

BAILEY & MOORE

  
*National Cancer Action Team*

# **Radiotherapy Costing and Tariff Development Project**

Delivering World Class Radiotherapy 

**July 2010**

## Table of Contents

	Page
1. Background	3
2. Understanding the National Picture	5
3. Counting and Recording Activity	8
4. Allocating Costs to Radiotherapy	11
5. Cost Variations	14
6. Setting a National Tariff	17
7. Recommendations for Radiotherapy Services	20
8. Conclusions	22
9. Next Steps	23
Appendices	
1. Invitation to tender – scope of work	
2. Schedule of meetings with Trusts	
3. Sample agenda for Trust meetings	
4. Proforma for notes of Trust meetings	
5. Brief guide to coding, counting and Reference Costs	
6. List of all submitting Reference Costs in 2008/9	
7. Key data for Trusts	
8. Comparative ratios by Trust	
9. Charts of comparative ratios by peer group	
10. Draft costing advice for Trusts	
11. Factors driving cost variations	

# National Cancer Action Team

## Radiotherapy Costing and Tariff Development

### 1 Background

- 1.1 Although there is no official policy as to when radiotherapy may come within the scope of Payment by Results, a national tariff could be implemented by April 2013. A reasonable assumption, therefore, is that it could be based, in part, on the 2009/10 or 2010/11 Reference Costs collections.
- 1.2 Furthermore, irrespective of developments in the national tariff, radiotherapy has been expanding significantly in recent years as government policy has been to invest in this area as part of its national plan for cancer. Both the volume of activity and the sophistication of treatment employed (e.g. Intensity Modulated Radiotherapy) are increasing sharply. Arrangements for commissioning such services will need to keep pace with these developments.
- 1.3 For these reasons, the quality and robustness of activity recording and costing has become a key issue for radiotherapy services.

### Current Situation

- 1.4 Reference Costs for radiotherapy were reviewed for 2006/07 and 2007/08 by the Department of Health (DH) and the National Cancer Action Team (NCAT). These showed a wide variation in the unit costs reported, raising concern that there were significant variations in data quality. In summary there were:
  - some significant differences between individual Trust's reference costs
  - significant differences in how costs were identified
  - different levels of service included in radiotherapy costs between Trusts
- 1.5 This indicated an urgent need to ensure accuracy of radiotherapy service costs as Commissioners look to expand radiotherapy treatment commissioned in line with the recommendations made by the National Radiotherapy Advisory Group and taken forward in the Cancer Reform Strategy.
- 1.6 To address these concerns, NCAT circulated a detailed costing template which could be completed by any radiotherapy provider. This template built up radiotherapy costs from individual locally-described activities.
- 1.7 Feedback from Trusts suggested that the wide variations in reported cost could be due to a number of factors, including:
  - Different conventions for counting and recording the activity – *for example, has only one fraction been counted per patient attendance?*
  - Different costing assumptions – *for example, how has consultant oncologists' time/cost been allocated between radiotherapy and other cancer services such as chemotherapy?*

- Genuine variations in cost to the organisation – *for example, where expensive equipment had been purchased from donated funds rather than purchased by the Trust.*
- 1.8 There is a variety of commissioning arrangements across England, with some Commissioners remaining on fixed block contracts for all radiotherapy activity, based on historical budgets. Other areas of the country have developed more sophisticated volume-based contracts with locally-agreed tariffs. It is recognised that commissioning arrangements need to support the developments in the service, with full cost and volume contracting based on reported activity and a robust understanding of costs.

### **Scope of the Radiotherapy Costing and Tariff Development Project**

- 1.9 Work to support Trusts in understanding their radiotherapy costs commenced with the introduction of the costing template. To take this forward, NCAT proposed that an extensive review of costs should be undertaken on a national scale.
- 1.10 A short-life team from NCAT, including senior finance support to provide expertise, was brought together to meet with the relevant multidisciplinary team from each Trust to:
- Explore how costs have been derived
  - Understand what assumptions have been made in the allocation of costs between planning and treatment activities across workforce, capital and overheads
  - From the discussions, develop a set of comprehensive guidance
- 1.11 The overall aim of these meetings would be to gain an understanding of the various factors that cause cost variations across Trusts, assess the areas in which Trusts are experiencing difficulties when costing radiotherapy and agree where NCAT could provide further support so that the quality of costing continues to improve. It was also intended to inform the debate on the setting of radiotherapy tariffs.
- 1.12 NCAT's full specification for the project is attached as **Appendix 1**.

## 2 Understanding the national picture

### The costing template

- 2.1 Initial support from NCAT consisted of a detailed costing template, circulated to all Trusts. This template built up radiotherapy costs from individual locally-described activities. The purpose of the template was both to provide Trusts with a methodology to identify radiotherapy costs (where a robust process was not already available) and to give a breakdown of average costs to enable benchmarking and further understand variations.
- 2.2 Trusts completed the template by:
- Listing all their radiotherapy activities as they are recorded and described locally
  - Estimating across each staff group (medical staff, radiographers, medical physicists, etc), by pay grade where possible, the amount of time each group spends on each activity
  - Applying a cost to these times, based on the pay grades of the staff involved
  - Multiplying these costs by the number of times each activity was performed in the year in question
  - Reconciling the total costs from the template, after overheads and other non-pay costs are added, to their Reference Costs return.
- 2.3 The template was first issued in 2007/08 and subsequently expanded and updated for 2008/09. It met with mixed success – many Trusts struggled to complete it fully as it required a significant input of time from radiotherapy management and finance staff. For other Trusts, it provided a methodology for costing that did not previously exist. It also allowed some anonymised benchmarking data to be circulated, based on the work of Trusts that had completed the relevant sections.
- 2.4 Trusts have now been asked to complete the summary sheet of the template with the figures that underpin their 2009/10 Reference Costs submission, although this is entirely voluntary.

### Meeting with Radiotherapy Providers

- 2.5 As described in paragraph 1.10, meetings were organised with 49 providers of radiotherapy services in England.
- 2.6 The aim of these meetings was to:
- Ensure a consistent and accurate approach to counting activity
  - Promote a robust costing methodology, in line with national standards
  - Gain an overview of the significant factors that make each Trust's costs vary compared to their peers
  - Assess any particular difficulties encountered when costing radiotherapy and suggest ways to address these
  - Ask for views regarding what further support Trusts would find useful from NCAT in the future

- 2.7 NCAT invited radiotherapy managers, finance leads and reference cost leads to explore and understand the issues mentioned above. Local Cancer Network Directors and SHA leads were also invited to give a strategic overview. Meetings were organised by each SHA and the full schedule is attached at **Appendix 2**.
- 2.8 To ensure a complete and consistent picture of all provider issues, every meeting followed the same format and agenda (copy attached at **Appendix 3**). Attendees' comments were then recorded on a standard template (copy attached at **Appendix 4**).
- 2.9 Meetings began with a discussion of the Trust's 2008/09 Reference Costs data compared to their peers (detailed below). Discussion then focused on activity counting and each major area of expenditure so as to gain an understanding of current practice. Finally, Trusts were invited to share their current difficulties in costing radiotherapy and suggest what support they would like to receive from NCAT in the future.

### **Analysis of 2008/9 Reference Costs**

- 2.10 The Reference Costs exercise is a national collection of cost data undertaken by the Department of Health each year in June. Every NHS provider submits this data, based on the previous financial year's accounts. Therefore the 2008/09 collection, submitted in June 2009, was the most recently published data available. In order to provide a set of benchmarking data for discussion at the Trust meetings, 2008/09 Reference Costs were analysed and compared.
- 2.11 An explanation of radiotherapy reference costs, and their basis in clinical coding and Healthcare Resource Groups (HRGs), is given at **Appendix 5**.
- 2.12 The data downloaded from the DH web site showed that there were 51 providers of Radiotherapy services in England in 2008/09. One Trust, known to be a provider of Radiotherapy services, had not submitted any data (Imperial College NHS Trust). Three providers had submitted radiotherapy data (Peterborough & Stamford Hospitals NHS FT, Gloucestershire PCT and West Kent PCT) but discussions with the relevant SHAs confirmed that these were incorrect, for example outpatient clinics included in error.
- 2.13 The providers above were divided into 5 peer groups of 9-10 providers each, based on number of fractions of treatment delivered in 2008/09 as reported in Reference Costs. This was to enable radiotherapy departments of similar size to be compared in groups rather than geographically which would, for example, compare small satellite units with major cancer centres.
- 2.14 The attribution of Trusts to peer groups was tested by using the same grouping but based on the reported total cost of treatment, rather than activity. This caused anomalies and this was raised with the 4 providers concerned. During discussions all 4 flagged issues within their costs that caused these anomalous results. Consequently the volume of fractions appeared to be the most reliable indicator of department size.
- 2.15 A list of all providers that submitted Reference Costs for radiotherapy in 2008/09 and their allocated peer group is attached at **Appendix 6**.

2.16 To facilitate benchmarking within each peer group, a set of four comparisons was produced as follows:

- Average unit cost of a planning event
- Average unit cost of a fraction of treatment
- Split of total costs between planning and treatment
- Fractions delivered per planning event

2.17 The comparison was presented to enable each Trust to see their own data in the four measures above, compared to other Trusts in their peer group, as well as looking at the average for the peer group and the national average.

2.18 The costs used in the above charts were all deflated by each Trust's Market Forces Factor (MFF). The MFF is a measure of "unavoidable" cost differences between NHS providers based on their geographical location, principally caused by rates of staff pay and the cost of land and buildings. The MFF for each provider is published each year. When comparative data from Reference Costs are published, it is normal practice to deflate all submitted costs by the MFF to ensure a fair "like for like" comparison between Trusts in different parts of England.

### **Key Data Feedback**

2.19 Following the meetings, an overview of the national picture in terms of key data was prepared, shown at **Appendix 7**, and which covers the following:

- Planning – number of events, total cost
- Treatment – number of events, total cost
- Number of Linacs on site (including service efficiency and non-operational)

2.20 For the purposes of comparison, the following measures are shown at **Appendix 8** and as charts at **Appendix 9**:

- Planning – unit cost (the average cost per planning event)
- Treatment – unit cost (the average cost per fraction)
- Number of fractions per planning event
- Total costs of planning: Total costs of treatment
- Average number of fractions per Linac
- Total cost quantum (planning and treatment) divided by number of Linacs used

2.21 The comparison shows the wide range of values that were submitted by Trusts as part of their reference costs submission and provides an indicator of where there might be issues regarding the accuracy of counting and/or costing.

### **Issues Raised by Trusts**

2.22 The broad themes explaining variations in average costs across the Trusts are detailed in sections 3 to 5 below:

- Counting and Recording Activity (Section 3)
- Allocation of Costs to Radiotherapy (Section 4)
- Major Cost Variations (Section 5)

### 3 Counting and Recording Activity

#### Current Situation

- 3.1 Historically, radiotherapy has suffered from poor data quality. In 2007, a report by NCAT indicated that the standard OPCS codes used to capture planning and treatment activity had become out of date. They failed to describe accurately newer modalities of treatment and consequently were inconsistently used by Trusts.
- 3.2 As a result, the DH, with support from NCAT, initiated a project to collect a national radiotherapy data set (RTDS). This has been mandatory for all radiotherapy providers from 1 April 2009. NCAT has been intensively supporting and promoting the collection of this data throughout the 2009/10 financial year. It was evident from the meetings that the additional rigour imposed by the process of collecting and submitting this data each month has improved the overall quality and completeness of data in most Trusts.
- 3.3 At the same time, OPCS codes have undergone several revisions and their latest iteration (version 4.5) has sought to improve the descriptions used to capture radiotherapy activity. OPCS coding is the main driver of the HRGs that are used in Reference Costs, as described in **Appendix 5**.
- 3.4 In the meetings, the majority of Trusts had a reasonable level of confidence in the quality and completeness of the activity underpinning their average prices. Many of those which expressed concerns over the activity reported in 2008/09 Reference Costs were of the view that 2009/10 data would be much improved, because of the requirements to submit the RTDS as described above.

#### Counting Treatment Activity

- 3.5 The counting of treatment fractions was generally thought to be the most straightforward part of activity recording. This reflects that fact that Linacs are highly computerised equipment and often link automatically to recording and verification systems. This data is used operationally within the radiotherapy department, e.g. to verify treatment and carry out safety checks, and is therefore subject to rigorous quality assurance.
- 3.6 A fraction is counted as part of the RTDS and also benefits from a clear definition within the NHS Data Dictionary:

*“A set of exposures delivered or intended to be delivered to a PATIENT in the course of one visit to a radiotherapy room.”*

[http://www.datadictionary.nhs.uk/data\\_dictionary/nhs\\_business\\_definitions/f/fraction\\_de.asp](http://www.datadictionary.nhs.uk/data_dictionary/nhs_business_definitions/f/fraction_de.asp)
- 3.7 It is then relatively simple to adjust for activity that should not be counted for Reference Costs, such as:
  - Multiple exposures or fractions in a single visit
  - Non-NHS treatment (e.g. private patients)
  - Non-treatment exposures (e.g. planning activity which should be included as part of the planning event for that course of treatment, equipment quality assurance, etc)



## Counting Planning Activity

- 3.8 The main area of inconsistency was in the definition and counting of planning events. Unlike fractions of treatment, here is no simple definition of a planning event in the NHS Data Dictionary.
- 3.9 According to current OPCS coding and Reference Costs guidance, a planning event should be counted only once for each course of treatment, however many times the patient attends hospital. Another complicating factor is that if a patient is planned and receives their first fraction of treatment in the same attendance, this should be recorded as one planning event plus one fraction of treatment.
- 3.10 Not all Trusts had followed this strictly, often because of the limitations of their recording systems. These could often identify that a patient had attended for a planning clinic, but they were not always designed to group these attendances into a single event relating to a specific course of treatment.
- 3.11 Several Trusts indicated that they overcame the issue above simply by counting courses of treatment from the recording and verification system. This is then used as a proxy for the number of planning events. This approach fits well with the national data set which requires Trusts to uniquely identify Episodes (i.e. the period from the start of planning to the end of treatment) and Treatment Courses (i.e. the period from the first fraction delivered to the last fraction delivered).
- 3.12 The issue of “multiple phase” courses of treatment was also raised. This is where a single course of treatment is divided into several phases, where each phase requires some re-planning according to the progress of the treatment delivered in the previous phase. According to the current coding guidance, the planning work would nonetheless be recorded as a single event in these circumstances. Only where the re-planning resulted in a completely new course of treatment being started would an additional planning event be recorded. Several Trusts felt that this was inappropriate as it failed to reflect the substantial resources that could be expended on re-planning.
- 3.13 In April 2008, a paper was produced by the Radiotherapy Coding Working Group which proposed to amend the definition of a planning event such that one per prescription may be counted. This would lead to multiple planning events being recorded in the case of courses of treatment with multiple phases.
- 3.14 This proposal has been submitted to DH for consideration but has not yet been ratified for inclusion in the OPCS coding guidance. However, this convention is already being used in the collection of the national radiotherapy data set and guidance to this effect is included on the RTDS web site:

***“Recording Preparation OPCS codes:***

*These may be applied to every prescription where relevant, and will only be recorded in the dataset on one attendance per prescription. The appropriate code would normally be recorded on the first attendance for treatment on the relevant prescription in addition to the delivery code. If a prescription does not require any planning, no codes will be recorded.”*

<http://www.canceruk.net/rtservices/rtds/rtdsdownloads/Guidance%20for%20Procedure%20OPCS4.5%20codes%20for%20Radiotherapy.doc>

3.15 There are, therefore, several difficulties that Trusts need to overcome when counting planning events for Reference Costs:

- There is no simple definition of the term in the NHS Data Dictionary
- Connecting for Health and Reference Costs guidance on coding and RTDS guidance on coding are inconsistent
- Trusts need to extract the data from their own recording systems in such a way that records (or calculates) one event per treatment course

## Summary

3.16 The introduction of RTDS has greatly improved both the data and management's understanding of data quality issues.

3.17 Extracting volumes of fractions delivered was relatively straightforward from computerised radiotherapy systems.

3.18 Recording planning events was more problematic for the reasons summarised above. Most Trusts had developed a methodology for extracting this data or via proxy measures. However, by calculating the ratio of treatment fractions to planning events against peer group and national averages (see graphs included in **Appendix 9**), a significant number of Trusts are shown as outliers, suggesting problems in this area.

## 4 Allocating Costs to Radiotherapy

### NHS Costing

4.1 NHS costing methodology is governed by the NHS Costing Manual, which stipulates minimum national standards for costing methodology. Trusts will normally have costing software linked to their general ledger which captures direct costs and carries out the apportionment and allocation of indirect costs and overheads, in accordance with the manual. These systems calculate “cost pools” for each service area which can then be divided by the relevant activity measures to derive average unit costs.

4.2 The manual states that:

*“Costing must be undertaken on a full absorption basis. Costs should be matched to the services that generate them and should reflect the full cost of the service delivered. This will be best achieved by maximising the proportion of costs charged directly to services and adopting a standardised approach to the apportionment of overheads and indirect costs”*

[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_112597](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_112597)

### Trusts’ Costing Methodologies

4.3 Many Trusts reported well-developed costing processes in place, including service level reporting and patient level costing. However, this was not always evidenced by the results of the benchmarking of reference costs.

4.4 There were also a number of Trusts that described fairly rudimentary methodologies for costing radiotherapy using the basic “top-down approach” output from their costing system.

4.5 A small number of Trusts indicated they had serious concerns about their ability to deliver robust costs in time for the Reference Costs deadline in June 2010. Where Trusts’ costs showed them to be an outlier compared to their peer group, support and advice was provided (for example linking Trusts with well-developed systems to “buddy” those Trusts with costing difficulties). It is anticipated that variation caused by inconsistent costing will reduce in the next reference cost submission, as Trusts are now aware of the need to focus on this service and improve the quality of costing.

4.6 More broadly, it was observed that the variation in the quality and robustness of costing appeared to be largely dependent on the level of resources that Trusts put into costing in general, and radiotherapy costing in particular. Furthermore, good quality costing depends on the close working between:

- The radiotherapy service manager and their staff
- Business/management accountants for cancer services/radiotherapy
- The individual or department leading the production of reference costs

Each of the 3 departments need to work carefully and closely together to ensure that the input of data and knowledge is sufficient and that the outputs are consistent. Recent initiatives to promote patient level costing and service line reporting have improved these links in many Trusts, but there were other cases where working did not seem to be joined up.

4.7 Specific issues that arose during discussions with Trusts are summarised below.

### **Staff costs**

- 4.8 Most Trusts identified allocation of medical time as an area of difficulty when costing because job plans were not available, accurately documented and/or medical staff would often combine a number of different activities (e.g. outpatient consultation and radiotherapy planning) in a single PA. In some cases, medical time was treated as an overhead and thus allocated over all radiotherapy services. This causes a disproportionate amount of time/costs to be applied to treatment, which is unlikely to reflect the reality as the majority of consultant time is likely to be spent in planning.
- 4.9 Indirect costs such as medical physics and maintenance and engineering staff, where the budget may sit in another department but resources are used in part for radiotherapy services, need to be captured accurately. This requires knowledge of costs for which radiotherapy managers may not have budgetary responsibility. This issue also occurs when the service costs lie within another Trust or external provider (e.g. a managed equipment service provider) and are provided under contract. Such contracts may specify the total amount paid but not necessarily sufficient detail to identify the radiotherapy element of the charge.

### **Fixed assets**

- 4.10 Accurate asset registers covering individual pieces of equipment are not always available. Given the huge significance of expensive equipment in the costs of radiotherapy, these need to be kept up to date. They also need to show a clear distinction between donated, granted (e.g. NOF/lottery funded) and purchased assets and the appropriate accounting treatment for each must be reflected in costs.
- 4.11 Similarly, some Trusts could identify the costs of land and buildings quite accurately, for example where radiotherapy services are provided in distinct premises. This is more problematic for services co-located within a large building.

### **Apportioning overheads and income**

- 4.12 Private patients' and other income, such as R&D, should be identified where attributable to radiotherapy and offset against costs. However, some Trusts applied the total private patient income for their Trust as a whole and apportioned this over departments.
- 4.13 Apportionment of overheads was generally carried out as prescribed by the costing manual, but it was recognised that energy and other utilities (usually being apportioned on floor space) may be understated as radiotherapy services use disproportionate amounts of energy and water. Proposals to use a weighting to reflect this were discussed but very few Trusts had taken this forward.

### **Provider to provider recharges**

- 4.14 Where services are provided to/by another provider, for example a cancer centre providing outreach clinics in another Trust, there was some confusion over which

organisation should record the cost and activity. Trusts should ensure costs and activity are only counted in one organisation.

4.15 The NHS Costing Manual suggests the following default treatment:

- *“The **receiving** NHS organisation should record **both** the costs and activity. Such costs should be added to the cost of the Finished Consultant Episode/Spell/attendance/client if necessary;*
- *“The **providing** NHS organisation should match the income and expenditure as with support services, but any resultant **activity (FCEs/Spells/attendances etc) should be excluded** and reconciled through the appropriate statement detailed in Section 11. Thus, the matching principle of activity and cost is maintained as the costs are offset by the income and the activity is not double counted across the NHS as a whole.”*

[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_112597](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_112597)

## Summary

4.16 Many Trusts reported well-developed costing processes in place, however, this was not always evidenced by the results of the benchmarking of reference costs. There were also a number of Trusts whose processes were rudimentary. The variation in the quality and robustness of costing appeared to be largely dependent on the level of resources that Trusts put into costing.

4.17 There is evidently a risk that fundamental errors in costing methodology will occur if the principles of the NHS Costing Manual are not followed carefully and if the issues raised above are not dealt with appropriately by Trusts. In addition, important details, such as the split of costs between planning and treatment, can be materially distorted if costing methodology is incorrectly applied.

4.18 NCAT will continue to collect costing data through the template and publishing benchmarking information. Additional costing guidance for Trusts is attached at **Appendix 10**.

## 5 Cost Variations

### Introduction

- 5.1 During the course of the meetings, each Trust was asked a series of standard questions about the delivery and structure of its radiotherapy service. These were designed to identify differences in the infrastructure and funding that may lead to significant variances between Trusts and their peers.
- 5.2 The most significant variations in cost structure were due to the range of costly equipment used to delivery radiotherapy treatment. This variance related to both the age of the equipment, the replacement profile and the source of funding. For example, the purchase cost of a Linac (the most expensive item used) is typically £1.5m to £2m with an estimated life of 10 years.
- 5.3 In accounting terms, the purchase cost of a new Linac is classified as capital expenditure and as such is not directly reflected in Reference Costs. However, revenue costs are affected when a new Linac is brought into service in the following ways:
- Depreciation – Trusts are required to write off the purchase cost in equal instalments over the expected life of the equipment. For example, if a Linac is purchased for £1.6m and is expected to be in service for 10 years, a Trust will charge £160k each year to its costs.
  - Capital Charges – Trusts are required to pay 3.5% of the balance sheet value of the asset each year in capital charges. Using the example above again, this would be calculated as 3.5% on £1.6m, equal to £56k in the first year of operation.
  - Other Related Costs – when a new Linac is purchased, it will reflect the latest complex technology and this generally increases costs such as training, servicing and maintenance. Additionally, time required per fraction may increase as staff become accustomed to the new technology.

### Issues relating to Linacs and other expensive equipment

- 5.4 In a number of Trusts, a proportion of the Linacs were donated (e.g. from charitable appeals or Trust funds) or granted (e.g. NOF/national lottery funded). Donated and granted assets attract no capital charges and their depreciation is offset in full by an accounting adjustment. If the majority of a Trust's Linacs have been donated or granted, this will obviously lower their costs compared to having purchased the equipment. When these assets are replaced, the cost base will rise accordingly.
- 5.5 In 2008/09 leasing equipment, rather than purchasing outright, was also employed as a means of lowering costs and this would be reflected in comparisons of 2008/09 Reference Costs. However, from 2009/10, the public sector has moved to International Financial Reporting Standards which removes this as an option to reduce reported costs.
- 5.6 There was variation in the number of Linacs employed in relation to the total fractions delivered. The target for utilisation is 8,000 fractions per Linac per year (NRAG report, February 2007). Several Trusts had markedly lower utilisation rates than this, due to a number of factors, such as:

- Maintaining an additional “service efficiency” machine to be brought into operation if other machines failed
- How many hours per day machines were in operation – some Trusts reported machines only operational for half a day because of staff shortages, for example
- Having a more complex casemix (e.g. paediatrics) and therefore fractions taking longer to deliver on average
- Existence of non-operational equipment awaiting disposal, thereby creating double running costs

5.7 The age profile of Linacs in operation was identified as an important factor in three respects:

- Older machines will attract lower depreciation and capital charges. If a Linac is fully depreciated (i.e. used beyond its original estimated life) then depreciation and capital charges will be nil.
- There was some debate around the impact on maintenance costs. Some Trusts reported that these could be higher, as older machines frequently break down, others felt older machines were less likely to break down due to the “simpler” technology.
- If several machines need to be replaced in one financial year, this will cause a significant increase in costs in the year when the new machines are brought into operation. This is particularly relevant for Trusts that received several machines funded by the NOF in 2002. (It is worth noting that the NOF funded machines will reach the end of their useful lives around 2012 and this will cause a significant “spike” in costs nationally.) A smoother profile, with no more than one Linac to be replaced in any one year, results in a more manageable annual cost pressure.

5.8 Several Trusts had transferred their equipment (and, in some instances, buildings) to Managed Equipment Service providers or PFI suppliers. This is an advanced form of leasing, where the Trust pays an annual sum to an external provider under a long-term contract. In return, the contractor provides all equipment and assumes responsibility for replacing equipment at the end of its useful life. Such arrangements tended to result in higher costs than conventionally purchasing the equipment (although the Trust will benefit from improved cash flow and transferring the risk of rising prices to the contractor).

### **Other significant issues**

5.9 Contributions from external income (i.e. the amount by which income exceeds the cost of delivering the service) will reduce the total cost to the NHS. The most significant of these was private patient income, with a number of Trusts reporting considerable private patient activity. To a lesser extent, research and teaching income can contribute to the infrastructure costs of delivering radiotherapy, although these sources are being progressively reduced.

5.10 The mixture of staff types and grades used to deliver the various elements of the radiotherapy service varied considerably. This could be due to a number of factors,

such as historical custom and practice, local labour market, availability of students, etc. We did not have the data to quantify and benchmark this accurately but the 2009/10 template, if completed, will provide valuable insight into the impact of skill mix on service costs.

## Summary

- 5.11 The expensive equipment used to deliver a radiotherapy service has the potential to significantly vary costs between individual Trusts, as well as between financial years. The combination of the factors set out in this section will be one of the major determinants of a Trust's average radiotherapy unit costs. Important factors that affect Trust costs are summarised at **Appendix 11**.
- 5.12 These factors mean that radiotherapy Reference Costs will suffer from a relatively high degree of volatility compared to other hospital services. This should be borne in mind when benchmarking radiotherapy costs and drawing conclusions from costing data.
- 5.13 This degree of variation in cost also has significant implications for the development of a national tariff for radiotherapy.



