaken in 2008. They also carry out internal audit reviews of aspects of their TRAC models, and some have been reviewed under the new RCUK quality assurance programme or by auditors working for the European Commission.

TRAC also relies heavily on institutional self-regulation of data quality. Each HEI is required to scrutinise its own TRAC methods and procedures and to report on this to its governing body. The annual TRAC return and data from TRAC (T) are signed off by the head of institution before reporting to HEFCE. In addition, HEFCE has provided support to a national TRAC benchmarking service, which enables all HEIs to check and compare their TRAC data and methods with their peer institutions.

Many institutions are using TRAC internally (such as: using similar cost drivers as those in their resource allocation methods; in a joined-up way with their workload management or planning systems; in contributions to reviews of course or department costing; in providing costs to inform negotiations on non-public activity). They are encouraged to do this, as the overseeing committees (Financial Sustainability Strategy Group and TRAC Development Group) consider that this helps to increase the robustness of TRAC data. The extent to which this happens varies significantly by institution, and can be very little in some; however, it does appear to be increasing across the sector.

- 7.18 There are several aspects of TRAC which are particularly relevant to this study.

Minimum requirements

- 7.19 There are a set of minimum requirements that all institutions must follow if their data is to be considered robust by funders (particularly, the higher education funding bodies and the research councils). The Statement of Requirements is at <http://www.jcpsg.ac.uk/guidance/require/> and institutions' compliance with these is assessed under the quality assurance procedures described above.
- 7.20 There are some requirements that are specific to clinical subjects, and as part of this study we assess the extent to which institutions are complying with these requirements. We also identify where the requirements are unclear or need to be changed, in order to improve the information produced at this more detailed level of clinical subject area (see Chapter 7).

Materiality and robustness

- 7.21 The principles of TRAC include a strong concept of 'materiality' (i.e. the costing effort should be proportionate to the significance of the costs). Materiality gives the maximum variation allowed if a requirement (or requirements in aggregate) are not fully complied with
- 7.22 TRAC uses the concept of 'robustness' to describe whether the processes and data meet the minimum requirements, to the required level of materiality.
- 7.23 It also uses the concept of 'fitness for purpose' to indicate that the quality of TRAC data is appropriate for the national purposes for which it was designed. In this study we consider the data is 'reliable' if it is fit for the purpose of informing the current funding models.

7.24 These terms are formally defined in the Glossary.

Academic staff time

7.25 Academic staff time is a key driver of costs – it is the main driver of academic pay costs and a significant driver of departmental and central service costs. Institutions ask their academics to record their time in as many as 15-58 categories. These ‘academic staff time systems’ record all of the time of academics and clinical academics covered by their contract with the university. This includes clinical services. (It should not include private consultancy or private practice, or clinical services provided directly to the NHS and paid for by the NHS directly to the consultant.) The time every academic records against activities – predominately teaching, research, clinical services and management/professional development/administration – is converted to a percentage, and is used to allocate their pay costs.

7.26 These time recording systems mask four things:

- Because of the use of percentages against pay, the length of their working week is not a factor recognised in cost allocation. If a clinical academic starts to work beyond 37 hours on, for example, Teaching (and the concept of a 37 hour week is itself to be questioned) then a higher proportion of their pay would be allocated to Teaching than before, but a lower proportion would be allocated to Research, Clinical Services or Administration/Management;
- Teaching and Research are the two main activities of academic staff and are inter-linked in complex ways;
- Clinical Services is the other main activity of clinical academics. This time is allocated to Teaching, Research or Other. In medical and dental schools this term covers:
 - ◆ patient care in a ward, dental unit, or other clinical environment;
 - ◆ with or without students present (whether Teaching or Postgraduate Research students);
 - ◆ with or without an underlying element of Research;
 - ◆ clinical management or administration;
- Academics in veterinary science departments also allocate time to clinical services. This is associated with animal care. This again is reallocated to Teaching, Research or Other activities;
- Administration, management and professional development (scholarship) are not ‘direct’ activities, and also need to be attributed to Teaching, Research and Other. These form a significant part of the time being recorded.

TRAC (T)

7.27 TRAC (T) is the TRAC method for producing further analysis of the costs of Teaching. It was introduced in 2006 and has been implemented in England, Northern Ireland and Scotland. Four years of data have now been prepared and benchmarked (and the four-year combined results are shown in the scatter graphs after Table 5 in Appendix D).

7.28 The methods are part of the TRAC Statement of Requirements, but are not subject to the formal external quality assurance processes described above.

The specified requirements should however be met by any institutions that wish their data to be considered to inform the funding councils' funding methods for teaching.

