PbR Data Assurance Framework 2007/08

Findings from the first year of the national clinical coding audit programme

Health

National report

August 2008

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Contents

Contents

List of figures

List of Figures

Summary

In 2007/08, the Payment by Results (PbR) Data Assurance Framework was implemented within the NHS in England. The framework, managed by the Audit Commission, consists of:

- an independent external clinical coding audit programme;
- the development of benchmarking indicators and tools to target audits and for wider local use by the NHS; and
- regular national analyses and briefings on issues arising from the audit and benchmarking programmes.

This report provides the summary analysis from the clinical coding audit programme undertaken at all acute NHS trusts in England. It provides the first comprehensive national picture of the quality of the data which underpin not only financial, but also clinical and commissioning information. The coding of more than 50,000 episodes, equating to approximately £73 million of expenditure under PbR, has been audited individually. Local reports containing recommendations for action have been produced for every acute trust. Key components of the assurance framework going forward will be monitoring progress against the recommendations and facilitating improvement.

The results of the audits show that coding errors are having an impact on Healthcare Resource Group[I] (HRG) assignment, and subsequently the accuracy of payments. An average HRG error of 9.4 per cent was identified, with a range across trusts from 0.3 per cent to 52 per cent. These errors contributed to a gross financial error of approximately £3.5 million, approximately 5 per cent of the price of the sample reviewed. In most cases, the net financial impact is close to zero, indicating little evidence of systematic and deliberate up-coding or gaming. Locally, however, there are a number of cases where the net financial impact of errors was significant.

I HRGs are the casemix grouping methodology used to support PbR. The groups are organised by body system and are then given clinical coherence by clustering diagnosis and procedure code combinations together into iso–resource specific groups. That is to say, different patients' treatment assigned to the same group should consume a similar level of resources. PbR uses spell–level HRGs as its currency. The current version is HRGv3.5 but this will be replaced in 2009/10 with HRG4.

Summary

The most common issue which affected the accuracy of clinical coding was the quality of the source documentation from which the coding data was abstracted. This included clinical coders working from discharge summaries rather than full case notes, illegible or poorly structured case notes, lack of access to additional information systems by coders and insufficient information included on electronic patient records. If coding accuracy is to improve, then trusts must improve the standards of source documentation. Other problems included the adequacy of trust coding arrangements and the level of clinician involvement and validation. In particular, the audits demonstrated that training and development of coders had more of an impact on limiting the number errors than the number of coding staff. Lack of clarity in national guidance on identifying and coding co-morbidities and data definitions also contributed to error rates. However, in the case of data definitions, this was not found to be as significant an issue as when we raised it following our pilot reviews in 2006.

Over the coming months we will begin a programme of further research into many of these issues and will produce briefings in order to help the NHS reach a better understanding of where and how to improve.

Further analysis of HRG errors showed that although foundation trusts (FTs) had marginally lower error rates than non-FTs and that wave 1 FTs had even lower error rates than other FTs, this was not statistically significant. However, higher error rates were encountered at specialist trusts. The causes of this are not yet fully understood but this may be due to inadequacies in the coding system when it comes to describing specialist activity rather than the coding processes at these trusts being inherently worse than at others. The analysis also showed higher error rates in some specialties (Paediatrics and Rheumatology), HRG chapters (D – Respiratory System and J – Skin, Breast and Burns) and individual HRGs (J10 – Malignant Breast Disorders <70 without complications and J40 – Minor Dermatological Conditions or Benign Tumours).

Clinical coding error averaged 16.5 per cent across primary and secondary diagnosis and procedure coding, with a range across trusts from 1 per cent to 76 per cent. At the primary level, procedure coding had a lower error rate than diagnosis coding but this was reversed at the secondary level. There is a strong correlation between the accuracy of primary coding and that of secondary coding, suggesting that if an error is made in the primary coding then this often transfers to the secondary coding.

The clinical coding errors identified are not only of importance to PbR, but also to other areas, such as activity planning, commissioning, resource allocation and clinical audits, where this information is key. These findings therefore have implications for data quality more generally and the use made of the information beyond PbR payments, including the development of quality measures outlined in the Darzi Review.[I] Measures to address data quality need to be introduced in order to ensure that the information used is reliable.

In addition to these audits and the subsequent analysis of results, the Audit Commission has developed its benchmarking methodology into a powerful online tool called the National Benchmarker, which has been made available to the NHS to further improve data quality at the local level. More information on the National Benchmarker can be found in the appendices.

