



Department
of Health

Reference costs 2012-13

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Foreword

These 2012-13 reference costs published today are the first produced under new arrangements put in place following the Health and Social Care Act (2012), which transferred responsibility for the National Tariff Payment System in England from the Department of Health to Monitor and NHS England.

Understanding the cost of patient care is an essential element in determining and setting appropriate prices. Monitor is now accountable for the reference costs collection, with the Department of Health continuing to collect reference costs on its behalf.

Monitor set out its long-term strategy for costing and cost collection to inform price setting in *Costing Patient Care*. This set out an intention to move towards using patient-level cost collection as the main source of cost data informing price setting.

However, the transition from reference costs to patient-level costing is likely to be a gradual process, stretching over a number of financial years, and requires due consideration to ensure robust costing data is available through the transitional period.

Therefore, in the medium term, Monitor and NHS England are likely to continue using reference costs to inform price setting and currency development. It is therefore essential that NHS providers and national bodies work together to ensure that costing data underpinning both reference costs and patient-level costs is of high quality.

The following stakeholders supported the collection of 2012-13 reference costs:

- the National Casemix Office at the Health and Social Care Information Centre designed enhanced Healthcare Resource Group currencies, HRG4+, to differentiate more effectively between levels of care complexity
- the Healthcare Financial Management Association, the representative body for NHS finance professionals, has continued to develop the Clinical Costing Standards which set out best practice for deriving cost data
- the NHS Trust Development Authority supported query resolution and managed the submission of reference costs by NHS trusts
- the Reference Costs Advisory Group, with members from national bodies and a representative sample of NHS providers, provided advice on the design of the guidance and collection.

This is a continuing journey to improve both the quality of the underlying costing and the process of cost collection. 121 trusts have now implemented patient level information costing systems (PLICS), and 116 of these trusts used PLICS to compile their reference costs return.

We introduced updated assurance measures to these 2012-13 reference costs, designed to enhance their quality, including a mandatory self-assessment quality checklist, and sign off by trust Boards. In addition, they will be subject to a targeted assurance programme by Capita, who are auditing the reference costs at 50 trusts between September 2013 and early 2014.

Our ambition is for costing data that supports a pricing system which delivers high quality care for patients and better value for the NHS.

Department of Health Monitor NHS England NHS Trust Development Authority

Chapter 1: Introduction

Overview

1. Reference costs are the average unit cost to the NHS of providing defined services in a given financial year to NHS patients in England and are collected annually by the Department of Health.
2. This document supports the publication of 2012-13 reference costs, which give the most comprehensive picture available about how 244 NHS trusts and NHS foundation trusts spent £55.2 billion delivering healthcare to patients in 2012-13.
3. [Chapter 1](#) provides an introduction to reference costs, how and why we collect them, and highlights some of the main changes to the 2012-13 collection.
4. [Chapter 2](#) explains the data that we have published alongside this document¹:
 - (a) national schedules of reference costs. These show the national average unit costs derived from the average unit costs of NHS providers
 - (b) reference cost index (RCI). A measure of the relative efficiency of NHS providers
 - (c) database of source data. Publishing the data submitted by trusts provides a valuable source of information for benchmarking of costs and other more detailed analysis.
5. [Chapter 3](#) covers the spell costs that we collected from trusts submitting equivalent finished consultant episode (FCE) costs. A spell is the period from admission to discharge within a single provider, may comprise of more than one FCE, and is the basis on which national prices for admitted patient care are paid.
6. [Chapter 4](#) describes the voluntary collection of data in cost pool groups piloted for the first time in 2012-13. Cost pool groups are types of costs, forming a set of component costs in a particular service line. For example, a single episode of care might include costs reported against distinct cost pool groups for wards, medical staff, and drugs. Monitor has suggested that cost pool data could be used for validations and to provide a richer data set for benchmarking.
7. [Chapter 5](#) shares the results of the annual survey conducted at the same time as the collection, mainly to assess the extent to which trusts are implementing PLICS, and using these systems to compile their reference costs.
8. [Chapter 6](#) sets out the actions we took to improve and validate the quality of 2012-13 reference costs, including responses to the mandatory self-assessment quality checklist completed by trusts.
9. If the information you are looking for is not available in this publication or on our web pages please contact us at pbrdatacollection@dh.gsi.gov.uk.

¹ <https://www.gov.uk/government/publications/nhs-reference-costs-financial-year-2012-to-2013>

Background

10. Reference costs are one of the building blocks for setting prices for NHS-funded services in England. These price setting arrangements currently cover the majority of NHS-funded acute services in England, under which NHS commissioners pay acute trusts a national price for each patient seen or treated, taking into account the complexity of the patient's healthcare needs. All NHS providers submit their costs and activity for each particular service, and national prices are set based on the average of these costs.
11. Under the Department of Health, these arrangements were characterised as a system of Payment by Results, and we refer readers who would like a fuller understanding to *A simple guide to Payment by Results*². National prices are a key part of Payment by Results, but the system also describes the use of national currencies for NHS commissioners to use when contracting with providers, with either non-mandatory national prices or locally set prices. From 1 April 2014, when Monitor and NHS England assume responsibility for the system, the term National Tariff will refer to the entire set of national prices, the methodology for price setting and the rules for varying national prices and agreeing local prices. Monitor and NHS England published their statutory consultation on the 2014-15 National Tariff Payment System in October 2013³.
12. Payment by Results was introduced in 2003-04. Reference costs were introduced several years earlier, in 1997-98, from a desire to understand how all hospital costs compared to each other. The NHS had always accounted for its expenditure in terms of staffing, goods, services and so on. Reference costs allowed unit costs of healthcare in hospital trusts to be compared down to the level of treatments and procedures. By unit costs, we simply mean the costs incurred in providing one unit of a service. For example, one hip replacement or outpatient attendance. Each year the Department of Health collects and publishes reference costs from all NHS providers of secondary healthcare services to NHS patients in England.
13. Meaningful unit costs cannot be derived simply by dividing total expenditure by the number of patients. Reference costs use casemix adjusted measures where they are available, in which the care provided to a patient (case) is classified according to its complexity (mix). The casemix measure for acute care in England is Healthcare Resource Groups (HRGs)⁴. HRGs are maintained by the National Casemix Office at the Health and Social Care Information Centre (HSCIC), and provide standard groupings of similar treatments that use similar resources. The latest version, HRG4+, was used for the first time in 2012-13 reference costs. The HRG classification system covers admitted patient care, outpatients, and emergency care.
14. Outpatient attendances are further classified according to their specialty (e.g. general surgery, or trauma and orthopaedics), and mental health services use a currency called the care cluster which defines patient need over different periods of time depending on the severity of the illness. Other services use a range of different currencies.

² <https://www.gov.uk/government/publications/simple-guide-to-payment-by-results>

³ <http://www.monitor.gov.uk/NT>

⁴ <http://www.ic.nhs.uk/casemix>

15. Reference costs are the average cost to the provider for each unit of currency. They therefore do not give any information on the variation of costs between patients in the same HRG or other currency in each provider. Nor do they usually give any information on individual diagnoses or treatment, because HRGs are a secondary classification system based on underlying primary classification systems for diagnoses and procedures.
16. Reference costs are supported each year by detailed costing and cost collection guidance, designed to minimise variation caused by different costing methodologies. Monitor's *Approved Costing Guidance*⁵ brought existing guidance into a single framework for the first time. It incorporates costing principles that should be applied to all NHS costing exercises, Clinical Costing Standards developed by the Healthcare Financial Management Association (HFMA)⁶, reference costs collection guidance for 2012-13⁷, and guidance for Monitor's PLICS collection.
17. Trusts submit reference costs on a full absorption basis, which simply means that all the running costs of providing these services are included within the submission. Each reported unit cost therefore includes:
 - (a) **direct costs** - relating directly to the delivery of patient care, e.g. medical staffing costs
 - (b) **indirect costs** - indirectly related to the delivery of care, but cannot always be specifically identified to individual patients, e.g. catering and linen
 - (c) **overhead costs** - costs of support services that contribute to the effective running of the organisation, and that cannot be easily attributed to patients, e.g. payroll services.
18. Trusts undertake a reconciliation of their reference cost return to their final financial accounts, to ensure they have reported all relevant costs.

Uses of reference costs

19. The Department of Health, in partnership with the Audit Commission, conducted a review of the uses and quality of reference costs in 2010⁸. The review found a wide audience for the data and we hope that this guide further promotes their use.
20. The value of services covered in reference costs (£55.2 billion in 2012-13) is broader than the current scope of national prices (£28.9 billion in 2012-13), and reference costs have a number of other uses besides setting prices.
21. They support the Department of Health commitment to data transparency for the benefit of patients and the public as set out in its business plan for 2013 to 2015⁹.
22. NHS providers and commissioners use the data for reporting to executive teams, benchmarking, contract negotiations and local pricing of non-tariff areas.

⁵ <http://www.monitor-nhsft.gov.uk/costingguidance>

⁶ <http://www.hfma.org.uk/costing/>

⁷ <https://www.gov.uk/government/publications/reference-costs-guidance-for-2012-13>

⁸ http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/en/Managingyourorganisation/NHSCostingmanual/DH_104762

⁹ <https://www.gov.uk/government/publications/department-of-health-business-plan-2013-to-2015>

23. Reference costs are also used by the Department of Health, Monitor, NHS England, the NHS Trust Development Authority, the Health and Social Care Information Centre, and other organisations and individuals to:
- (a) hold the Department of Health and its ministers to account for the use of NHS resources in replies to parliamentary questions, freedom of information requests and other official correspondence
 - (b) calculate the RCI
 - (c) support implementation of the European Union cross border healthcare directive, which requires transparent and objective mechanisms for the reimbursement of patient costs between member states
 - (d) inform the weighted capitation formula used to allocate resources to NHS commissioners
 - (e) provide comparative costs to support evaluation of new or innovative medical technologies
 - (f) support Office for National Statistics estimates of NHS productivity for calculating Gross Domestic Product
 - (g) inform the design of HRGs and other payment currencies
 - (h) inform other academic research.

Changes to 2012-13 reference costs

24. The changes made to this year's reference costs collection were guided by the following principles:
- (a) supporting the development of price setting
 - (b) improving data quality, validation and assurance
 - (c) ensuring the collection remains fit for purpose.
25. *Reference costs guidance for 2012-13* contains a full list of changes. Some of the key changes, and their impact on this publication, are summarised below.

Supporting the development of price setting

26. 2012-13 reference costs were the first to utilise new design features in HRG4+, which support the distinct identification and appropriate costing of more specialised services.
27. Income from private patients and other non-NHS patients¹⁰ is not reimbursed through national prices and is therefore excluded from reference costs. In previous collections, trusts were required to net this income from their operating expenses before submitting reference costs. This assumes that income exactly matches cost.
28. However, as *Costing Patient Care* observed, if income is more than costs, this has the impact of lowering reference costs (and therefore national prices) below the real cost of providing patient care. Similarly, if income is less than costs, this has the impact of raising reference costs (and national prices) above the real cost of providing patient care.

¹⁰ Other non-NHS patient income includes overseas visitors who are not exempt from charges, patients from the devolved administrations of Scotland, Wales and Northern Ireland, and Ministry of Defence funded armed forces personnel.

29. To remove this distortion, and as a first step to improve costing of services which are subject to income streams, we asked trusts to exclude costs rather than net off income for private and other non-NHS patients in their 2012-13 reference costs. This has resulted in an increase to the total costs submitted (Table 1).

Table 1: Impact of excluding costs rather than netting off income relating to non-NHS patients

	£m
Non-NHS patient costs	-758.1
Non-NHS patient income ¹¹	887.6
Increase in reference costs	129.5

30. Over time, we are working to adopt the same approach for other more complex funding streams not directly relating to patient care (education and training, research and development), so that the costs collected are the true cost of providing services to patients.
31. Monitor has suggested that cost pool data could be used for validation, and provide a richer data set for benchmarking. We therefore piloted a voluntary collection from acute trusts of FCE average unit costs by cost pool group for all admitted patient care HRGs, based on definitions in the *HFMA acute health clinical costing standards 2013/14*. [Chapter 4](#) describes this collection.

Improving data quality, validation and assurance

32. In addition to the requirement in previous collections for Finance Directors to sign off the data, in 2012-13 we added a requirement for Boards to approve the costing process that supports the reference costs submission.
33. We mandated the submission of an updated self-assessment quality checklist based on recommendations by the Audit Commission following their audits of reference costs.
34. We increased and refined the number of validations performed on the data, and embedded these into the collection templates.
35. [Chapter 6](#) further describes these changes.

Ensuring the collection remains fit for purpose

36. We removed the requirement for trusts to submit separately the unit costs of services sub-contracted to the independent sector (in effect, the contract price for these services rather than the actual cost of provision). *Costing Patient Care* set out intentions to collect cost data directly from the independent sector in future.
37. The cost of services directly commissioned by NHS commissioners from the independent sector were removed from the collection in 2011-12. From 2012-13 therefore, only trust costs of providing services to NHS patients are collected.

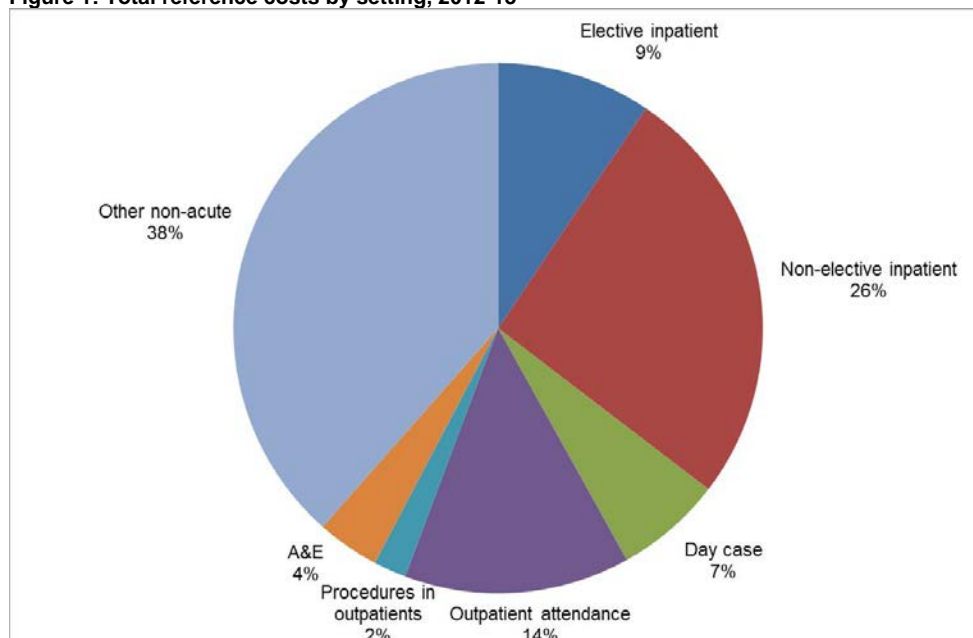
¹¹ Source: NHS trust and NHS foundation trust accounts

Chapter 2: Data

Headlines

38. Some headline statistics from the 2012-13 data¹² (with comparisons against 2011-12) are as follows:
- 2012-13 reference costs cover £55.2 billion of NHS expenditure, an increase of £1.7 billion (3.2%) over £53.4 billion in 2011-12
 - This represents 54% of £102.6 billion¹³ NHS revenue expenditure in 2012-13
 - 5.6 million data items were submitted by 244 NHS trusts and NHS foundation trusts
 - Detailed costs were provided for 2,100 treatments or procedures covering over 15 million FCEs within admitted patient care alone
 - The average cost of a day case is £693 (£682)
 - The average cost of an elective inpatient stay excluding excess bed days is £3,366 (£3,215)
 - The average cost of a non-elective inpatient short and long stay combined excluding excess bed days is £1,489 (£1,436)
 - The average cost of an excess bed day is £273 (£264)
 - The average cost of an outpatient attendance is £108 (£106)
 - The average cost of an A&E attendance is £114 (£108).
39. Figure 1 shows the total costs reported in 2012-13 by setting, with admitted patient care accounting for 42% of the reported costs.