## 6 Setting a national tariff

### Payment by Results

- 6.1 Payment by Results (PbR) is a method of funding NHS activity which has been used in England since 2003/04. It is based on a national tariff published annually which defines what price a provider may charge for the activities it undertakes.
- 6.2 Its objective is to provide a transparent, rule-based system for paying healthcare providers. It seeks to reward efficiency, support patient choice and encourage productivity. It replaced the previous situation where providers set their own prices and funding was reliant principally on historic budgets and local negotiating skills.
- 6.3 The national tariff uses HRGs as the currency for payment and each HRG attracts a standard price. Providers are reimbursed according to the number of patient spells they record by HRG.
- 6.4 The principal philosophy behind the existing national tariff is that activity is reimbursed at a standard average price. The introduction of a fixed (or maximum) price tariff will therefore create “winners and losers” For some activities a Trust will be reimbursed above the costs it incurs and for some activities below cost.
- 6.5 Nonetheless the tariff is the same for every Trust and it is for individual Trusts to manage their financial situation in total. For example, if a Trust cannot secure enough income to cover its costs for a particular activity, the Board may address this by reducing costs or even ceasing the activity. There is no option for the tariff being altered to suit individual organisations or circumstances whilst remaining under PbR. Instances where additional costs are deemed to be outside the Trusts’ control are dealt with through adjustments to the tariff structure rather than local negotiation.
- 6.6 A national tariff for radiotherapy does not yet exist. The underlying OPCS coding structure has been refined so as to make it fit for the purpose of coding radiotherapy activity. However, with the introduction of a national tariff, organisations will need to assess the impact of the factors raised in this report.

### Design of a Future Tariff

- 6.7 The design of any future tariff will need to take a policy view on which cost drivers are within the Trust’s control.
- 6.8 The majority of costs in radiotherapy, although volatile between years, will ultimately fall under the control of the Trust and should be capable of being planned for. This would include major capital expenditure, for example replacing Linacs at the end of their life, as Trusts would be aware of this years in advance and could plan accordingly.
- 6.9 However it is recognised within PbR that certain cost drivers cannot be managed by Trusts and, if their impact is material, the tariff may provide an element of additional reimbursement. For example, a patient’s age may impact on costs, as it affects the time required to treat and plan effectively. It is generally accepted that paediatric radiotherapy requires more resources than adult (although Trusts would need to collect the evidence for this). This issue could be handled by changing the structure of the radiotherapy HRGs to introduce a split by age, which is common in many acute HRGs.

6.10 Further, the tariff should be designed so as to promote quality of care. An implication of a fixed tariff is that Trusts will not be fully reimbursed where services are organised in a way that incurs costs above the tariff. Costs incurred by using new treatments that deliver improved quality of treatment and outcomes may not be covered by the standard tariff. However, a “best practice” tariff is already available for some services which can address this issue. This reimburses above the normal tariff if Trusts meet defined quality standards.

### **Supporting Technological Development**

6.11 Radiotherapy services are developing rapidly in terms of advanced techniques for the treatment of tumours and the technology needed to implement them. Many of the techniques increasingly common at the present time were not widely used in 2008/09, the base year for the Reference Costs analysed. Intensity Modulated Radiotherapy, for example, was still undergoing clinical trials in 2008/09, but is now being prioritised as an important national development by NCAT as part of the Cancer Reform Strategy.

6.12 The existing national tariff is based on the Reference Costs from a previous year and currently there is a 3 year lag. For example, the 2010/11 tariff is based on 2007/08 Reference Costs. These figures are then cleaned and adjusted for developments increasing average costs, such as NICE appraisals.

6.13 As Radiotherapy is such a rapidly evolving service, a national tariff may act as a disincentive to introducing new treatment pathways that are clinically desirable but more expensive. The adjustment for the technological advances in radiotherapy over the 3 year period may be very significant and this aspect needs to be calculated accurately in order to prevent the tariff from being understated. If this is not accurately reflected, this will create a further disincentive to invest in latest techniques and technology as the tariff will not provide sufficient funding to allow Trusts to proceed.

6.14 One way to address this in the structure of the tariff would be to allow new services to be treated as an exclusion from the tariff, with local prices agreed between Trust and Commissioner.

### **Analysing the impact of a national tariff**

6.15 A national tariff will not reflect the individual circumstances of every Trust’s cost base. Local issues, such as how a Trust chooses to organise its service in terms of skill mix of staff employed, may not be compensated by a national tariff. Most costs are considered to be within the control of the Trust and hence are unlikely to be reflected in any specific flexibilities to the tariff.

6.16 Trusts will need to analyse the major risks for them in controlling their costs within income achieved under the national tariff. These are likely to be at their greatest when several issues occur simultaneously, e.g. replacing more than one Linac previously covered by donated funding.

6.17 Volatility of costs may be more difficult for smaller Trusts to manage. The average quantum of cost for radiotherapy in a peer group 5 Trust is £2.8m per year. Replacing a single Linac costing £1.6m, using the figures in paragraph 5.3 above, can increase revenue costs by £0.2m per year (8%) purely in respect of depreciation and capital charges.

6.18 There is a risk, therefore, that imposing a fixed national tariff on such a volatile cost structure would provide a disincentive to invest in the latest equipment, particularly in

smaller radiotherapy departments. Over time, this may lead to smaller departments falling behind and eventually becoming economically unviable. This may not be a desirable outcome in terms of ensuring patients have good access to the latest radiotherapy services, close to home.

## **Summary**

6.19 Radiotherapy is a highly capital-intensive service, with funding and replacement profiles having a significant impact on the cost bases of different Trusts. Therefore the introduction of a fixed price tariff will create a number of risks and Trusts ensure they are aware of how a fixed tariff may affect their financial position.

6.20 Technology for services is developing rapidly and the tariff, if based on activity and costs from 3 years previously will not reflect current technology and techniques, leading to a disincentive to keep pace with best practice. In other services this has been addressed by building flexibilities and exclusions into the standard tariff, and by redesigning HRGs.

## **7 Recommendations for Radiotherapy Services**

### **Trusts should count activity accurately**

- 7.1 A more sophisticated level of commissioning (i.e. where Trusts are moving away from block contracts) will need to be supported by a greater degree of accuracy and detail in recording activity. Payment will be based on validated activity data recorded in accordance with the national standards and if systems are not in place to deliver the RTDS, Trusts may lose income.
- 7.2 The pace of technological development will also reinforce the need for a good understanding of current and future work. Planning for developments and capacity will need to be based on accurate activity data and projections, especially if the Trust needs to make a case for further funding.
- 7.3 If Commissioner and Trusts are to have a productive and successful dialogue about future planning of radiotherapy services, both parties need to have confidence in the activity data recorded.

### **Trusts should have a robust costing process**

- 7.4 Trusts need to ensure that adequate resources are deployed to provide reliable costing information for radiotherapy services. To achieve this, different parts of the organisation (radiotherapy management, management accounts, costing leads, informatics) need to work effectively together.
- 7.5 Trusts will need to ensure that the financial contribution made by radiotherapy is understood (i.e. how the costs compare to the income currently received in SLAs). This is often achieved through the introduction of Service Line Reporting/ Patient Level Costing.
- 7.6 Processes should also include ensuring the reference costs submissions are reconciled to these costs, to support the compilation of any national tariff which is likely to be based on a national average of reference costs.

### **Trusts should understand key cost drivers**

- 7.7 Trusts will need to ensure they understand the key components of their costs and the factors that drive their costs. In many cases, the predominant factor will be the capital investment underlying the service. However, other important factors, such as skill mix employed, will also need to be analysed.
- 7.8 Trusts need to understand how their costs may vary both from year to year and compared to other Trusts within its peer group. This will enable them to benchmark the costs of their services, then identify and maximise potential efficiencies. If they work to reduce variations caused by counting and costing issues, this will expose the real issues driving their cost base.
- 7.9 As funding is stretched, Commissioners will be looking for further efficiencies and cost improvements to be delivered. Benchmarking also provides a tool to identify where the cost structure can be altered so as to deliver the service in a more cost efficient way.

## Commissioning arrangements must be fit for purpose

- 7.10 There are a variety of arrangements in place for the commissioning of radiotherapy across Trusts. Some areas have progressed to sophisticated cost and volume contracts, defined by HRG and reimbursed at a locally-agreed tariff. Others remain on fixed block contracts which are historically determined and rolled forward each year with nothing more than a standard inflationary uplift.
- 7.11 Moving to a national tariff system means that commissioning will need to move uniformly on to cost and volume contracts. Arrangements under block contract should be urgently reviewed, perhaps using shadow contracts at locally agreed prices to understand the potential impact of a tariff system.
- 7.12 While this will provide Trusts with opportunities in terms of attracting additional funding if activity or casemix increases, the onus will be on them to record activities consistently and accurately. They will also need to understand their own costs and whether the tariff covers them sufficiently at differing levels of activity.
- 7.13 Trusts will also need to bear in mind likely future settlements for health budgets. Despite rising activity and technological developments, commissioners will not have unlimited funding. Trusts and Commissioners will both be exposed to risk and will need to work collaboratively to address the future needs of the radiotherapy service.

## Feedback from the project should be shared with the PbR Team

- 7.14 There is an opportunity to share feedback from this exercise to inform the setting of any future tariff. This could include a summary of the particular issues affecting radiotherapy services and recommendations, such as the following:

Issue	Recommendation
Cost variations between trusts	Trusts to manage within tariff.
Volatility of costs – capital costs	The volatile nature of costs of RT services could be mitigated by allowing local top-up payments, for example to allow Trusts to invest in new technology by supporting revenue costs of significant capital investment.
Speed of growth in technology	As above
Speed of introduction of new treatments	New treatments and regimes could be covered by specific exclusions to the tariff and covered by a locally agreed price until the tariff “catches up” and they become more widespread.
Complexities (e.g. Paeds)	Tariffs for complex treatment if material, such as for children, could be addressed by an adjustment to the existing HRGs, for example by splitting according to age or co-morbidities
Incentivising quality	“Best Practice” tariff could be introduced.

## 8 Conclusions

- 8.1 There is an urgent need to ensure accuracy of radiotherapy service costs as commissioners look to expand radiotherapy treatment commissioned in line with the recommendations made by the National Radiotherapy Advisory Group and taken forward in the Cancer Reform Strategy.
- 8.2 More detailed guidance and the introduction of RTDS have clearly improved the recording and coding of activity data. Trusts should work with Commissioners and networks to capitalise on the improved data available, ensuring that services are commissioned using accurate and detailed activity information. NCAT can continue to support this process by securing clearer definitions for activity, particularly for planning events, through its work with Connecting for Health.
- 8.3 However, from meetings with Trusts, it is apparent that the quality of costing radiotherapy services varies significantly across organisations and this needs to be urgently addressed. The 2009/10 Reference costs submission will provide a stocktake of progress and demonstrate where further work is needed. This can be further tested by benchmarking, for example using NCAT's costing template summary.
- 8.4 It is also clear that the extension of PbR poses some risk to the continued development of radiotherapy services, although the comments and recommendations in the report could equally apply to locally agreed prices. Those Trusts with poor systems are likely to suffer under the introduction of a tariff, either national or local. The understanding of costs, their drivers and the underlying activity will be key to enabling the best possible radiotherapy services for patients.

## 9 Next steps

### 9.1 To continue to improve coding and recording of activity

Trusts will continue to improve their performance in delivering the RTDS, with the target for data quality and completeness being introduced by the end of the year.

Further guidance is needed to address the lack of clarity re counting, and inconsistencies.

- Draft further guidance where need was identified in meetings e.g., re planning events.
- Identify where guidance is inconsistent
- Set out the issues, make further recommendations to Connecting for Health and continue to pursue

### 9.2 To ensure all Trusts have a robust costing methodology and that the variance in reference costs is reduced

Extreme outliers on the analysis of 2008/09 reference costs were mainly due to anomalies in costing and counting.

- The graphs at **Appendix 9** indicate those Trusts which are outliers and where a review of methodology would be advisable.
- The trend of narrowing the gap between upper and lower quartiles should continue by employing all means available to disseminate good costing practice and benchmarking data. Additional costing guidance for Trusts is attached at **Appendix 10**.

### 9.3 To measure improvement in costing and counting

A further round of collecting summary cost information (via a template previously collected) to enable further benchmarking and feedback to all Trusts

- NCAT to collate 2009/10 Reference Costs for radiotherapy, Trusts to send either by email or with the completed costing template for 2009/10.
- Repeat peer group comparison compiled for May/June meetings, calculate new averages and identify outliers.

### 9.4 Provide feedback from meetings to attendees

- Send out 2008/09 Reference Cost comparison spreadsheet to all attendees
- Consider putting this report onto the Reference Costs Forum for information.
- Send out attendees lists (geographically and in peer groups) to promote networking.
- Feedback sessions to be arranged in the autumn placing Trusts into peer groups and facilitating discussion of the issues arising from the report

## 9.5 Provide feedback to PbR team

The summary table of the key issues, along with recommendations should be sent to the PbR team. This would detail how any tariff structure could be adapted so that the issues raised in the report do not adversely affect provision of the service.

To provide additional feedback, a small group of pilot sites, selected from across all peer groups, could be formed to “road test” an indicative tariff. This would be based on national average reference costs and should model its effect over 10 years, the capital life cycle of a Linac.



## Appendix 1

### SPECIFICATION

#### 1. Project Title

Radiotherapy Costing and Tariff Development Project

#### 2. Project stakeholder and contact details

All contact should be through Bravo site – Any problems, please contact Gina Booth on 01489 779607

#### 3. Introduction

##### **BACKGROUND & RATIONALE TO THE PROJECT**

The DH and Cancer Action Team have agreed that costs generated as part of the 06/07 reference cost collection process for radiotherapy centres were poor. In summary there were:

- some significant differences between Trusts reference costs
- significant differences in how costs were identified
- different levels of service included in RT costs between units

There is an urgent need to ensure accuracy of radiotherapy service costs as commissioners look to expand radiotherapy treatment commissioned in line with the recommendations made by the National Radiotherapy Advisory Group and taken forward in the Cancer reform Strategy.

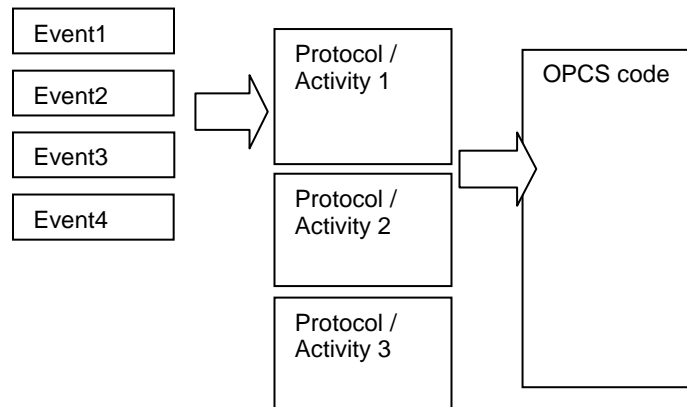
A project brief was developed to consider how this situation could be improved. The Project has been considering:

- how improvements could be made to reference costing and guidance
- the resilience and appropriateness of the HRG4 framework based on both OPCS 4.4 and the new OPCS4.5 codes (to be published in April 2009)
- the feasibility of developing an emerging tariff for radiotherapy form 2010/11 on the basis of a nationally defined costing model

The project is driven by a steering group and small project team. It will links into the work of the Radiotherapy Coding Working Group but also the Cancer Expert Reference Panel, NRAG and the clinical reference group for PbR.

## PROJECT FRAMEWORK

The principles underpinning the project require costs to be applied to individual key activities/ events in delivering Radiotherapy to the patient (planning and delivery of Radiotherapy). These events are then aggregated to the various clinical treatment plans and associated OPCS codes.



## 4. Scope

### PROGRESS TO DATE

Within this framework Trusts have been:

- identifying and counting the use of the various treatment protocols available linked to an appropriate OPCS code (there are significant risks in the consistency across organisations and the ability to benchmark activity as many Trusts label their activity differently and national guidance coding guidance has at best been ambiguous, although now improving)
- agreeing the events that take place based on a national pathway
- allocating resources weightings to these events (first stage relates to workforce – staff group and time)

Templates have been developed as a guide for Trusts to reflect the events/ tasks that take place in their organisation.

Once Trusts have agreed their time weightings they have been asked to apply costs to the various activity events. This is not only for the workforce but for capital and service overheads.

Trusts participating in the project have completed and submitted the resource allocation templates. These data have been collated and fed back to the organisations in an anonymous form to support benchmarking.

Most Trusts have also been able to provide some high level cost allocation data and

shared the derived reference costs but few have shown how these costs are allocated to the various activities so detailed comparisons have not been possible. There is also some concern that very different approaches have been taken to the allocation of costs and so comparisons across organisations are flawed.

### **NEXT STEPS - SECURING ROBUST COSTS**

Senior finance advice is needed to support the review of costs submitted

The purpose of the next phase of work is for a team from NCAT (including external financial advisors) to meet with the relevant multidisciplinary team from each Trust participating in the project to:

1. Explore how their costs have been derived
2. Understand what assumptions have been made in the allocation of costs between planning and treatment activities across:
  - Workforce
  - Capital
  - Overheads
3. From the discussion develop a set of comprehensive guidance which will assist Trusts in delivering a set of robust reference costs for 0910 data

## **5. Specifying Goods and / or Services**

### **PROCESS AND COMMITMENT**

Developing this will require a financial input to meetings with each SHA and Radiotherapy team (Radiotherapy Manager and Finance lead).

Financial consultants will be considered the expert financial resource in these meetings and are expected to lead the financial elements of the discussion (against a clearly defined brief)

All meetings will be led by Tim Cooper Associate Director (radiotherapy) National Cancer Action Team

#### Time Commitment

Total of approx 14 days

- One day briefing on key issues and project process
- 10 x one day meetings with each SHA. Expect meetings to begin at 9.30 a.m. Average of 5 meetings per SHA. Estimate one hour per radiotherapy team meeting.
- Two days post meeting analysis of data received to prepare for feedback
- One day feedback / debrief

- Additional analysis by agreement.

Note that NCAT will use this opportunity to explore other radiotherapy related topics during the meetings. No input is required for these additional discussions.

### **QUALIFICATIONS REQUIRED**

Applicants should be able to demonstrate:

- availability to work flexibly between November 09 and February 2010. Dates to be agreed with SHA and Tim Coopers diary
- high levels of skills and experience in NHS finance and reference cost analysis
- an understanding of NHS Costing guidance and Payment by Results
- an understanding of and past experience in working with the OPCS and HRG framework within the NHS, in particular around unbundled services
- past evidence of delivering against project milestones
- good team working skills

### **Specification Update**

The Time Commitment was subsequently expanded allow for:

- Further preparatory work undertaken to compare reference costs and provide an additional benchmark for discussion (see section 2)
- Additional input into the meetings was agreed
- 2 SHAs (London, South West) required 2 meetings owing to the number of Trusts in each SHA

## Appendix 2

### Schedule of Meetings with Trusts

Meeting time	SHA	Radiotherapy Department	Cancer Network	Radiotherapy Manager
<b>5th May</b>	<b>Conference Room 1, Clarendon Suites, 2 Stirling Road, Edgbaston, Birmingham</b>			
10am	West Midlands	Royal Wolverhampton Hospitals	Greater Midlands	Diana Williams
11am	West Midlands	Shrewsbury and Telford Hospital	Greater Midlands	Margaret van Daesdonk
12pm	West Midlands	University Hospital Of North Staffordshire	Greater Midlands	Susan Newman
2pm	West Midlands	University Hospitals Coventry And Warwickshire	Arden	Gill Elkin
3pm	West Midlands	University Hospital Birmingham	Pan Birmingham	Maria Thompson
<b>6th May</b>	<b>York House, 18-20 Massetts Road, Horley, Surrey, RH6 7DE</b>			
10.30am	South East Coast	Royal Surrey County Hospital	West Sussex & Hampshire	Angela Francis
11.45am	South East Coast	Brighton And Sussex University Hospitals	Sussex	Angela Hammond
2pm	South East Coast	East Kent Hospitals	Kent and Medway	Christine Richards
	South East Coast	Maidstone And Tunbridge Wells	Kent and Medway	Christine Richards
<b>7th May</b>	<b>Riverside House, Goldcrest Way, Newcastle Upon Tyne NE15 8NY</b>			
1pm	North East	Newcastle Upon Tyne Hospitals	North of England	Susan Lamb
2.30pm	North East	South Tees Hospitals	North of England	Fiona Milne
<b>10th May</b>	<b>Meeting Room 2, NHS South West, South West House, Blackbrook Park Avenue, Taunton, RA1 2PX</b>			
10am	South West	Royal United Hospital Bath	Avon Somerset & Wiltshire	Sue McGregor
11am	South West	Taunton	Avon Somerset & Wiltshire	Keren Anstey
12pm	South West	United Bristol Healthcare	Avon Somerset & Wiltshire	Kate Love
2.30pm	South West	Gloucestershire Hospitals	Three Counties	Carol Scott

Meeting time	SHA	Radiotherapy Department	Cancer Network	Radiotherapy Manager
<b>12th May</b>	<b>Octavia House, Interchange 25 Business Park, Long Eaton, Notts, NG10 5QG</b>			
10am	East Midlands	Derby Hospitals	East Midlands	Wendy Steele
11am	East Midlands	Northampton General Hospital	East Midlands	Jane Wilkinson
12pm	East Midlands	University Hospitals Of Leicester	East Midlands	Ghislaine Boyd
2pm	East Midlands	Nottingham City Hospital	East Midlands	Russell Hart
3pm	East Midlands	United Lincolnshire Hospitals	East Midlands	Angela Turbin
<b>17th May</b>	<b>Meeting room 2, NHS South West, South West House, Blackbrook Park Avenue, Taunton, RA1 2PX</b>			
10am	South West	Royal Devon And Exeter	Peninsula	Geraldine Jenner
11.15am	South West	Royal Cornwall Hospitals	Peninsula	Philippa Robbins
1pm	South West	Plymouth Hospitals	Peninsula	<del>Susan Lamb</del>
2.15pm	South West	South Devon Health Care	Peninsula	Linda Gordon
3.30pm	South West	Poole Hospital	Peninsula	
<b>18th May</b>	<b>Room 6, 4th Floor, NHS London, Southside, Victoria Street, London SW1E 6QT</b>			
9.30am	London	Barking, Havering And Redbridge Hospitals	North East London	Jackie Hartigan
10.30am	London	Barts And The London	North East London	Jane Head
11.30am	London	North Middlesex University Hospital	North London	Richard Knott/ <del>Kelly Jenner</del>
1.30pm	London	Royal Free Hampstead	North London	Kashmira Mehta
2.30pm	London	University College London Hospitals	North London	Julia Solano
<b>19th May</b>	<b>1st Floor, Rivergate House, Newbury Business Park, London Road, Newbury, Berks, RG14 2PZ</b>			
10am	South Central	Portsmouth Hospitals	Central South Coast	Kim Sanderson
11.30am	South Central	Southampton University Hospitals	Central South Coast	Carolyn O'Donovan
2pm	South Central	Oxford Radcliffe Hospitals	Thames valley	Elisabeth Turner
3pm	South Central	Royal Berkshire And Battle Hospitals	Thames valley	Paula Horne

Meeting time	SHA	Radiotherapy Department	Cancer Network	Radiotherapy Manager
<b>28th May</b>	<b>The Arley Room, The Centre, Birchwood Park, Warrington, WA3 6YN</b>			
10am	North West	Christie Hospital	Greater Manchester	Pat Lawrence
11.30am	North West	Lancashire Teaching Hospitals	Lancs. & South Cumbria	Helen Clements
1.45pm	North West	Clatterbridge Centre For Oncology	Merseyside & Cheshire	Julie Massey
3pm	North West	North Cumbria Acute Hospitals	North of England	Gwen Barker
<b>2nd June</b>	<b>Nightingale Room, Victoria House, Capital Park, Fulbourn, Cambridge, CB21 5XB</b>			
9.30am	East of England	Cambridge University Hospitals	Anglia	Kath Walker
11am	East of England	Ipswich Hospital	Anglia	Suzanne Isherwood
12pm	East of England	Norfolk And Norwich University Hospital	Anglia	Jenny Tomes
2pm	East of England	Essex Rivers Healthcare	Essex	<b>did not attend</b>
<b>3rd June</b>	<b>Emily MacManus Dining Room, Guys Hospital, London SE1 9RT</b>			
10am	London	Hammersmith Hospitals	West London	Suzanne Harrow
11.15am	London	Royal Marsden	South West London	Jan Balycky
12.45pm	London	Guy's And St Thomas'	South East London	Shauna Emergy
<b>9th June</b>	<b>Room 2, Blenheim House, West One, Duncombe Street, Leeds, LS1 4PL</b>			
10am	Yorkshire and the Humber	Hull And East Yorkshire Hospitals	Humber & Yorkshire	Kay Duxbury
11am	Yorkshire and the Humber	Sheffield Teaching Hospitals (by teleconference)	North Trent	Moira Tomlinson
12pm	Yorkshire and the Humber	Leeds Teaching Hospitals	Yorkshire	Martin Duxbury
1.30pm	East of England	East and North Hertfordshire (by teleconference)	Mount Vernon	Susan D'Arcy
<b>15th June</b>	<b>by teleconference</b>			
2pm	East of England	Southend Hospital (by teleconference)	Essex	Nicolai Greet

# AGENDA

## 1. Introductions

## 2. Aims of the meeting

- To understand the Trust's costing methodology
- To gather views on the problems and issues arising from reference costs

## 3. Progress to date

- Overview
- Trust's engagement & feedback
- Review of 08/09 ref costs against peer group

## 4. Approaches to costing

- Sources of activity data – data quality, reference cost currencies
- Allocation of direct staff costs – medical staff, radiographers
- Any significant pay costs outsourced, e.g. equipment maintenance
- Allocation of capital charges – numbers of donated vs. purchased assets
- Apportionment of overheads to radiotherapy
- Any other significant costs included

## 5. Issues arising

- Areas of difficulty in completing templates/ reference costs
- Factors that may affect the robustness of costing

## 6. Next steps

- Ideas for costing support from NCAT
- Templates
- Costing guidance
- Working groups

## 7. Radiotherapy Service Delivery

- 31 day standard
- RTDS
- 40,000 fractions planning



## Proforma for notes of Trust meetings

<b>Meeting:</b>	Radiotherapy costing project
<b>Date:</b>	
<b>Location</b>	
<b>Time</b>	<b>Trust</b>
<b>Progress to date</b>	
<ul style="list-style-type: none"> <li>• Overview</li> <li>• Trust's engagement &amp; feedback</li> <li>• Review of 08/09 ref costs against peer group</li> </ul>	
<b>Approaches to costing</b>	
<ul style="list-style-type: none"> <li>• Sources of activity data</li> </ul>	
<ul style="list-style-type: none"> <li>• Allocation of direct staff costs – medical staff, radiographers</li> </ul>	
<ul style="list-style-type: none"> <li>• Any significant pay costs outsourced, e.g. equipment maintenance</li> </ul>	
<ul style="list-style-type: none"> <li>• Allocation of capital charges – numbers of donated vs purchased assets</li> </ul>	
<ul style="list-style-type: none"> <li>• Apportionment of overheads to radiotherapy</li> </ul>	
<ul style="list-style-type: none"> <li>• Any other significant costs included</li> </ul>	
<b>Issues arising</b>	
<ul style="list-style-type: none"> <li>• Areas of difficulty in completing templates / reference costs</li> </ul>	
<ul style="list-style-type: none"> <li>• Factors that may affect the robustness of costing</li> </ul>	
<b>Next steps</b>	
<ul style="list-style-type: none"> <li>• Ideas for costing support from NCAT Templates Costing guidance Working Groups</li> </ul>	

## A Brief Guide to Coding, Counting and Reference Costs

### Introduction

Reference Costs are collected annually each June by the DH from all NHS providers. They provide an historical statement of providers' costs based on their published annual accounts for the financial year that ended in the previous March. The data is published on the DH web site each year.