- 7.29 The methods are given in <http://www.jcpsg.ac.uk/guidance/2008/>. Briefly, they require the following process:
- Institutions are to take the costs allocated to Teaching in annual TRAC;
 - show these by HESA academic cost centre (which requires a mapping of data from institutions' own departments or schools);
 - separately show publicly-funded and non-publicly funded Teaching (as calculated under annual TRAC);
 - remove the costs of non-HEFCE fundable Teaching from publicly-funded Teaching, to give the costs of HEFCE-fundable Teaching;
 - remove non-subject related costs from HEFCE-fundable Teaching. These are additional costs of activities that are separately funded by HEFCE, such as long courses, old/historic buildings, part-time students, and widening participation. HEFCE funding in each area is used a proxy for the additional cost of each area;
 - remove the actual costs of bursaries and scholarship from HEFCE-fundable Teaching;
 - this gives a total subject-related cost, by each of the 41 HESA academic cost centres, and sub-cost centres, for all HEFCE-fundable students (both under-graduate and postgraduate taught, for all years of their course);
 - this is divided by the full-time-equivalent number (from HESES and HESA) of HEFCE-fundable students;
 - to produce an average annual full economic cost of a full-time-equivalent HEFCE-fundable student – a result called the Subject-FACTS.
- 7.30 The relevant costs for this study are those in HESA academic cost centre CC01 (clinical medicine), HESA academic cost centre CC02 (clinical dentistry) and HESA academic cost centre CC03 (veterinary science). Although student numbers are classified between price groups A and B in the three cost centres for funding purposes, institutions infrequently show costs allocated at this level – we cover this in our report.

TRAC-RCR

- 7.31 TRAC-Research Cost Relativities (RCR) was implemented by a sample of institutions across the UK in 2008, following several years of pilot work. Data has been produced for two years, and that for 2009/10 is given in Table 6 of Appendix D.
- 7.32 Its purpose is specifically to produce cost relativities for Research that could be used to inform the funding bodies' research funding methods, should that be appropriate. Because of this more limited aim, it only involves a sample of institutions, and is not a mainstream TRAC system. It does not form part of the TRAC Statement of Requirements.
- 7.33 However, participating institutions used agreed principles and methods, and the results were benchmarked to help ensure that the data was fit for purpose.
- 7.34 Broadly, TRAC-RCR uses the Research costs produced under annual TRAC, shown as three research sponsor groups (institution-own-funded; postgraduate

research students; research grants and contracts). These are analysed into HESA academic cost centres. The costs of each group are divided by FTEs (academic staff time allocated directly to Research for I/O and RG&C; PGRs for postgraduate research students) to give a cost/FTE for each discipline. These are compared with the cost/FTE for a group of disciplines covering social sciences and the humanities, to produce a cost relativity for each discipline.

- 7.35 Total Research costs are separately divided by academic staff time allocated directly to Research, to produce a cost relativity for total Research costs.
- 7.36 Full details of the methods, how they were developed, the results, and how these can be interpreted, are given in the TRAC-RCR report by J M Consulting to the UK higher education funding bodies: 'Review of research cost relativities based on the Transparent Approach to Costing' available at http://www.hefce.ac.uk/pubs/rereports/2011/rd09_11/
- 7.37 We note that this gave qualifications about how the data could be relied upon and used, and these are as relevant to clinical subjects as to all others. It is therefore as important to read that report as Chapter 6 in this study. Chapter 6 assumes readers have read and understood the TRAC-RCR report, and does not repeat material.

Overall

- 7.38 In principle, the TRAC (T) and TRAC-RCR costs should provide the most reliable source of information on relative costs. TRAC is the only activity-based costing system able to provide this type of data. The HESA data are not activity-based (i.e. they include academic staff and academic department costs of both Teaching and Research together) and they do not analyse central university costs (non-departmental costs), or include research grant and contract costs alongside academic department costs in the way that TRAC does.
- 7.39 Our report considers whether TRAC, TRAC (T) and TRAC-RCR data provides reliable data.

Appendix C: Factors affecting variability of clinical costs

A wide range of cost drivers and methods and data were reviewed in the study. The following is a list of those which were identified as possible problem areas for this study – in the terms of reference, by the Steering Group or during the case study visits. Where they might result in a material impact on clinical data, they are discussed in the main body of the report (chapter references are provided). Otherwise, a brief comment is given here.

Issue		Discussion
Pre-clinical and clinical distinction		
1	Pre-clinical and clinical costs cannot be separately identified.	See Chapter 3
2	Non-clinical and clinical costs in Research cannot be separately identified.	See Chapter 6
3	Institutions have different proportions of price group A and B students. Some B students may be allocated to non-clinical cost centres.	See Chapters 3 and 4
4	Weightings given to long or standard courses (in the student cost drivers) are unlikely to be appropriate for clinical subjects.	This was not done by any institution, although some were contemplating it. The same is true of PGT vs. UG students in these clinical areas. See Chapter 7
Clinical services		
5	The cost of time on O(CS) is allocated variously between T, R and O – generally irrespective of whether staff have reimbursed salaries.	See Chapters 3 and 6
6	Some 'agency' payments by the NHS for merit awards, ADHs etc have not been allocated to Other	See Chapters 3 and 6
7	Some other costs are reimbursed by the NHS and have been left in Teaching	See Chapters 3 and 6
8	O(CS) is sometimes allocated to NPFT, or non-HEFCE fundable Teaching, as well as to Subject-FACTS; and sometimes not.	See Chapter 7