Figure 1: Total reference costs by setting, 2012-13



40. [Annex A](#) provides further summary statistics from 2006-07 to 2012-13. Note that reference costs are not always directly comparable between years because of annual

¹² The full dataset, including HRG code UZ01Z, Data Invalid for Grouping

¹³ Department of Health Annual Report and Accounts 2012-13

changes to the scope of the collection, the collection guidance, and the currencies against which costs are reported. *HRG4+ 2012-13 Reference Costs Grouper Roots*¹⁴ describes changes to HRGs from 2006-07 (when HRG4 was introduced) to 2012-13.

Introduction

41. The data are presented in three ways:

- (a) national schedules of reference costs
- (b) reference cost index
- (c) database of source data.

National schedules of reference costs

42. The national schedules of reference costs (NSRC) show the national average unit cost for each service submitted by the 244 NHS providers in 2012-13. There are two schedules:

- (a) NSRC01 – the main schedule, showing data for the whole range of services provided by trusts, including admitted patient care on an FCE basis
- (b) NSRC02 – showing admitted patient care on a spells basis.

43. The schedules show:

- (a) activity, i.e. the number of attendances, bed days, clients, episodes, tests, or other unit of activity appropriate to the service
- (b) the national average (mean) unit cost, i.e. total cost divided by total activity
- (c) the lower and upper quartile unit costs¹⁵
- (d) the number of data submissions, i.e. the number of trusts reporting costs against each service.

¹⁴ <http://www.hscic.gov.uk/casemix/costing>

¹⁵ Note that it is sometimes possible for the national average mean unit cost to be less than or more than the lower and upper quartiles. In the following example, trust B has a high proportion of the total activity and therefore the mean (£529) lies outside the lower and upper quartiles (£600).

	Unit cost	Activity	Total cost
Trust A	£100	1	£100
Trust B	£600	6	£3,600
Mean	£529	7	£3,700

Unit cost	Quartile
£100	
£600	Lower quartile
£600	
£600	Median
£600	
£600	Upper quartile
£600	

44. The costs included in the schedules are the average of the actual reported costs. We have not removed unavoidable cost differences due to geographic location, which are reflected in the market forces factor (MFF) index. (See [Annex D](#) for a discussion of the MFF).
45. Information is shown separately for the following services:
- (a) **elective inpatients** – where the patient has a planned admission to hospital with the expectation that they will remain in hospital for at least one night
 - (b) **non-elective inpatients** – where the patient has an unplanned admission. Includes emergency admissions and admissions for maternity, births, and non-emergency patient transfers from another hospital
 - (c) **day cases** – where the patient has a planned admission and is discharged on the same day
 - (d) **regular day and night admissions** – patients admitted electively during the day or night, as part of a planned series of regular admissions for an on-going regime of broadly similar treatment and who are discharged the same day or next morning
 - (e) **day care facilities** - provided for the clinical treatment, assessment and maintenance of function of patients, in particular, though not exclusively, those who are elderly, who have had strokes, or who have mental health issues. These facilities do not have hospital beds and function separately from any ward
 - (f) **outpatient attendances** – at clinics in hospital, community health centres, general practices or other locations, split by whether or not the attendance was (i) under the clinical direction of a consultant, (ii) face to face (iii) first or follow up, and (iv) single or multi-professional
 - (g) **outpatient attendances where a procedure is performed** – HRG4+ allows the separate reporting of procedures in an outpatient setting
 - (h) **cancer multi-disciplinary teams** – meetings between healthcare professionals to discuss treatment plans for cancer patients
 - (i) **accident and emergency (A&E) services** - split by A&E department type, and by whether or not the attendance led to an admission
 - (j) **unbundled HRGs** for a number of services. These costs are generally high and only relate to a limited number of patients. Including them as an overhead on treatments and procedures would significantly distort costs and lead to wide variations. Trusts therefore report them separately as follows:
 - (i) **chemotherapy** – drug costs for cancer patients, split between procurement of regimens and delivery, with other costs included in the relevant admitted patient or outpatient setting
 - (ii) **critical care (adult, neonatal, and paediatric)** – costs associated with critical care services
 - (iii) **diagnostic imaging** - including MRI and other scans (plain film x-rays that are part of an admission or outpatient attendance are not reported separately due to their high volume and low cost)
 - (iv) **high cost drugs** – for certain high cost drugs
 - (v) **radiotherapy** – treatment costs for cancer patients
 - (vi) **rehabilitation** – covering a wide range of rehabilitation taking place under a specialist rehabilitation consultant or within a discrete rehabilitation unit
 - (vii) **specialist palliative care** – care provided under a specialist palliative care medical consultant either in a palliative care unit or in a designated palliative care programme

- (k) **renal dialysis** – covering renal dialysis for both chronic kidney disease and acute kidney injury
 - (l) **direct access services** – diagnostic or pathology services that are undertaken in admitted patient care, critical care, outpatients or emergency medicine are included as part of the composite costs of these types of care. Where these services are provided independently of an admission or outpatient attendance, because a patient is referred by a GP for a test or self-refers, the reference costs collection classifies these as direct access services. A range of diagnostic services, including physiological and clinical measurement tests (reported by HRG), plain film x-rays, and pathology services are covered
 - (m) **adult mental health services** – costs were collected against mental health care clusters for working age adults and older people. The clusters reflect service user needs over extended periods of time from four weeks to one year, and may contain multiple different care interventions
 - (n) **other mental health services** – covers children and adolescent mental health services, drug and alcohol services, specialist mental health services (e.g. autistic spectrum disorder and eating disorder services) and secure mental health services
 - (o) **community services** – costs cover a range of staff groups providing community services, including allied health professionals, health visitors and midwives, community paediatricians and dentists, and specialist and district nurses
 - (p) **ambulance services** – costs were collected from NHS ambulance service trusts against currencies which reflect the number of emergency and urgent calls received, whether an ambulance was dispatched, and whether the patient was treated at the scene or conveyed to another healthcare provider
 - (q) **cystic fibrosis** – costs were collected against a year of care currency which allocates cystic fibrosis patients into one of seven bands, each one describing an increasingly complex year of care
 - (r) **audiology services** – services for people with hearing difficulties, covering assessment, fitting and repair of hearing aids, and neonatal screening.
46. Reference costs for admitted patient care are collected by HRG and treatment function code (TFC). In previous years, we have shown national average unit costs for admitted patient care (and procedures performed in outpatients, and diagnostic imaging) by HRG only. In 2013-14, we are showing these national average unit costs by HRG and TFC. [Annex D](#) discusses this change further.
47. To ensure a like for like comparison of activity and costs, the main schedule shows separately the costs of bed days for elective and non-elective inpatients that fall inside and outside nationally set lengths of stay, known as trim points¹⁶. Costs that fall inside the trim point are known as inlier costs. Costs that fall outside the trim point are known as excess bed day costs.
48. Within the schedules, we have multiplied unit costs and activity reported by the NHS to estimate:
- (a) the total cost of each activity (by HRG etc) across all settings

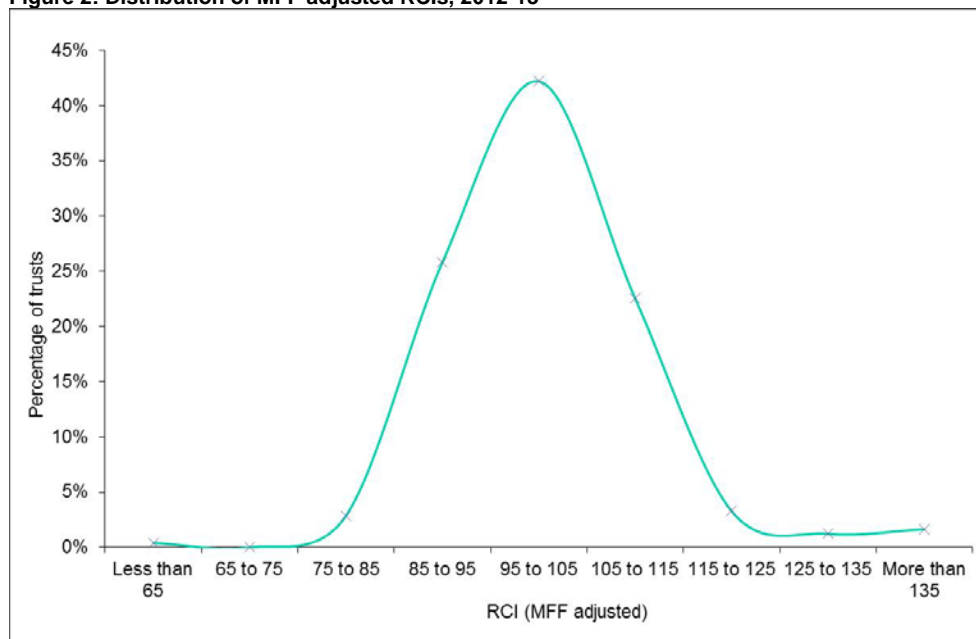
¹⁶ The trim point is defined as the upper quartile length of stay for the HRG plus 1.5 times the inter-quartile range of length of stay. HRG4+ 2012/13 Reference Costs Grouper trim points are published at <http://www.hscic.gov.uk/casemix/costing>

- (b) the total cost of all activity in each setting (inpatients, day cases, outpatients etc).
49. We have continued to exclude HRG UZ01Z (data invalid for grouping) from the schedules, as in previous years. But this year we have included HRGs in subchapter WD (treatment of mental health patients by non-mental health providers).

Reference cost index

50. The RCI is a measure of the relative efficiency of NHS trusts. It shows the actual cost of a trust's casemix compared with the same casemix delivered at national average cost. A trust with costs equal to the national average will score 100, with higher cost trusts scoring above 100 and lower cost trusts scoring below 100. For example, a score of 110 suggests that costs are 10% above the average whilst a score of 90 suggests costs are 10% below the average.
51. Figure 2 shows the distribution of RCIs for trusts in 2012-13. Almost half of all trusts have an RCI within five points of 100. There are a small number with exceptionally low or high RCIs.

Figure 2: Distribution of MFF adjusted RCIs, 2012-13



52. Whereas the schedule provides detailed information on the national average cost for each treatment or procedure, the reference cost index (RCI) provides a comparison of costs at the aggregate level for each trust.
53. Each trust's RCI is calculated by dividing its actual costs (unit costs x activity) by the expected costs (national average mean unit cost x activity), and multiplying the result by 100.
54. Table 2 illustrates the calculation of the RCI for two trusts.

Table 2: Worked example of RCI

		A	B	C	D = C/A	E	F = B*D	G = B*E	H = F/G*100
Trust	HRG	MFF	Activity	Unit cost	Unit cost adjusted for MFF	National average unit cost adjusted for MFF	Actual cost adjusted for MFF	Expected cost adjusted for MFF	RCI adjusted for MFF
Trust A	HRG1	1.1	10	12	11	11	109	110	
Trust A	HRG2	1.1	20	22	20	23	400	467	
Total							509	577	88
Trust B	HRG1	0.9	15	10	11	11	167	165	
Trust B	HRG2	0.9	15	25	28	23	417	350	
Total							583	515	113

55. As well as organisation wide scores, RCIs are provided for the following services:

- (a) ambulance services
- (b) community services
- (c) critical care
- (d) elective inpatient and day case
- (e) emergency medicine
- (f) excess bed days
- (g) mental health
- (h) non-elective inpatient
- (i) other acute services
- (j) outpatient services
- (k) unbundled services.

56. We also apply the same methodology for deriving each trust's overall RCI to the service specific RCIs, but only activity, unit costs and national average costs relevant to that service are included in the calculation. The source database (paragraph 61) includes a RCI "mapping pot" to enable costs to be mapped to the above services. We have also published an analysis that shows the cost variance (the difference between local and national average unit cost) for each service code in each trust.

57. Where trusts ceased to exist in 2012-13, the successor trust reported one reference cost return for their organisation, incorporating the activities and costs of predecessor trusts. In these circumstances, no comparable RCI data exists for 2011-12. The data reflect organisations in existence at 31 March 2013, and do not reflect any subsequent change in status (e.g. NHS foundation trust approval).

58. This year we have changed elements of the RCI calculation to improve its accuracy:

- (a) market forces factor adjustment
- (b) HRG and treatment function code
- (c) day case and elective inpatient averages
- (d) services included in or excluded from the RCI.

59. The changes were made to ensure the RCI takes better account of a trust's casemix, and have a beneficial impact for specialist providers. [Annex D](#) describes the changes in detail.

60. To allow comparisons to be made between years, we are publishing 2012-13 RCIs calculated using both the 2011-12 and 2012-13 methodology.

Database of source data

61. We have provided the source data submitted by trusts in a series of comma separate variable (CSV) files. [Annex B](#) describes the files and their contents. [Annex C](#) contains further guidance on using the source data.
62. We have also published the source data submitted by trusts in the reconciliation statement return on the Unify2¹⁷ forum. This return provides assurance that trusts have correctly included all costs, identified services excluded from reference costs, and netted off allowable income from their reference costs quantum. It also provides information on the costs of certain high cost drugs and devices included in reference cost returns, and other memorandum information. We are releasing this information on Unify2 to enable trusts to benchmark their data.

Using the data

63. We have provided below four examples to illustrate how the data can be used to analyse and investigate costs across the NHS.

Calculating average costs - normal delivery in an inpatient setting

64. To determine the average cost for the normal delivery of a baby in an inpatient setting, the first step is to identify the relevant HRGs (Table 3).

Table 3: Normal delivery HRGs

HRG	Description
NZ30A	Normal Delivery with CC Score 2+
NZ30B	Normal Delivery with CC Score 1
NZ30C	Normal Delivery with CC Score 0
NZ31A	Normal Delivery with Epidural or Induction, with CC Score 2+
NZ31B	Normal Delivery with Epidural or Induction, with CC Score 1
NZ31C	Normal Delivery with Epidural or Induction, with CC Score 0
NZ32A	Normal Delivery with Epidural and Induction, or with Post-partum Surgical Intervention, with CC Score 2+
NZ32B	Normal Delivery with Epidural and Induction, or with Post-partum Surgical Intervention, with CC Score 1
NZ32C	Normal Delivery with Epidural and Induction, or with Post-partum Surgical Intervention, with CC Score 0
NZ33A	Normal Delivery with Epidural or Induction, and with Post-partum Surgical Intervention, with CC Score 2+
NZ33B	Normal Delivery with Epidural or Induction, and with Post-partum Surgical Intervention, with CC Score 1
NZ33C	Normal Delivery with Epidural or Induction, and with Post-partum Surgical Intervention, with CC Score 0
NZ34A	Normal Delivery with Epidural, Induction and Post-partum Surgical Intervention, with CC Score 2+
NZ34B	Normal Delivery with Epidural, Induction and Post-partum Surgical Intervention, with CC Score 1
NZ34C	Normal Delivery with Epidural, Induction and Post-partum Surgical Intervention, with CC Score 0

65. The second step is to identify a weighted average cost from the total activity and costs across the required settings (Table 4). As described above, inpatient costs are split between those below the trim point (inlier) and those beyond the trim point (excess). When calculating a weighted average cost, the inlier and excess costs are

¹⁷ Unify2 is the corporate collection system used by the Department to collect reference costs.

summed but the excess bed day activity, which is already included in the inlier activity, is ignored.