Reference Costs cover the vast majority of health services expenditure and provide the most complete and authoritative record of NHS providers' costs. They therefore provide a useful tool for analysing and benchmarking costs that can be used by providers, commissioners and other interested parts.

The currency for Reference Costs is Healthcare Resource Groups (HRGs). These are derived from clinical coding, as described below.

### Clinical Coding

All hospital-based activity is coded for the patient's diagnoses (using a coding system known as ICD10) and for any procedures undertaken (using a coding system known as OPCS4).

For radiotherapy, only OPCS codes are relevant in terms of deriving the HRG. The following OPCS codes (version 4.4) were available to record radiotherapy activity in 2008/09:

**Table 1: OPCS codes used to record radiotherapy in 2008/09**

OPCS code	Label
X63.1	Volume definition for radiotherapy with imaging and intensity-modulated radiation therapy dosimetry
X63.2	Volume definition for radiotherapy with imaging, dosimetry and technical support
X63.3	Volume definition for multiple phases of complex radiotherapy with dosimetry
X63.4	Volume definition for simple radiotherapy with imaging and dosimetry
X63.5	Volume definition for simple radiotherapy with imaging and simple calculation
X63.6	Volume definition for superficial or deep X-ray, electron or megavoltage radiotherapy with simple calculation
X63.8	Other specified radiotherapy volume definition
X63.9	Unspecified radiotherapy volume definition
X64.1	Preparation for total body irradiation
X64.2	Preparation for intracavitary radiotherapy
X64.3	Preparation for interstitial radiotherapy
X64.8	Other specified radiotherapy preparation
X64.9	Unspecified radiotherapy preparation
X65.1	Delivery of a fraction of total body irradiation
X65.2	Delivery of a fraction of intracavitary radiotherapy
X65.3	Delivery of a fraction of interstitial radiotherapy
X65.4	Delivery of a fraction of external beam radiotherapy NEC
X65.5	Oral delivery of radiotherapy for thyroid ablation
X65.8	Other specified radiotherapy delivery
X65.9	Unspecified radiotherapy delivery

Radiotherapy OPCS codes are split into two parts: preparation (codes beginning with X63 and X64) and treatment (codes beginning with X65).

Preparation deals with all pre-treatment processes, such as:

- Impression and shell fitting
- Simulator and or CT planning
- Volume delineation and localisation
- Creation of treatment plan (first and second checks)
- Treatment plan authorisation

Treatment refers to the delivery of a fraction of radiotherapy to the patient on a machine in order to treat the tumour.

These codes have been updated for 2009/10 (version 4.5) so as to reflect more accurately ongoing developments in radiotherapy treatments, e.g. IMRT and IGRT.

### **Healthcare Resource Groups (HRGs)**

Healthcare Resource Groups (HRGs) are standard groupings of clinically similar treatments which use comparable levels of healthcare resource. i.e. cost a similar amount to provide.

HRGs offer organisations the ability to understand their activity in terms of the types of patients they care for, and the treatments they undertake. They enable the comparison of activity within and between different organisations and provide an opportunity to benchmark treatments and services to support trend analysis over time.

A useful introduction to HRGs can be found at:

[http://www.ic.nhs.uk/webfiles/Services/casemix/Prep%20HRG4/Introduction%20to%20HRG4\\_January%202008.pdf](http://www.ic.nhs.uk/webfiles/Services/casemix/Prep%20HRG4/Introduction%20to%20HRG4_January%202008.pdf)

HRGs are derived from the clinical coding described above. Software called the HRG Grouper processes the codes (ICD10 and OPCS4) on each patient record, together with other information such as age and length of stay, and calculates the applicable HRG.

For mainstream hospital services, a single “core HRG” is produced for each inpatient spell (i.e. the period from admission to discharge) or outpatient attendance. However, radiotherapy is one of several “unbundled” services. This means that, when these services are delivered, additional HRGs are generated for the spell or attendance which describes the unbundled activity. For a radiotherapy patient, the core HRG will describe the patient’s diagnosis and any surgical procedures undertaken, while the additional unbundled radiotherapy HRGs will describe the radiotherapy activity.

Radiotherapy HRGs are derived from procedure coding (OPCS4) only and other information about the patient (e.g. diagnosis, age) is not taken into account – this would be reflected only in the core HRG for the spell.

The HRGs for radiotherapy therefore follow a similar structure to the OPCS codes. There is a section for planning, which relates to the OPCS codes for preparation, and a section for treatment, which relates to the OPCS codes for treatment.

The list of HRGs that were used in radiotherapy in 2008/09 is below:

**Table 2: HRGs used in radiotherapy in 2008/09**

HRG Code	Description
<b>Planning:</b>	
SC01Z	Define volume for SXR, DXR, electron or Megavoltage Radiotherapy without imaging and with simple calculation
SC02Z	Define volume for simple Radiation Therapy with imaging (Simulator, CT scanner etc) but with simple calculation and without Dosimetry
SC03Z	Define volume for simple Radiation Therapy with imaging and Dosimetry
SC04Z	Define volume for multiple phases of complex Radiation Therapy with imaging and Dosimetry
SC05Z	Define volume for Radiation Therapy with imaging, Dosimetry and technical support e.g. mould room
SC06Z	Define volume for Radiation Therapy with imaging and Intensity-modulated Radiation Therapy Dosimetry or equivalent
SC07Z	Prepare for Total Body Irradiation
SC08Z	Prepare for Intracavitary Radiotherapy
SC09Z	Prepare for Interstitial Radiotherapy
SC10Z	Other Radiotherapy Planning
<b>Treatment:</b>	
SC21Z	Deliver a fraction of treatment on a superficial or orthovoltage machine
SC22Z	Deliver a fraction of treatment on a megavoltage machine
SC23Z	Deliver a fraction of complex treatment on a megavoltage machine
SC24Z	Deliver a fraction of Radiotherapy on a megavoltage machine using General Anaesthetic
SC25Z	Deliver a fraction of Total Body Irradiation
SC26Z	Deliver a fraction of Intracavitary Radiotherapy without General Anaesthetic
SC27Z	Deliver a fraction of Intracavitary Radiotherapy with General Anaesthetic
SC28Z	Deliver a fraction of Interstitial Radiotherapy
SC29Z	Other Radiotherapy Treatment

Slightly revised HRGs were issued for 2009/10 to reflect the updated version 4.5 OPCS coding structure mentioned above.

### Radiotherapy Reference Costs

Radiotherapy has a dedicated section within the Reference Costs collection, which records the “unbundled” cost of radiotherapy as described above. This means the costs directly associated with treatment or with planning for treatment. These do not include, for example:

- outpatient clinics attended by patients undergoing radiotherapy treatment
- ward costs, if a patient undergoing radiotherapy treatment is admitted to a bed
- multi-disciplinary team meetings regarding patients’ progress
- diagnostic imaging scans, where the purpose is primarily diagnostic rather than for planning of treatment
- pre-planning activity, e.g. the attendance where the patient consents to radiotherapy
- post-treatment administration and follow up

Planning is measured in events, where each course of treatment has a single planning event. Such an event may comprise one or more attendances by the patient at hospital but nonetheless the activity is measured as a single event.

Treatment is measured in fractions of radiotherapy delivered and there is normally one fraction per attendance at hospital. This is the case even if multiple fields are being delivered or multiple areas of the body are being treated. In exceptional circumstances only, for example in the case of hyper-fractionated radiotherapy, more than one fraction may be delivered in a single attendance.

Providers will record their radiotherapy activity with the OPCS codes described in Table 1. The HRG grouper will process these records and calculate the appropriate HRG from the list in Table 2.

Providers calculate the cost of providing each of the HRGs using their costing systems, which take costs from their accounting ledgers and allocate them across all the activities they undertake. Dividing these costs by the recorded activity volumes by HRG gives the average unit costs by HRG that are submitted for Reference Costs.

### **Implications of Reference Costs and HRGs for a Radiotherapy Tariff**

In mainstream acute services, the national tariff is based on previous years' Reference Costs, adjusted for known changes since the date of submission. HRGs therefore provide the currency that provides reimbursement under the national tariff.

In radiotherapy, HRGs have a much shorter history and are still subject to development each year in response to feedback from providers. Nonetheless, it is expected that any future national tariff for radiotherapy would also be based on activity recorded by HRG.

## Appendix 6

### List of all providers submitting Reference Costs for Radiotherapy 2008/09

Provider Name	Fractions Delivered	Activity Rank	Peer Group
CLATTERBRIDGE CENTRE FOR ONCOLOGY NHS FOUNDATION TRUST	89,479	1	1
THE CHRISTIE NHS FOUNDATION TRUST	82,028	2	1
LEEDS TEACHING HOSPITALS NHS TRUST	67,103	3	1
SHEFFIELD TEACHING HOSPITALS NHS FOUNDATION TRUST	57,741	4	1
MAIDSTONE AND TUNBRIDGE WELLS NHS TRUST	54,198	5	1
THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST	52,976	6	1
CAMBRIDGE UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	51,656	7	1
UNIVERSITY HOSPITAL BIRMINGHAM NHS FOUNDATION TRUST	51,509	8	1
THE ROYAL MARSDEN NHS FOUNDATION TRUST	49,324	9	1
UNIVERSITY HOSPITALS BRISTOL NHS FOUNDATION TRUST	45,148	10	1
GUY'S AND ST THOMAS' NHS FOUNDATION TRUST	44,872	11	2
EAST AND NORTH HERTFORDSHIRE NHS TRUST	44,722	12	2
LANCASHIRE TEACHING HOSPITALS NHS FOUNDATION TRUST	43,564	13	2
SOUTHAMPTON UNIVERSITY HOSPITALS NHS TRUST	38,835	14	2
SOUTH TEES HOSPITALS NHS TRUST	36,716	15	2
OXFORD RADCLIFFE HOSPITALS NHS TRUST	36,446	16	2
GLOUCESTERSHIRE HOSPITALS NHS FOUNDATION TRUST	36,326	17	2
UNIVERSITY HOSPITALS COVENTRY AND WARWICKSHIRE NHS TRUST	35,080	18	2
NOTTINGHAM UNIVERSITY HOSPITALS NHS TRUST	33,575	19	2
HULL AND EAST YORKSHIRE HOSPITALS NHS TRUST	32,622	20	2
ROYAL SURREY COUNTY HOSPITAL NHS TRUST	32,585	21	3
UNIVERSITY HOSPITALS OF LEICESTER NHS TRUST	31,921	22	3
POOLE HOSPITAL NHS FOUNDATION TRUST	31,757	23	3
PORTSMOUTH HOSPITALS NHS TRUST	29,029	24	3
UNITED LINCOLNSHIRE HOSPITALS NHS TRUST	27,431	25	3
NORTH MIDDLESEX UNIVERSITY HOSPITAL NHS TRUST	27,059	26	3
THE ROYAL WOLVERHAMPTON HOSPITALS NHS TRUST	25,943	27	3
DERBY HOSPITALS NHS FOUNDATION TRUST	25,822	28	3
UNIVERSITY COLLEGE LONDON HOSPITALS NHS FOUNDATION TRUST	24,943	29	3
NORTHAMPTON GENERAL HOSPITAL NHS TRUST	24,741	30	3
SOUTHEND UNIVERSITY HOSPITAL NHS FOUNDATION TRUST	24,634	31	4
BARTS AND THE LONDON NHS TRUST	24,155	32	4
COLCHESTER HOSPITAL UNIVERSITY NHS FOUNDATION TRUST	23,798	33	4
NORFOLK AND NORWICH UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	23,775	34	4
UNIVERSITY HOSPITAL OF NORTH STAFFORDSHIRE NHS TRUST	23,751	35	4
ROYAL DEVON AND EXETER NHS FOUNDATION TRUST	21,339	36	4
BARKING, HAVERING AND REDBRIDGE UNIVERSITY HOSPITALS NHS TRUST	19,845	37	4
PLYMOUTH HOSPITALS NHS TRUST	18,935	38	4
ROYAL CORNWALL HOSPITALS NHS TRUST	16,266	39	4
ROYAL BERKSHIRE NHS FOUNDATION TRUST	16,195	40	4
ROYAL UNITED HOSPITAL BATH NHS TRUST	15,190	41	5
IPSWICH HOSPITAL NHS TRUST	14,293	42	5
SHREWSBURY AND TELFORD HOSPITAL NHS TRUST	14,057	43	5
NORTH CUMBRIA UNIVERSITY HOSPITALS NHS TRUST	12,815	44	5
WEST KENT PCT	12,527	45	5
SOUTH DEVON HEALTHCARE NHS FOUNDATION TRUST	10,894	46	5
ROYAL FREE HAMPSTEAD NHS TRUST	10,641	47	5
BRIGHTON AND SUSSEX UNIVERSITY HOSPITALS NHS TRUST	1,069	48	5
PETERBOROUGH AND STAMFORD HOSPITALS NHS FOUNDATION TRUST	814	49	5
TAUNTON AND SOMERSET NHS FOUNDATION TRUST	288	50	5
GLOUCESTERSHIRE PCT	1	51	5

## Appendix 7

### Key Data for Trusts

Provider Name	Planning Activity		Treatment Activity		Number of Linacs
	No. of Events	MFF adj Cost £m	No. of Fractions	MFF adj Cost £m	
<b>Peer Group 1:</b>					
CAMBRIDGE UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	3,776	£2.2m	51,656	£3.8m	7
CLATTERBRIDGE CENTRE FOR ONCOLOGY NHS FOUNDATION TRUST	5,650	£1.7m	89,479	£13.1m	9
LEEDS TEACHING HOSPITALS NHS TRUST	6,026	£2.9m	67,103	£11.2m	10
MAIDSTONE AND TUNBRIDGE WELLS NHS TRUST	3,904	£2.0m	54,198	£6.4m	7
SHEFFIELD TEACHING HOSPITALS NHS FOUNDATION TRUST	3,912	£2.5m	57,741	£4.4m	7
THE CHRISTIE NHS FOUNDATION TRUST	7,068	£5.3m	82,028	£9.6m	11
THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST	3,890	£2.0m	52,976	£7.5m	10
THE ROYAL MARSDEN NHS FOUNDATION TRUST	4,169	£2.2m	49,324	£7.4m	11
UNIVERSITY HOSPITAL BIRMINGHAM NHS FOUNDATION TRUST	3,092	£4.5m	51,509	£4.0m	8
UNIVERSITY HOSPITALS BRISTOL NHS FOUNDATION TRUST	3,376	£1.7m	45,148	£5.1m	5
	<b>44,863</b>	<b>£27.0m</b>	<b>601,162</b>	<b>£72.6m</b>	<b>85</b>
<b>Peer Group 2:</b>					
EAST AND NORTH HERTFORDSHIRE NHS TRUST	3,853	£1.5m	44,722	£8.2m	9
GLOUCESTERSHIRE HOSPITALS NHS FOUNDATION TRUST	3,707	£0.3m	36,326	£4.2m	4
GUY'S AND ST THOMAS' NHS FOUNDATION TRUST	3,726	£4.2m	44,872	£5.2m	6
HULL AND EAST YORKSHIRE HOSPITALS NHS TRUST	2,292	£1.5m	32,622	£4.7m	6
LANCASHIRE TEACHING HOSPITALS NHS FOUNDATION TRUST	3,322	£1.7m	43,564	£4.8m	6
NOTTINGHAM UNIVERSITY HOSPITALS NHS TRUST	2,634	£1.2m	33,575	£4.7m	4
OXFORD RADCLIFFE HOSPITALS NHS TRUST	3,063	£2.8m	36,446	£2.6m	6
SOUTH TEES HOSPITALS NHS TRUST	2,434	£1.9m	36,716	£3.8m	6
SOUTHAMPTON UNIVERSITY HOSPITALS NHS TRUST	3,135	£0.7m	38,835	£5.0m	3
UNIVERSITY HOSPITALS COVENTRY AND WARWICKSHIRE NHS TRUST	4,859	£2.6m	35,080	£2.8m	5
	<b>33,025</b>	<b>£18.3m</b>	<b>382,758</b>	<b>£45.9m</b>	<b>55</b>
<b>Peer Group 3:</b>					
DERBY HOSPITALS NHS FOUNDATION TRUST	1,864	£1.7m	25,822	£2.2m	5
NORTH MIDDLESEX UNIVERSITY HOSPITAL NHS TRUST	2,699	£1.5m	27,059	£1.9m	3
NORTHAMPTON GENERAL HOSPITAL NHS TRUST	1,624	£0.5m	24,741	£3.9m	3
POOLE HOSPITAL NHS FOUNDATION TRUST	2,561	£1.2m	31,757	£2.6m	4
PORTSMOUTH HOSPITALS NHS TRUST	2,159	£1.5m	29,029	£2.9m	3
ROYAL SURREY COUNTY HOSPITAL NHS TRUST	3,376	£2.0m	32,585	£3.3m	5
THE ROYAL WOLVERHAMPTON HOSPITALS NHS TRUST	3,454	£1.0m	25,943	£3.6m	4
UNITED LINCOLNSHIRE HOSPITALS NHS TRUST	1,889	£0.8m	27,431	£3.6m	3
UNIVERSITY COLLEGE LONDON HOSPITALS NHS FOUNDATION TRUST	1,862	£2.9m	24,943	£4.5m	4
UNIVERSITY HOSPITALS OF LEICESTER NHS TRUST	2,438	£0.3m	31,921	£5.2m	4
	<b>23,926</b>	<b>£13.3m</b>	<b>281,231</b>	<b>£33.9m</b>	<b>38</b>
<b>Peer Group 4:</b>					
BARKING, HAVERING AND REDBRIDGE UNIVERSITY HOSPITALS NHS TRUST	8,415	£1.9m	19,845	£3.0m	4
BARTS AND THE LONDON NHS TRUST	1,756	£0.4m	24,155	£5.4m	8
COLCHESTER HOSPITAL UNIVERSITY NHS FOUNDATION TRUST	2,048	£0.5m	23,798	£2.2m	3
NORFOLK AND NORWICH UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	2,250	£0.8m	23,775	£3.8m	4
PLYMOUTH HOSPITALS NHS TRUST	2,568	£1.2m	18,935	£2.5m	3
ROYAL BERKSHIRE NHS FOUNDATION TRUST	4,212	£0.4m	16,195	£1.1m	3
ROYAL CORNWALL HOSPITALS NHS TRUST	1,650	£0.6m	16,266	£1.8m	2
ROYAL DEVON AND EXETER NHS FOUNDATION TRUST	2,117	£1.8m	21,339	£0.9m	2
SOUTHEND UNIVERSITY HOSPITAL NHS FOUNDATION TRUST	2,536	£0.6m	24,634	£2.5m	4
UNIVERSITY HOSPITAL OF NORTH STAFFORDSHIRE NHS TRUST	1,699	£1.7m	23,751	£2.7m	3
	<b>29,251</b>	<b>£9.8m</b>	<b>212,693</b>	<b>£25.9m</b>	<b>36</b>
<b>Peer Group 5:</b>					
BRIGHTON AND SUSSEX UNIVERSITY HOSPITALS NHS TRUST	2,099	£2.3m	1,069	£1.2m	4
IPSWICH HOSPITAL NHS TRUST	1,400	£0.3m	14,293	£1.8m	3
NORTH CUMBRIA UNIVERSITY HOSPITALS NHS TRUST	1,167	£0.2m	12,815	£2.1m	2
ROYAL FREE HAMPSTEAD NHS TRUST	902	£0.8m	10,641	£1.5m	2
ROYAL UNITED HOSPITAL BATH NHS TRUST	1,442	£0.6m	15,190	£2.4m	2
SHREWSBURY AND TELFORD HOSPITAL NHS TRUST	1,114	£1.4m	14,057	£1.2m	2
SOUTH DEVON HEALTHCARE NHS FOUNDATION TRUST	689	£0.7m	10,894	£3.1m	2
TAUNTON AND SOMERSET NHS FOUNDATION TRUST	57	£0.1m	288	£0.1m	3
	<b>8,870</b>	<b>£6.3m</b>	<b>79,247</b>	<b>£13.5m</b>	<b>20</b>
<b>NATIONAL TOTALS</b>	<b>139,935</b>	<b>£74.6m</b>	<b>1,557,091</b>	<b>£191.7m</b>	<b>234</b>