I Professor the Lord Darzi of Denham KBE High quality care for all: NHS Next Stage Review final report (Department of Health, June 2008).

Recommendations

Key action points for trusts

Trusts should:

- implement their audit action plans to improve their clinical coding;
- review and, where necessary, improve their source documentation to promote accurate coding and ensure that clinicians are engaged and involved in validating coding;
- invest in and develop their coding departments through professional training and development; and
- use the National Benchmarker regularly in order to review potential coding anomalies and areas for improvement.

Key action points for primary care trusts (PCTs)

PCTs should:

- monitor trusts' implementation of their audit action plans and subsequent improvement in clinical coding; and
- use the National Benchmarker regularly in order to review potential coding anomalies and areas for improvement.

Key action points for the Department of Health (DH) and NHS Connecting for Health (NHS CfH)

The DH and NHS CfH should:

- review the coding systems and guidance for specialties, HRG chapters and HRGs which were identified as being prone to higher errors;
- clarify guidance on the identification and coding of co-morbidities;
- review the appropriateness of coding classifications for specialist activity in order to ensure that they can accurately describe more complex activity;
- continue to improve training and development programmes for clinical coders and clinical coding auditors; and
- introduce a wider data quality programme for NHS bodies in order to improve standards of data and increase confidence in its more widespread use.

1 Introduction

1 The PbR Data Assurance Framework is designed to support the improvement of data quality, which underpins the accuracy of coding and pricing under PbR. Following piloting during 2006,[I] the assurance framework was implemented across the NHS in England during 2007/08. The framework is a rolling programme of work developed and managed by the Audit Commission. It consists of:

- an independent clinical coding audit programme, investigating national themes and targeted clinical areas, covering all acute NHS trusts in England;
- the development of benchmarking indicators to target audits and for wider use online by PCTs and trusts; and
- regular national briefings on issues emerging from both the coding audits and benchmarking analysis.

2 The clinical coding audits undertaken as part of the assurance framework follow the NHS Connecting for Health (NHS CfH) coding audit methodology. However, for the purpose of the assurance framework, the methodology was extended to cover the re-pricing of the audit sample using PbR rules and the exploration of any local data definitional issues.

3 This report presents the summary results and analysis of 170[II] clinical coding audits carried out at all acute trusts in England during 2007/08. For the first time, it provides a comprehensive national picture of the quality of clinical coding data. The audit in each trust reviewed 300 Finished Consultant Episodes (FCEs) split across four areas: a national theme (100 FCEs) selected from three possible specialties (Trauma and Orthopaedics, Cardiology and Paediatrics); and then a broad (100 FCEs), medium (70 FCEs) and focused (30 FCEs) area, corresponding to specialty, HRG chapter and individual HRG level. These areas were selected through national benchmarking, using the Commission's PbR National Benchmarker tools, or through local discussion. Once completed, the financial impact of any errors identified was calculated by pricing the sample on the basis of the pre- and post-audited coding data.

4 Given that the primary function of the framework is to provide assurance of the data quality which supports the accuracy of payments under PbR, the report is structured firstly to summarise nationally the overall HRG errors and the financial impact of these under PbR. It then outlines the issues identified which have contributed to the errors as well as providing further analysis of the HRG and underpinning clinical coding errors, which ultimately determine and derive the HRGs and payments under PbR.

5 Due to the small size of the activity sample and the targeted nature of the audits, it is not recommended that these results be extrapolated beyond the areas selected for audit. However, these results do provide information that will help both commissioners and providers to decide if the controls over the accuracy of their activity data are adequate, and to highlight areas of concern that they may wish to investigate further.

6 Appendix 1 also contains details of our National Benchmarker online tool. Developed as part of the assurance framework, the National Benchmarker provides direct access to the Commission's PbR benchmarking analysis via a user-friendly front end and is available to any member of NHS staff.

7 Summary results from the 2007/08 audits were recently published on our website: www.audit-commission.gov.uk/pbr. Further research, analysis and case studies will be made available over the forthcoming months via our website and via our quarterly e-bulletin Assure.

I *Payment by Results Assurance Framework: Pilot Results and Recommendations*, Audit Commission, December 2006.

II 171 audits have been completed. The results of one audit are still being discussed with the Trust and have therefore been removed from the summary analysis.