Table 4: Calculating the average cost of a normal delivery

	A	B	C = A * B
Setting	Activity	National average unit cost (£)	Activity x unit cost (£)
Day case	46	1,127	51,850
Elective Inpatients	964	2,163	2,085,290
Elective Inpatient Excess Bed Days	68	390	26,529
Non-Elective Inpatient - Long Stay	159,951	2,295	367,098,796
Non-Elective Inpatient - Long Stay Excess Bed Days	54,957	450	24,746,475
Non-Elective Inpatient - Short Stay	238,223	1,161	276,468,615
All inpatient setting	399,184	1,680	670,477,555

66. The national average unit cost of an inpatient normal delivery is £1,680. Note that these costs relate to the delivery episode itself, and no additional costs are incurred for a healthy baby. If the baby requires health care in its own right, then this becomes a separate episode with its own costs. These figures also do not represent all the costs to the NHS of a birth, which will also include the costs of home births and other events such as GP consultations, and antenatal and postnatal outpatient attendances.

Using the code to group - coeliac disease

67. Hospital episode statistics (HES)¹⁸ are collected by individual diagnoses or procedures. Reference costs are not.
68. However, it is possible to use the Code to Group workbook¹⁹, published by the NHS Information Centre, to understand how HRGs are derived from a given set of ICD-10 codes for diagnoses and OPCS-4 codes for procedures. Such an approach for estimating the costs of a particular diagnosis or procedure would need to be undertaken with caution. The precise grouping to HRGs depends on other ICD-10 and OPCS-4 codes and patient characteristics (e.g. age, length of stay, complications and comorbidities) present in the episode of care, and the resulting costs would be affected by other diagnoses and procedures in the HRG.
69. For example, the costs associated with coeliac disease (ICD-10 code K900) are included in one of the HRGs for non-malignant gastrointestinal tract disorders with an HRG root code of FZ91, and splits dependent on length of stay and complications or comorbidities. Once the required HRGs have been identified, the method described in example one can be followed to obtain the average cost for this and clinically similar disorders.

Comparing costs over time - cholecystectomy

70. To examine the difference between the day case and elective inpatient costs of performing a cholecystectomy (gall bladder removal) between 2005-06 and 2012-13, the first step is again to identify the relevant HRGs. However, a complicating factor when comparing reference costs between years, especially over an extended period,

¹⁸ <http://www.hscic.gov.uk/hes>

¹⁹ <http://www.hscic.gov.uk/casemix/costing>

is that they have been collected on different versions of HRGs. The tables below illustrate the changes for cholecystectomy.

Table 5: Cholecystectomy HRGs under HRGv3.5 in 2005-06 reference costs

HRG	Description
G13	Cholecystectomy >69 or with CC
G14	Cholecystectomy <70 without CC

Table 6: Cholecystectomy HRGs under HRG4 in 2006-07 to 2008-09 reference costs

HRG	Description
GA10A	Cholecystectomy with CC
GA10B	Cholecystectomy without CC

Table 7: Cholecystectomy HRGs under HRG4 in 2009-10 to 2011-12 reference costs

HRG	Description
GA10C	Open cholecystectomy without CC
GA10D	Laparoscopic cholecystectomy with length of stay 1 day or more without CC
GA10E	Laparoscopic cholecystectomy with length of stay 0 days without CC
GA10F	Open or laparoscopic cholecystectomy with CC

Table 8: Cholecystectomy HRGs under HRG4+ in 2012-13 reference costs

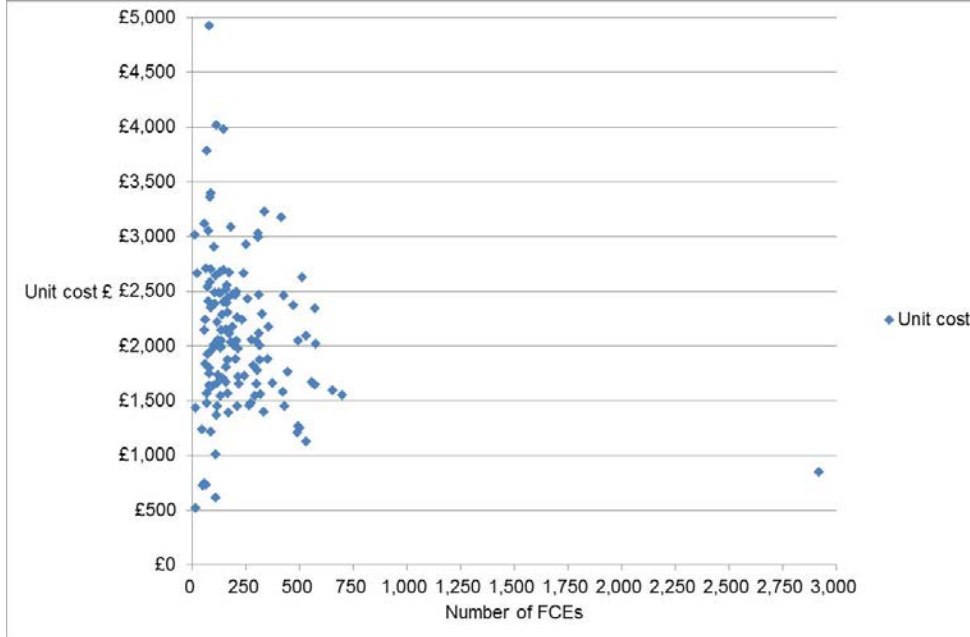
HRG	Description
GA10G	Open or Laparoscopic Cholecystectomy, 18 years and under
GA10H	Laparoscopic Cholecystectomy, 19 years and over, with CC Score 4+
GA10J	Laparoscopic Cholecystectomy, 19 years and over, with CC Score 1-3
GA10K	Laparoscopic Cholecystectomy, 19 years and over, with CC Score 0
GA10L	Open Cholecystectomy, 19 years and over, with CC Score 3+
GA10M	Open Cholecystectomy, 19 years and over, with CC Score 1-2
GA10N	Open Cholecystectomy, 19 years and over, with CC Score 0

71. Once the required HRGs for each year have been identified, the method described in example one can be followed to obtain the required average cost.

Comparing costs between trusts - normal delivery

72. Table 4 showed the national average unit cost for the normal delivery HRGs across all trusts. It is possible to undertake a more detailed organisation level analysis using the source data provided on our website.
73. Figure 3 shows the trust level data for a normal delivery with complications and comorbidities score 0 (NZ30C) in obstetrics (TFC 501) in a non-elective inpatient (long stay) setting. Even though the national average unit cost is £1,919, the data shows a range of different costs across trusts.

Figure 3: Inlier unit costs for Normal Delivery with CC Score 0, TFC 501, non-elective inpatient (long stay), 2012-13



Chapter 3: Spell data

Headlines

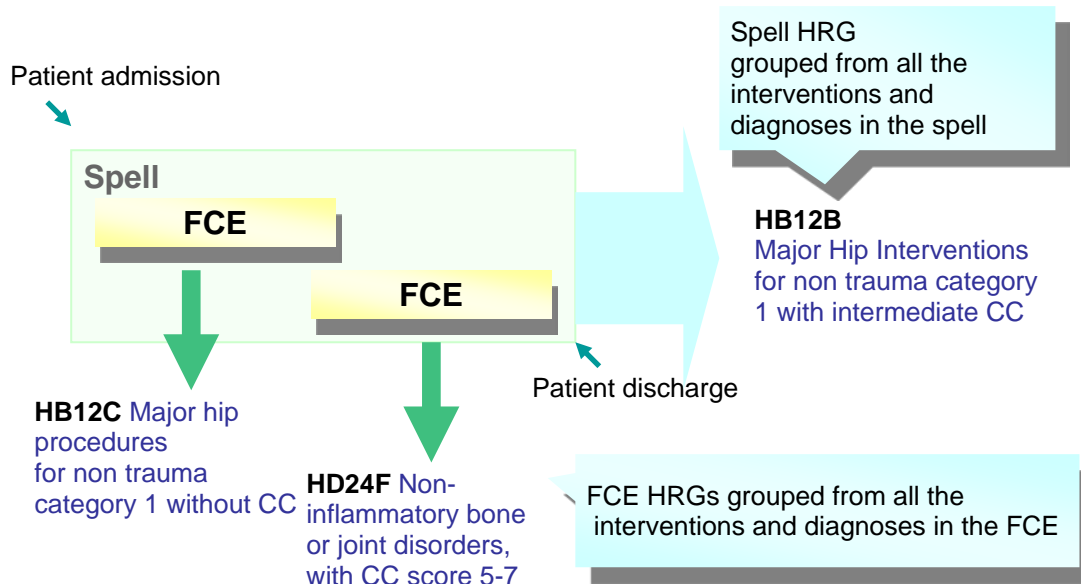
74. Some headline statistics from the 2012-13 data²⁰ (with comparisons against 2011-12) are as follows:

- £23.2 billion of spell costs were submitted by 182 trusts, representing every trust that had submitted equivalent FCE costs, an increase on the £22.5bn submitted by 186 trusts in 2011-12
- The average spell cost of a day case is £696 (£684)
- The average spell cost of an elective inpatient stay including excess bed days is £3,706 (£3,256)
- The average spell cost of a non-elective inpatient short stay and long stay combined including excess bed days is £2,118 (£2,052).

Introduction

75. A spell is the period from admission to discharge within a single provider and may comprise of more than one FCE. HRG4+ supports spell based grouping. It is possible to group individual FCEs to a HRG, but the overall spell groups to a HRG based on the coding in all the FCEs within the spell (Figure 4).

Figure 4: Spell and FCE HRGs



76. National prices for admitted patient care are paid for a spell of care. But trusts have historically reported reference costs by FCE. The conversion of FCE costs into spell prices is complicated, and the collection of spell costs was introduced by the Department to support a move towards more transparently calculated prices.

77. Spell costs were submitted as follows:

²⁰ The full dataset, including HRG UZ01Z

- (a) by admission method (day case, elective inpatient, non-elective inpatient long stay and non-elective inpatient short stay)
- (b) number of spells by HRG
- (c) average unit cost per spell by HRG, untrimmed for any excess bed days
- (d) number of spell inlier bed days by HRG
- (e) number of spell excess bed days by HRG.

78. The submission of spell costs and activity is otherwise on the same basis as the submission of FCE costs and activity. Our validation checks ensured that the total spell costs submitted by each trust reconciled to within 0.1% of equivalent total FCE inlier and excess bed day costs by admission method.

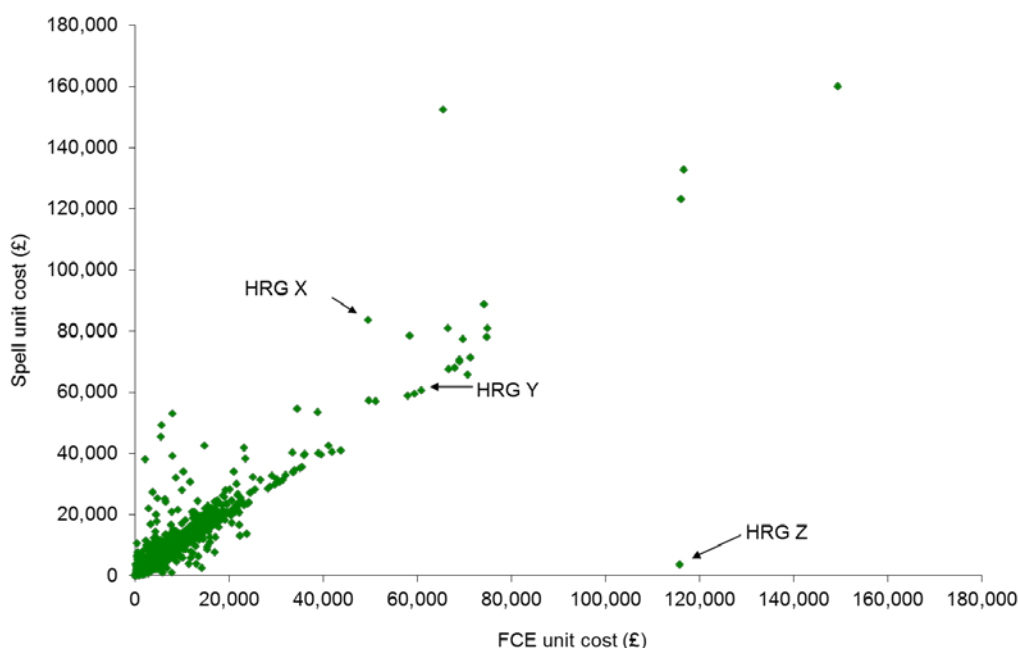
Analysis

79. At HRG level, the mean unit costs reported for spells and FCEs are not directly comparable because:

- (a) spell costs include excess bed days over the HRG spell trimpoints, and should therefore be compared with the equivalent FCE costs with excess bed days included
- (b) each spell includes one FCE as a minimum, and on average 1.17 FCEs, and its unit cost is therefore generally higher for any given HRG
- (c) where a spell unit cost is lower than an FCE unit cost, this may be a function of grouping (paragraph 75) or data quality.

80. Figure 5 plots the FCE unit costs against the spell unit costs across all admission methods and shows a high degree of correlation ($R^2 = 0.857$).

Figure 5: FCE (including excess bed day) and spell unit costs across all admission methods, £



81. There is no single driver for the complex relationship between the mean spell and FCE unit costs for any particular HRG. Using Figure 5, we can suggest some possible interpretations for different HRG unit costs:

- (a) HRG X has a significantly higher spell unit cost than FCE unit cost. The most likely scenario is that the spells of care grouped to this HRG commonly contain more than one FCE. In the majority of cases, the FCEs recorded against this HRG are joined in longer spells of care in which the individual patients also had episodes of care recorded under other HRGs, but the interventions and procedures from this HRG are tending to dominate when the spell HRG is calculated. Or, two or more different FCE HRGs are generating a different spell HRG to either FCE HRG, due to the conventions of intervention and diagnosis grouping
 - (b) HRG Y, which has a similar unit cost in both the FCE and spell collections (and therefore falls on the 45-degree line), is almost exclusively one where single episodes of care make up the reported spells. This is the most common scenario, because 90-95% of spells comprise of a single episode
 - (c) HRG Z has a lower spell unit cost than FCE unit cost. This situation is most likely to be the reverse of HRG X. Here the FCEs with a higher than average unit cost being reported against this HRG are through spell grouping usually grouped with other FCEs to a different HRG, leaving only the lower cost FCEs to form the (commonly single episode) spells of care in this HRG.
82. Note that quoted costs relating to admitted patient care elsewhere in this publication are on an FCE rather than spell basis. We will continue to respond to parliamentary questions, freedom of information and other data requests using FCE costs unless the question specifically asks for spell costs.
83. We have also published an organisation wide spell RCI for each trust, using the same methodology described in [Chapter 2](#). We recommend that the FCE based RCIs (paragraph 50) remain the default RCI for comparisons between acute trusts.

Chapter 4: Cost pool data

84. Cost pools are accumulated types of costs in logical groupings that support analysis, audit and benchmarking of costing.
85. *Costing Patient Care* suggested that cost pool data could be used for validations, and to provide a richer data set for benchmarking. Monitor included a collection of cost pool group data in their 2012-13 PLICS collection. We also piloted a voluntary collection from acute trusts²¹ of their FCE average unit costs by cost pool group for admitted patient care²² HRGs, based on definitions of cost pool groups in Standard 2 of the *HFMA Acute Health Clinical Costing Standards 2013/14*.
86. The cost pool groups we used for this collection, which were fully aligned with Monitor's 2012-13 PLICS collection (*Approved Costing Guidance, Chapter 4*) were as follows:

Table 9: Cost pool groups and sub cost pools

Blood and blood products
CNST
Critical care
Drugs (excluding high cost drugs)
Drugs (high cost drugs)
Emergency department
Imaging
Medical staffing
Operating theatres
Other clinical supply and services
Other diagnostics testing
Specialist nursing staff
Outpatients
Pathology
Pharmacy costs
Prostheses/ implants/devices
Radiotherapy
Secondary commissioning costs
Special procedure suites / Special treatment rooms (excluding endoscopy unit)
Special procedure suites / Special treatment rooms (endoscopy unit)
Therapies
Wards

87. In line with Monitor's collection, we split two of the cost pool groups into sub cost pool groups:
- (a) the drug cost pool group is split into:
 - (i) drugs (excluding high cost drugs)
 - (ii) high cost drugs
 - (b) specialist procedure suite group is split into:

²¹ Mental health, community and ambulance trusts were excluded from this collection.