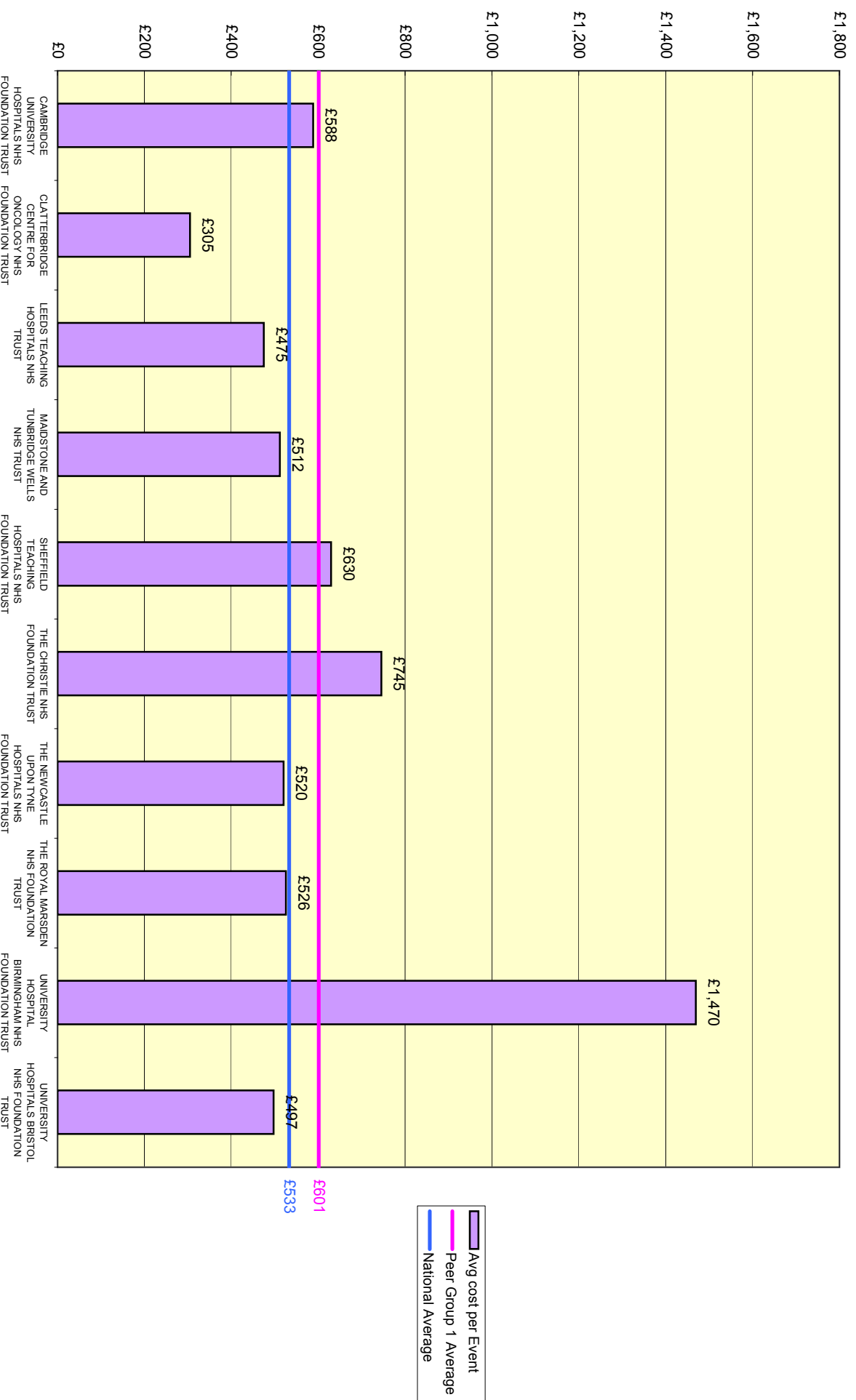
## Appendix 8

### Comparative Ratios by Trust

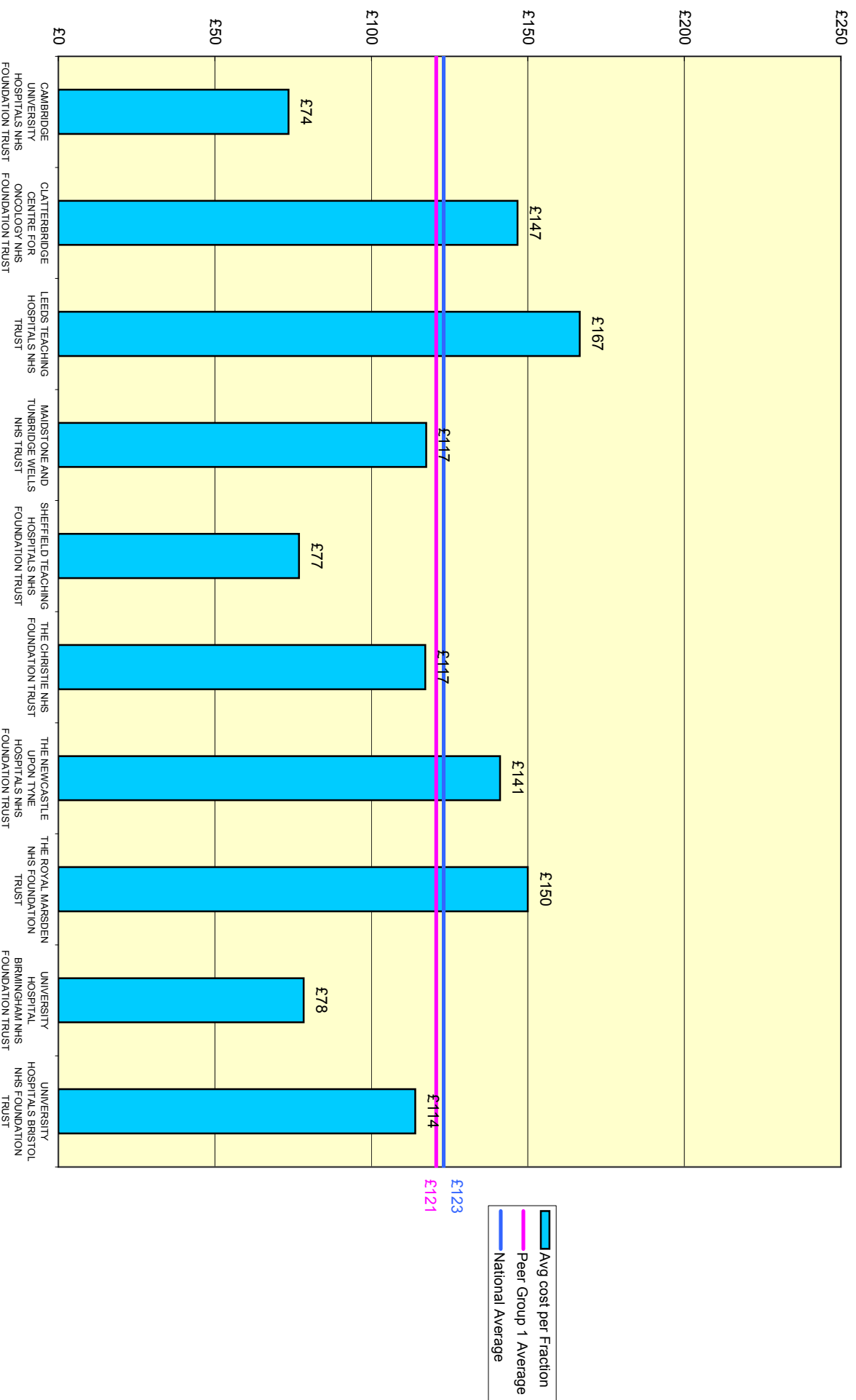
Provider Name	Cost per Planning Event £	Cost per Treatment Fraction £	Fractions per Planning Event	Planning Cost: Treatment Cost	Thousand Fractions per Linac	Cost Quantum per Linac £m
<b>Peer Group 1:</b>						
CAMBRIDGE UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	£588	£74	13.7	37:63	7.4	£0.9m
CLATTERBRIDGE CENTRE FOR ONCOLOGY NHS FOUNDATION TRUST	£305	£147	15.8	12:88	9.9	£1.7m
LEEDS TEACHING HOSPITALS NHS TRUST	£475	£167	11.1	20:80	6.7	£1.4m
MAIDSTONE AND TUNBRIDGE WELLS NHS TRUST	£512	£117	13.9	24:76	7.7	£1.2m
SHEFFIELD TEACHING HOSPITALS NHS FOUNDATION TRUST	£630	£77	14.8	36:64	8.2	£1.0m
THE CHRISTIE NHS FOUNDATION TRUST	£745	£117	11.6	35:65	7.5	£1.4m
THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST	£520	£141	13.6	21:79	5.3	£1.0m
THE ROYAL MARSDEN NHS FOUNDATION TRUST	£526	£150	11.8	23:77	4.5	£0.9m
UNIVERSITY HOSPITAL BIRMINGHAM NHS FOUNDATION TRUST	£1,470	£78	16.7	53:47	6.4	£1.1m
UNIVERSITY HOSPITALS BRISTOL NHS FOUNDATION TRUST	£497	£114	13.4	25:75	9.0	£1.4m
	<b>£601</b>	<b>£121</b>	<b>13.4</b>	<b>27:73</b>	<b>7.1</b>	<b>£1.2m</b>
<b>Peer Group 2:</b>						
EAST AND NORTH HERTFORDSHIRE NHS TRUST	£383	£183	11.6	15:85	5.0	£1.1m
GLOUCESTERSHIRE HOSPITALS NHS FOUNDATION TRUST	£94	£115	9.8	8:92	9.1	£1.1m
GUY'S AND ST THOMAS' NHS FOUNDATION TRUST	£1,134	£115	12.0	45:55	7.5	£1.6m
HULL AND EAST YORKSHIRE HOSPITALS NHS TRUST	£634	£144	14.2	24:76	5.4	£1.0m
LANCASHIRE TEACHING HOSPITALS NHS FOUNDATION TRUST	£500	£110	13.1	26:74	7.3	£1.1m
NOTTINGHAM UNIVERSITY HOSPITALS NHS TRUST	£437	£139	12.7	20:80	8.4	£1.5m
OXFORD RADCLIFFE HOSPITALS NHS TRUST	£904	£72	11.9	51:49	6.1	£0.9m
SOUTH TEES HOSPITALS NHS TRUST	£778	£103	15.1	33:67	6.1	£0.9m
SOUTHAMPTON UNIVERSITY HOSPITALS NHS TRUST	£227	£130	12.4	12:88	12.9	£1.9m
UNIVERSITY HOSPITALS COVENTRY AND WARWICKSHIRE NHS TRUST	£528	£80	7.2	48:52	7.0	£1.1m
	<b>£553</b>	<b>£120</b>	<b>11.6</b>	<b>28:72</b>	<b>7.0</b>	<b>£1.2m</b>
<b>Peer Group 3:</b>						
DERBY HOSPITALS NHS FOUNDATION TRUST	£937	£85	13.9	44:56	5.2	£0.8m
NORTH MIDDLESEX UNIVERSITY HOSPITAL NHS TRUST	£539	£69	10.0	44:56	9.0	£1.1m
NORTHAMPTON GENERAL HOSPITAL NHS TRUST	£286	£158	15.2	11:89	8.2	£1.5m
POOLE HOSPITAL NHS FOUNDATION TRUST	£469	£82	12.4	32:68	7.9	£0.9m
PORTSMOUTH HOSPITALS NHS TRUST	£682	£101	13.4	33:67	9.7	£1.5m
ROYAL SURREY COUNTY HOSPITAL NHS TRUST	£592	£103	9.7	37:63	6.5	£1.1m
THE ROYAL WOLVERHAMPTON HOSPITALS NHS TRUST	£288	£140	7.5	21:79	6.5	£1.2m
UNITED LINCOLNSHIRE HOSPITALS NHS TRUST	£408	£132	14.5	18:82	9.1	£1.5m
UNIVERSITY COLLEGE LONDON HOSPITALS NHS FOUNDATION TRUST	£1,562	£182	13.4	39:61	6.2	£1.9m
UNIVERSITY HOSPITALS OF LEICESTER NHS TRUST	£139	£163	13.1	6:94	8.0	£1.4m
	<b>£558</b>	<b>£120</b>	<b>11.8</b>	<b>28:72</b>	<b>7.4</b>	<b>£1.2m</b>
<b>Peer Group 4:</b>						
BARKING, HAVERING AND REDBRIDGE UNIVERSITY HOSPITALS NHS TRUST	£224	£153	2.4	38:62	5.0	£1.2m
BARTS AND THE LONDON NHS TRUST	£207	£222	13.8	6:94	3.0	£0.7m
COLCHESTER HOSPITAL UNIVERSITY NHS FOUNDATION TRUST	£232	£91	11.6	18:82	7.9	£0.9m
NORFOLK AND NORWICH UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	£373	£161	10.6	18:82	5.9	£1.2m
PLYMOUTH HOSPITALS NHS TRUST	£486	£132	7.4	33:67	6.3	£1.2m
ROYAL BERKSHIRE NHS FOUNDATION TRUST	£85	£69	3.8	24:76	5.4	£0.5m
ROYAL CORNWALL HOSPITALS NHS TRUST	£356	£110	9.9	25:75	8.1	£1.2m
ROYAL DEVON AND EXETER NHS FOUNDATION TRUST	£847	£41	10.1	67:33	10.7	£1.3m
SOUTHEND UNIVERSITY HOSPITAL NHS FOUNDATION TRUST	£217	£100	9.7	18:82	6.2	£0.8m
UNIVERSITY HOSPITAL OF NORTH STAFFORDSHIRE NHS TRUST	£974	£115	14.0	38:62	7.9	£1.5m
	<b>£333</b>	<b>£122</b>	<b>7.3</b>	<b>27:73</b>	<b>5.9</b>	<b>£1.0m</b>
<b>Peer Group 5:</b>						
BRIGHTON AND SUSSEX UNIVERSITY HOSPITALS NHS TRUST	£1,106	£1,106	0.5	66:34	0.3	£0.9m
IPSWICH HOSPITAL NHS TRUST	£233	£124	10.2	16:84	4.8	£0.7m
NORTH CUMBRIA UNIVERSITY HOSPITALS NHS TRUST	£166	£166	11.0	8:92	6.4	£1.2m
ROYAL FREE HAMPSTEAD NHS TRUST	£877	£143	11.8	34:66	5.3	£1.2m
ROYAL UNITED HOSPITAL BATH NHS TRUST	£390	£161	10.5	19:81	7.6	£1.5m
SHREWSBURY AND TELFORD HOSPITAL NHS TRUST	£1,240	£84	12.6	54:46	7.0	£1.3m
SOUTH DEVON HEALTHCARE NHS FOUNDATION TRUST	£996	£286	15.8	18:82	5.4	£1.9m
TAUNTON AND SOMERSET NHS FOUNDATION TRUST	£1,021	£510	5.1	28:72	0.1	£0.1m
	<b>£713</b>	<b>£170</b>	<b>8.9</b>	<b>32:68</b>	<b>4.0</b>	<b>£1.0m</b>
<b>NATIONAL AVERAGES</b>	<b>£533</b>	<b>£123</b>	<b>11.1</b>	<b>28:72</b>	<b>6.7</b>	<b>£1.1m</b>
<b>Highest Value</b>	<b>£1,562</b>	<b>£1,106</b>	<b>16.7</b>	<b>67:33</b>	<b>12.9</b>	<b>£1.9m</b>
<b>Lowest Value</b>	<b>£85</b>	<b>£41</b>	<b>0.5</b>	<b>6:94</b>	<b>0.1</b>	<b>£0.1m</b>
<b>Upper Quartile</b>	<b>£795</b>	<b>£154</b>	<b>13.7</b>	<b>37:63</b>	<b>8.0</b>	<b>£1.4m</b>
<b>Lower Quartile</b>	<b>£301</b>	<b>£98</b>	<b>10.1</b>	<b>18:82</b>	<b>5.4</b>	<b>£0.9m</b>



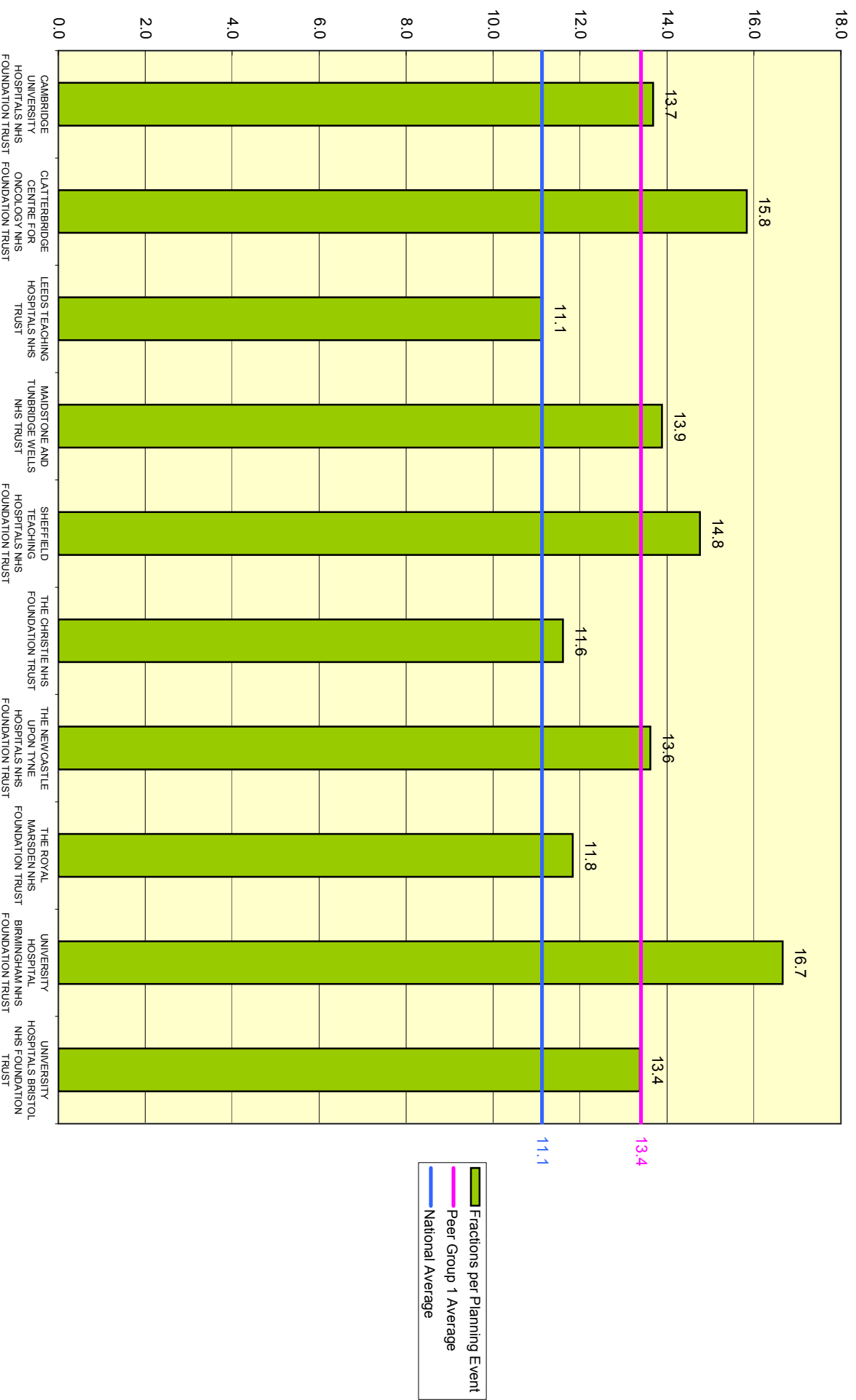
## Average Cost per Planning Event - Peer Group 1



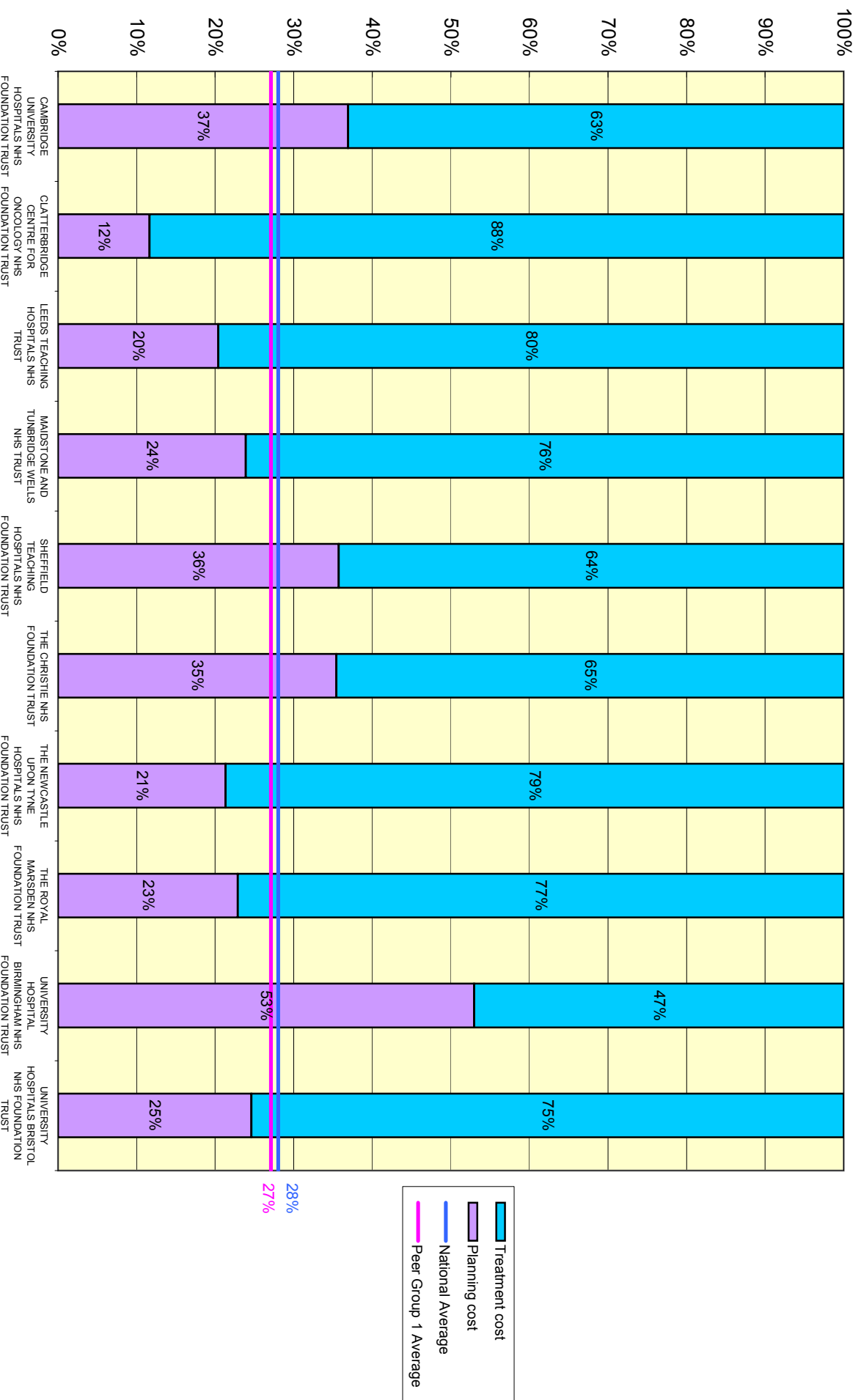
## Average Cost per Treatment Fraction - Peer Group 1



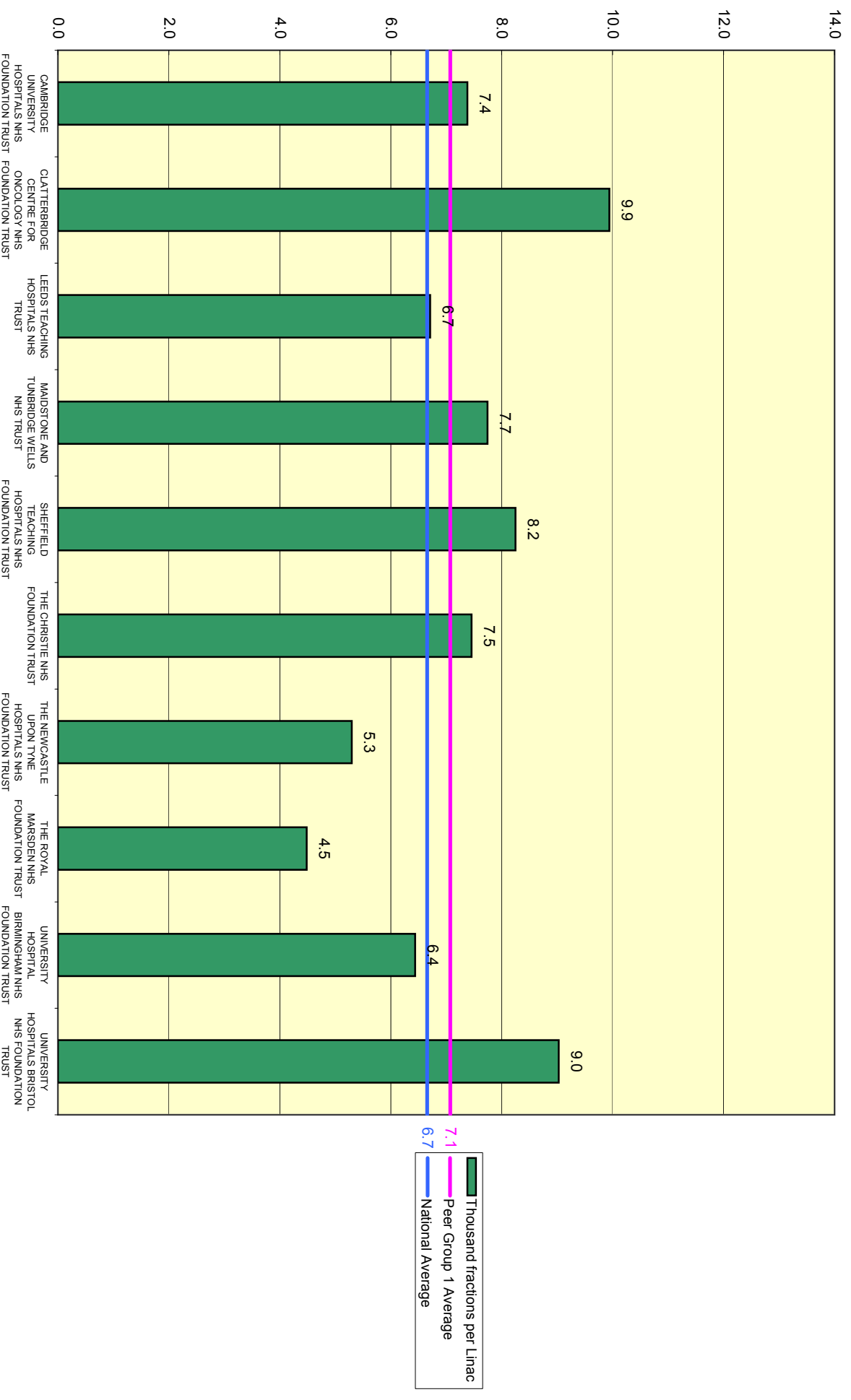
## Average Fractions Delivered per Planning Event - Peer Group 1



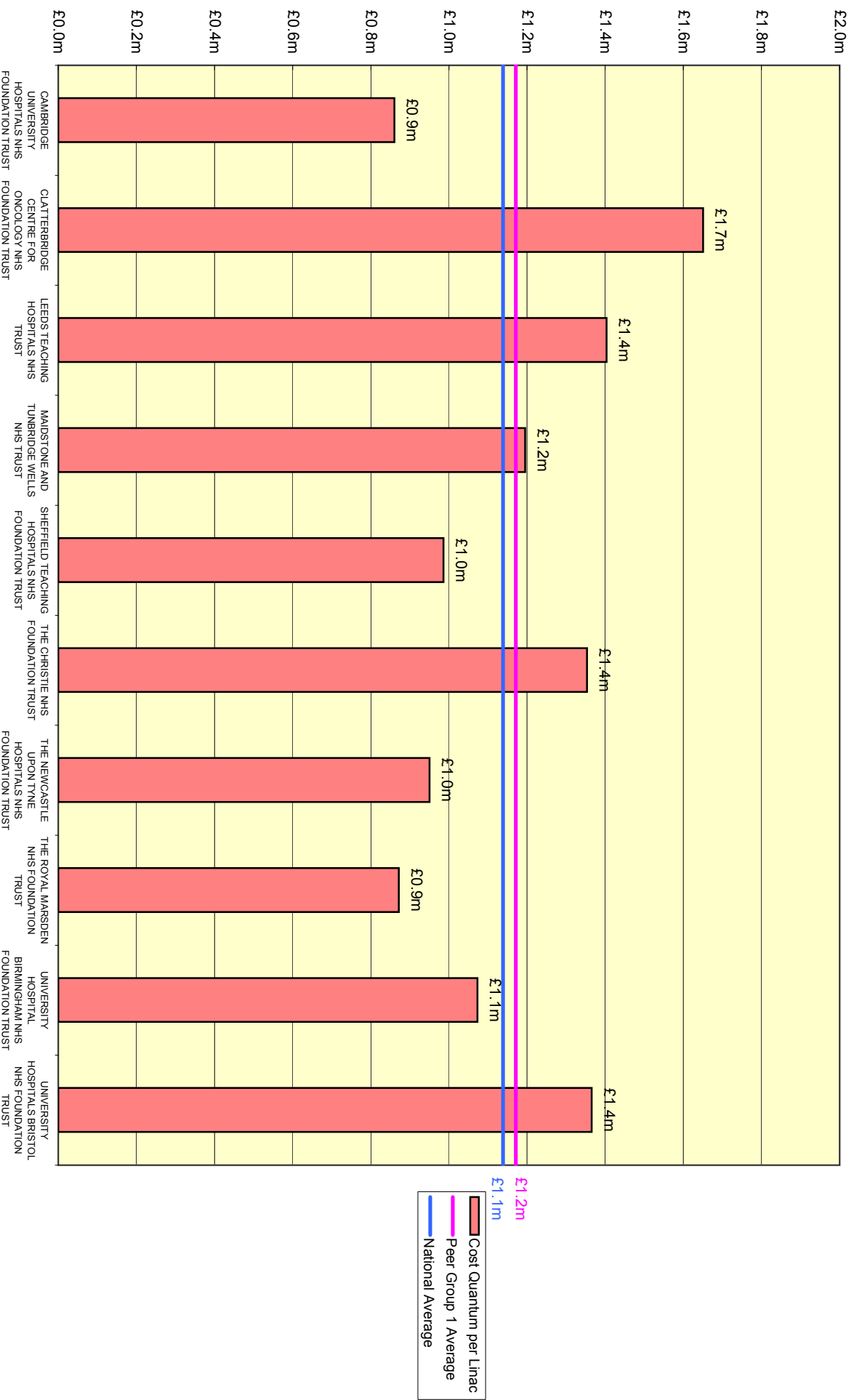
## Split of Costs between Treatment and Planning - Peer Group 1