Issue		Discussion
9	O(CS) sometimes does not get allocated Support costs. Sometimes it does not get allocated the Support time of academics.	See Chapter 7
10	Clinical Services activity with PGRs present is never separately identified.	Applicable to all institutions. Could not be quantified. Given the difficulty currently experienced in correctly identifying and allocating O(CS) this has not been identified as an issue for TRAC to correct.
11	HEFCE's funding of part of clinical academics' distinction awards etc is in Subject-FACTS.	See Chapters 3 and 7
12	Clinical Services time is sometimes arrived at on the basis of programmed activities.	See Chapters 3, 6 and 7
Institution-own-funded Research and scholarship		
13	Should some I/O costs be included as scholarship?	See Chapter 3
14	I/O might be overstated as it is sometimes used as 'Other'	Considered as part of the general issue above.
15	Scholarship is being allocated differently to T, R and O by different HEIs.	See Chapter 3
Dentistry		
16	Not all institutions have pre-registration students	See Chapter 4
17	Time data for TRAC is often not robust because of the sampling techniques applied to small departments	See Chapters 4 and 7
18	The use of time data for an individual in allocating their pay costs may not be appropriate if the time data is based on diaries	See Chapter 7
19	Not all estates costs are included as they are not currently being recharged by the NHS.	See Chapter 4
20	It is not always clear whether part-time consultants are charging time to O(CS), and if they should be doing so.	See Chapters 4 and 7

Issue		Discussion
21	It is not possible to identify the full cost of O(CS) as some clinical services may be allocated directly to Teaching.	See Chapter 7
Veterinary science		
22	Farms and hospitals generate income. There is a wide range of practices on how the costs of this are identified and allocated.	See Chapters 3 and 7
Clinical medicine – Research		
23	The RCR denominator excludes research fellows.	See TRAC-RCR report, and Chapter 6 of this study.
24	Institutions with very small amounts of Research often do not report robust costs at cost centre level.	Relevant to institutions outside our case studies. Not material when RCRs are calculated using the mean, or large number of institutions report Research in a discipline area, as in medicine.
25	PGR costs are probably understated.	See Chapter 6
26	Academic time in supervising PGRs is sometimes included in the denominator for the RCR calculated on total Research costs.	See Chapter 6
27	I/O costs are sometimes overstated as research assistant FTEs are not included in the staff cost drivers used to allocate Research costs between research sponsor types.	See Chapters 6 and 7
28	I/O costs per FTE often look too high or too low, without good explanation	See Chapters 6 and 7
29	Research assistants between contracts are allocated variously to S, T and I/O Research	See Chapters 6 and 7
30	Co-Investigators in other departments are not recorded in the RCR calculation (neither as cost nor FTE).	See Chapter 6
31	Clinicians (in NHS) are not recorded in the RCR calculation.	See Chapter 6

Issue		Discussion
Other issues (affecting more than one activity)		
32	Collaborative arrangements mean that the data is not robust for some partners.	This can be of significance for subjects with a small number of institutions. See Chapters 4, 5 and 7.
33	Changes in profile of activity – e.g. start-up of medical school; significant changes in dental technician numbers	Identified in some institutions. Will affect Subject-FACTS, often materially. Different costs arise from different types of institution and student population but all are treated the same way in TRAC and these were not factors to be investigated in the scope of this study. Does not affect reliability of their TRAC data (if activities in a year are properly reflected in cost drivers used for that year).
34	Some department or school costs may be allocated to more than one cost centre.	Not identified as a problem in almost all case study institutions. See Chapter 6.
35	Academic staff time data is sometimes applied to net pay, after direct recharges to research projects have been made.	Applies to all subjects, and only some institutions. See Chapter 7.
36	Academic department circulation space is being allocated using a variety of cost drivers.	Acceptable under TRAC. See Chapter 7.
37	Not all Teaching costs are included where the university has separate colleges.	Would affect all subjects. Is only relevant to a small number of institutions.
38	A wide range of academic time systems is used.	Acceptable under TRAC. See dentistry above.
39	A wide range of cost drivers is used for non-academic costs e.g. department non-pay, central services.	Acceptable under TRAC. Applies to all subjects. Inappropriate cost drivers were used in two institutions (did not reflect latest student data in dentistry; led to under-statement of costs of Research). See Chapter 4. (Not material for Research.)
40	Clinical academics may work long hours.	See Appendix B and Chapter 4
41	RFI might overstate (or understate) institutions' long-term investment needs	Raised as a concern at one institution. Being addressed by FSSG's work on sustainability (see Appendix B). Applies to all subjects.

Other areas were studied but no problems were identified. These included the following:

	Removal of non-subject related costs, including bursaries and scholarships
	Allocation of Teaching between PFT and NPFT
	Allocation of PFT between non-HEFCE-fundable and HEFCE-fundable
	Identification and allocation of research facility costs
	Identification and allocation of research technician costs