²² Including day cases, elective inpatients and non-elective inpatients, but excluding regular day or night admissions.

- (i) special procedure suite costs without endoscopy costs
- (ii) endoscopy costs.

88. In addition to the cost pool fields in Table 9, we included two further fields in the collection template:

- (a) **overheads** - to allow more meaningful benchmarking and analysis, we asked trusts to identify separately their overhead costs without absorbing them in the cost pool groups. Costs that should be classified as overheads are listed in Standard 1 of the *HFMA Acute Health Clinical Costing Standards 2013/14*
- (b) **non-patient care activities** – we asked trusts not to net off income from non-patient care activities such as education, training and research against costs. Trusts were asked to record the income in this data field and include the cost in the cost pool groups where appropriate.

89. Participating trusts were invited to submit either unit costs and activity (where possible), or unit costs only (to encourage participation from providers who have not implemented PLICS).

90. The cost pool collection template contained a number of validations to ensure that the submitted cost pool costs were consistent with the FCE average unit costs for admitted patient care HRGs in the main collection.

91. 50 acute trusts participated in the voluntary pilot collection. Of these, 44 have implemented PLICS.

92. Consistent with other voluntary pilot collections that we have conducted in previous years, we are sharing data and further analysis with participating trusts, but we are not publishing the cost pool data.

Chapter 5: Survey

Headlines

93. Some headline findings from the 2013 survey are that:

- 207 trusts have implemented, are implementing, or are planning to implement PLICS, compared to 198 in the 2012 survey
- 121 trusts have implemented PLICS, compared to 93 in 2012
- Of these, 116 used PLICS data to underpin some or all of their reference cost return, and 118 used the HFMA Clinical Costing Standards
- For the first time, two community trusts and one ambulance trust have now implemented PLICS, but implementation still varies widely by organisation type, with 110 acute trusts having implemented PLICS, and eight mental health trusts
- When asked to score themselves against the four levels of clinical and financial engagement, from purely board level (level 1) through to full engagement across all departments and clinical specialties (level 4), 56 trusts reported working at level 4
- Trusts employ on average 2.88 whole-time equivalent staff to run the costing system and produce cost information
- Trusts spend on average 93 days preparing and submitting the annual reference costs return.

Introduction

94. Many organisations have implemented PLICS. These systems help organisations understand exactly how costs are built at the most basic and accurate level, that of the patient, and therefore inform decision making to improve both the quality and effectiveness of services. The Department continues to encourage their use in the NHS, both for their local benefits and to improve the quality of reference costs.

95. As part of the collection we conduct a mandatory annual survey of all trusts to assess:

- (a) progress in implementing PLICS
- (b) the extent to which trusts are using PLICS to underpin their reference costs, and for which service areas
- (c) the extent to which trusts are using the *HFMA Clinical Costing Standards*
- (d) levels of clinical and financial engagement.

96. The survey results inform national policy making.

97. We included some new questions in the 2013 survey to understand better the resources trusts are committing to costing and cost collection.

PLICS implementation

98. PLICS are computerised information systems in hospitals that identify and record the costs of individual patients. Events such as theatre minutes, diagnostic tests and

prosthetics can be tagged to the patient record, electronically where such data capture systems are in place. Essentially a bottom up approach, rather than a traditional top down approach based on averages and apportionments, costing at a patient level should better reflect actual interactions and events related to individual patients and the associated costs.

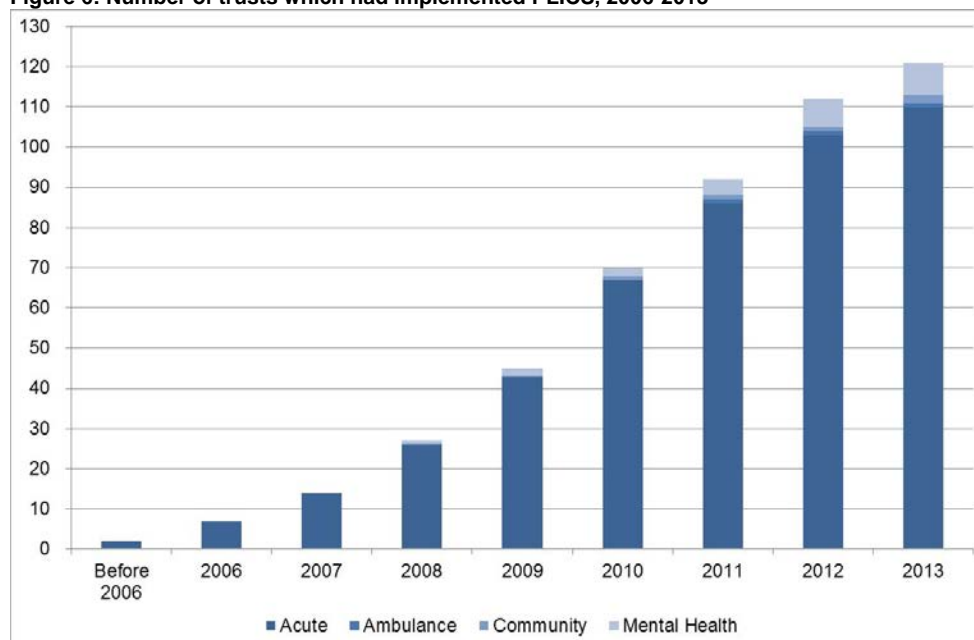
99. PLICS provide trusts with the ability to understand their economic and financial drivers, benchmark their costs in detail against other providers, and a basis for meaningful engagement with clinicians to improve services for the benefit of patients.
100. *Costing Patient Care* set out Monitor's intention, over the longer term, to move to PLICS as the main source of data for price setting.
101. The survey results show that 207 trusts (85%) have implemented, are implementing, or are planning to implement PLICS (Table 10), compared to 198 (80%) in the 2012 survey.

Table 10: PLICS in NHS trusts and NHS foundation trusts, 2013

	Acute	Ambulance	Community	Mental health	All trusts
Implemented	110	1	2	8	121
Implementing	22	0	1	10	33
Planning	14	0	5	34	53
Not planning	15	9	9	4	37
Total	161	10	17	56	244

102. These numbers reflect a steady increase in the numbers of trusts that have implemented PLICS since the Department first started surveying uptake (Figure 6).

Figure 6: Number of trusts which had implemented PLICS, 2006-2013



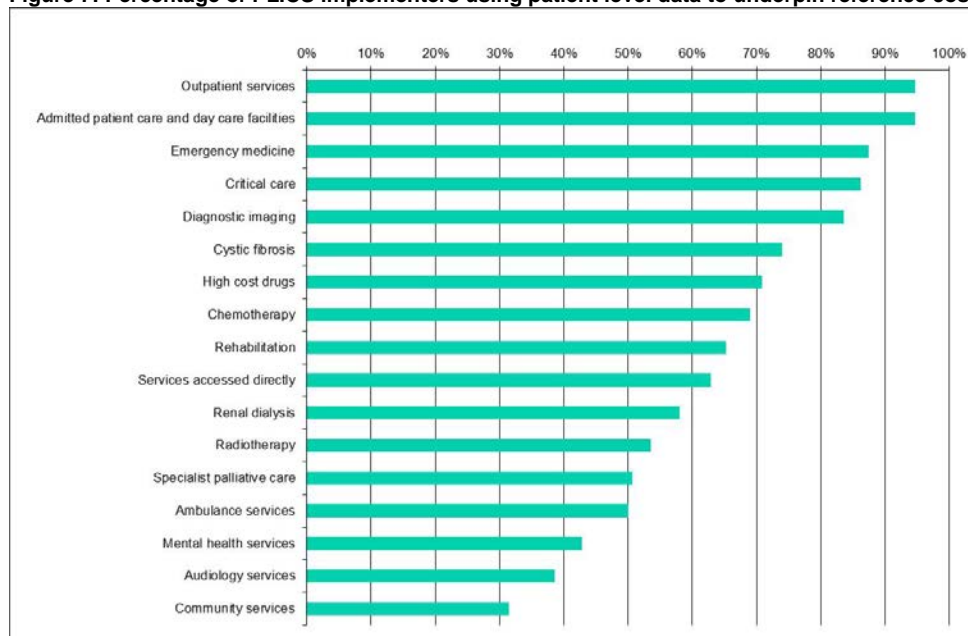
103. 116 of the 121 trusts that have implemented PLICS used their system to inform some or all of their 2012-13 reference costs return (Table 11). The five trusts that did not cited differences in reference costs and PLICS methodology, data quality issues, or reported that their system was not fully developed and tested.

Table 11: Trusts using PLICS to underpin reference costs

	Acute	Ambulance	Community	Mental Health	All Trusts
Yes	106	1	2	7	116
No	4	0	0	1	5
Total	110	1	2	8	121

104. Although trusts have implemented PLICS, this might not necessarily be across all services provided by the trust. We therefore asked these trusts to indicate which services in their reference costs were underpinned by PLICS data.

105. Figure 7 shows, for each department in the reference costs collection, the number of trusts using patient level data as the basis for their submission as a percentage of the number of trusts with PLICS returning costs. It shows that PLICS data are mostly used in established clinical areas with good data flows, such as admitted patient care and outpatients. Patient level data are least likely to be used for community services.

Figure 7: Percentage of PLICS implementers using patient level data to underpin reference costs by service area

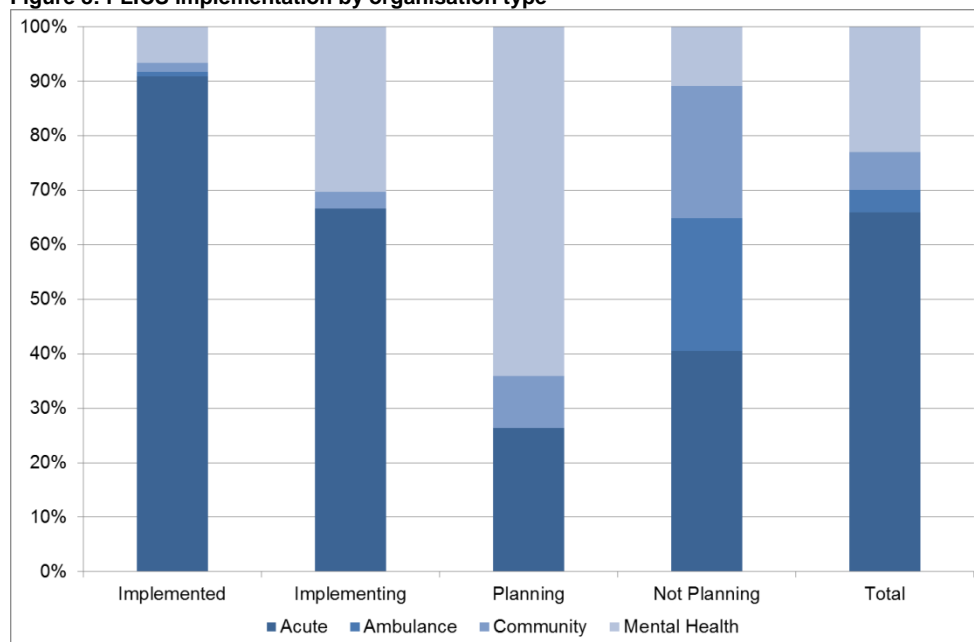
106. Of the 110 acute trusts that have implemented PLICS, 106 of these trusts used PLICS to underpin their admitted patient care reference costs. This represented 96% of their admitted patient care quantum.

107. Table 12 shows the extent to which the quantum of costs for each service in reference costs was underpinned by all trusts using PLICS to inform their return. £15.4 billion (66%) of admitted patient care costs were derived from PLICS.

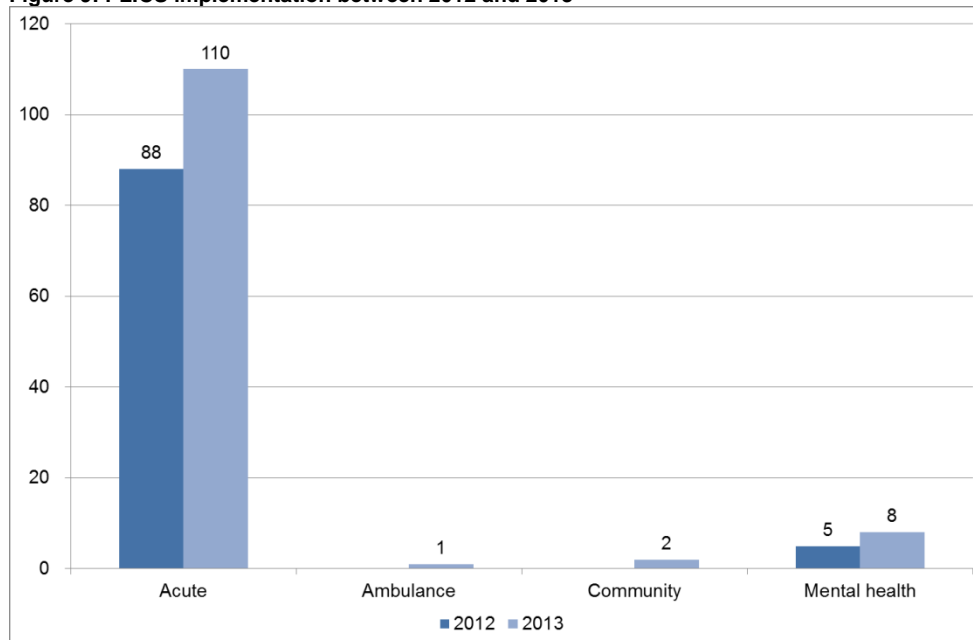
Table 12: Reference costs underpinned by PLICS by service (£ millions)

Service	Value of reference costs underpinned by PLICS	Total value of reference costs	Percentage of service underpinned by PLICS
Admitted patient care and day care facilities	15,438	23,267	66%
Ambulance services	175	1,581	11%
Audiology services	51	209	24%
Chemotherapy	508	978	52%
Community services	375	4,171	9%
Critical care	1,633	2,630	62%
Cystic fibrosis	50	85	59%
Diagnostic imaging	494	859	58%
Emergency medicine	1,225	2,122	58%
High cost drugs	634	1,328	48%
Mental health services	772	6,524	12%
Outpatient services	5,562	8,670	64%
Radiotherapy	171	346	49%
Rehabilitation	241	818	29%
Renal dialysis	202	528	38%
Services accessed directly	408	942	43%
Specialist palliative care	31	101	31%
All services	27,970	55,159	51%

108. Figure 8 shows that of the 121 (50%) trusts that have implemented PLICS, implementation varies widely by organisation type, with 110 acute trusts (68%) having implemented PLICS, compared to eight mental health trusts (14%), two community trusts (12%) and one ambulance trust (10%).

Figure 8: PLICS implementation by organisation type

109. The number of acute trusts that have implemented PLICS has increased in the last year from 88 to 110 (Figure 9). For the first time, two community trusts and one ambulance trust have implemented PLICS.

Figure 9: PLICS implementation between 2012 and 2013

110. 83% of trusts are using PLICS to produce and report patient level costs at least quarterly (Table 13).