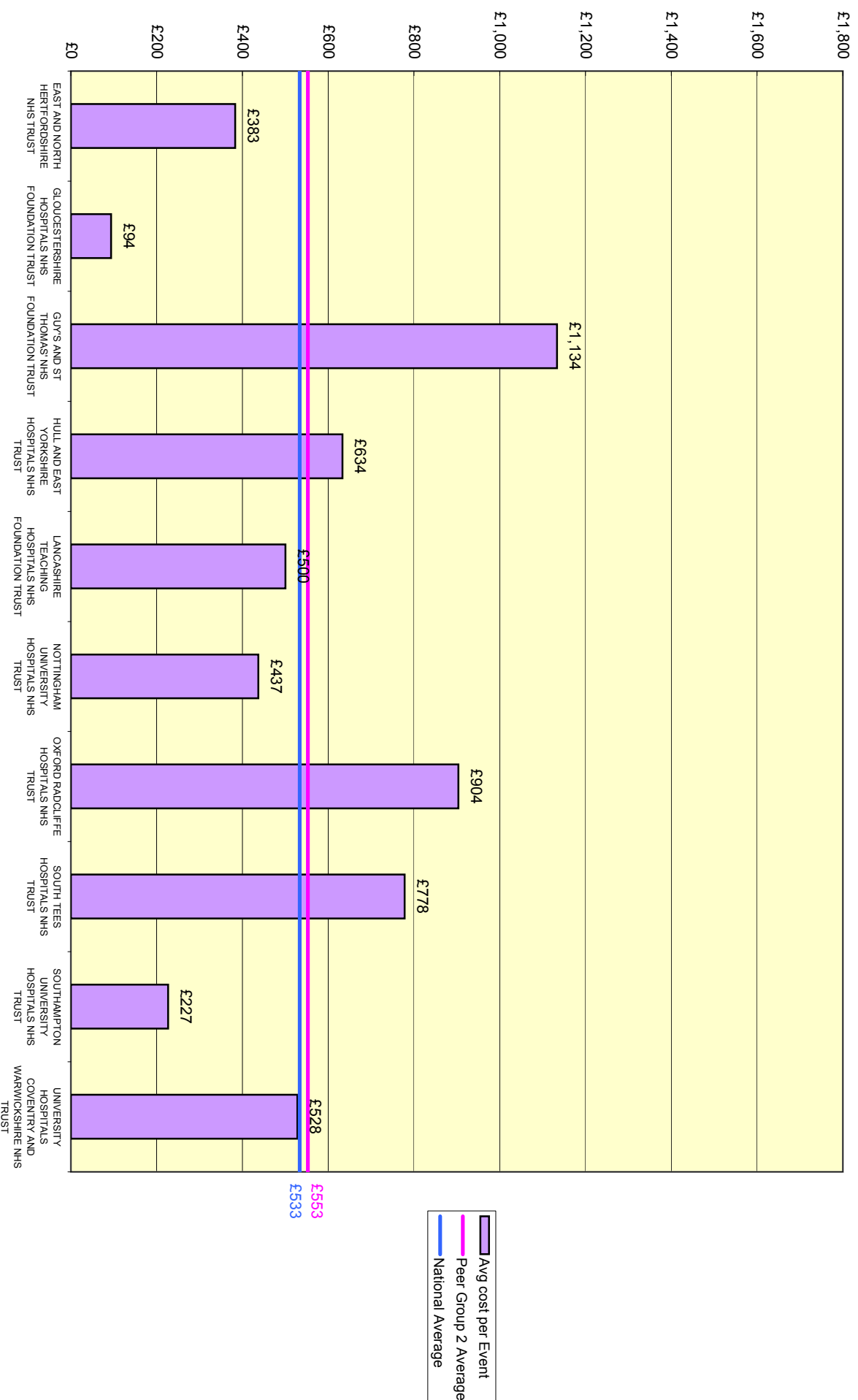
## Average Fractions Delivered per Linac - Peer Group 1



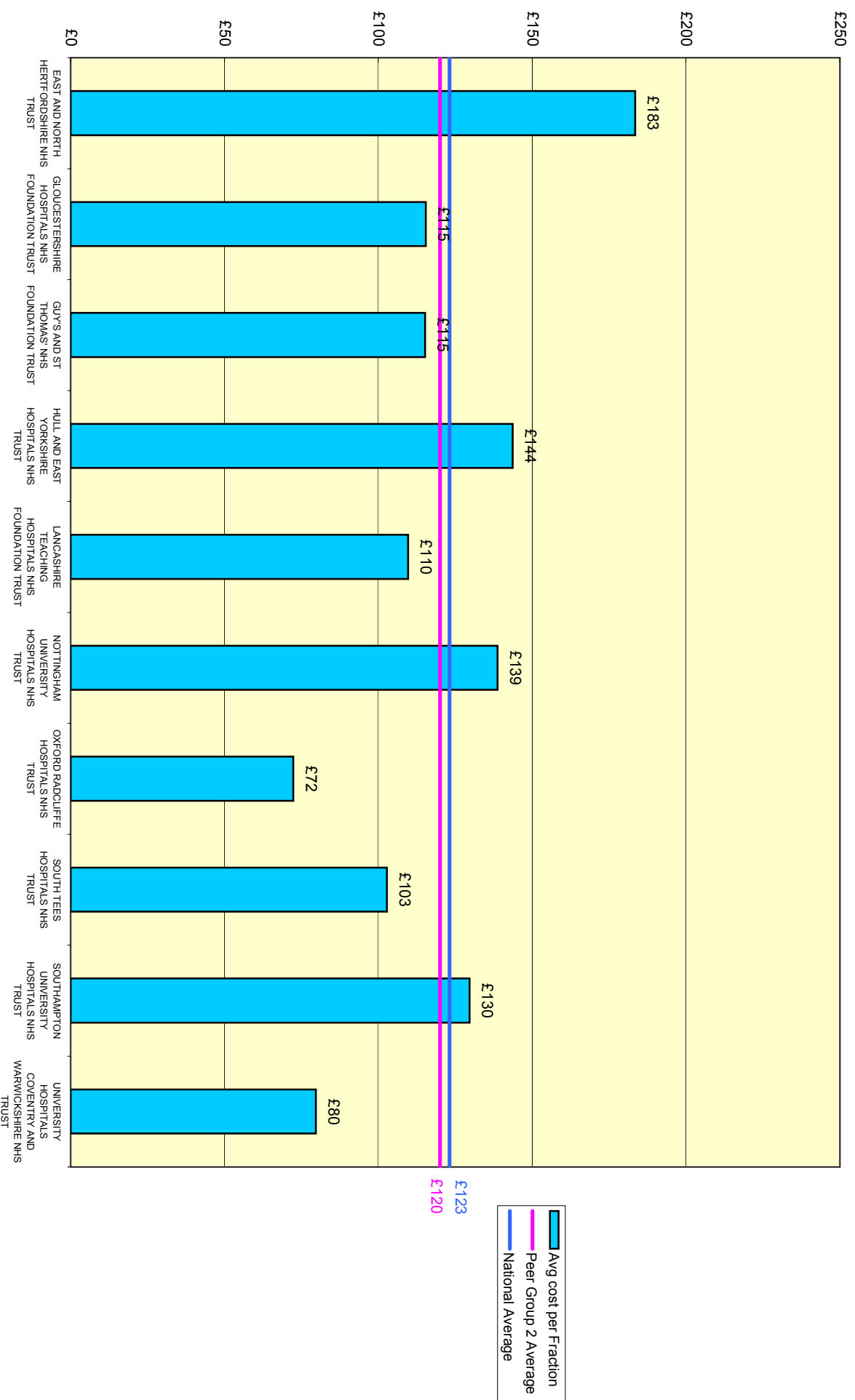
## Cost Quantum per Linac - Peer Group 1



## Average Cost per Planning Event - Peer Group 2

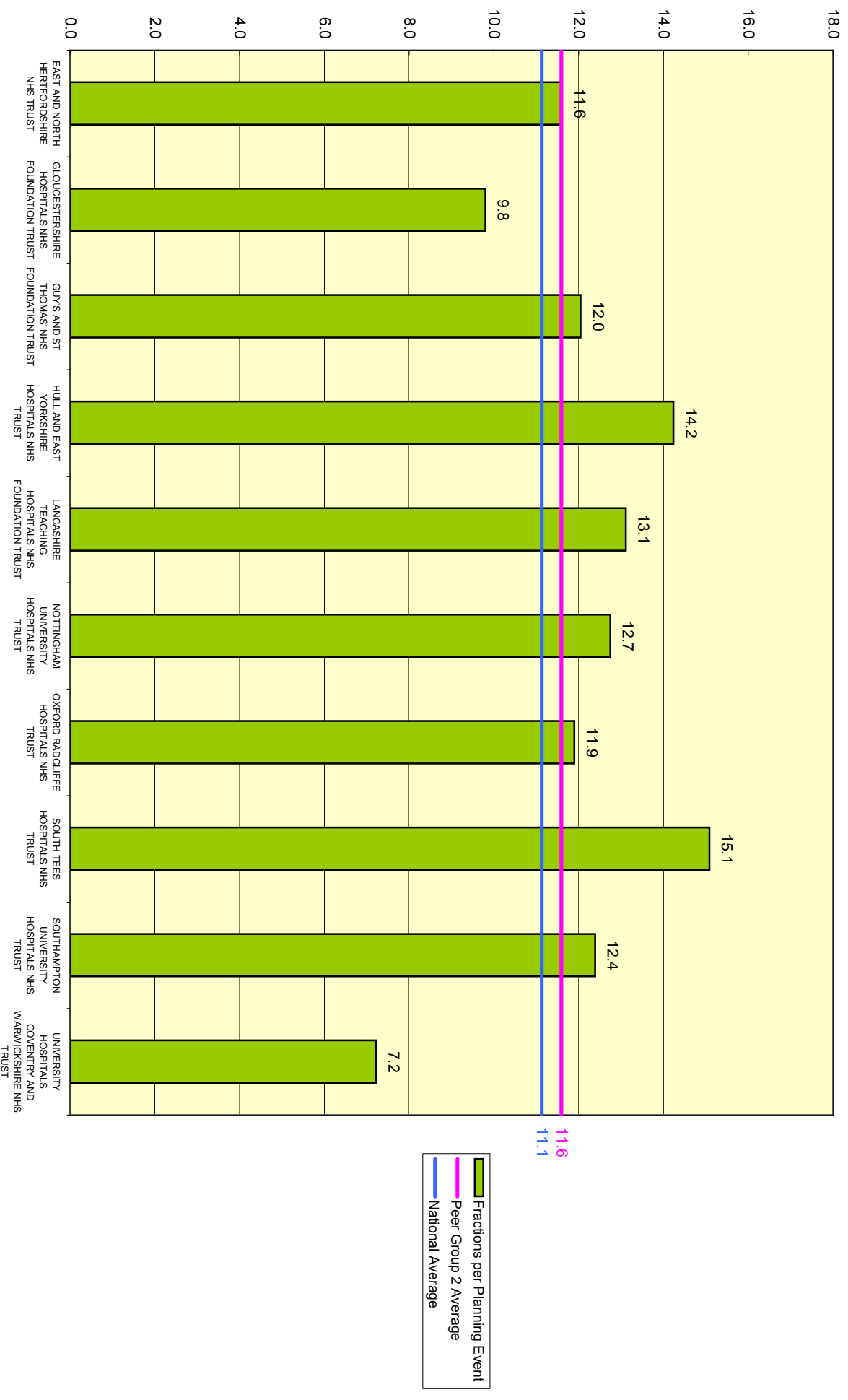


## Average Cost per Treatment Fraction - Peer Group 2

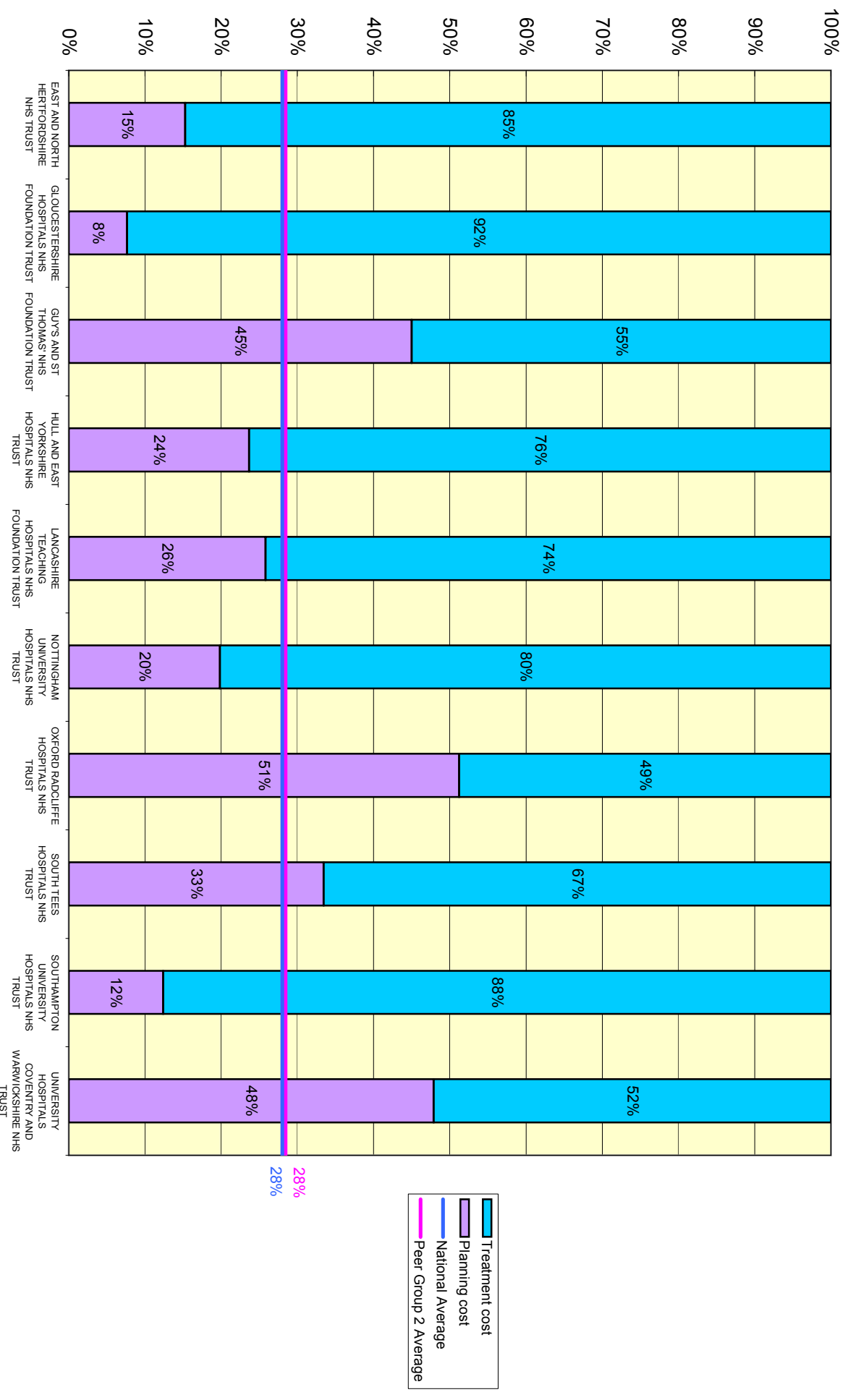




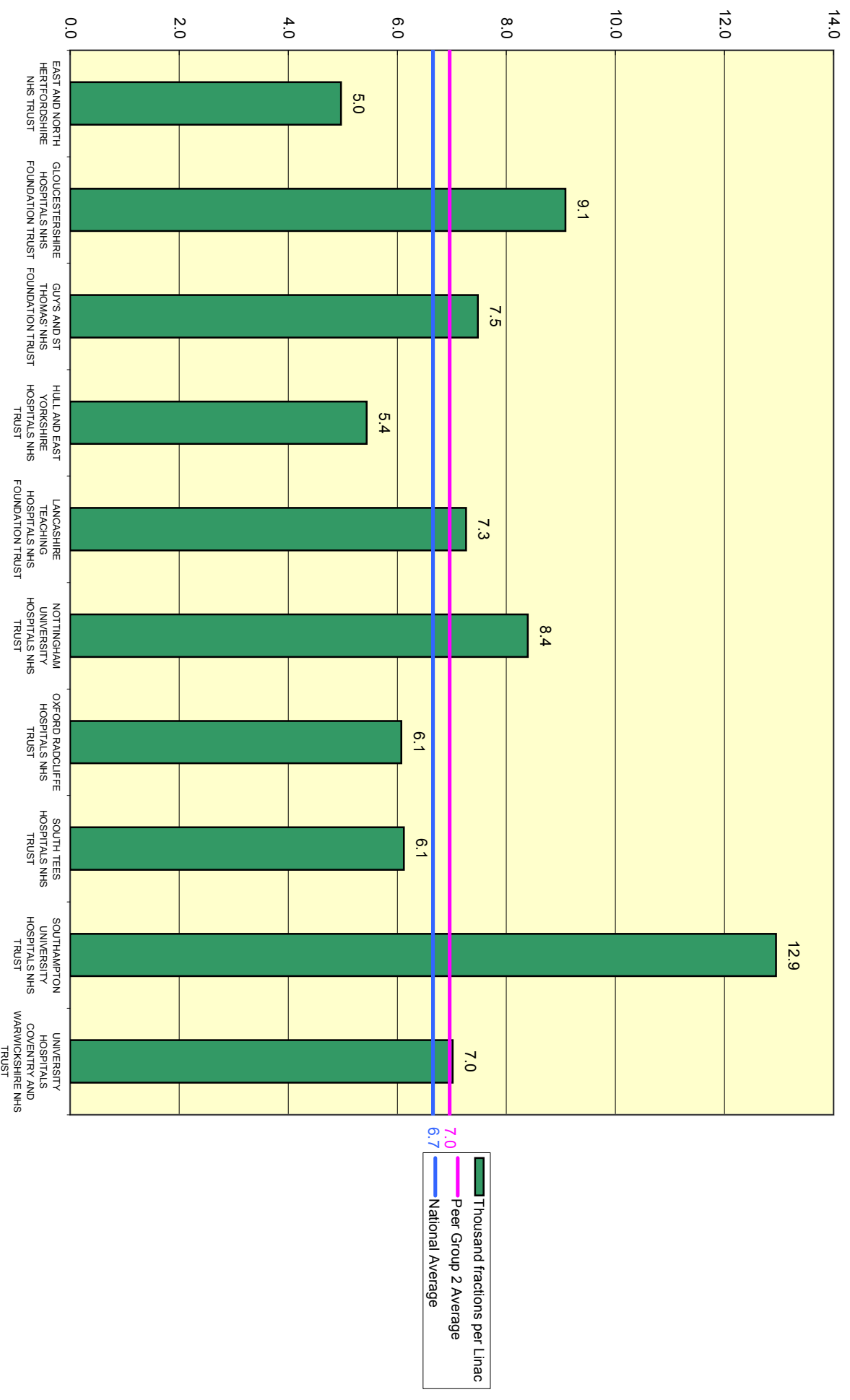
## Average Fractions Delivered per Planning Event - Peer Group 2



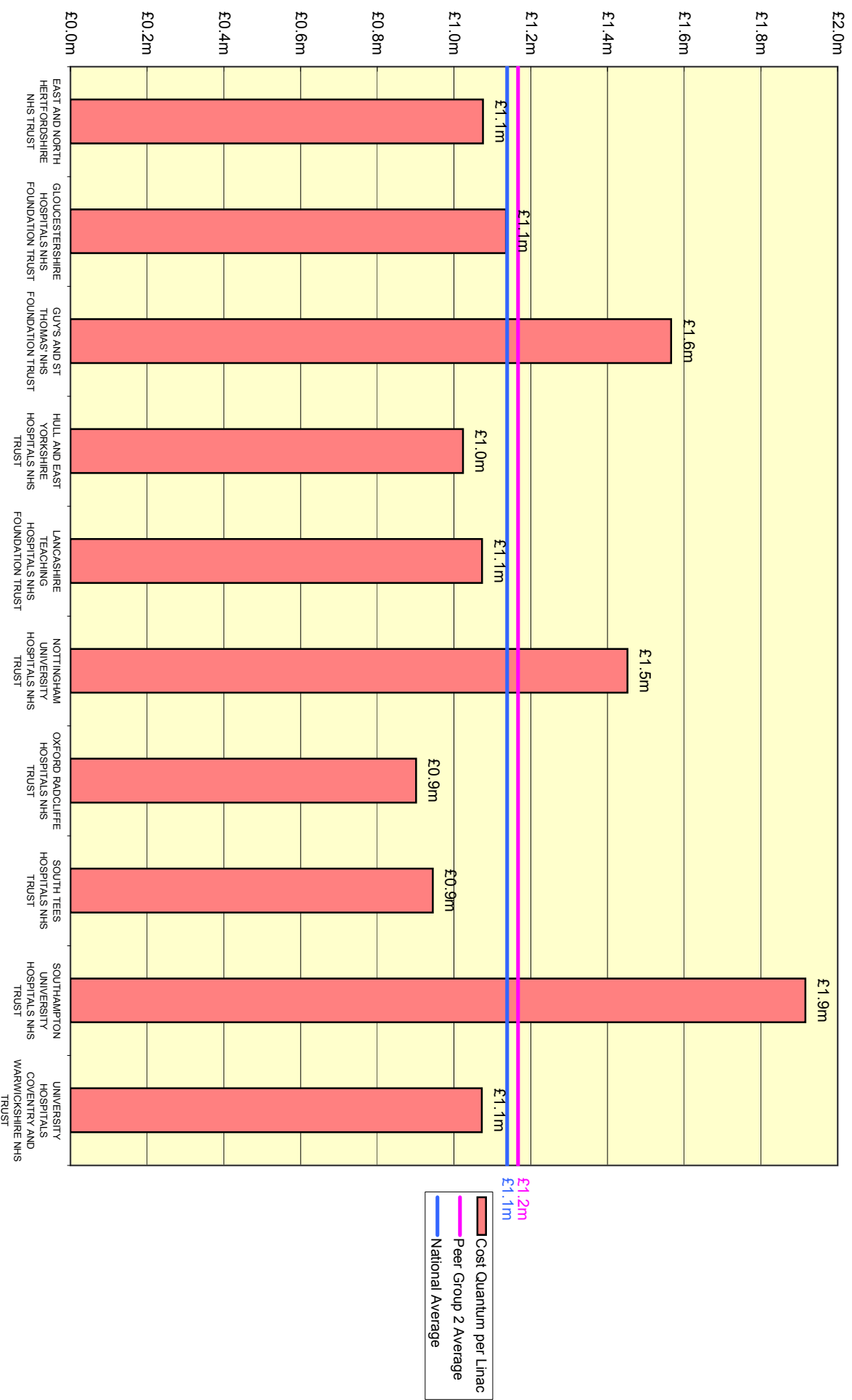
## Split of Costs between Treatment and Planning - Peer Group 2



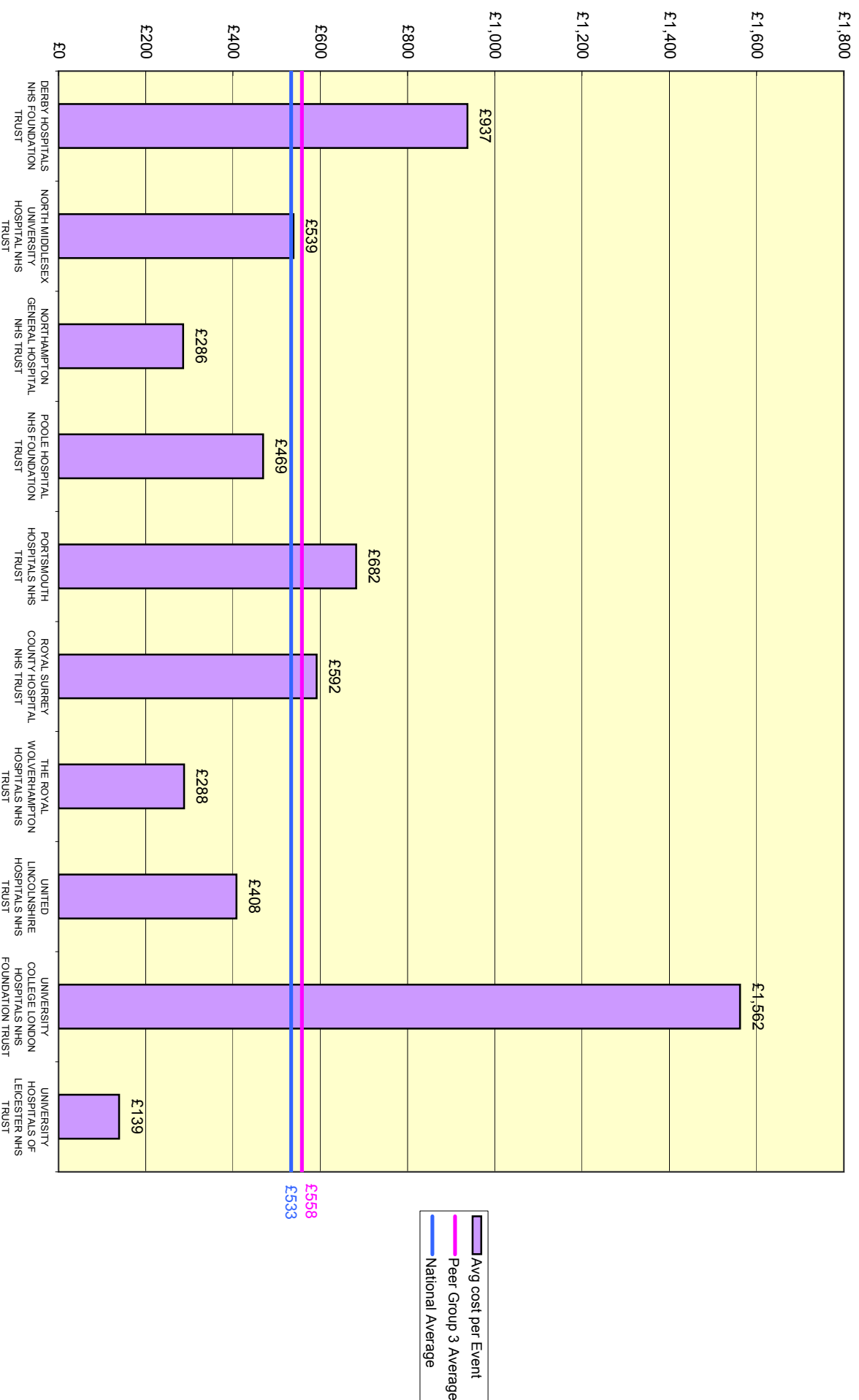
## Average Fractions Delivered per Linac - Peer Group 2