2 HRG error rates and financial impact

8 PbR is the casemix funding system used in England to reimburse acute care providers for the majority of their activity. Casemix refers to the fact that the price paid is related not only to the volume of activity but also to the type and severity of the illness or injury being treated. It is a prospective payment system because prices are set in advance each year.

9 HRGs are the casemix grouping methodology used to support PbR. The groups are organised by body system and are then given clinical coherence by clustering diagnosis and procedure code combinations together into iso-resource specific groups. That is to say, different patients' treatment assigned to the same group should consume a similar level of resources. The current version used for payment is HRGv3.5 but this will be replaced in 2009/10 with HRG4, which has been used for reference costs since 2007/08.

10 Each specific period of care under a consultant generates a Finished Consultant Episode (FCE). FCEs are grouped together to make up the patient's entire stay in hospital, known as a hospital provider spell. A PbR spell is a hospital provider spell minus any specific FCEs that are excluded from PbR rules. It is possible to derive an HRG for each FCE, but PbR uses spells-based HRGs as the basis of payment. If HRGs are the classification system, then PbR spells are the currency.

11 The price attached to the spell HRG is known as the tariff. Currently, this is calculated through a national reference-costing exercise: historic costing data submitted by providers is then adjusted for, for example, inflation, efficiency, and the cost of new technologies, and then tariffs are set for each HRG. However, price does not equal payment as the tariff can be adjusted for excessively short or long length of stay and for specialist top-ups for particularly complex patients. Finally, a Market Forces Factor (MFF) is applied to the price to take account of unavoidable, regional variations in the costs of providing care.

12 Unlike previous clinical coding audits, the assurance framework includes a financial impact analysis of the coding errors identified from the audit. We use the current year's complete PbR tariff rules (incorporating specialist top-ups, short-stay adjustments and excess bed day payments), applied to spells and grouped using the current HRGv3.5 grouper.

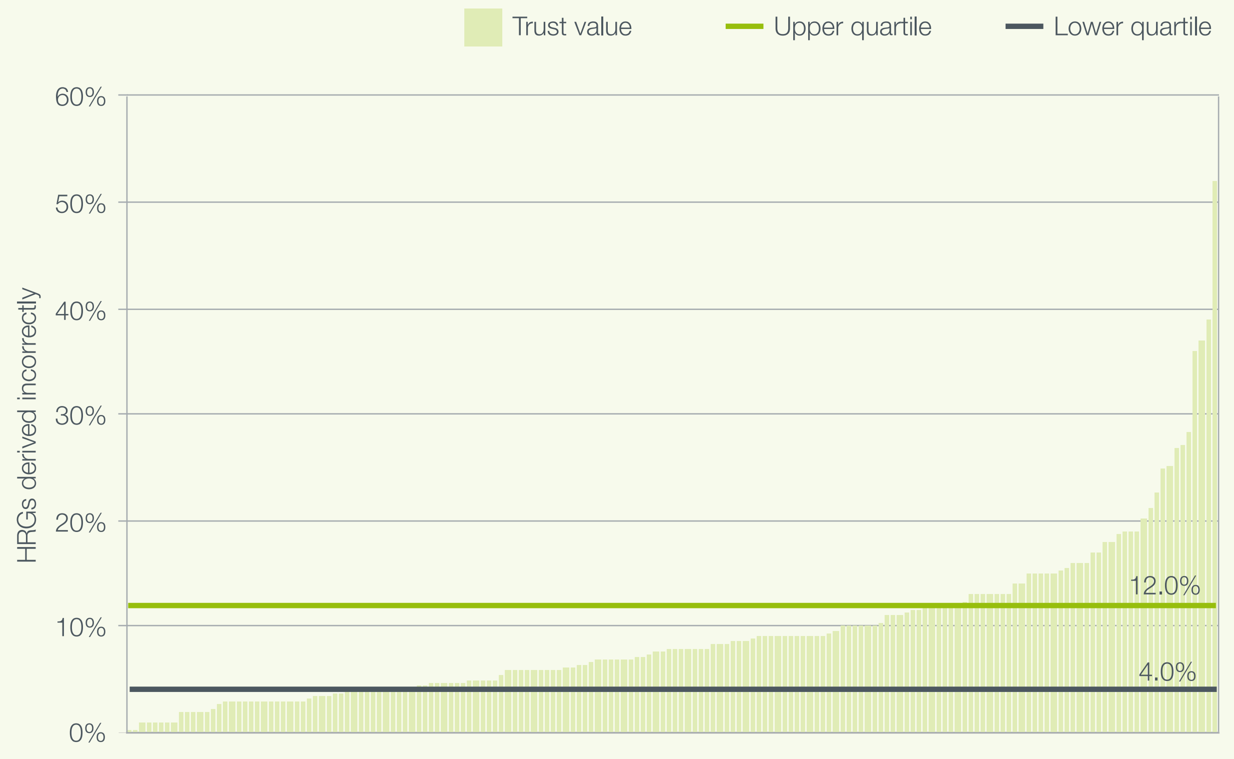
13 This analysis is an important addition to the reporting of errors at the HRG level because it takes account of the differential effect of the specific price attached to each HRG. Consequently, when looking at absolute figures, a large financial impact can be as much the result of the area selected for audit as it is the HRG error rate.