Table 13: Producing and reporting patient level cost information from PLICS

	Acute	Ambulance	Community	Mental health	All trusts
Monthly	28	1	0	4	33
Bimonthly	3	0	0	0	3
Quarterly	59	0	2	4	65
Annually	10	0	0	0	10
Biannually	4	0	0	0	4
Not reporting	6	0	0	0	6
Total	110	1	2	8	121

111. Trusts that are implementing PLICS are at various stages in the process (Table 14).

Table 14: Trusts in the process of implementing PLICS

	Acute	Ambulance	Community	Mental Health	All trusts
Completed and improving accuracy	8	0	0	3	11
Dual running with existing costing system	8	0	0	2	10
Supplier chosen	6	0	1	5	12
Total	22	0	1	10	33

112. Table 15 shows the timescales for the 86 trusts currently implementing and planning to implement PLICS. By 2016, 146 acute trusts (91%), 52 mental health trusts (93%), 8 community trusts (47%) and 1 ambulance trust (10%) anticipate running PLICS.

Table 15: Timescales for trusts implementing and planning to implement PLICS

	Acute	Ambulance	Community	Mental health	All trusts
Within 1 year	19	0	1	9	29
1-2 years	14	0	2	23	39
2-3 years	3	0	2	8	13
3 years +	0	0	1	4	5
Total	36	0	6	44	86

113. The 37 trusts not planning to implement PLICS cited various reasons (Table 16). 17 trusts are focussing on service line reporting (SLR). SLR is a complementary tool to PLICS, that takes a combined view of resources, costs and income, and hence profit and loss, by each service line or specialty within the trust. Most ambulance trusts are not convinced of the benefits of PLICS to their organisations.

Table 16: Reasons for not implementing PLICS

Reason	Acute	Ambulance	Community	Mental Health	All trusts
Financial cost of system	2	0	0	0	2
Focusing on SLR	5	2	8	2	17
Future of organisation is uncertain	3	0	1	0	4
Implementing new information systems	1	0	0	0	1
Lack of staff resource	2	0	0	0	2
Not convinced of benefits to our organisation	1	7	0	1	9
Ongoing strategic review of benefits	1	0	0	1	2
Total	15	9	9	4	37

Clinical and financial engagement

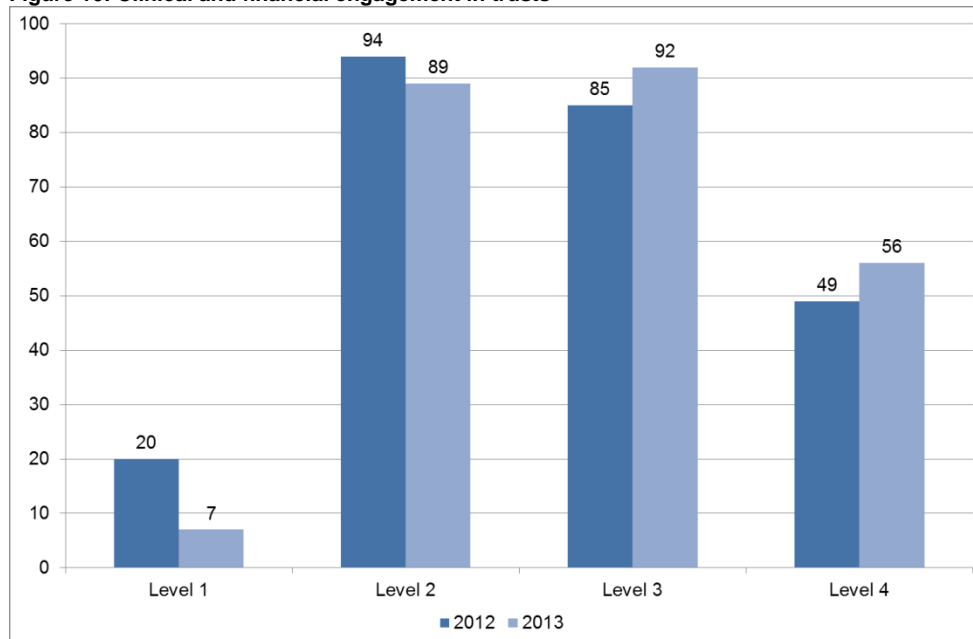
114. Effective clinical²³ and financial engagement should be an integral part of the costing process in order to ensure good quality data. The Department has defined four levels of engagement:

- (a) Level 1: Engagement is only at board/strategic level. For example, dialogue takes place between medical director and finance director, but there is no real joined-up, collaborative work between the wider clinical and finance teams
- (b) Level 2: There is some joined-up, collaborative work between clinical and finance teams but only on an ad hoc basis when required, for example for a specific Commissioning for Quality and Innovation (CQUIN) project
- (c) Level 3: Joined-up collaborative working between clinical and finance teams is the norm in at least one clinical specialty/directorate. For example, a finance manager works as an integral part of a clinically led quality improvement team. There is also a plan to roll this out across other directorates
- (d) Level 4: Joined-up collaborative working between clinical and finance teams is the norm across all clinical specialties/departments. Finance managers routinely work as integral members of clinically led quality improvement teams and both professional groups share cost and quality data to improve outcomes.

115. Our survey asks trusts to self-assess themselves against these levels. The results for the last two years²⁴ are shown in Figure 10. 56 trusts (23%) now consider themselves to be at level 4, compared to 49 (20%) in Figure 10 2012.

²³ Clinical covers the full range of clinical staff working in the NHS, including medical, nursing, and allied health professionals.

Figure 10: Clinical and financial engagement in trusts



116. The 33 trusts implementing PLICS were asked the level at which clinicians were working with the finance team on implementation. Only 12% assessed themselves at level 4.
117. The Department has recently published *Effective Clinical and Financial Engagement: A Best Practice Guide for the NHS*²⁵. This guide identifies the characteristics and behaviours of the top performing organisations, and highlights examples of best practice and their benefits. It includes a self-assessment tool to support trusts in making an objective assessment of their level which will improve standardisation of the data collected in future surveys.

Clinical costing standards

118. The *HFMA Clinical Costing Standards*²⁶ provide recommended best practice for the production of patient level costs. Many of the standards are also appropriate for non-PLICS costing. Separate standards currently exist for acute and mental health services, and the intention is that they will be developed for community and ambulance services in the future. Originally published by the Department of Health in 2009, in the following year the Department asked the HFMA to take over responsibility for developing the standards. This reflects a shared belief that the finance profession should have the lead role in setting standards and promoting the highest quality in costing.
119. 118 (98%) of the 121 trusts that have implemented PLICS reported using the *HFMA Clinical Costing Standards* (Table 17) to support their reference costs return. Of the three trusts not using the standards, one reported that they were not supported by

²⁴ Our 2013 survey clarified that the self-assessment should be across the organisation as a whole, because some trusts had interpreted the 2012 survey as applying only to the reference costs return. Clinical and financial engagement should be seen as an organisation wide exercise, and not simply a means to improving cost collections, although this is likely to be a benefit. This clarification may partly explain the small improvement in engagement in 2013.

²⁵ <https://www.gov.uk/government/publications/nhs-clinical-and-financial-engagement-best-practice>

²⁶ <http://www.hfma.org.uk/costing/>

the system, and the remaining two suggested that further refinements to their systems were necessary.

Table 17: Use of the HFMA Clinical Costing Standards in reference costs

	Acute	Ambulance	Community	Mental Health	All trusts
Yes	107	1	2	8	118
No	3	0	0	0	3
Total	110	1	2	8	121

120. 111 trusts (91%) of the 121 trusts that have implemented PLICS fully or partially used the *HFMA Clinical Costing Standards* as part of their implementation, and all of the 10 that did not confirmed that they have subsequently reviewed their system against the standards (Table 18).

Table 18: Use of the HFMA Clinical Costing Standards during implementation by trusts that have implemented PLICS

	Acute	Ambulance	Community	Mental Health	All trusts
Fully	50	0	0	5	55
Partially	50	1	2	3	56
Not at all	10	0	0	0	10
Total	110	1	2	8	121

121. All of the 33 trusts implementing PLICS are using the standards as part of their implementation (Table 19).

Table 19: Use of the HFMA Clinical Costing Standards during implementation by trusts that are implementing PLICS

	Acute	Ambulance	Community	Mental Health	All trusts
Fully	17	0	0	8	25
Partially	5	0	1	2	8
Not at all	0	0	0	0	0
Total	22	0	1	10	33

122. 51 trusts that have implemented PLICS have used the materiality and quality score (MAQS)²⁷ to assess their costing performance, compared to 25 in 2012. The MAQS was developed by the HFMA to provide a consistent methodology for trusts to assess and improve the quality of their costing data.

Other findings

123. We recognise that running the costing system and producing cost information for internal use and national data returns requires a considerable investment by trusts. Our 2013 survey introduced two new questions to assess the levels of resources required.

124. We asked trusts how many whole-time equivalent (WTE) staff were engaged in running the costing system and producing cost information (Table 20).

²⁷ <http://www.hfma.org.uk/costing/supporting-material/>

Table 20: Average number of WTE staff running costing systems and producing cost information per trust

	Acute	Ambulance	Community	Mental Health	All trusts
Finance staff	1.85	1.70	1.75	1.71	1.80
Information staff	0.61	1.03	1.09	1.13	0.78
Other staff	0.16	0.00	0.04	0.79	0.29
All staff	2.62	2.73	2.88	3.63	2.88

125. We also asked trusts to estimate the resource commitment (in number of days) of collating and submitting the annual reference costs return, including reading guidance, gathering and preparing data, and assurance (Table 21).

Table 21: Average number of days spent collating and submitting the annual reference costs return per trust

	Acute	Ambulance	Community	Mental Health	All trusts
Finance staff	77	12	39	63	69
Information staff	13	3	18	23	15
Other staff	7	2	7	15	9
All staff	98	17	64	101	93

Chapter 6: Quality

Introduction

126. Good quality cost data is an essential element in developing a pricing system in the NHS that helps deliver high quality care for patients and better value for the taxpayer.
127. Better cost information will also help NHS providers manage their organisations by:
- (a) highlighting variations in cost
 - (b) eliminating waste and reducing avoidable costs
 - (c) informing the efficient redesign of pathways
 - (d) facilitating meaningful dialogue between clinicians and managers.
128. In addition to encouraging organisations to implement PLICS, and endorsing the use of the *HFMA Clinical Costing Standards* to improve the quality of costing, we have worked over a number of years to develop the reference costs collection process itself to increase levels of quality control. *Costing Patient Care* suggested some further improvements to raise the profile of costing in NHS providers and improve quality which we adopted for 2012-13. These were:
- (a) trust Board approval of the costing process
 - (b) a self-assessment quality checklist embedded in the reference costs return
 - (c) a targeted external assurance process.
129. We also refined some existing validations and introduced some new validations, designed to assure the basic integrity of the data and to improve quality and accuracy. Wherever possible, we embedded these validations into the collection templates.
130. We discuss the above changes in more detail in the rest of this chapter.
131. We also undertook a number of other actions, designed to support improvements to reference cost returns. These included:
- (a) **consolidating guidance into fewer documents** to minimise the sources of reference for costing professionals. We decommissioned the *NHS Costing Manual* and consolidated the necessary text into either the *HFMA Clinical Costing Standards* or the *Reference costs guidance*. We also merged the *PLICS and reference costs best practice guidance* into the *Reference costs guidance*
 - (b) **enforcing sign off requirements by deactivating Unify2 accounts with “sign off” functionality not belonging to Finance Directors**. Finance Directors who could not personally sign off the collection had to nominate a deputy
 - (c) **working in partnership with the NHS Trust Development Authority** to performance manage submissions from NHS trusts
 - (d) **consulting with our Reference Costs Advisory Group** to ensure changes to the guidance, workbooks and processes were workable for the NHS.

Board approval and Finance Director sign off

132. The onus on the production of sound, accurate and timely data that is right first time rests with each NHS organisation. In 2012-13, in addition to the existing requirement for Finance Directors to sign off the data, we added a requirement for Boards to approve the costing process in advance of the reference costs submission.
133. The Board of each NHS trust and NHS foundation trust, or its Audit Committee or other appropriate sub-committee, was therefore required to confirm that it was satisfied with the trust's costing processes and systems, and that the trust would submit its reference cost return in accordance with guidance. Specifically, Boards were required to confirm that:
- (a) costs were prepared with due regard to the principles and standards set out in Monitor's *Approved Costing Guidance*
 - (b) appropriate costing and information capture systems were in operation
 - (c) costing teams were appropriately resourced to complete the reference costs return accurately within the timescales set out in the reference costs guidance
 - (d) procedures were in place such that the self-assessment quality checklist would be completed at the time of the reference costs return.
134. The Finance Director were required to sign off the reference costs return in Unify2 against a revised set of requirements, which were that:
- (a) the Board had approved the costing process ahead of the collection
 - (b) the return had been reconciled internally and was an accurate reflection of cost and activity terms of the services provided
 - (c) finance teams had actively engaged clinicians and other relevant non-finance stakeholders in the costing process
 - (d) the self-assessment quality checklist had been completed and used to improve quality and to provide assurance to the Department about the accuracy of the return.

Self-assessment quality checklist

135. The 2012-13 collection required trusts to complete for the first time a self-assessment quality checklist embedded in the collection templates. This built on a checklist developed by the Audit Commission and introduced in 2011-12. The checklist covered 10 areas, and responses from the 244 trusts are summarised in the following tables.

Table 22: Total costs. The 2012-13 reference costs quantum has been fully reconciled to the signed annual accounts through completion of the reconciliation statement workbook in line with guidance

Fully reconciled to within +/- 1% of the signed annual accounts	243
Fully reconciled to within +/- 1% of the draft annual accounts	1

Table 23: Total activity. The activity information used in the reference costs submission to report admitted patient care, outpatient attendances and A&E attendances has been fully reconciled to provisional Hospital Episode Statistics and documented

Fully reconciled and documented	96
Partly reconciled	44
Not reconciled	13
n/a – reconciliation completed but to another source	67
n/a – no activity comparable to HES within the submission	24

136. Many trusts reported reconciling activity information to SUS or other contract monitoring data rather than HES. Whilst it was to be expected that many ambulance, community and mental health trusts would respond that there was no activity comparable to HES within the submission, it was of greater concern that some acute trusts did not attempt any reconciliation of the activity information used in reference costs.

Table 24: Sense check. All unit costs under £5 have been reviewed and are justifiable

All unit costs under £5 reviewed and justified	65
n/a – no costs under £5 within the submission	179

137. Acute trusts reporting unit costs under £5 generally identified low cost direct access pathology services or non-face-to-face contacts as the reason, and mental health trusts identified low intensity care cluster costs per day.

Table 25: Sense check. All unit costs over £50,000 have been reviewed and are justified

All unit costs over £50,000 reviewed and justified	103
n/a – no costs over £50,000 within the submission	141

138. Acute trusts reporting unit costs over £50,000 identified the following reasons:

- (a) critical care outreach (which is submitted as a total cost rather than a unit cost because there is no nationally recognised activity measure)
- (b) long lengths of stay
- (c) small numbers of patients
- (d) complex or specialised treatments (e.g. transplants).

Table 26: Sense check. All unit cost outliers (defined as less than one-tenth or more than ten times the previous year's national mean average unit cost) have been reviewed and are justifiable

All unit cost outliers reviewed and justified	151
n/a – no unit cost outliers within the submission	93

139. Acute trusts reporting unit cost outliers supplied reasons similar to paragraph 138 (b) to (d). Mental health trusts offered a range of reasons including differences in service provision or service reconfiguration.

Table 27: Benchmarking. Data has been benchmarked where possible against national data for individual unit costs and for activity volumes

All cost and activity data benchmarked using Audit Commission's National Benchmarker	41
All cost and activity data benchmarked using another benchmarking process	67
Some but not all cost and activity data benchmarked using Audit Commission's National Benchmarker	54
Some but not all cost and activity data benchmarked using another benchmarking process	62
No benchmarking performed on the cost data prior to submission	20

140. Trusts reporting that they had benchmarked all or some of their cost and activity data using another benchmarker process quoted membership of the Patient Cost Benchmarking group²⁸ or used the published 2011-12 national average reference costs. The 10 ambulance trusts are a distinct community that tend to benchmark against each other prior to submission.