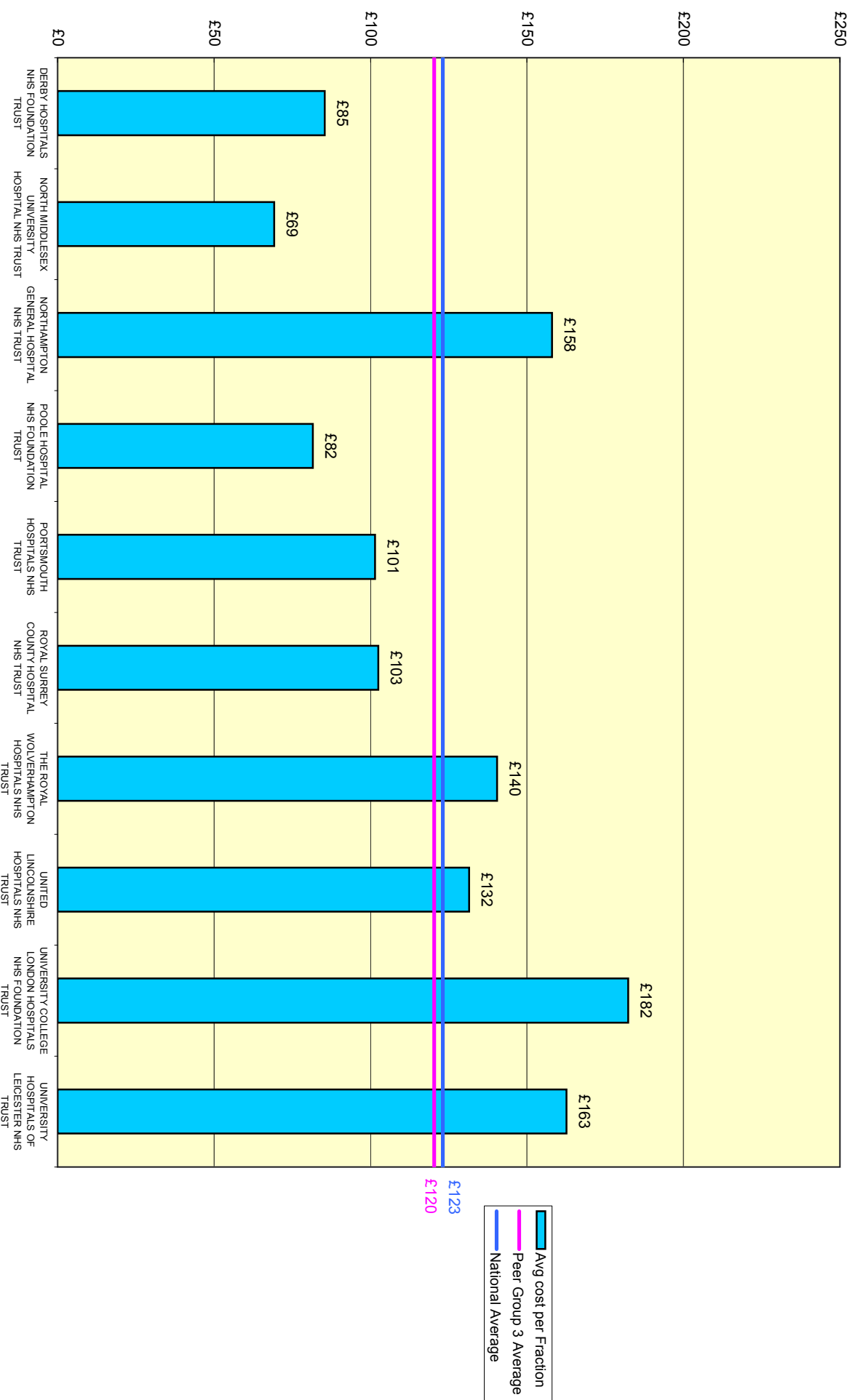
## Cost Quantum per Linac - Peer Group 2



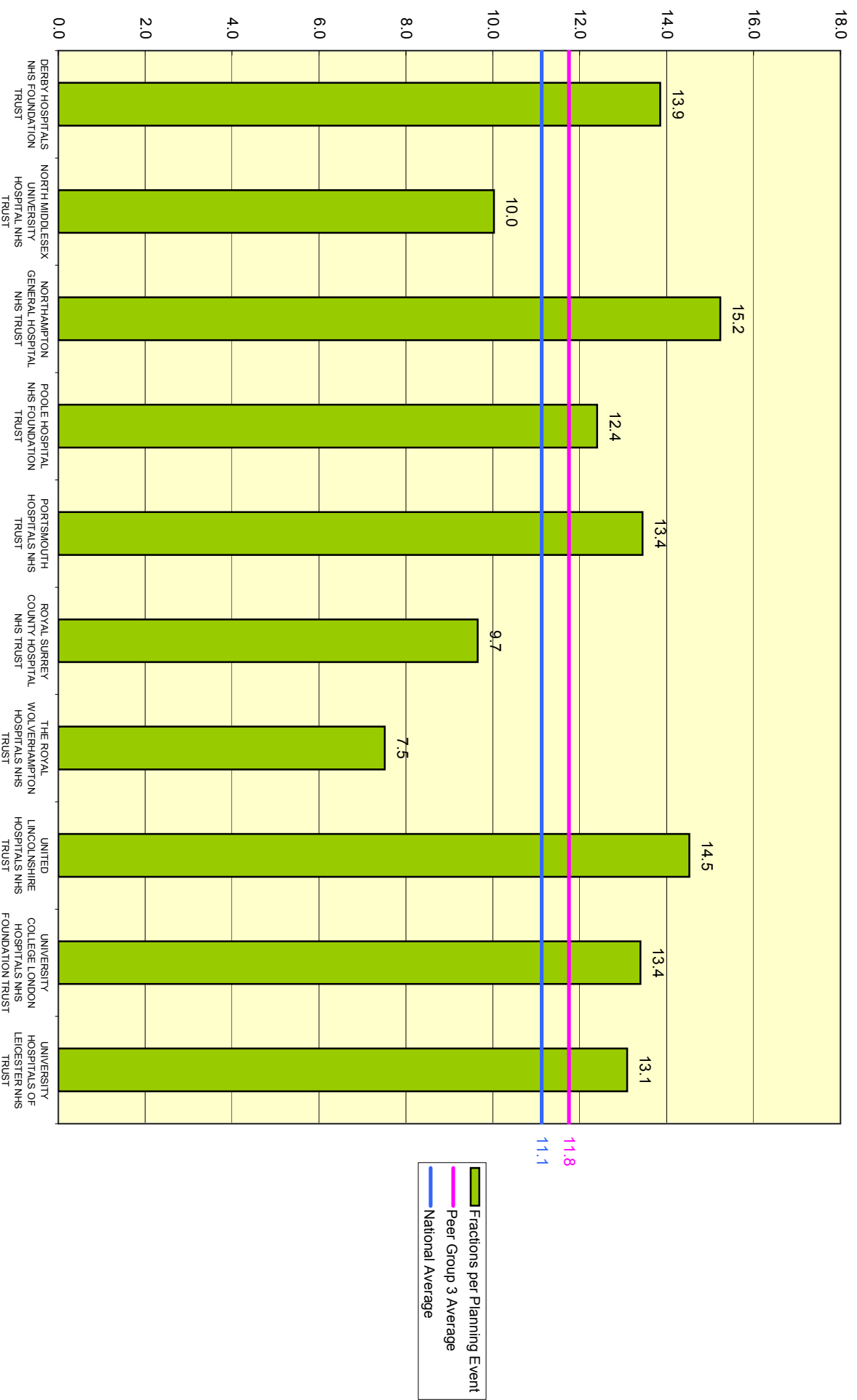
## Average Cost per Planning Event - Peer Group 3



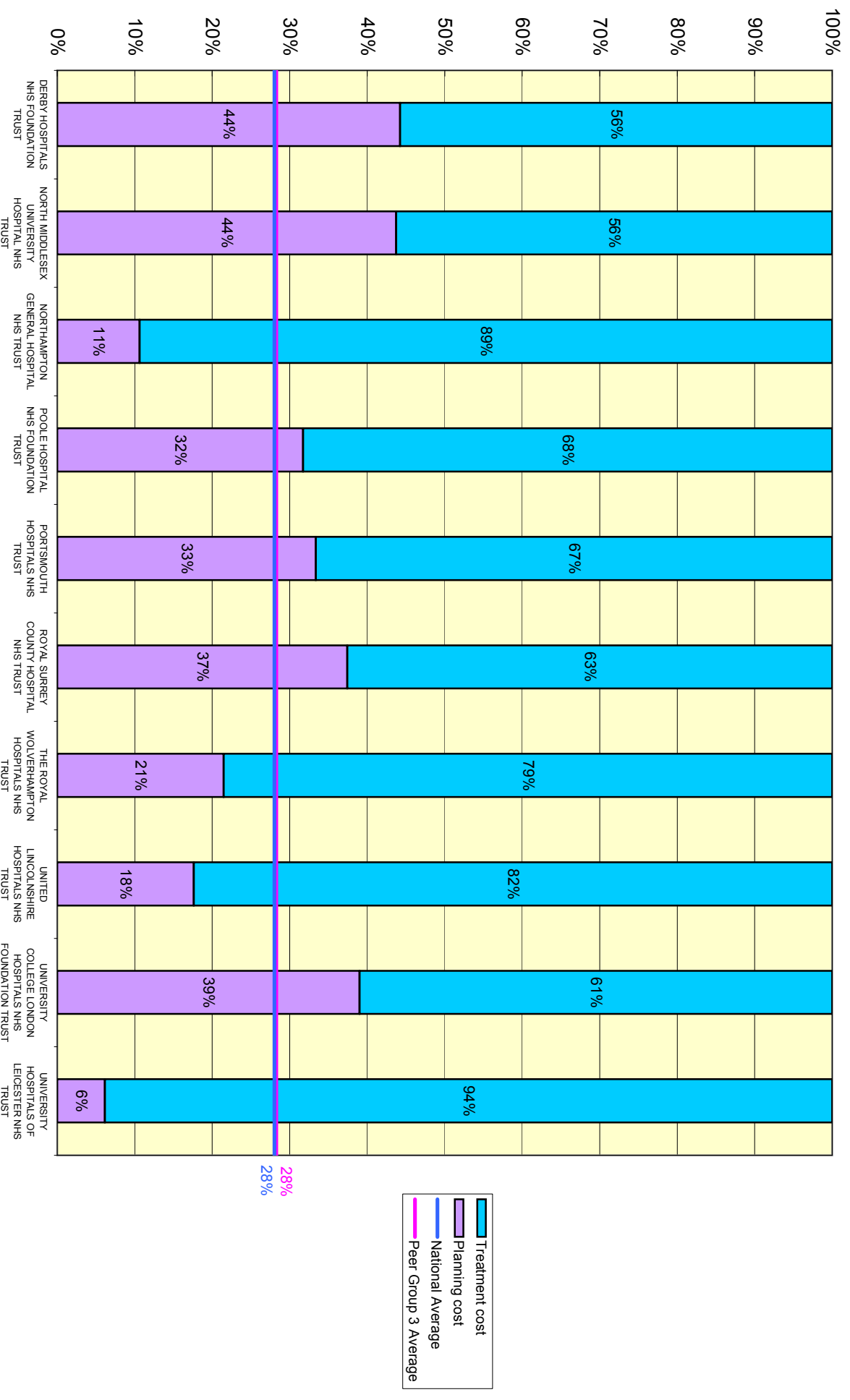
## Average Cost per Treatment Fraction - Peer Group 3



## Average Fractions Delivered per Planning Event - Peer Group 3

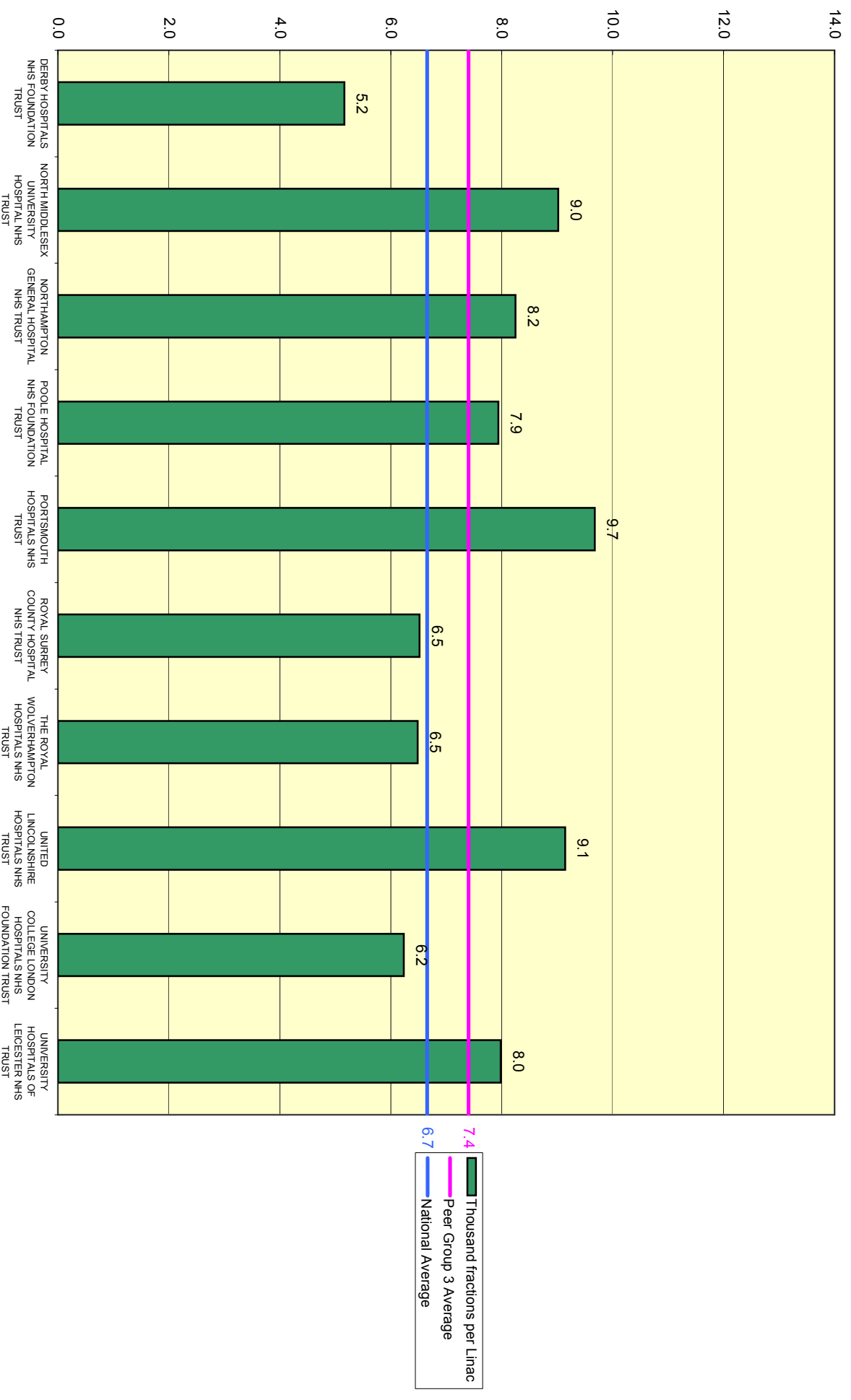


## Split of Costs between Treatment and Planning - Peer Group 3

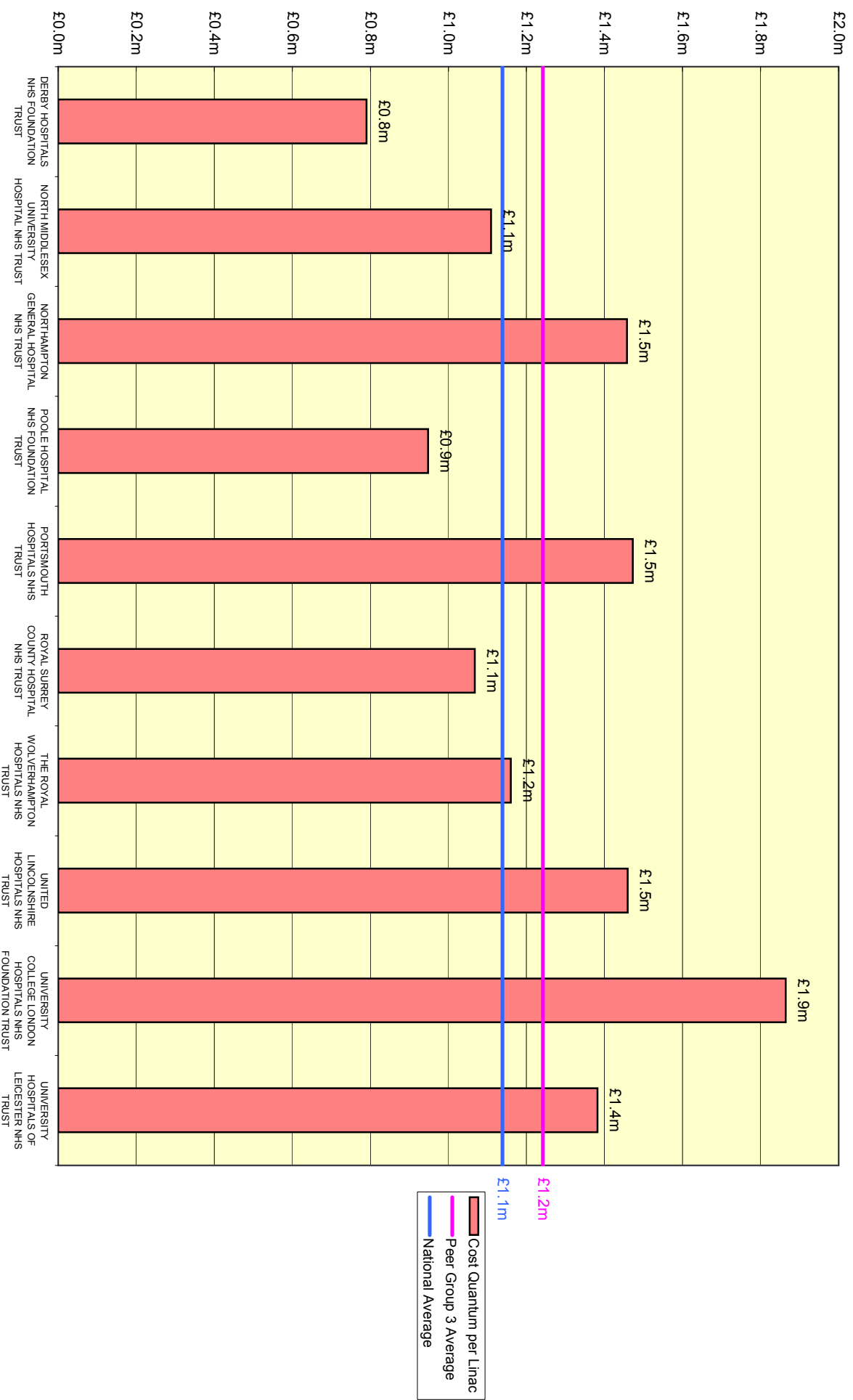




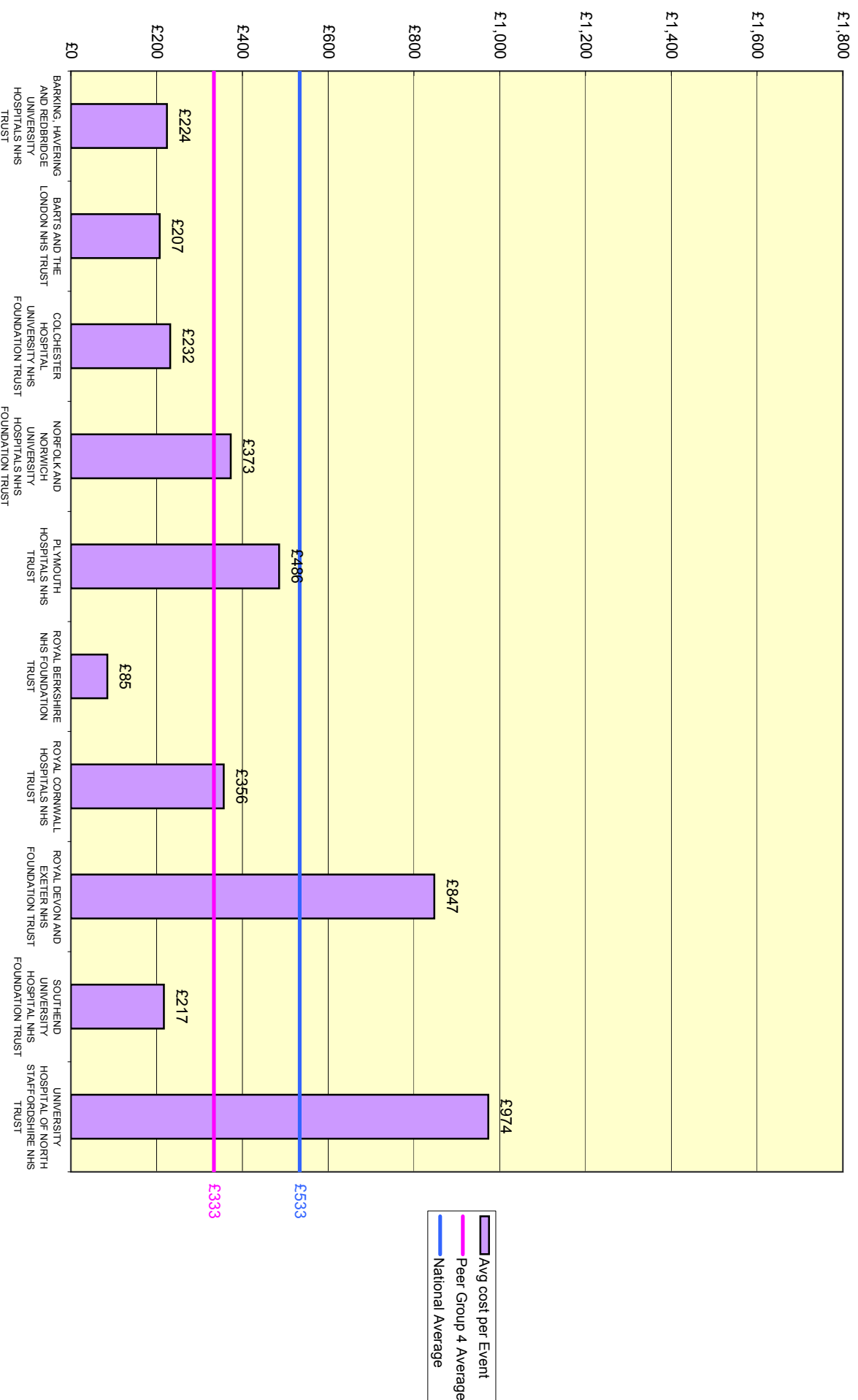
## Average Fractions Delivered per Linac - Peer Group 3



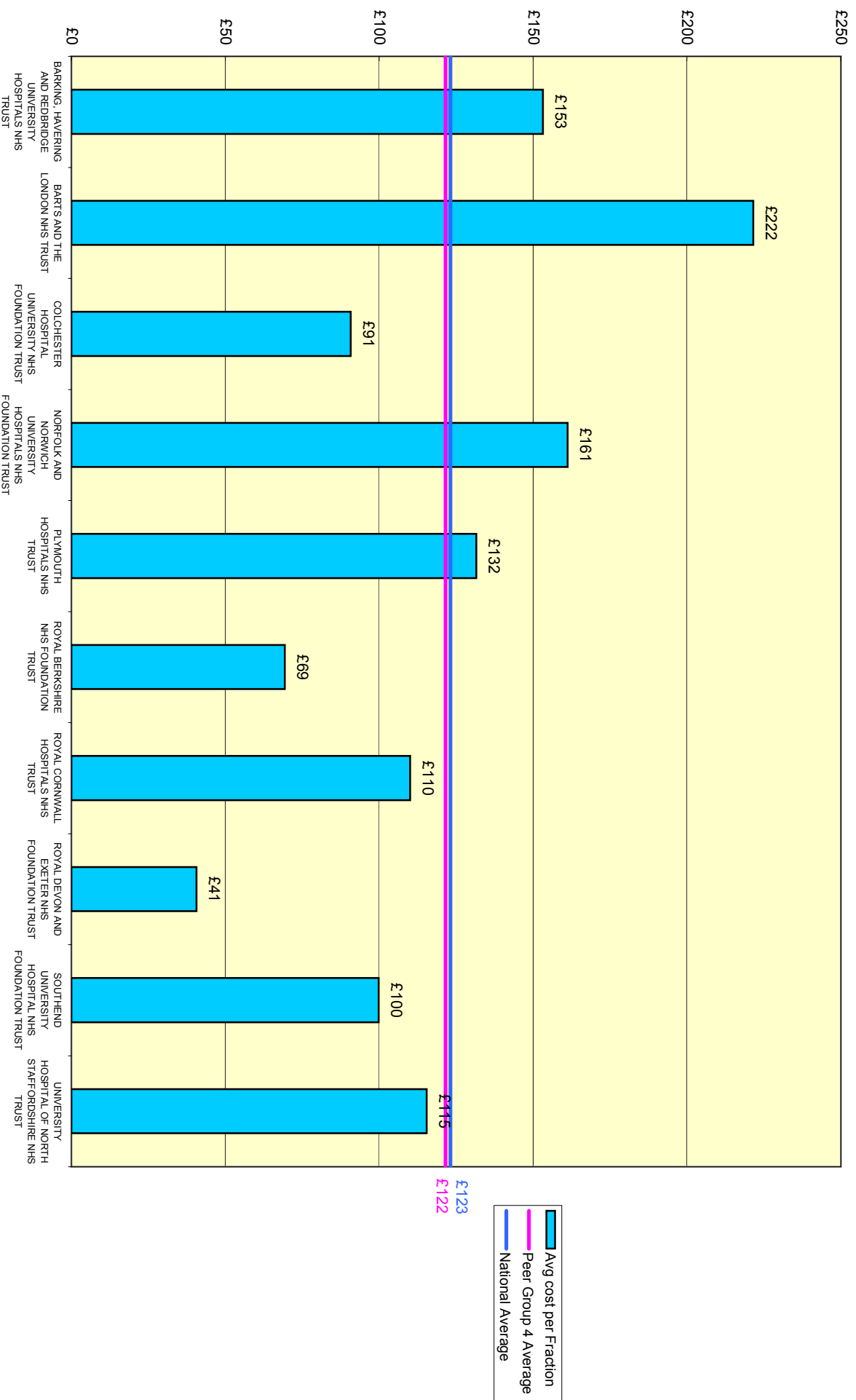
## Cost Quantum per Linac - Peer Group 3