14 The analysis of the financial impact is based purely on the audit sample reviewed. As stated earlier, due to the targeted nature of the audit, it would be inappropriate to extrapolate these results across all activity.

2.1 HRG error rates by trust

15 Figure 1 shows the HRG error rates resulting from the clinical coding audits at all of the trusts reviewed. The mean HRG error rate derived from the clinical coding audits is 9.4 per cent. As the graph shows, the error rates vary considerably across trusts, with a range from 1-52 per cent, and a lower quartile of 4 per cent and an upper quartile of 12 per cent.

Figure 1
Percentage of HRGs derived incorrectly



Source: Audit Commission

2 HRG error rates and financial impact

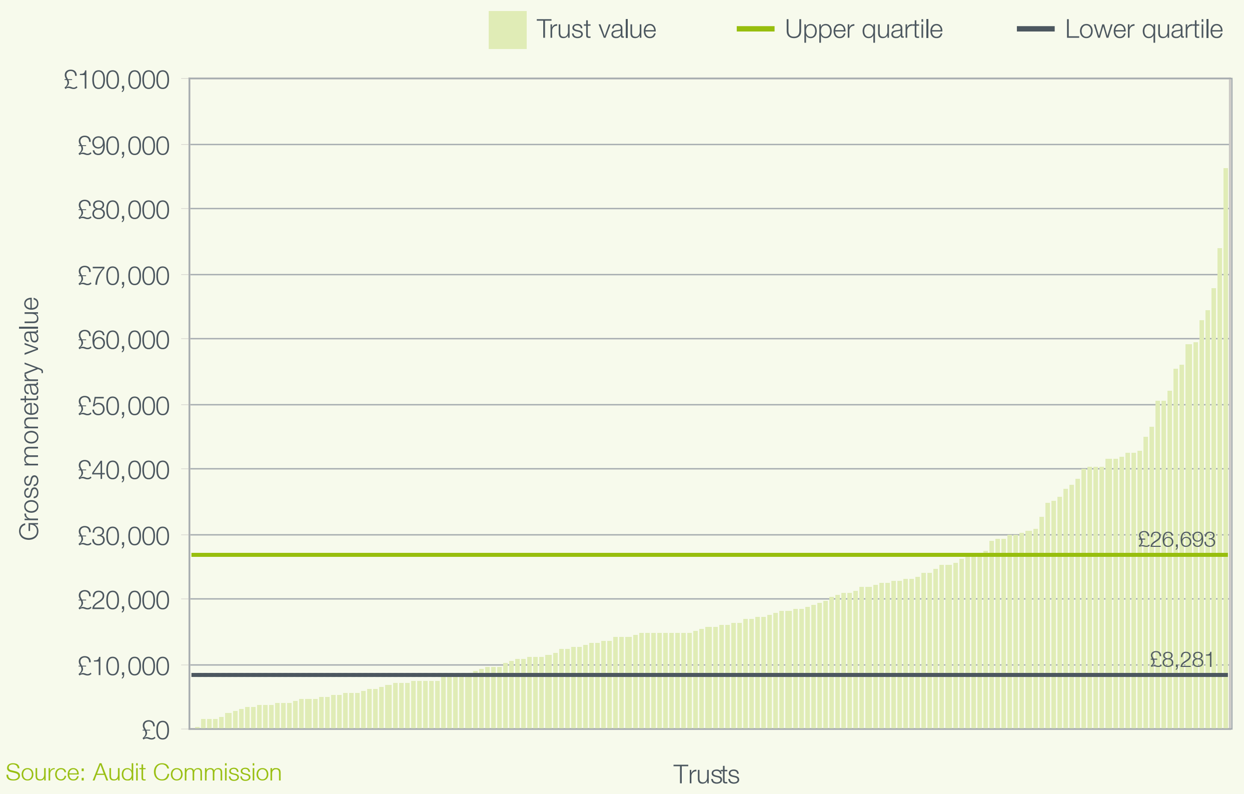
2.2 Gross financial impact by trust

16 The assurance framework audited approximately 50,000 episodes of care, equating to £72,803,175 worth of NHS expenditure. At the national level, the errors identified from the coding audits had a gross monetary value of £3,408,031, or 4.7 per cent of the total.