Table 28: Data quality. Assurance is obtained over the quality of data for 2012-13

An external audit has been performed on data quality for 2012-13	38
An internal audit has been performed on data quality for 2012-13	33
Internal management checks have provided assurance over data quality for 2012-13	144
Assurance has been obtained over data quality but not for 2012-13	18
No assurance has been obtained over data quality	11

Table 29: Data quality. Assurance is obtained over the reliability of costing and information systems

An external audit has been performed on costing and information system reliability for 2012-13	13
An internal audit has been performed on costing and information system reliability for 2012-13	24
Internal management checks have provided assurance over costing and information system reliability for 2012-13	168
Assurance has been obtained over costing and information system reliability but not for 2012-13	27
No assurance has been obtained over costing and information system reliability	12

Table 30: Data quality. Where issues have been identified in the work performed on the 2012-13 data and systems, these issues have been resolved to mitigate the risk of inaccuracy in the 2012-13 reference costs submission

All exceptions have been resolved and the risk of inaccuracy in the 2012-13 submission fully mitigated	68
Some exceptions have been resolved but not all	94
Exceptions have all been resolved going forward but there is an historical risk to the accuracy of the 2012-13 submission due to resolution being during 2012-13 and not being applied retrospectively	19
Exceptions have yet to be resolved	7
n/a – no exceptions noted	56

Table 31: Data quality. All other non-mandatory validations as specified in the guidance and workbooks have been investigated and necessary corrections made

All non-mandatory validations have been investigated and necessary corrections made	109
Some non-mandatory validations have been investigated and necessary corrections made	120
No non-mandatory validations have been investigated [state reason]	3
n/a – no non-mandatory validations have occurred	12

141. Trusts have told us that the workbooks produced more non-mandatory validations than could be reasonably investigated in the time available. A non-mandatory validation is not in itself an indication that the data are incorrect, but an opportunity for trusts to investigate their data further. Some validations, such as the flagging of unexpected cost relativities between HRGs, proved to be of limited value when operated at the local rather than national level. We plan to review our validations for 2013-14 in light of this feedback.

142. The trusts that did not investigate any non-mandatory validations faced other challenges in meeting the submission deadline or did not build sufficient time into the process.

²⁸ <http://www.albatross-fs.com/patient-cost-benchmarking-pcb.html>

Resubmissions of data

143. As part of the data validation process, an initial analysis of the reference costs data is performed, by trust, to establish if any trust has submitted reference cost data so materially incorrect that the trust would be required to resubmit their data via Unify2. Unless data is so incorrect that it would have a material impact on any national average unit cost in tariff, the policy is not to allow resubmissions. This encourages trusts to get data right first time.
144. Trusts flagged as having significant outliers were contacted to discuss their data submission and the impact on the overall collection. None of the trusts contacted had submitted data that was materially incorrect for tariff purposes, and therefore no resubmissions via Unify2 were required. For the trusts listed below, the data did impact on their RCI and this should be borne in mind when comparing with other organisations.
- Medway NHS Foundation Trust
 - Royal Brompton and Harefield NHS Foundation Trust
 - Sheffield Health and Social Care NHS Foundation Trust
 - Staffordshire and Stoke on Trent Partnership NHS Trust
 - Surrey and Sussex Healthcare NHS Trust
 - The Queen Elizabeth Hospital, Kings Lynn, NHS Foundation Trust.

Validation

145. For the 2012-13 collection, we moved all mandatory validations from the Unify2 system into the workbooks to ensure trusts were notified of errors earlier in the process. We also built all non-mandatory validations into the workbooks for the first time. Some of these non-mandatory validations (e.g. market share or unit cost outliers) could necessarily only be added to the workbooks using 2011-12 data. We repeated these validations during the collection window using emerging 2012-13 data and provided daily feedback to trusts. Unify2 also includes a report to allow trusts to compare their unit costs against the emerging national average unit cost
146. The mandatory validations were designed to assure the basic integrity of the data and included the following checks:
- (a) activity reported as a positive integer
 - (b) both activity and a unit cost were reported
 - (c) combinations of supplier type, department code, service code and currency code were unique
 - (d) data codes (e.g. HRG, TFC) were valid
 - (e) inlier activity reported if excess bed day activity reported
 - (f) inlier bed days less than or equal to the HRG trim point multiplied by number of FCEs
 - (g) inlier costs and activity were reported if excess bed day costs were reported
 - (h) no fields were missing in any record
 - (i) number of inlier bed days were greater than or equal to the number of FCEs
 - (j) unit costs reported as positive and to two decimal places
 - (k) other checks specific to certain services or currencies (e.g. costs were not allocated to HRG codes SB97Z or SC97Z).

147. We introduced two new mandatory validations for 2012-13:

- (a) mandatory minimum unit costs of £20 for all admitted patient care core HRGs including excess bed days, and £5 for all outpatient attendance, outpatient procedure and unbundled HRGs. The purpose of this validation was to eliminate the lowest unit costs that a minority of trusts had submitted in previous years because of poor quality costing
- (b) a validation to ensure that all non-elective inpatients identified as long stay rather than short stay had an average length of stay (defined as number of inlier bed days plus excess bed days divided by number of FCEs) of greater than or equal to two. We introduced this after clarifying in guidance that the decision about whether a non-elective inpatient stay is short (zero or one day) or long (two or more days) is taken after, not before, length of stay adjustments for critical care, rehabilitation and specialist palliative care.

148. The final data passes all these mandatory checks.

149. We conducted a number of non-mandatory validations designed to improve the quality and accuracy of the data. Some trusts are running these checks through their costing systems at appropriate intervals (e.g. quarterly) during the year in preparation for the annual cost collection, and the self-assessment quality checklist asked trusts whether they had considered these and made necessary revisions (paragraph 141).

150. We introduced new non-mandatory validations for 2012-13 covering:

- (a) cost relativities inconsistent with HRG design
- (b) follow up outpatient attendance costs greater than first attendance costs
- (c) mental health care cluster costs not expected in an admitted patient care setting.
- (d) same costs reported against different currencies

151. Table 32 summarises the number of issues remaining for a selection of non-mandatory validations against the number of records (unweighted for activity) to which the validation applied in the final datasets for the last three years. In most cases there is a reduction in issues.

Table 32: Number of non-mandatory validations in the final 2010-11 to 2012-13 datasets

Description of non-mandatory validation	2010-11 ²⁹		2011-12		2012-13	
	Validations	Validations as % of records	Validations	Validations as % of records	Validations	Validations as % of records
Day case unit cost more than double elective inpatient unit cost ³⁰	2,026	2.8%	1,837	2.5%	1,858	2.4%
Single-professional more than double multi-professional outpatient attendance unit cost	119	3.6%	99	2.5%	118	2.5%
Unit cost does not cover the cost of a device	472	51.0%	376	30.9%	413	30.5%
Market share larger than 5% ³¹	2,461	7.4%	2,118	6.5%	4,411	10.4%

²⁹ Data for Nuffield Orthopaedic Centre NHS Trust and Winchester and Eastleigh Healthcare NHS Trust were recoded, following mergers that occurred during 2011-12, to allow comparisons to be made between 2010-11 and 2011-12 reference costs

³⁰ Excludes UZ01Z

³¹ Excludes UZ01Z for admitted patient care, HRG subchapter WD and total costs under £100,000

Reference costs 2012-13

Description of non-mandatory validation	2010-11 ²⁹		2011-12		2012-13	
	Validations	Validations as % of records	Validations	Validations as % of records	Validations	Validations as % of records
Outliers (unit cost is less than one-twentieth or more than twenty times the mean unit cost) ³²	1,803	0.4%	1,624	0.3%	1,148	0.2%
Unit cost under £5 ³³	645	0.1%	142	0.0%	74	0.0%
Unit cost over £50,000 ³⁴	403	0.0%	382	0.0%	505	0.0%

152. We did not apply any materiality threshold (i.e. a minimum volume or cost), to our non-mandatory validations. Trusts have told us that some of the volumes of non-mandatory validations generated were more than could be investigated in the time available. We will therefore take advice on re-introducing materiality thresholds for 2013-14.

153. [Annex E](#) describes the non mandatory validations in more detail.

Assurance

154. As part of their Payment by Results data assurance programme for 2013-14, Capita are auditing the arrangements for submission of reference cost returns, and the quality and accuracy of data, at 50 trusts³⁵. The results of the audits will be published in 2014.

³² Excludes UZ01Z, HRG Subchapter WD, total cancer multi-disciplinary team costs, critical care outreach services, mental health care clusters and cystic fibrosis year of care currencies

³³ Excludes UZ01Z, SB97Z, SC97Z, direct access pathology, total cancer multi-disciplinary team costs, critical care outreach services, mental health care clusters, and excess bed days

³⁴ Excludes UZ01Z, SB97Z, SC97Z, direct access pathology, total cancer multi-disciplinary team costs, critical care outreach services, mental health care clusters, and excess bed days

³⁵ [http://www.chks.co.uk/Payment-by-Results-\(PbR\)-Assurance](http://www.chks.co.uk/Payment-by-Results-(PbR)-Assurance)

Glossary

Admitted patient care	An overarching term covering the following classifications of patients who have been admitted to a hospital: ordinary elective admissions, ordinary non-elective admissions, day cases, regular day admissions and regular night admissions.
Casemix	A system whereby the complexity (mix) of the care provided to a patient (cases) is reflected in an aggregate secondary healthcare classification. Casemix adjusted payment means that providers are not just paid for the number of patients they treat in each specialty, but also for the complexity or severity of the mix of patients they treat.
Complications and comorbidities	Many HRGs differentiate between care provided to patients with and without complications and comorbidities. Comorbidities are conditions that exist in conjunction with another disease, e.g. diabetes or asthma. Complications may arise during a period of healthcare delivery.
Core Healthcare Resource Group (HRG)	An HRG that represents a care event (e.g. finished consultant episode, outpatient attendance or A&E attendance).
Cost driver	Activity that influences the cost of a service, e.g. length of stay or theatre minutes.
Currency	A unit of healthcare activity such as spell, episode or attendance.
Data quality	The degree of completeness, consistency, timeliness and accuracy that makes the data appropriate for a specific use.
Direct costs	Costs that directly relate to the delivery of patient care. Examples include medical and nursing staff costs.
Excess bed days	Days that are beyond the trim point for a given HRG.
Finished consultant episode (FCE)	An episode of patient treatment under the care of one consultant that has finished.
Healthcare Resource Group (HRG)	Standard groupings of clinically similar diagnosis and procedure codes that use similar levels of resources.
Hospital episode statistics (HES)	A national source of patient non-identifiable data.
ICD-10	International Classification of Disease and Related Health Problems. An internationally defined classification of disease, managed by the World Health Organisation (WHO) and currently in its 10th Revision
Indirect costs	Costs that are indirectly related to the delivery of patient care. They are not directly determined by the number of patients or patient mix but costs can be allocated on an activity basis to service costs.
Market forces factor (MFF)	An index used to estimate the unavoidable cost differences of providing healthcare.
National Tariff	From 1 April 2014 the term National Tariff will refer to the legal framework, set by Monitor and NHS England, that

	includes nationally set prices, the methodology for setting them and the payment rules for variations to national prices (including local modifications) and local price setting. All NHS services will fall within the scope of the National Tariff, but not all services will have national prices. See also Payment by Results.
Overhead costs	Costs that are not driven by the level of patient activity and which have to be apportioned to service costs as there is no clear activity-based allocation method. An example would be the chief executive's salary.
Patient level costing	Costs which are calculated by tracing the actual resource use of individual patients.
Patient level costing and information systems (PLICS)	IT systems which combine activity, financial and operational data to cost individual episodes of patient care. This is a 'bottom-up' approach to costing where an organisation records individual interactions and events that are connected with a patient's care from the time of admission until the time of discharge. The direct and indirect costs of the resources used during those interactions are allocated to the patient, much like a bill someone would receive at the end of a hotel stay.
Payment by Results	The current term for the payment system in England, within which there is a national tariff that refers only to the nationally set prices paid for each currency. The Department of Health publication, <i>A simple guide to Payment by Results</i> ³⁶ , provides a useful introduction. See also National Tariff.
Quantum	The total monetary amount available at a trust to be allocated within reference costs.
Service line reporting (SLR)	A method for reporting cost and income by service lines to improve management's understanding of the contribution of each service line to performance.
Spell	The period from date of admission to date of discharge for one patient in one hospital. A spell may consist of more than one FCE.
Trim point	A defined length of stay for each HRG. Technically defined as the upper quartile length of stay for the HRG plus 1.5 times the inter-quartile range of length of stay.
Unbundled Healthcare Resource Group (HRG)	An unbundled HRG represents an additional element of care. An unbundled HRG will always be associated with a core HRG that represents the care event, and will always be produced in addition to a core HRG.
Unit cost	The unit cost is the cost incurred by an organisation to produce, store and sell one unit of a particular product. Unit costs include all fixed costs and all variable costs involved in production.

³⁶ <https://www.gov.uk/government/publications/simple-guide-to-payment-by-results>

Annex A: Key figures

£ billion	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Total reference costs	41.3	43.9	47.6	51.2	53.0	53.4	55.2
Analysis by setting							
Elective inpatient	4.4	4.7	5.1	5.3	5.4	5.3	5.2
Non-elective inpatient	10.3	10.7	11.8	12.6	13.3	13.7	14.3
Day case	2.5	2.8	3.1	3.4	3.4	3.5	3.6
Outpatient attendance ³⁷	5.7	6.2	6.8	7.4	7.7	7.4	7.6
Outpatient procedure	0.3	0.3	0.5	0.7	0.9	0.9	1.1
Accident and emergency	1.4	1.5	1.6	1.8	1.9	2.0	2.1
Other non-acute	16.8	17.6	18.6	20.0	20.3	20.6	21.2
Analysis by HRG chapter							
Chapter A – Nervous system	1.1	1.1	1.1	1.3	1.3	1.3	1.4
Chapter B – Eyes and periorbita	0.4	0.5	0.5	0.5	0.5	0.5	0.5
Chapter C – Mouth, head, neck and ears	0.7	0.7	0.8	0.8	0.9	0.9	0.9
Chapter D – Respiratory system	1.1	1.1	1.4	1.5	1.6	1.6	1.8
Chapter E – Cardiac surgery and primary cardiac conditions	1.7	1.8	1.9	2.0	2.0	2.3	2.3
Chapter F – Digestive system	2.1	2.3	2.5	2.7	2.7	2.8	2.8
Chapter G – Hepatobiliary and pancreatic system	0.5	0.5	0.5	0.6	0.6	0.7	0.7
Chapter H – Musculoskeletal system	3.1	3.4	3.7	3.8	3.9	3.8	3.8
Chapter J – Skin, breast and burns	0.8	0.8	0.9	0.9	0.9	0.9	0.9
Chapter K – Endocrine and metabolic system	0.2	0.2	0.2	0.2	0.2	0.3	0.3
Chapter L – Urinary tract and male reproductive system	1.2	1.2	1.4	1.5	1.5	1.6	1.6
Chapter M – Female reproductive system and assisted reproduction	0.6	0.6	0.6	0.7	0.7	0.7	0.7
Chapter N – Obstetrics	1.3	1.4	1.5	1.7	1.8	1.9	1.9
Chapter P – Diseases of childhood and neonates	0.8	0.8	0.9	0.9	1.0	1.0	1.1
Chapter Q – Vascular system	0.5	0.5	0.5	0.6	0.5	0.5	0.5
Chapter R - Radiology and nuclear medicine	-	-	-	-	0.2	0.2	0.2
Chapter S – Haematology, chemotherapy, radiotherapy and specialist palliative care	0.4	0.4	0.5	0.5	0.5	0.5	0.5
Chapter U – Undefined groups	0.1	0.1	0.1	0.1	0.1	0.0	0.1
Chapter V – Multiple trauma, emergency medicine and rehabilitation	0.2	0.1	0.2	0.2	0.2	0.2	0.2
Chapter W – Immunology, infectious diseases and other contacts with health services	0.5	0.6	0.7	0.8	0.9	0.9	0.9

³⁷ Includes consultant-led and non-consultant led outpatient attendances, and cancer multi-disciplinary teams

Annex B: Source data

We have provided the source data in CSV files, listed below.