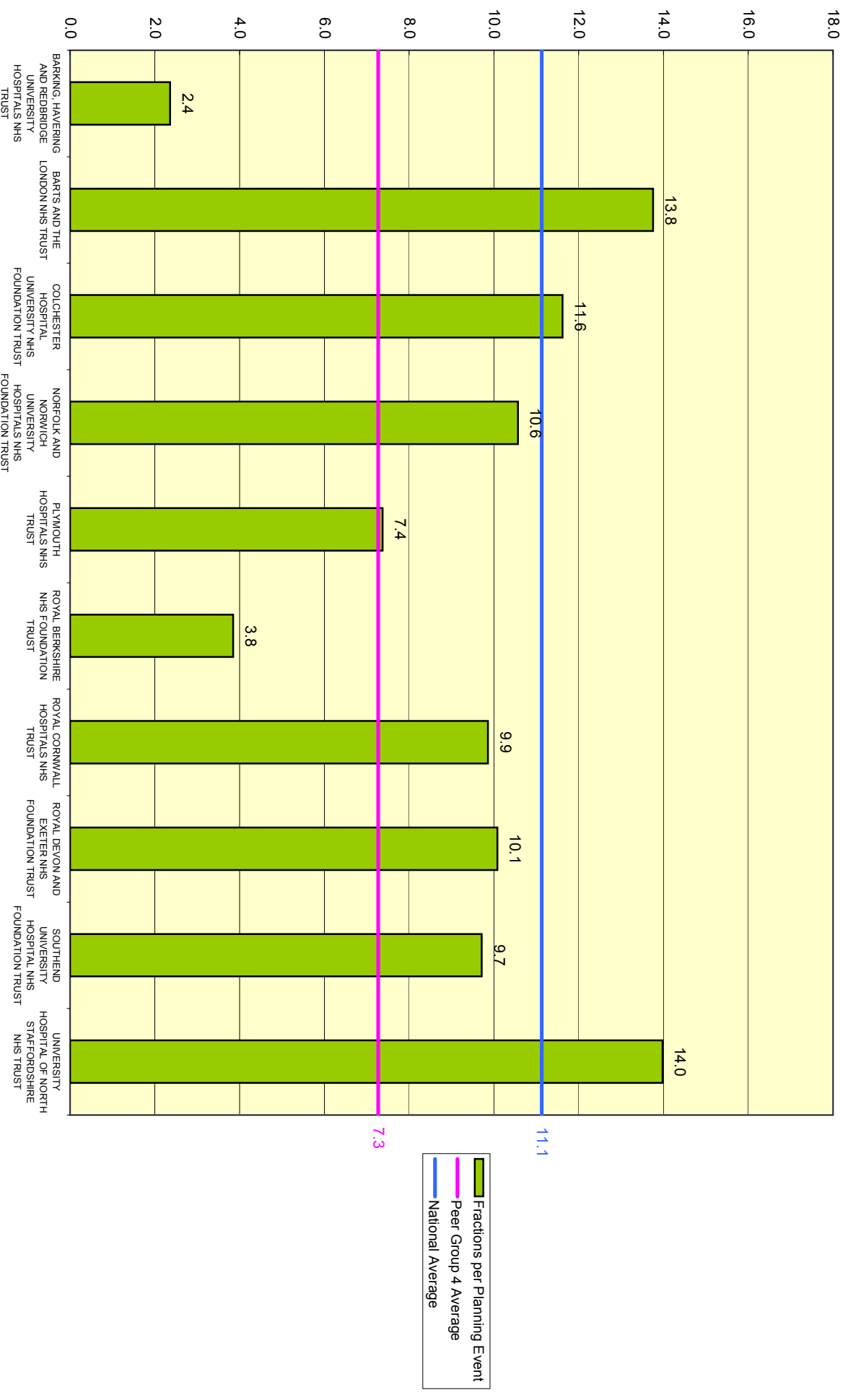
## Average Cost per Planning Event - Peer Group 4



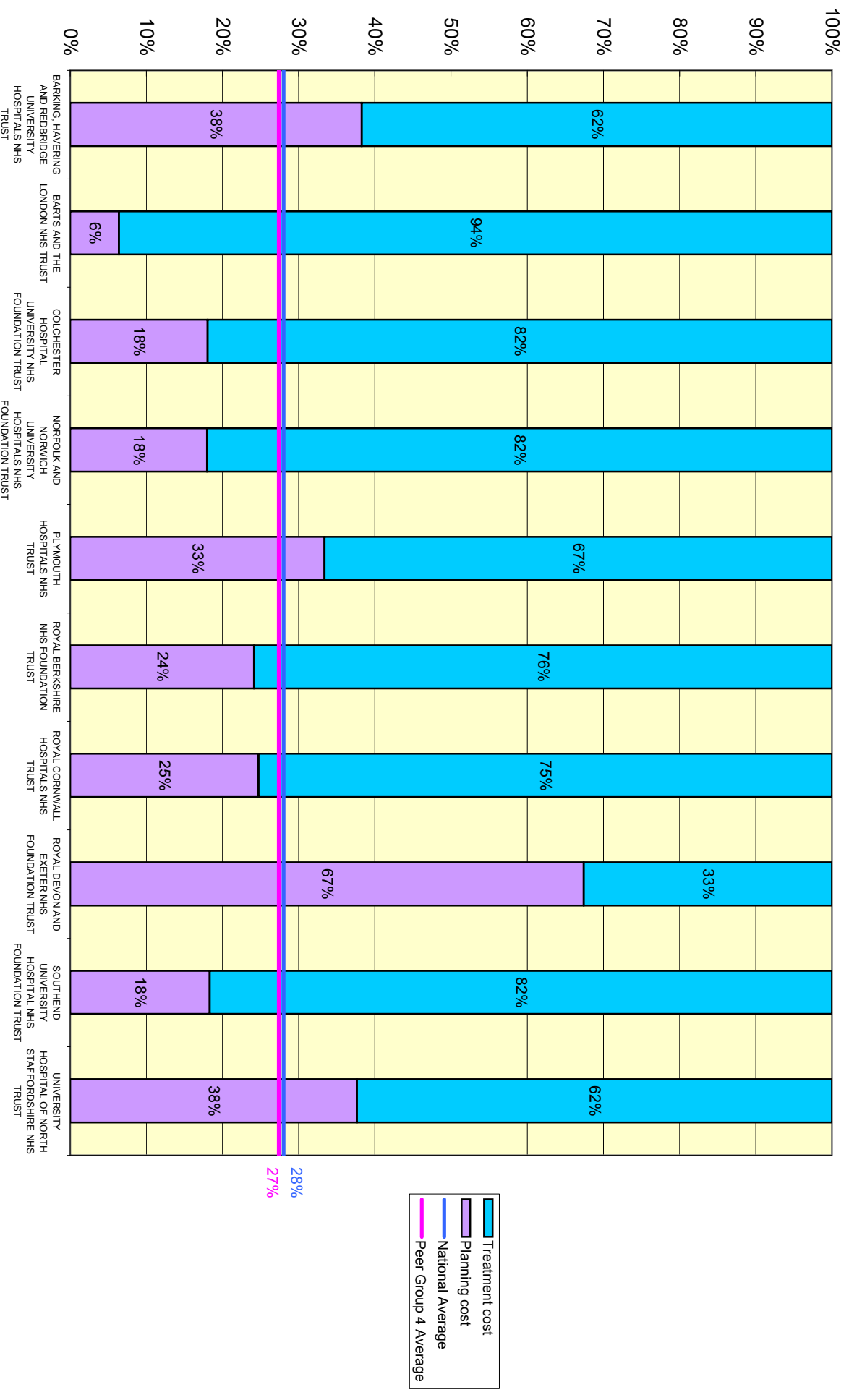
## Average Cost per Treatment Fraction - Peer Group 4



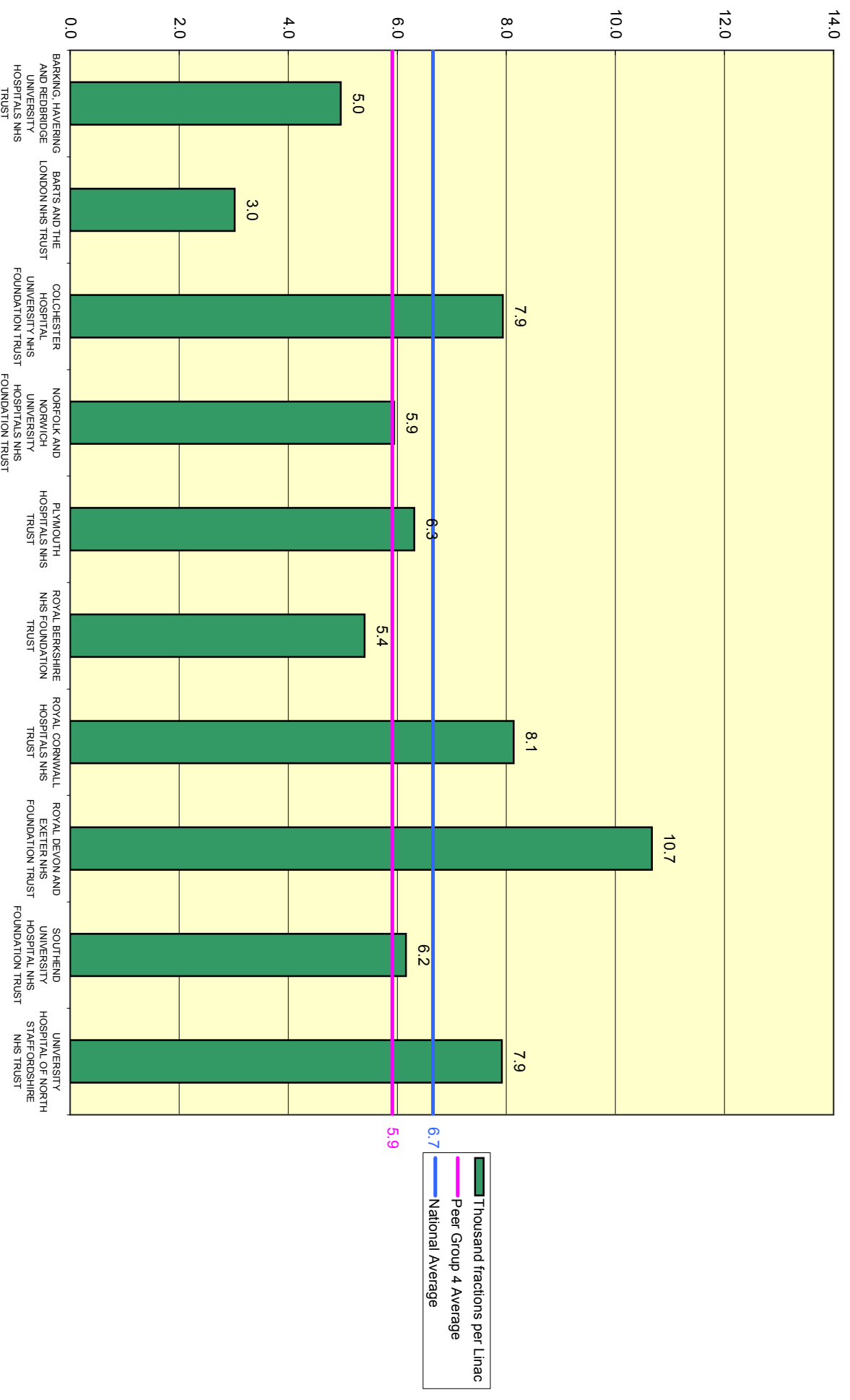
## Average Fractions Delivered per Planning Event - Peer Group 4



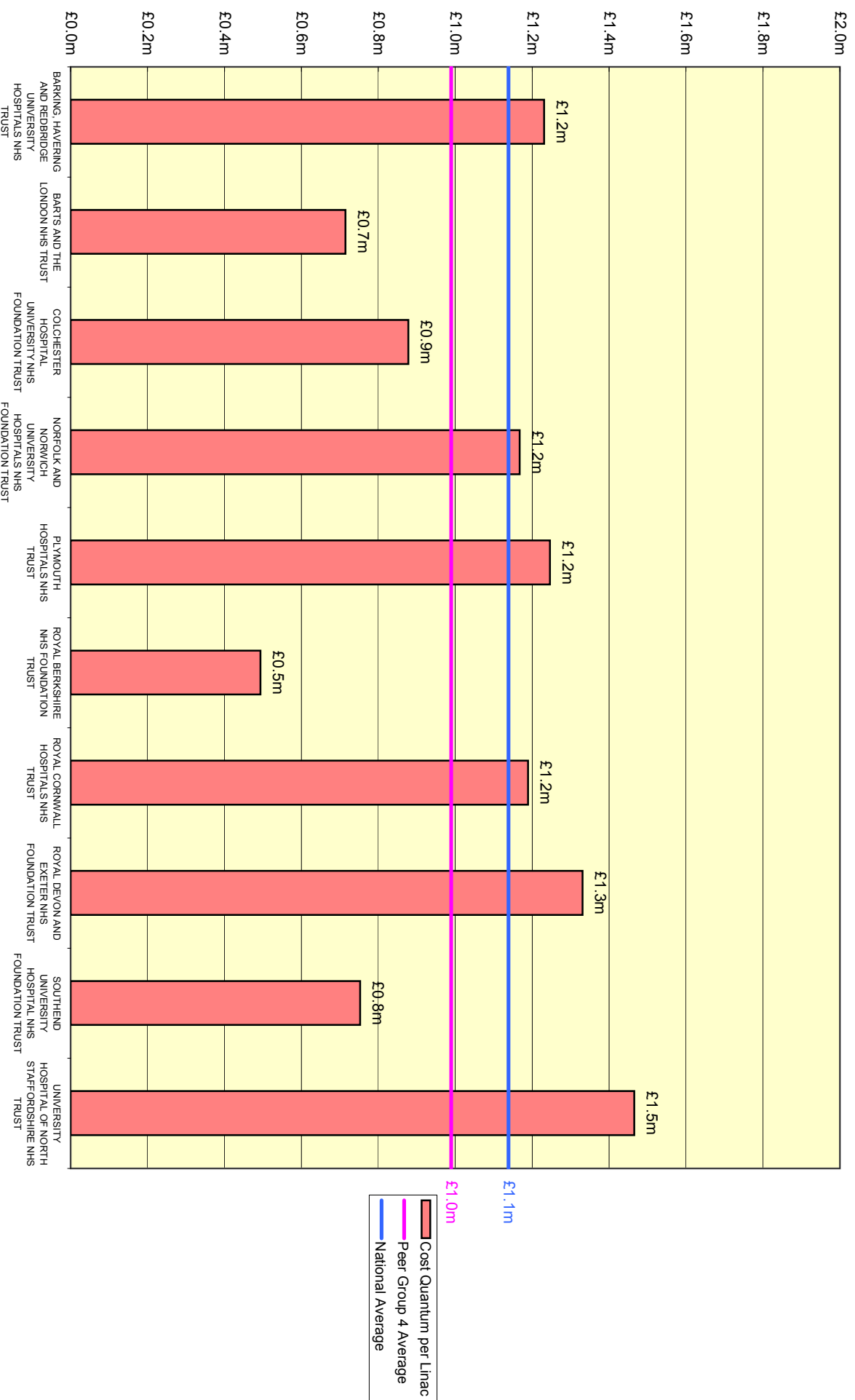
## Split of Costs between Treatment and Planning - Peer Group 4



## Average Fractions Delivered per Linac - Peer Group 4

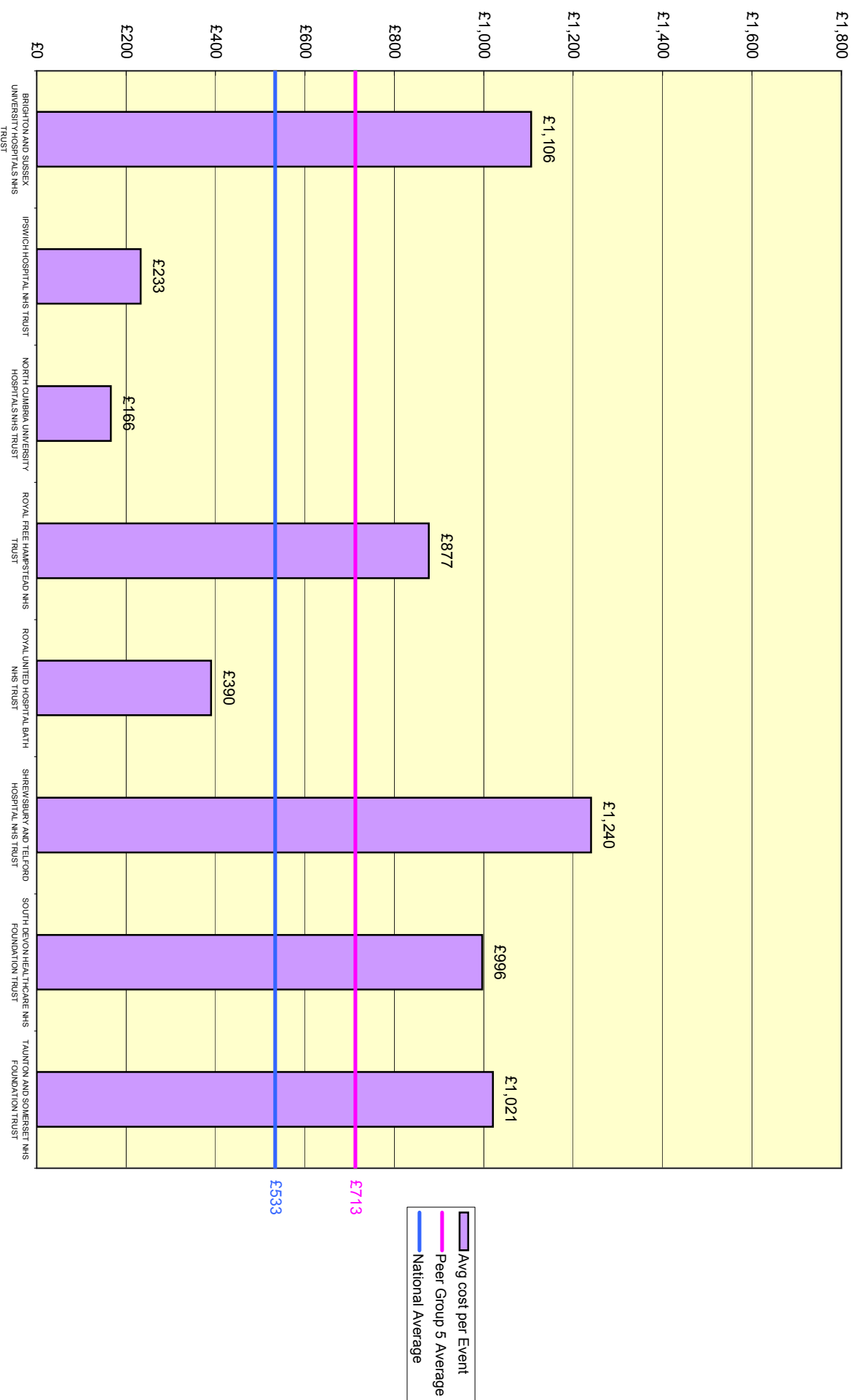


## Cost Quantum per Linac - Peer Group 4

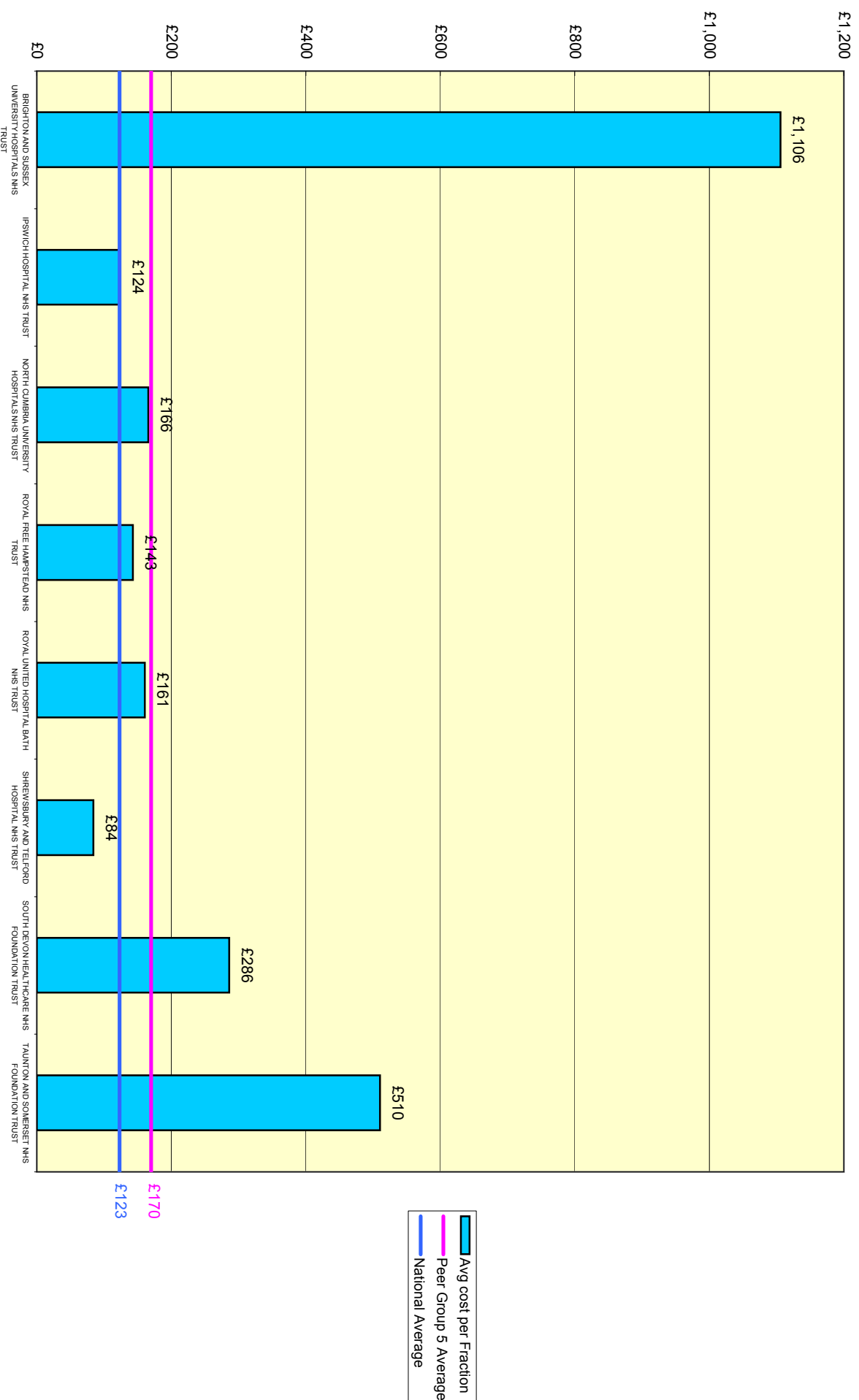




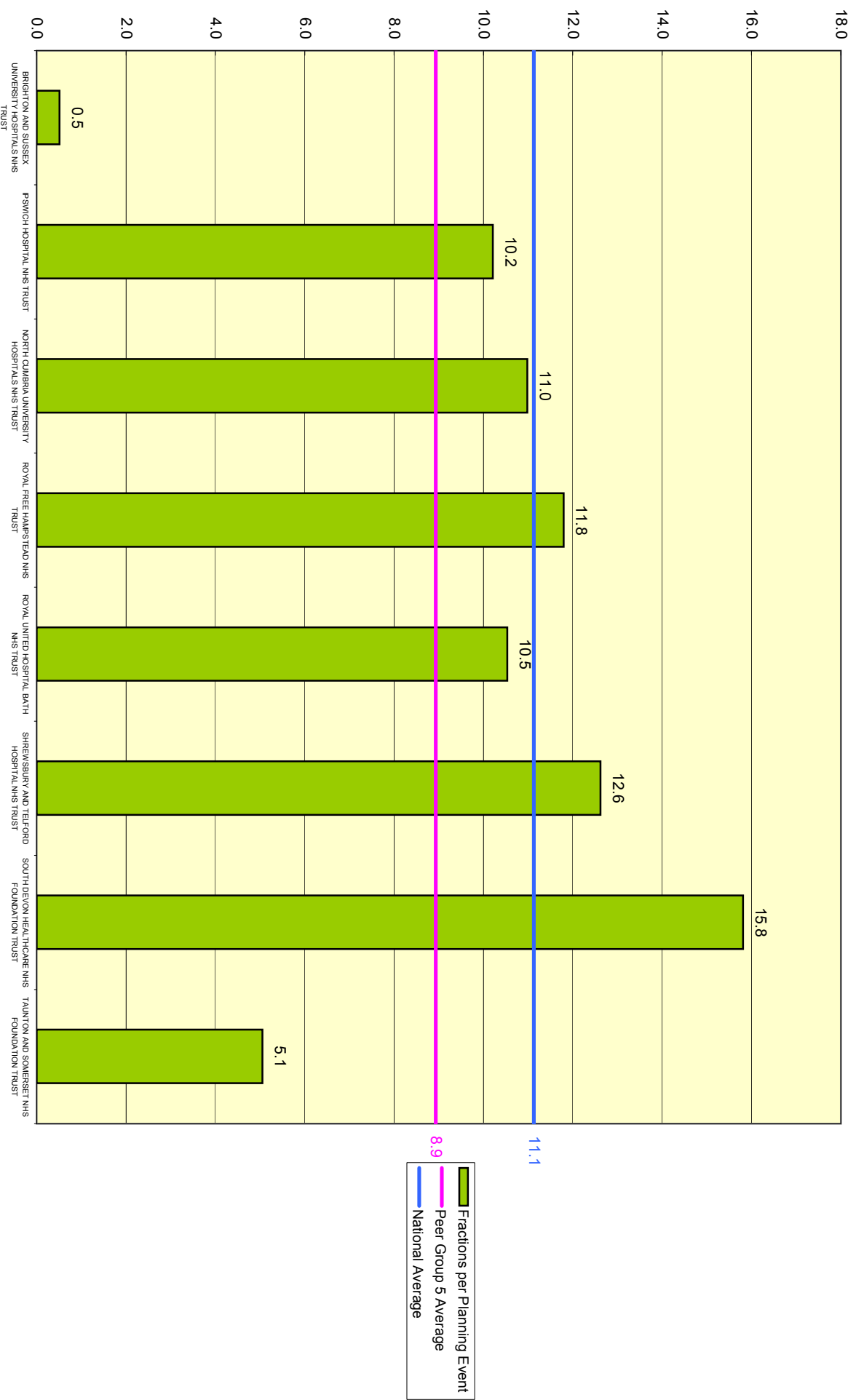
## Average Cost per Planning Event - Peer Group 5