17 The national gross financial impact of 4.7 per cent will not be the same as the national mean HRG error rate of 9.4 per cent because each HRG will always attract a price greater than zero. The financial effect, therefore, will always be less marked than the number of HRGs changing because the financial impact is a matter of degree rather than a binary correct/incorrect change to the status of the HRG.

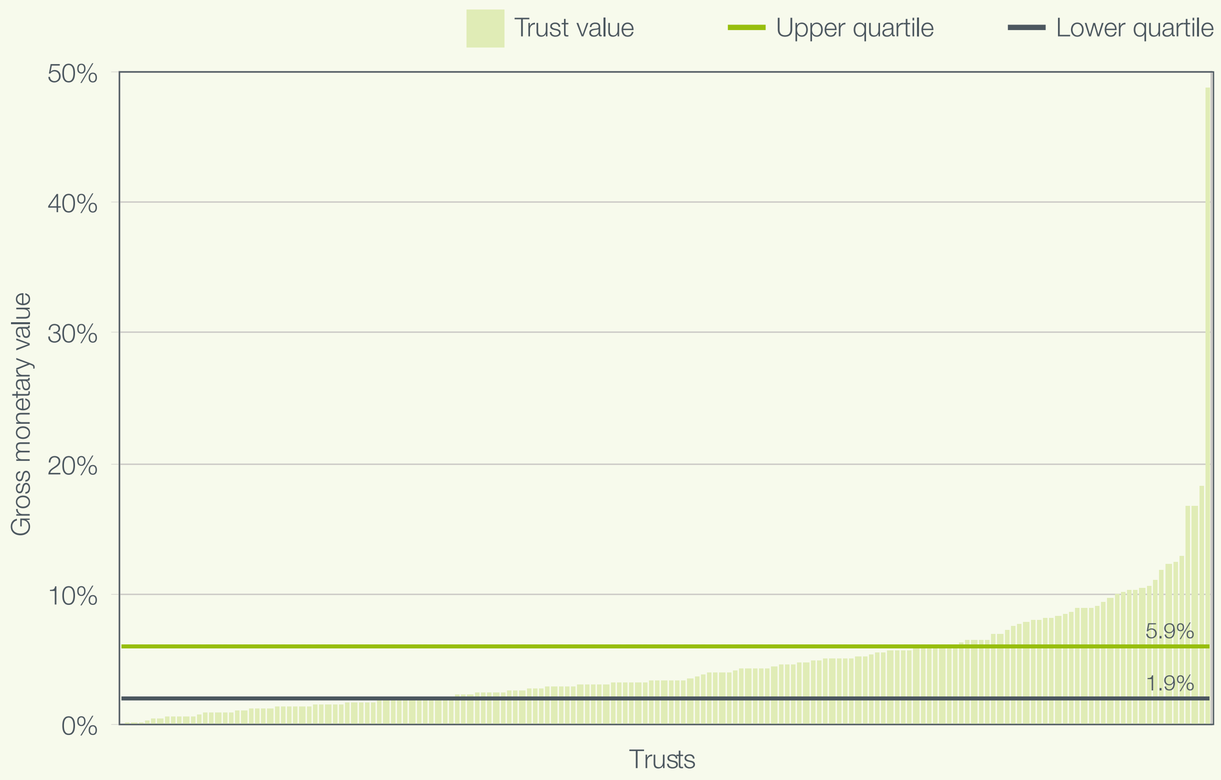
18 Figures 2 and 3 show the gross monetary value of the errors at HRG level. To produce this analysis we treated the monetary value of all the errors identified as a positive value and added them together. We have presented this as both an absolute figure (Figure 2) and as a percentage of the sample size (Figure 3).