CSV file name	Contents
1 Data	Organisation level data
2 Organisation description	Data provider code and name and MFF value
3 Department description	Department code and name
4 Service description	Service code and name
5 Currency description	Currency code and name
6 Units	Activity unit for all department/service/currency combinations
7 Mapping pots	For calculating service level RCIs
8 Mapping pots description	Mapping pot name
9 Memorandum data	Organisation level memorandum data
10 Memorandum units	Activity unit for memorandum data
11 Mental health memorandum data	Memorandum information collected for mental health care clusters
12 Spells data	Organisation level spell data
13 Survey	Responses to the reference costs survey

The following tables describe the contents of each CSV file

1 Data³⁸

Field name	Description
Org code	Organisation code
Department code	Department code (e.g. EI)
Service code	Service code (e.g. 100)
Currency code	Currency code (e.g. AA02A)
Unit cost	Average cost to the organisation of providing the activity
Activity	See Table 6 “Units” for details
Bed days	Number of inlier bed days
Mean	National mean average unit cost
Actual cost	Organisation’s activity multiplied by organisation’s unit cost
Expected cost	Organisation’s activity multiplied by national mean unit cost
Mapping pot ³⁹	Maps all activity to one of 13 groups for the purpose of calculating service level RCIs

2 Organisation description

Field name	Description
Org code	Organisation code
Organisation name	Organisation name
Org type	Trust type: acute, ambulance, mental health or community
MFF	Market forces factor for the organisation, used for calculating RCIs

³⁸ We have provided two versions of the Data file. One containing the costs submitted by trusts, and a second where we have adjusted the costs for each trust’s MFF. The latter file should be used for calculating RCIs. Otherwise we recommend using the first file.

³⁹ Cystic fibrosis, critical care outreach services and UZ01Z are not included in the published RCI calculation. They are allocated to the 13_Excl pot.

3 Department description

Field name	Description
Department code	Department code (e.g. EI)
Department name	Department name (e.g. elective inpatient)

4 Service description

Field name	Description
Service code	Service code (e.g. 100)
Service name	Service name (e.g. general surgery)

5 Currency description

Field name	Description
Currency code	Currency code (e.g. AA02A)
Currency name	Currency name (e.g. intracranial procedures for trauma with major diagnosis)

6 Units

Field name	Description
Department code	Department code (e.g. EI)
Service code ⁴⁰	Service code (e.g. 100)
Currency code ⁴¹	Currency code (e.g. AA02A)
Units	E.g. FCE

7 Mapping pot

Field name	Description
Department code	Department code (e.g. EI)
Service code	Service code (e.g. 100)
Mapping pot	Mapping pot (e.g. 01_EI)

8 Mapping pot description

Field name	Description
Mapping pot	Mapping pot (e.g. 01_EI)
Mapping pot name	Mapping pot description (e.g. elective inpatient and day case)

9 Memorandum data

Field name	Description
Org code	Organisation code
Department code	Department code
Service code	Service code
Currency code	Currency code
Unit cost	Average cost to the organisation of providing the activity
Activity	See Table "6 Units" for details
Memo	See Table "10 Memorandum units" for details

⁴⁰ Where the fields are blank, this indicated that the units of measurement are the same regardless of the service code

⁴¹ Where the fields are blank, this indicated that the units of measurement are the same regardless of the currency code

10 Memorandum units

Field name	Description
Department code	Department code
Service code	Service code
Units	Depending on the department code, the unit is either <ul style="list-style-type: none"> - the number of critical care periods, collected in addition to the number of critical care bed days for adult critical care - the number of requests, collected in addition to the number of tests for directly accessed pathology services - the average number of sessions per week per patient of home haemodialysis, collected in addition to the number of sessions for haemodialysis

11 Mental health memorandum data

Field name
Org code
Department code
Service code
Currency code
Unit cost
Activity
Unit cost per occupied bed day
Cluster days in admitted patient care
Unit cost per non-admitted patient cluster day
Cluster days in non-admitted patient care
Average review period (days)
Total number of completed cluster review periods

12 Spell data⁴²

Field name	Description
Org code	Organisation code
Department code	Department code (e.g. EI)
HRG code	Currency code (e.g. AA02A)
Unit cost	Average cost to the organisation of providing the activity
Activity	Number of spells
Inlier bed days	Number of inlier spell bed days
Excess bed days	Number of excess spell bed days
Mean	National mean average unit cost
Actual_cost	Organisation's activity multiplied by organisation's unit cost
Expected_cost	Organisation's activity multiplied by national mean unit cost
Mapping_pot	For calculating service level RCIs

⁴² We have provided two versions of the Data file. One containing the costs submitted by trusts, and a second where we have adjusted the costs for each trust's MFF. The latter file should be used for calculating RCIs. Otherwise we recommend using the first file.

13 Survey⁴³

Field	Description
Org	Organisation code
Q1	What is the current status of patient level information and costing systems (PLICS) in your organisation?
Q2a	How many WTE staff are engaged in running your costing system and producing cost information: Finance staff?
Q2b	How many WTE staff are engaged in running your costing system and producing cost information: Information staff?
Q2c	How many WTE staff are engaged in running your costing system and producing cost information: Other staff?
Q3a	What is the resource commitment (in number of days) of collating and submitting the annual reference costs return: Finance staff?
Q3b	What is the resource commitment (in number of days) of collating and submitting the annual reference costs return: Information staff?
Q3c	What is the resource commitment (in number of days) of collating and submitting the annual reference costs return: Senior managers?
Q4	What is the level of clinical and financial engagement in your organisation?
Q5	How often are you producing and reporting patient level cost information?
Q6	Did you use PLICS to underpin your reference costs return?
	If you answered yes to Q6, which service areas were underpinned by PLICS:
Q7a	Admitted patient care and day care facilities?
Q7b	Outpatient services?
Q7c	Emergency medicine?
Q7d	Chemotherapy?
Q7e	Critical care?
Q7f	Diagnostic imaging?
Q7g	High cost drugs?
Q7h	Radiotherapy?
Q7i	Rehabilitation?
Q7j	Specialist palliative care?
Q7k	Renal dialysis?
Q7l	Services accessed directly?
Q7m	Mental health services?
Q7n	Community services?
Q7o	Ambulance services?
Q7p	Cystic fibrosis?
Q7q	Audiology services?
Q8	If you answered no to Q6, is there a particular reason for this?
Q9	Did you use the HFMA Clinical Costing Standards as part of your PLICS implementation?
Q10	If you did not use the HFMA Clinical Costing Standards as part of your implementation, have you subsequently reviewed your system against the standards?
Q11	Did you use the HFMA Clinical Costing Standards when producing your reference costs?
Q12	If you answered no to Q11, why are you not using the HFMA Clinical Costing

⁴³ We have not supplied responses to the following survey questions:

- Q14, If you answered yes to Q13, what is your current MAQS score? (optional)
- Q26, Do you have any other comments?

Field	Description
	Standards?
Q13	Have you used the materiality and quality score (MAQS) as detailed in the HFMA Clinical Costing Standards?
Q15	When was your PLICS implemented?
Q16 ⁴⁴	Who is the supplier of your PLICS?
Q17	What stage of implementation are you at?
Q18	What is your timescale for completing PLICS implementation?
Q19	How involved have clinicians been in implementing PLICS?
Q20	Are you using the HFMA Clinical Costing Standards as part of your PLICS implementation?
Q21	If you are not using the HFMA Clinical Costing Standards why is this?
Q23	What is your timescale for completing PLICS implementation?
Q25	If you not planning to implement PLICS, what are the main reasons why not?

⁴⁴ Q16 asked this question to trusts that have implemented PLICS. Q22 and Q24 asked the same question to trusts implementing or planning to implement PLICS.

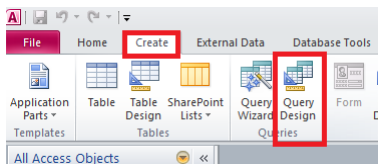
Annex C: Using the source data

Introduction

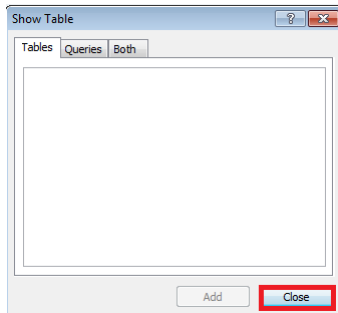
1. This Annex contains standard queries to support analysis of the data. Users should first import the CSV files described in [Annex B](#) into Microsoft Access. The notes that follow are based on Microsoft Access 2010. The process for other versions may differ slightly.

Creating standard queries

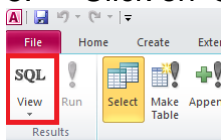
2. This process will create standard queries which will allow organisations to compare their data against the national averages and calculate the RCIs. Users are able to create other queries, as required.
3. Having imported the CSV files into a Microsoft Access database, click on 'Create' and then on 'Query Design'.



4. A Show Table window will pop up. Click 'Close'.



5. Click on 'SQL' in the top left hand corner.



6. A new window will appear.

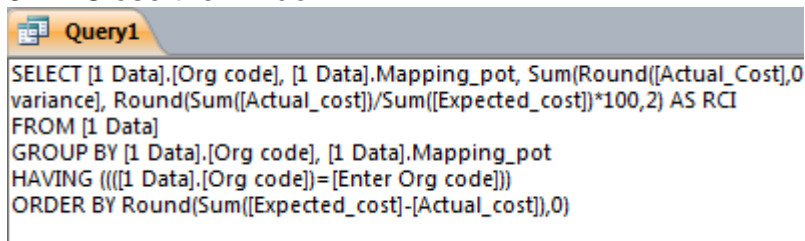


7. Paste the SQL text in the first row of the table below into the window.

SQL text – RCI related queries	Query name
SELECT [1 Data MFF adjusted].[Org code], [1 Data MFF adjusted].Mapping_pot, Sum(Round([MFFd Actual_Cost],0)) AS [Actual cost], Sum(Round([MFFd Expected_cost],0)) AS [Expected cost], Round(Sum([MFFd Expected_cost]-[MFFd Actual_cost]),0) AS [Cost variance], Round(Sum([MFFd Actual_cost])/Sum([MFFd Expected_cost])*100,2) AS RCI FROM [1 Data MFF adjusted] GROUP BY [1 Data MFF adjusted].[Org code], [1 Data MFF adjusted].Mapping_pot HAVING ((([1 Data MFF adjusted].[Org code])=[Enter Org code])) ORDER BY Round(Sum([MFFd Expected_cost]-[MFFd Actual_cost]),0);	01 By Org and RCI pot
SELECT [1 Data MFF adjusted].[Org code], [1 Data MFF adjusted].Mapping_pot, [1 Data MFF adjusted].[Department code], Sum(Round([MFFd Actual_Cost],0)) AS [Actual cost], Sum(Round([MFFd Expected_cost],0)) AS [Expected cost], Round(Sum([MFFd Expected_cost]-[MFFd Actual_cost]),0) AS [Cost variance], Round(Sum([MFFd Actual_cost])/Sum([MFFd Expected_cost])*100,2) AS RCI FROM [1 Data MFF adjusted] GROUP BY [1 Data MFF adjusted].[Org code], [1 Data MFF adjusted].Mapping_pot, [1 Data MFF adjusted].[Department code] HAVING ((([1 Data MFF adjusted].[Org code])=[Enter Org code]) AND (([1 Data MFF adjusted].Mapping_pot)=[Enter Mapping pot - 01_EI, 02_NEI, 03_XS, 04_CCS, 05_OP, 06_OAS, 07_Com, 08_MH, 09_Trans, 10_AMB, 11_A&E, 12_UB, 13_Excl])) ORDER BY Round(Sum([MFFd Expected_cost]-[MFFd Actual_cost]),0);	02 By Org, RCI pot, Dept
SELECT [1 Data MFF adjusted].[Org code], [1 Data MFF adjusted].Mapping_pot, [1 Data MFF adjusted].[Department code], [1 Data MFF adjusted].[Service code], Sum(Round([MFFd Actual_Cost],0)) AS [Actual cost], Sum(Round([MFFd Expected_cost],0)) AS [Expected cost], Round(Sum([MFFd Expected_cost]-[MFFd Actual_cost]),0) AS [Cost variance], Round(Sum([MFFd Actual_cost])/Sum([MFFd Expected_cost])*100,2) AS RCI FROM [1 Data MFF adjusted] GROUP BY [1 Data MFF adjusted].[Org code], [1 Data MFF adjusted].Mapping_pot, [1 Data MFF adjusted].[Department code], [1 Data MFF adjusted].[Service code] HAVING ((([1 Data MFF adjusted].[Org code])=[Enter Org code]) AND (([1 Data MFF adjusted].Mapping_pot)=[Enter Mapping pot - 01_EI, 02_NEI, 03_XS, 04_CCS, 05_OP, 06_OAS, 07_Com, 08_MH, 09_Trans, 10_AMB, 11_A&E, 12_UB, 13_Excl]) AND (([1 Data MFF adjusted].[Department code])=[Enter Department code])) ORDER BY Round(Sum([MFFd Expected_cost]-[MFFd Actual_cost]),0);	03 By Org, RCI pot, Dept and Service
SELECT [1 Data MFF adjusted].[Org code], [1 Data MFF adjusted].Mapping_pot, [1 Data MFF adjusted].[Department code], [1 Data MFF adjusted].[Service code], [1 Data MFF adjusted].[Currency code], Sum(Round([MFFd Actual_Cost],0)) AS [Actual cost], Sum(Round([MFFd Expected_cost],0)) AS [Expected cost], Round(Sum([MFFd Expected_cost]-[MFFd Actual_cost]),0) AS [Cost variance], Round(Sum([MFFd Actual_cost])/Sum([MFFd Expected_cost])*100,2) AS RCI FROM [1 Data MFF adjusted] GROUP BY [1 Data MFF adjusted].[Org code], [1 Data MFF adjusted].Mapping_pot, [1 Data MFF adjusted].[Department code], [1 Data MFF adjusted].[Service code], [1 Data MFF adjusted].[Currency code] HAVING ((([1 Data MFF adjusted].[Org code])=[Enter Org code]) AND (([1 Data MFF adjusted].Mapping_pot)=[Enter Mapping pot - 01_EI, 02_NEI, 03_XS, 04_CCS, 05_OP, 06_OAS, 07_Com, 08_MH, 09_Trans, 10_AMB, 11_A&E, 12_UB, 13_Excl]) AND (([1 Data MFF adjusted].[Department code])=[Enter Department code]) AND (([1 Data MFF adjusted].[Service code])=[Enter service code])) ORDER BY Round(Sum([MFFd Expected_cost]-[MFFd Actual_cost]),0);	04 By Org, RCI pot, Dept, Service and Currency
SQL text – unit cost related queries	Query name
SELECT [1 Data].[Org code], [1 Data].[Department code], [1 Data].[Currency code], Sum([1 Data].Actual_cost) AS SumOfActual_cost, Sum([1 Data].Activity) AS SumOfActivity, Sum([Actual_Cost])/Sum([Activity]) AS [Unit Cost] FROM [1 Data] GROUP BY [1 Data].[Org code], [1 Data].[Department code], [1 Data].[Currency code];	05 Unit Cost by Organisation, Department and Currency