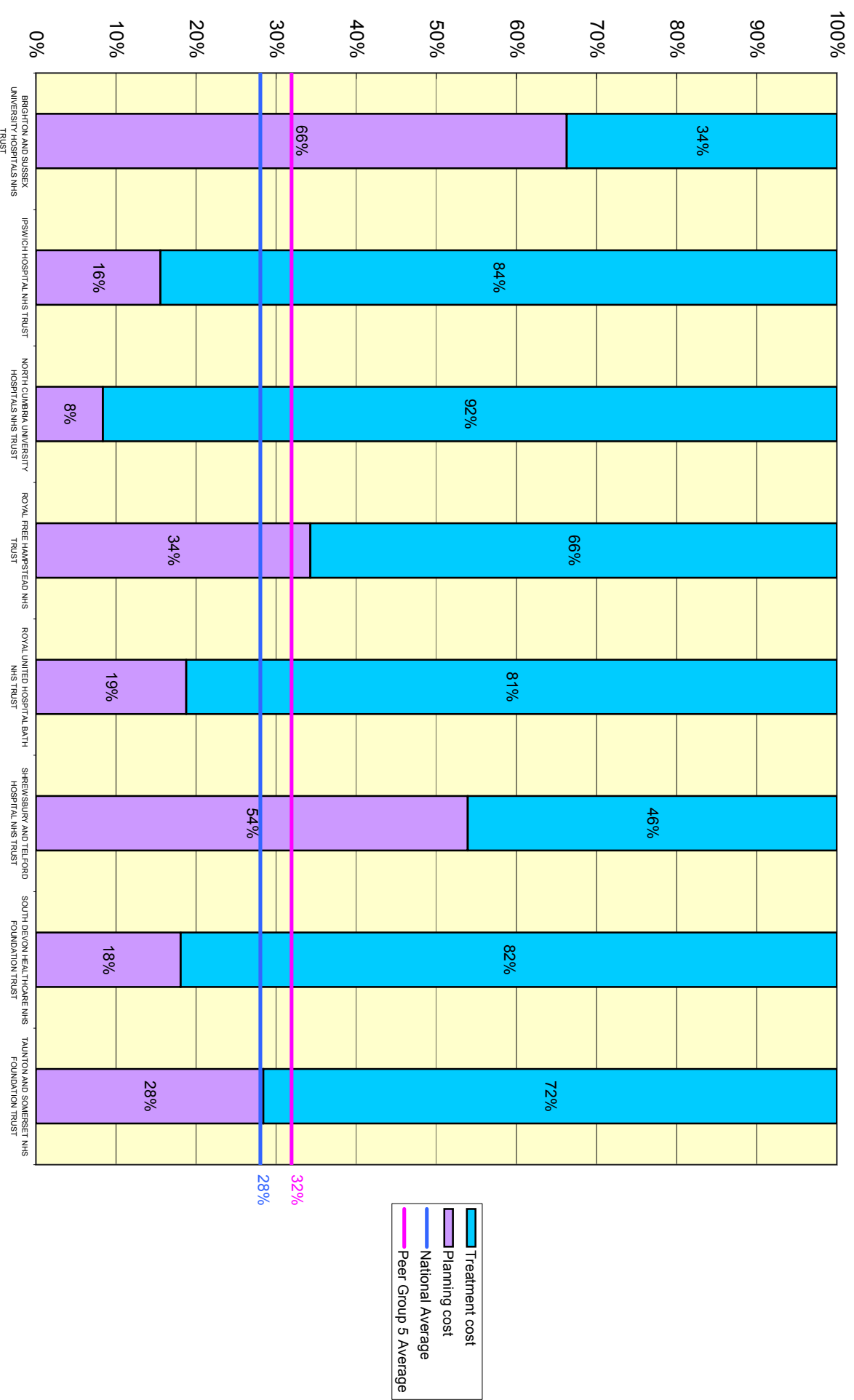
## Average Cost per Treatment Fraction - Peer Group 5



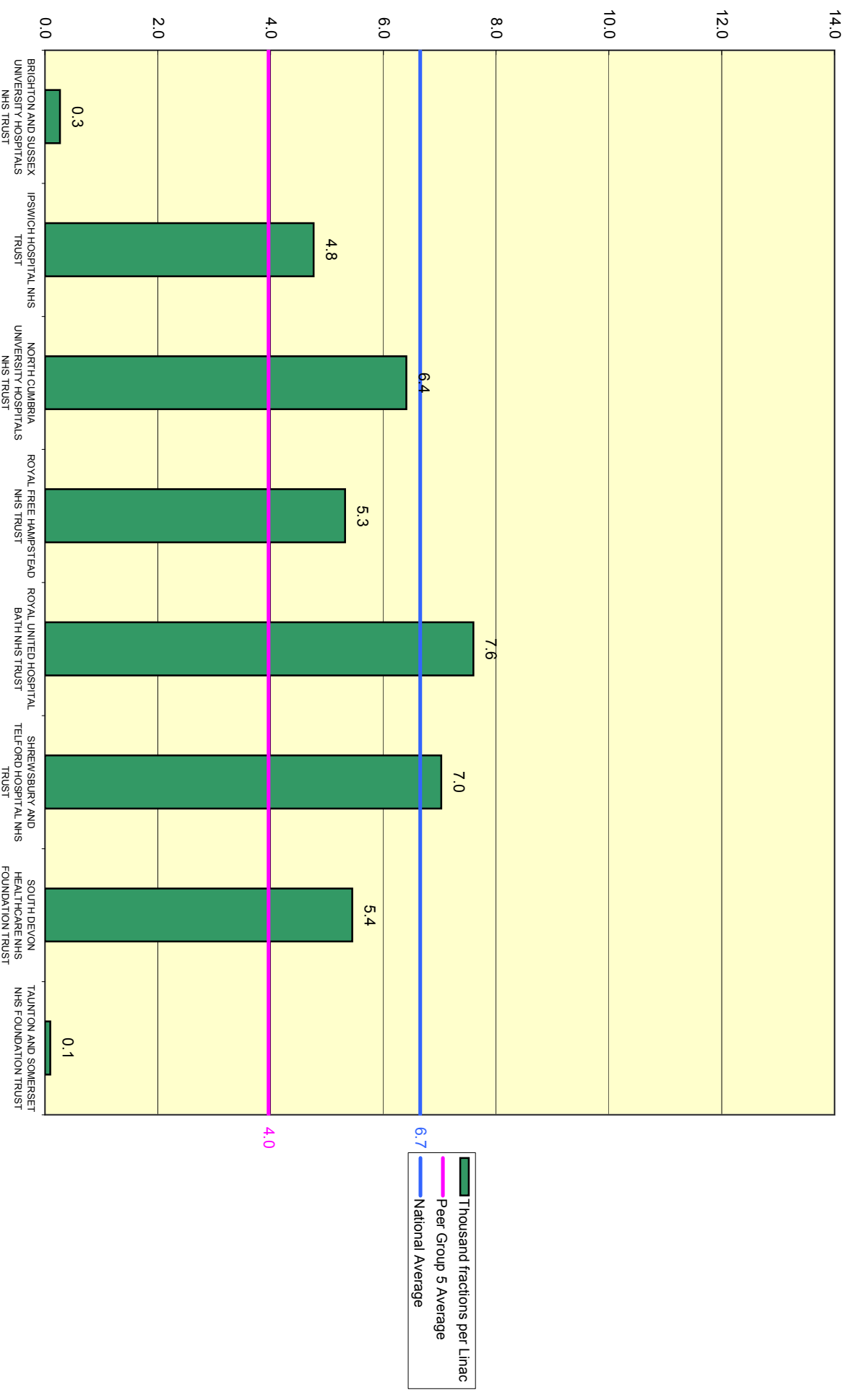
## Average Fractions Delivered per Planning Event - Peer Group 5



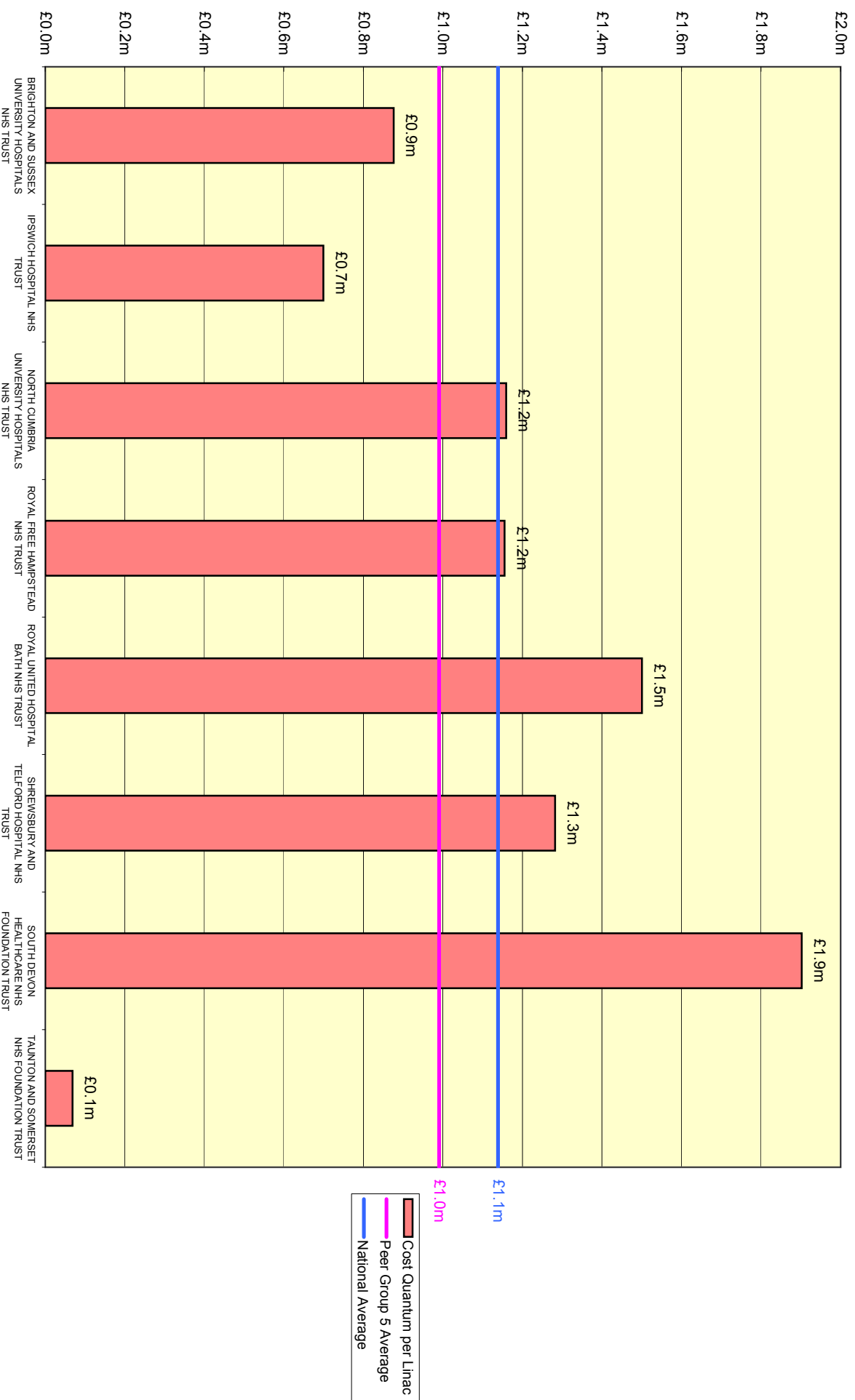
## Split of Costs between Treatment and Planning - Peer Group 5



## Average Fractions Delivered per Linac - Peer Group 5



## Cost Quantum per Linac - Peer Group 5



**National Cancer Action Team  
Radiotherapy costing and tariff development project  
Costing Advice: June 2010**

---

## **1. INTRODUCTION**

The purpose of the paper is to provide guidance on allocating costs to the unbundled radiotherapy cost pool and, within that pool, to individual delivery and planning activities / HRGs.

It is based on a paper produced by Susan Gibbin, with the assistance of the Radiotherapy finance leads, in April 2009. It has been revised in the light of discussions with all Radiotherapy providers during the course of May and June 2010.

## **2. CONTEXT**

It is recognised nationally that the quality of radiotherapy data collection and associated reference costing may not be robust enough to develop a national tariff at this stage. Therefore supplementary advice has been provided to assist organisations in improving their costing processes. A key part of this was a costing template developed by the National Cancer Action Team, which many Trusts have already started to use during the course of 2007/08 and 2008/09.

Following our discussions with radiotherapy providers, a number of key themes emerged where providers indicated that extra guidance may be helpful. This paper provides assistance to trusts seeking to complete the template but is also intended to provide general guidance to all trusts when costing radiotherapy services.

## **3. THE TEMPLATE**

The radiotherapy template is optional. However, Trusts are asked to complete the “cost summary” worksheet, which summarises the total cost pool for radiotherapy across various categories. This will allow trusts’ costs to be benchmarked and the results will be shared with trusts.

The remaining worksheets are designed to capture activities based on each organisation’s local descriptions as defined within their radiotherapy department. Capturing activity and costs at this granular level provides sufficient flexibility to allow costs to be mapped to both the existing and any future OPCS / HRG data definitions. Alternatively, Trusts may have their own systems and spreadsheets for capturing this detail.

It is assumed that organisations will follow national costing guidance in calculating the radiotherapy cost pool. This guidance should therefore be used in conjunction with the following national standards:

- Reference Cost Guidance for 2009/10 collection:  
[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_112590](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_112590)
- NHS Costing Manual 2009/10 edition:  
[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_112597](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_112597)
- Acute Health Clinical Costing Standards 2009/10:  
[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_095359](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_095359)

**National Cancer Action Team  
Radiotherapy costing and tariff development project  
Costing Advice: June 2010**

---

#### **4. RECORDING AND COUNTING ACTIVITY**

Activity is likely to be held on radiotherapy systems rather than on PAS. Therefore it is unlikely to be in a suitable format for running through the HRG grouper software and OPCS codes will have to be assigned manually to local descriptions of activity. From these codes, HRGs can be derived.

Useful guidance on what type of activities map to each HRG can be found at: <http://www.ic.nhs.uk/webfiles/Services/casemix/Prep%20HRG4/Radiotherapy%20HRG%20Definitions.pdf>

This should be read in conjunction with the relevant HRG grouping documentation for the year in question. The 2009/10 files are at: <http://www.ic.nhs.uk/services/the-casemix-service/using-this-service/reference/downloads/costing/hrq4-2009-10-reference-costs-grouper-documentation>

Some additional guidance documents have been provided for OPCS coding on the Radiotherapy Data Set (RTDS) web site at: <http://www.canceruk.net/rtservices/rtds>

In respect of Planning HRGs, it is important to remember that Reference Costs guidance allows only one planning event to be recorded per course of treatment. Therefore, if multiple planning attendances relating to the same course of treatment are being recorded, only the first attendance should be counted and any subsequent attendances should be excluded. An alternative approach, used by several Trusts, is simply to count courses of treatment and use this as a proxy for planning events.

The RTDS guidance mentioned above allows for planning events to be recorded for every prescription rather than one per course of treatment. It is therefore imperative that organisations are clear how they are recording this activity and can reconcile between the different conventions.

Treatment HRGs are measured in fractions and this should be more straightforward to collect from radiotherapy systems. However, it is important to remember to exclude the following types of activity which may be present in the data:

- Multiple fractions in a single visit – the HRG design means these should be recorded as a single fraction except in exceptional circumstances such as hyper-fractionated radiotherapy
- Non-NHS treatment (e.g. private patients)
- Non-treatment exposures (e.g. planning activity which should be included as part of the planning event for that course of treatment, equipment quality assurance, etc)

#### **5. ALLOCATION TO THE COST POOL**

A key objective is to ensure that only appropriate costs end up in the unbundled radiotherapy cost pool. As noted above, the expectation is that organisations follow national guidance and costing standards in determining which costs should be allocated and apportioned to radiotherapy.

However, to minimise any confusion and ambiguity guidance has been developed in line with the NCAT template. This guidance provides more detail than that available nationally to improve, where possible, consistency of approach. The table below offers advice on a number of areas, based on the issues Trusts highlighted during the course of our discussions.



**National Cancer Action Team  
Radiotherapy costing and tariff development project  
Costing Advice: June 2010**

Area	Comment
<p><b>Medical Staffing (Consultants and Junior Doctors)</b></p>	<p>Clinical Oncology medical staff often provide services to Radiotherapy as well as other departments, so costs need to be separated initially to take account of the time they spend on Radiotherapy specifically.</p> <p>This needs to be done on the basis of their agreed job plans, if available. This information can be supplemented with further knowledge about how their time is organised.</p> <p>In the case of junior medical staff, the allocation of their time will often be on the basis of best estimate. However, the net cost of their time, after netting off central funding for training and education, is unlikely to be significant.</p> <p>Some of their Radiotherapy time will be associated with planning and delivery, and some with radiotherapy care delivered in other settings, e.g. outpatient clinics. Therefore their radiotherapy time needs to be further sub-divided into that spent on planning, treatment and other activities not part of the unbundled radiotherapy cost pool.</p> <p>Activities to be <u>excluded</u> from the radiotherapy cost pool:</p> <ul style="list-style-type: none"> <li>▪ Ward rounds (cost should be allocated to the core HRG for the patient spell)</li> <li>▪ Outpatient consultation clinics (cost should be allocated to Clinical Oncology outpatients)</li> <li>▪ Radiotherapy Treatment Review / Floor Clinics (outpatient activity as above)</li> <li>▪ Multi-Disciplinary Team Meetings (reported separately for reference cost purposes)</li> </ul> <p>The costs of R&amp;D, postgraduate education and nationally funded Clinical Excellence awards should not be allocated to patient care. This can be achieved by both identifying the time and excluding it or, more crudely, by netting off the income received for such activities from the total cost pool.</p> <p>Time spent on non-clinical duties (e.g. SPAs) needs to be allocated across clinical time as an indirect cost on an appropriate basis (usually evenly across clinical PAs unless another basis is specifically preferred).</p> <p>The activities remaining in the radiotherapy cost pool should only include those that contribute directly to the planning and delivery of radiotherapy. It is expected that the majority of medical time will be spent in planning rather than treatment.</p> <p>It is advisable to maintain a clear distinction between external beam radiotherapy and brachytherapy, as these treatments tend to be organised quite differently. Furthermore, the NCAT template only analyses the cost of external beam radiotherapy. Brachytherapy will be the subject of a separate review in the future.</p>

**National Cancer Action Team  
Radiotherapy costing and tariff development project  
Costing Advice: June 2010**

Area	Comment
<b>Radiographers</b>	<p>The job plan templates can be modified for local use to identify the time spent by Therapeutic Radiographers in their key activities. As an alternative, local job planning systems or spreadsheets can be used.</p> <p>Once complete, this time allocation can be used to allocate their costs to those activities, some of which will be planning and treatment. Again, it is advisable to separate out, where possible, brachytherapy from external beam.</p> <p>The activity templates ask trusts to identify the time spent by groups of staff spent either directly planning the treatments, or in direct contact with patients having radiotherapy delivered. Time spent by staff supporting but not directly undertaking planning or delivery (e.g. supervisory staff) should also be allocated to those activities as an indirect cost on an appropriate basis.</p>
<b>Medical/Radiation Physics, Equipment Maintenance, etc</b>	<p>Organisations have different arrangements for testing and maintaining their equipment. Some trusts use in house Physics staff, where the costs and job plans should be relatively easy to identify. Ideally their time spent on their activities should be identified using a similar method to Radiographers wherever possible so as to maintain consistency.</p> <p>This area may be more difficult where these services are procured from an external body (another trust or a PFI/MES contractor) and reasonable estimates will have to be made in such cases.</p>
<b>Nursing Staff</b>	<p>With the exception of specialist nursing staff involved in a limited range of radiotherapy treatments (e.g. brachytherapy), it is unlikely that nursing costs will be a significant part of the radiotherapy cost pool.</p> <p>As with medical staff time, the following are to be <u>excluded</u> from unbundled radiotherapy cost pool:</p> <ul style="list-style-type: none"> <li>▪ Ward nursing (cost should be allocated to the core HRG for the patient spell)</li> <li>▪ Input into outpatient clinics (cost should be allocated to Clinical Oncology outpatients)</li> <li>▪ Radiotherapy Treatment Review / Floor Clinics (outpatient activity as above)</li> </ul>
<b>Other Supporting Staff</b>	<p>There will be a range of other staff, e.g. administrative staff on reception, that will support planning and treatment although not directly involved. These indirect costs need to be allocated to planning</p>

**National Cancer Action Team**  
**Radiotherapy costing and tariff development project**  
**Costing Advice: June 2010**

Area	Comment
	and treatment on an appropriate basis, e.g. reception staff on the basis of patient attendances.
<b>Diagnostic Imaging</b>	<p>Diagnostic Imaging (e.g. MRI, CT, etc) provided as part of the diagnosis and staging of cancer should not be included in the radiotherapy cost pool. These costs form part of the unbundled cost pool for diagnostic imaging.</p> <p>Only scans performed as part of the radiotherapy planning and treatment process (i.e. after the decision to treat with radiotherapy has been made) should be included within the pool. It is likely that this activity will be performed within the radiotherapy department rather than the imaging department.</p>
<b>Fixed Assets</b>	<p>The depreciation and capital charges associated with the equipment used to deliver radiotherapy are likely to form a significant part of the cost pool. It is therefore imperative that the revenue costs relating to fixed assets are calculated with the utmost care. This implies having an accurate and up-to-date asset register wherever possible, covering both the equipment and the buildings used in radiotherapy.</p> <p>Particular attention should be paid to the following:</p> <ul style="list-style-type: none"> <li>▪ Source of funding for assets needs to be recorded and documented – donated or government granted (e.g. NOF) assets attract no capital charges and depreciation is offset by a transfer from reserves</li> <li>▪ Age profile of equipment and remaining life of assets under the organisation's accounting policies – this will have a significant impact on the calculation of depreciation and capital charges</li> <li>▪ Recognising in full the correct accounting treatment of leased assets being brought on balance sheet, whether under conventional finance leases or longer-term PFI/MES arrangements</li> <li>▪ Being aware of which activities individual assets are used for so that costs can be allocated accurately between the various planning and treatment HRGs, e.g. Linacs will be predominantly used in treatment and as such their cost should not be spread evenly across all activities</li> <li>▪ Buildings – depreciation and capital charges based on a known book value wherever possible, rather than, for example, a total for a building apportioned by floor area.</li> </ul>
<b>Provider to Provider recharges</b>	Where providers supply radiotherapy services on behalf of other providers (e.g. planning services provided by a larger trust), care needs to be taken that the activity and associated costs are counted against only one organisation.

**National Cancer Action Team**  
**Radiotherapy costing and tariff development project**  
**Costing Advice: June 2010**

Area	Comment
	<p>The NHS Costing Manual suggests the following default treatment:</p> <ul style="list-style-type: none"> <li>▪ “The receiving NHS organisation should record both the costs and activity. Such costs should be added to the cost of the Finished Consultant Episode/Spell/attendance/client if necessary;</li> <li>▪ “The providing NHS organisation should match the income and expenditure as with support services, but any resultant activity (FCEs/Spells/attendances etc) should be excluded and reconciled through the appropriate statement detailed in Chapter 11. Thus, the matching principle of activity and cost is maintained as the costs are offset by the income and the activity is not double counted across the NHS as a whole.”</li> </ul>
<p><b>Contributions from Income</b></p>	<p>Significant sources of income, predominantly from private patient activity, were indicated by some trusts.</p> <p>Such income needs to be netted off the cost pool, preferably by excluding private patient activity together with the associated cost. If this is not possible, total income for radiotherapy should be netted off the total cost pool.</p> <p>Similar principles should apply to contributions from other income sources, such as research and teaching income, although these are expected to be relatively immaterial.</p>
<p><b>Corporate Overheads</b></p>	<p>In addition to the direct and indirect costs described above, there will be a range of organisation-wide overhead costs to be apportioned to radiotherapy. These apportionments will normally be calculated across the whole trust by trusts’ costing systems.</p> <p>Suggested bases of apportionment can be found in the NHS Costing Manual (Appendix 2) and Acute Health Clinical Costing Standards.</p> <p>The issue of utilities (energy, water, etc) may warrant some additional attention, as radiotherapy is thought to be a disproportionate user of these services and a standard apportionment across the trust (usually floor area or building volume) may understate the true cost. Experts in facilities, estates, etc. may be able to suggest a suitable weighting if this issue is thought to be material.</p> <p>Once a share of overheads has been apportioned to the radiotherapy cost pool, wherever possible, a reasonable method should be used to allocate these between the various activities/HRGs relating to planning and treatment. This may be a continuation of the apportionment basis used by the costing system or an alternative method may be required. For example, the main driver of the individual HRGs is time and this may be the most appropriate basis upon which to allocate the overheads across activities.</p>

**National Cancer Action Team  
Radiotherapy costing and tariff development project  
Costing Advice: June 2010**

---

## **6. SUMMARY**

The radiotherapy cost pool needs to be built up carefully using the approach described above. In particular, costs relating to inpatient and outpatient care need to be identified and excluded.

Allocating the cost pool further between individual activities and/or HRGs requires a great deal of local knowledge and close co-operation between radiotherapy service managers, business accountants for the service and Reference Costs leads.

However, Trusts should always be aware of the materiality of the issues they are attempting to resolve – e.g. junior doctor time was identified by many trusts as a problematic issue yet allocating their net cost (after netting off income for training and education) on different bases is unlikely to affect the cost pool significantly.

An effective “sense check” that an organisation can apply to verify its cost pool and the associated activity is to benchmark itself with other similar organisations. The template summary worksheet is designed to facilitate this by analysing the cost pool over key staff groups, non pay, capital, etc. Collating this data nationally and feeding back the results to trusts should provide a vital aid to improving the quality of radiotherapy costing.

Richard Bailey  
Fiona Moore  
July 2010

Thanks to the authors of the original paper:

- Susan Gibbin, Project Lead
- Jeremy Brinley-Codd (G&St T)
- Carolyn Crossland (Christie)
- John Andrews (Clatterbridge)
- Cynthia Cardozo (Royal Marsden)

## Factors driving costs variations

Cost	Note	Increases costs	Decreases costs
<b>Capital funding</b>			
Availability of capital funding	Particularly for smaller units, where cost of 1 linac may be more than annual capital budget.	PFI/MES/leasing - may be more expensive to run in the short term but may mean less “down time” and protection from future price increases	Raise funds through charitable donations, run machines beyond expected life
Donated vs. funded	Significant numbers of linacs were funded from NOF monies and other donations. These are now being replaced with Trusts bearing the costs.	Replacing donated linacs by purchasing or leasing new machines	Purchasing linacs from newly donated funds
<b>Capital profile</b>			
No of Linacs	Fractions delivered per linac - some Trusts keep a standby machine for service efficiency or where linacs not used full time due to, say, staff shortages	Cost per fraction higher where assets are not fully utilised	Trusts “sweat” the assets.
Age of Linacs	Using older linacs for longer or replacing them	Higher prices and costs of new technology mean the cost of capital is higher.	Where fully depreciated, usually >10 yrs, there is no cost of capital.
Replacement profile	A phased programme of replacement will even out stepped increases in capital costs	Replacing more than one machine in a year	Phasing replacements over a number of years
<b>Staffing</b>			
Skill mix	Different staffing models for services. Varies due to clinical judgement on service delivery as well as from necessity, e.g. availability of staff locally	Higher skill mix levels – e.g. Physics staff calculate dosage	Lower skill mix – e.g. use dosimetrists
Numbers and rotas	Establishment used for service delivery plus how rotas are used, e.g. structured to minimise overtime	Higher staff numbers, use of overtime – but may mean extra income	Lower staff numbers, overtime
Availability of Junior docs/ students	Teaching hospitals will have access to student staff to carry out some roles – but increased training hours.	Additional costs of training students	Students used for delivering services
<b>Service delivery</b>			
Complexity of activity	Complexity of work – may be outside HRG bands	More time required per patient	More time required per patient
New technology	Required to deliver new techniques/treatments	Updating assets	Better health outcomes
Model of service delivery	Use SLAs with other Trusts How planning is delivered e.g. CTs etc	Decisions on how service is delivered may bring prices above or below the average.	
No. of sites, Double-running costs	Where service is delivered over more than one site	Losing economies by duplication across > one site	Single site, sharing staff across one site.