Figure 2
Gross monetary value of the HRG errors as an absolute figure



Source: Audit Commission

Figure 3
Gross monetary value of the HRG errors as a percentage of the sample size



Source: Audit Commission

2.3 Net financial impact by trust

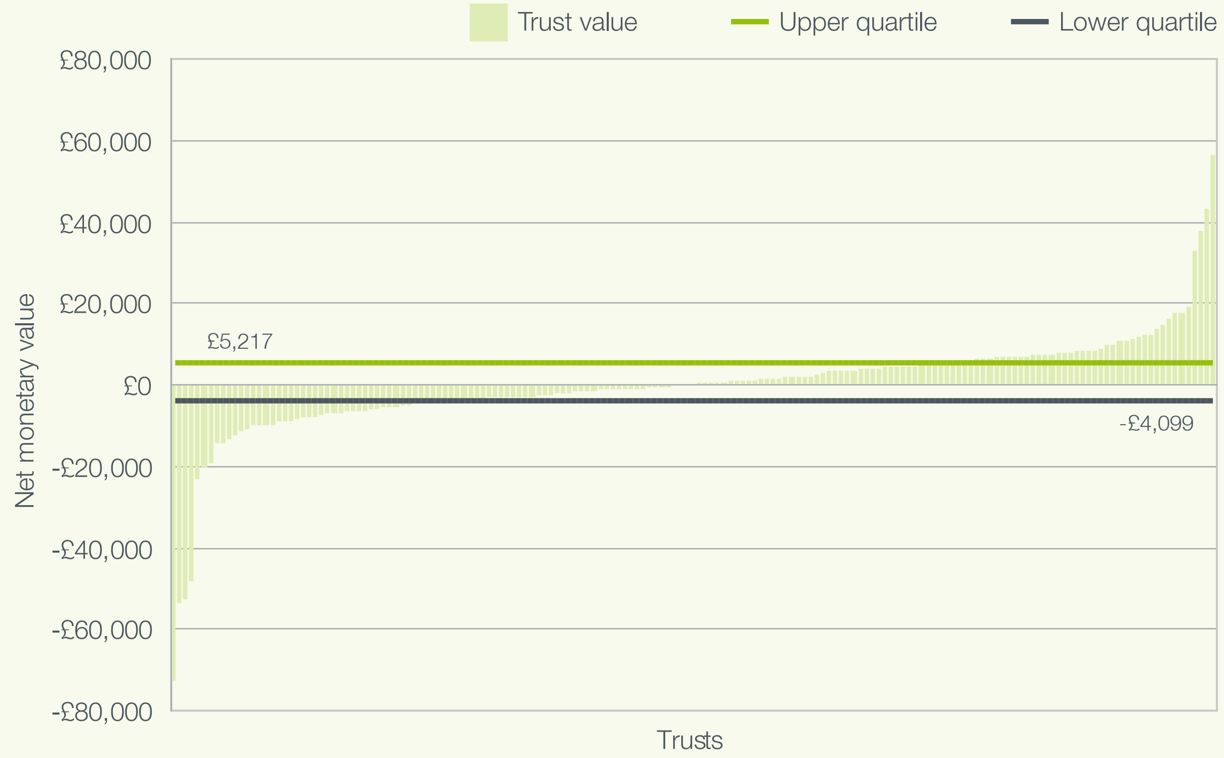
19 This analysis shows the net monetary value of the errors identified from the clinical coding audits. Where an error identified by the auditor has led to the assignment of a lower cost HRG, the difference is treated as an overcharge to the PCT and is expressed as a negative figure. Where the audit has led to the assignment of a higher cost HRG, the difference is treated as an undercharge to the PCT and is expressed as a positive figure. All changes, both positive and negative, are added together to give the net financial impact for each provider from a PCT perspective. In essence, a negative figure represents an overcharge to the PCT and a positive figure an undercharge.

20 Figures 4 and 5 show the overall net monetary value of the HRG errors as an absolute figure and as a percentage of the total price of the sample.