SQL text – RCI related queries	Query name
SELECT [1 Data].[Org code], [1 Data].[Department code], Sum([1 Data].Actual_cost) AS SumOfActual_cost, Sum([1 Data].Activity) AS SumOfActivity, Sum([Actual_Cost])/Sum([Activity]) AS [Unit cost] FROM [1 Data] GROUP BY [1 Data].[Org code], [1 Data].[Department code];	06 Unit Cost by Organisation and Department
SELECT [1 Data].[Org code], [1 Data].[Currency code], Sum([1 Data].Actual_cost) AS SumOfActual_cost, Sum([1 Data].Activity) AS SumOfActivity, Sum([Actual_Cost])/Sum([Activity]) AS [Unit cost] FROM [1 Data] GROUP BY [1 Data].[Org code], [1 Data].[Currency code];	07 Unit Cost by Organisation and Currency
SELECT [1 Data].[Department code], [1 Data].[Currency code], Sum([1 Data].Actual_cost) AS SumOfActual_cost, Sum([1 Data].Activity) AS SumOfActivity, Sum([Actual_Cost])/Sum([Activity]) AS [Unit cost] FROM [1 Data] GROUP BY [1 Data].[Department code], [1 Data].[Currency code];	08 Unit Cost by Department and Currency
SELECT [1 Data].[Org code], Sum([1 Data].Actual_cost) AS SumOfActual_cost, Sum([1 Data].Activity) AS SumOfActivity, Sum([Actual_Cost])/Sum([Activity]) AS [Unit cost] FROM [1 Data] GROUP BY [1 Data].[Org code];	09 Unit Cost by Organisation
SELECT [1 Data].[Department code], Sum([1 Data].Actual_cost) AS SumOfActual_cost, Sum([1 Data].Activity) AS SumOfActivity, Sum([Actual_Cost])/Sum([Activity]) AS [Unit cost] FROM [1 Data] GROUP BY [1 Data].[Department code];	10 Unit Cost by Department
SELECT [1 Data].[Currency code], Sum([1 Data].Actual_cost) AS SumOfActual_cost, Sum([1 Data].Activity) AS SumOfActivity, Sum([Actual_Cost])/Sum([Activity]) AS [Unit cost] FROM [1 Data] GROUP BY [1 Data].[Currency code];	11 Unit Cost by Currency

8. Close the window.



```

SELECT [1 Data].[Org code], [1 Data].Mapping_pot, Sum(Round([Actual_Cost],0  

variance], Round(Sum([Actual_cost])/Sum([Expected_cost])*100,2) AS RCI  

FROM [1 Data]  

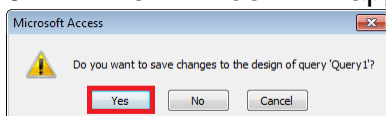
GROUP BY [1 Data].[Org code], [1 Data].Mapping_pot  

HAVING ((([1 Data].[Org code])=[Enter Org code]))  

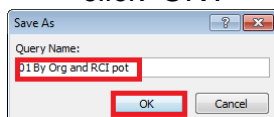
ORDER BY Round(Sum([Expected_cost]-[Actual_cost]),0)

```

9. A new window will appear. Click 'Yes'.



10. A new window will appear. Type in the name from the table above in step 23, then click 'OK'.



11. Repeat this process for the other three queries listed in step 23 above.

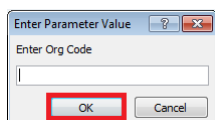
Using the standard queries

RCI queries

12. The standard queries are designed to allow organisations to drill into their data. Organisations may want to use this to highlight areas in which they have substantial activity and where their costs are much higher or lower than the national average.
13. The RCI standard queries all show actual cost, expected cost, cost variance (expected cost – actual cost) and RCI. The cost variance is similar to the RCI, however it takes activity into account. The queries are sorted by cost variance – ascending.
14. The amount of detail shown increases with each standard query. The table below shows how the detail builds up.

Query	Org code	RCI pot	Dept	Service	Currency
1 By Org and RCI pot	✓	✓			
2 By Org, RCI pot and Dept	✓	✓	✓		
3 By Org, RCI pot, Dept and Service	✓	✓	✓	✓	
4 By Org, RCI pot, Dept, Service and Currency	✓	✓	✓	✓	✓

15. The standard queries require some of the variables to be selected after running the query, e.g. the “1 By Org and RCI pot” query requires org code to be selected. These pre-selected fields are shaded in the table.
16. Once the query has been set up, it can be run by double clicking it. A new window(s) will appear. Enter the information required and click on OK.



Unit cost queries

17. The unit cost standard queries are designed to allow organisations to compare unit cost for activity defined by organisation code, department code and currency code, or any combination of these fields.
18. Unlike the RCI standard queries, they will not require the input of an organisation code.

Annex D: Changes to the RCI methodology

Market forces factor adjustment

1. Trusts in some parts of the country have higher costs because labour, land and buildings cost more in these areas. The purpose of the market forces factor (MFF) is to compensate for the unavoidable cost differences of providing healthcare in different parts of the country. Its derivation and uses are described in *Payment by Results and the market forces factor 2013-14*⁴⁵.
2. In previous years, the MFF adjustment has been the last step in the calculation of RCIs. In other words, having calculated an RCI for each trust as broadly described in paragraph 53, we then divided this by the MFF for each trust. Trusts located in areas with higher than average unavoidable costs have an MFF greater than 1, so their RCI decreased. Those in lower than average cost areas have an MFF of less than 1, so their RCI decreased.
3. This methodology assumed that all activity is carried out by a range of trusts with an average MFF of 1.00. However, this is not the case. A more accurate method, and one that is consistent with the calculation of national prices in previous years (see *Step-by-step: calculating the 2013-14 national tariff*⁴⁶) is to make the MFF adjustment the first step in the calculation of RCIs by dividing each trust's unit costs by its MFF before calculating national average unit costs. For example, assuming the same unit cost of £1,000 for a given currency, dividing this by:
 - (a) an MFF of 0.9210 for Cornwall Partnership NHS Foundation Trust gives a unit cost of £1,086
 - (b) an MFF of 1.1951 for University College London Hospitals NHS Foundation Trust gives a unit cost of £837.
4. We used the latest published MFF, in the form of an index centred around 1.00, and scaled to ensure that the total national value of reference costs (the quantum) remains constant. Scaling does not affect the relative differences between the MFF values of different trusts.

HRG and treatment function code

5. Reference costs for admitted patient care (and procedures in outpatients and diagnostic imaging) are collected by HRG and TFC. TFCs describe divisions of clinical work (e.g. general surgery, ophthalmology, paediatric surgery) and it is for NHS providers to determine locally which TFC should be recorded on activity and cost returns.
6. In previous years, we have calculated national average unit costs for the RCI based on HRG and admission method only, and have not used the TFC. This methodology assumes that the unit costs are the same across TFC. However, the data shows that there are large variations in unit costs for the same HRG across different TFCs. This

⁴⁵ <https://www.gov.uk/government/publications/payment-by-results-pbr-operational-guidance-and-tariffs>

⁴⁶ <https://www.gov.uk/government/publications/payment-by-results-pbr-operational-guidance-and-tariffs>

is because TFC, or speciality, costs will differ for reasons such as different nurse to patient ratios on different wards (paediatric wards have higher ratios than children's wards) or the grades of nurses on a ward. Table 33 illustrates how national average unit costs for an HRG might vary by TFC. In this example, if TFC was not taken into account, the RCIs of trusts providing higher cost paediatric services would be increased compared to those trusts not providing these services and vice versa.

Table 33: Illustration of how HRG national average units cost for non-elective inpatients (long stay) vary by TFC

HRG	Description	TFC	Description	FCEs	National Average Unit Cost
AA06F	Major Intracranial Procedures Except Trauma with Brain Tumours or Cerebral Cysts, with CC Score 0-2	150	Neurosurgery	478	£9,582
AA06F	Major Intracranial Procedures Except Trauma with Brain Tumours or Cerebral Cysts, with CC Score 0-2	218	Paediatric Neurosurgery	47	£15,638

7. For 2012-13, we are therefore taking TFC into account when calculating national average unit costs for the RCI.

Separating day case and elective inpatient averages

8. In previous years, we have combined day case and elective inpatient national average unit costs for the RCI. This methodology penalises providers that carry out a higher proportion of elective inpatient activity than the national average. Most national tariffs also have combined day case and elective prices to incentivise more day case activity.
9. For 2012-13, separate rather than combined day case and elective inpatient averages for the RCI have been calculated, because the RCI is primarily a measure of relative efficiency rather than a means to incentive the provision of activity in one setting over another.

Services included in or excluded from the RCI

10. In 2012-13 we are including the following currencies in the RCI that were excluded in previous years:
 - (c) mental health care clusters. Costs were first collected against this currency in 2011-12 reference costs, but were excluded from that year's RCI because the currency was only mandated in December 2011, meaning that the data were not comparable between providers. 2012-13 reference costs include a full year of clustered data, which it is therefore appropriate to include in the RCI
 - (d) HRGs in subchapter WD (treatment of mental health patients by non-mental health providers). Mental health services provided by specialist providers are captured using other currencies, and the HRGs within WD effectively form the residue of treatment of mental health patients by non-specialist mental health service providers. However, we have been advised that the costs are sufficiently comparable to include in the RCI.
11. We are continuing to exclude the following currencies from the RCI as in previous years:
 - (e) HRG UZ01Z (data invalid for grouping). HRGs are designed to be iso-resource, by which we mean standard groupings of clinically similar treatments that use similar levels of resource. Since UZ01Z could include any costs relating to any

patient activity that cannot be coded, it is inappropriate to include in a measure of relative efficiency

- (f) the cystic fibrosis year of care currency. The collection reflects shared care arrangements that exist for cystic fibrosis by allowing for the reporting of costs for the same patient from both a specialist centre and second trust where local care is provided. Because the use of these shared care arrangements will vary, the costs cannot be considered iso-resource
- (g) adult critical care outreach services. Trusts report these services separately, rather than as an overhead to admitted patient care, and as a total cost rather than a unit cost because there is no national dataset for collecting the activity

Annex E: Non-mandatory data validations

Cost relativities inconsistent with HRG design

155. *Costing Patient Care* suggested that reference costs sometimes produce cost relativities that are inconsistent with the clinical design of HRGs. Such inconsistencies at the national average level might require pricing adjustments. For example, with other factors being equal, in Table 34 we would expect AA02E to have a higher cost than AA02F, and in Table 35 we would expect AA37Z to have a higher cost than AA38Z. We introduced a validation into the 2012-13 collection template which flagged unexpected relativities between HRG splits⁴⁷ or between HRG roots⁴⁸.

Table 34: Comparing HRG splits

HRG	Description
AA02E	Intracranial Procedures for Trauma with Diagnosis of Intracranial Injury, with CC Score 3-5
AA02F	Intracranial Procedures for Trauma with Diagnosis of Intracranial Injury, with CC Score 0-2

Table 35: Comparing HRG roots

HRG	Description
AA37Z	Intermediate Intracranial Procedures Except Trauma with Stroke
AA38Z	Minor Intracranial Procedures Except Trauma with Stroke

156. The feedback we have received from trusts is that at the patient level or organisational average level it is to be expected that costs will often not match an HRG hierarchy. This validation generated the highest volume of issues but trusts reported that on investigation their data were correct.

157. At the national average level, most of the apparent cost inconsistencies are for day cases and there are relatively few for elective or non-elective inpatients. Indeed, provisional analysis suggests that the costs are confirming the design intentions of HRG4+. Consider the 2011-12 and 2012-13 national average unit costs for bronchopneumonia in Table 36 and Table 37. The 2012-13 costs demonstrate a sharper differentiation between care complexity and length of stay, and if used to set national prices would differentiate more appropriately between providers delivering different levels of care.

Table 36: 2011-12 reference costs for bronchopneumonia

HRG	Label	FCEs	Mean length of stay	Average unit cost
DZ23A	Bronchopneumonia with Major CC	7,801	8	£2,600
DZ23B	Bronchopneumonia with Intermediate CC	1,920	6	£1,935
DZ23C	Bronchopneumonia without CC	199	4	£1,310

⁴⁷ The HRG split represents the full 5-character HRG

⁴⁸ The HRG root represents a stage in the grouping process whereby activity is mapped to a partially defined 4-character HRG prior to applying any split logic

Table 37: 2012-13 reference costs for bronchopneumonia

HRG	Label	FCEs	Mean length of stay	Average unit cost
DZ23D	Bronchopneumonia with CC Score 13+	804	15	£4,545
DZ23E	Bronchopneumonia with CC Score 9-12	2,722	10	£3,226
DZ23F	Bronchopneumonia with CC Score 5-8	4,401	7	£2,175
DZ23G	Bronchopneumonia with CC Score 0-4	2,800	5	£1,625

Costs that do not cover the cost of a device

158. This validation queried unit costs that were less than the expected minimum cost for the device for HRGs where the activity always include the high cost device. For example, we always expected a minimum unit cost of £14,000 for a Unilateral Cochlear Implant (HRG CZ25A).

Day case unit costs greater than ordinary elective unit costs

159. This validation highlighted day case unit costs that were more than double the elective unit cost for the same HRG in the same TFC.

Follow up outpatient attendance unit costs greater than first attendance unit costs

160. This validation queried follow up unit costs that were more than double the first attendance unit cost for the same outpatient attendance in the same TFC.

Market share

161. This validation queried returns where a trust's market share of total costs or activity for a service (defined as the combination of department code and HRG sub-chapter for acute services, or department code and currency for non-acute services), was greater than 5%.

Mental health care cluster and admitted patient care

162. This validation queried cluster days reported in an admitted patient care setting, for mental health care clusters 01, 02 and 03. We would expect activity for these low intensity clusters to be reported in non-admitted patient care settings.

Outliers

163. This validation queried unit costs that were less than one-tenth or more than ten times the national mean unit cost.

Single-professional outpatient attendance unit costs greater than multi-professional unit costs

164. This validation queried single-professional unit costs that were more than double the multi-professional unit cost for the same outpatient attendance in the same TFC.

Unit costs under £5

165. This validation queried unit costs that were under £5, and formed part of the self-assessment quality checklist.

Unit costs over £50,000

166. This validation queried unit costs that were over £50,000, and formed part of the self-assessment quality checklist.

Year on year changes

167. We included within the collection template a comparison of the total cost and activity a trust was proposing to submit against each worksheet, and the same data reported by that trust in 2011-12. Our validations repeated this analysis at a more granular level. We queried any data return where the change in total cost or activity by department code and HRG sub-chapter for acute services, or service code for non-acute services, was greater than 25%. Large increases or decreases might reflect service reconfiguration or changes to coding practice.

Same costs against different currencies

168. This validation queried same costs reported against different HRGs or other currencies. Given that HRGs consume different levels of healthcare resource and are expected to have different costs, it is inappropriate to report the same costs against multiple HRGs (or against multiple other currencies). However, we also recognise this practice is more prevalent in trusts without PLICS that apply a traditional top down costing methodology to allocate costs from the general ledger to specialties.

Services excluded from reference costs

169. The collection guidance listed services excluded from reference costs. The reconciliation return asked trusts to identify services from this list that they excluded, and also provided a user-defined lines for other services that trusts wished to exclude. The total cost excluded from reference costs was £5.2 billion (compared to £5.6 billion in 2011-12). The number of user defined lines has also decreased significantly in the last three years (Table 38).

Table 38: User defined services excluded from reference costs

Reference costs year	Number of user defined exclusions
2010-11	1,256
2011-12	200
2012-13	100

170. An analysis of the 100 user defined service exclusions suggests they fall into one of four categories:

- (a) services that did not need to be user defined because they are already defined in the national list of excluded services
- (b) services that have a currency in reference costs and were therefore incorrectly excluded
- (c) services that we agreed, after discussions with the trusts concerned, could be excluded
- (d) services where more information is needed.