2 HRG error rates and financial impact

Figure 4

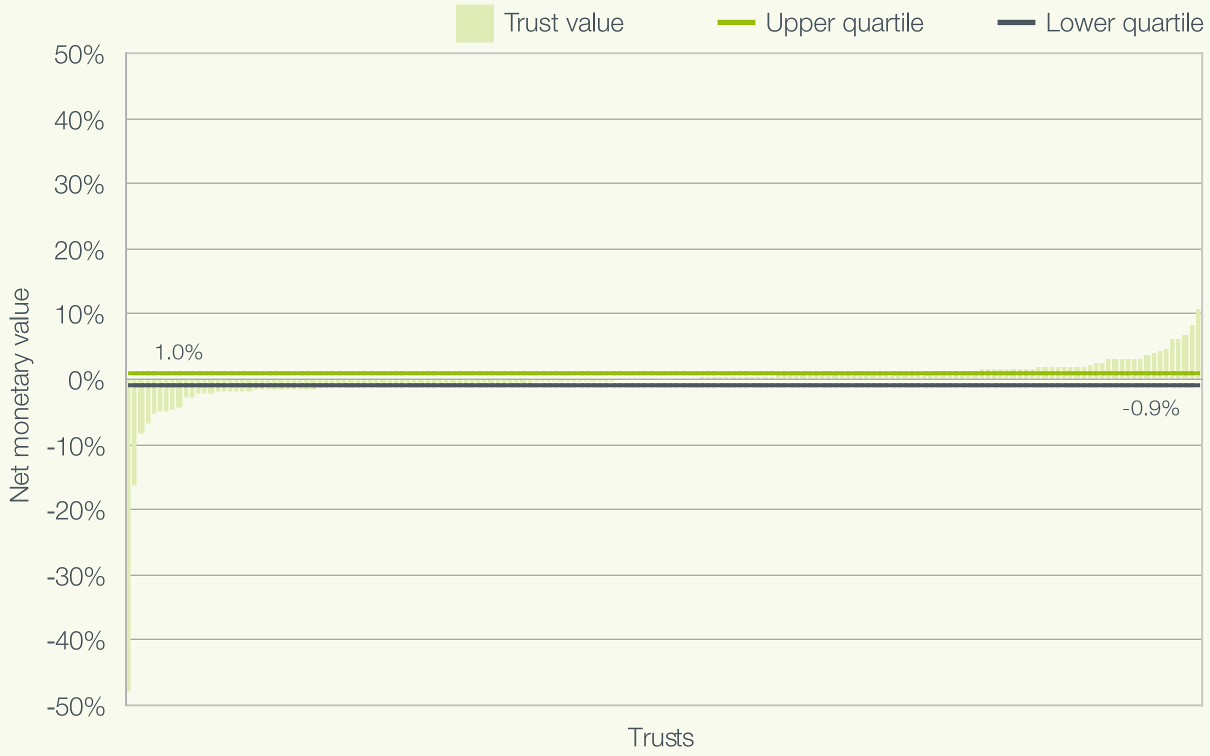
Net monetary value of the HRG errors as an absolute figure



Source: Audit Commission

Figure 5

Net monetary value of the HRG errors as a percentage of the sample size



Source: Audit Commission

21 This analysis shows that for the majority of trusts, the net value of the sample audited – whether expressed as an absolute figure or as a percentage – is relatively small. For example, one trust had an error rate with a gross monetary value of approximately £40,000 on a total sample value of approximately £500,000 but had a net impact of only approximately £950. However, a large gross financial error, even when the net impact is small, will have profound implications for the accuracy of service-line economics.

22 For the most part, the errors appear to fall in a random way, benefiting both providers and commissioners alike. From this we conclude that, at the national level, there appears to be little evidence of systematic or deliberate up-coding or gaming. Likewise, our findings do not suggest a consistent trend in under-coding – for example, not coding relevant co-morbidities – leading to under-charging. However, the net values at some individual trusts are significant and may be having an impact locally. Equally, the audit sample may not be reflective of a whole contract and even small net financial impacts, in percentage terms, can become significant amounts of money when applied to full contracts.

23 If the gross value measures the potential size of the financial risk, the net value gives the actual level of risk in practice. However, if the scale of errors for a provider's total PbR activity was similar to that found in the audit sample, but those errors were less evenly distributed between under- and over-charges, then the size of the actual financial risk would be significantly greater.

24 Some acute hospital activity is not covered by PbR but is instead paid for under locally agreed arrangements. We reviewed the effect that re-coding had on FCEs within a spell that led to a change in HRG which moved that FCE in or out of the PbR tariff system altogether. Such a change can have a significant financial impact due to local price agreements. For example, one trust saw a 100 per cent difference in its pre- and post-audit prices at the broad/specialty level. However, we found that this issue only had a significant effect on a small number of trusts, and that the majority of the largest net outliers are not explained by these movements.

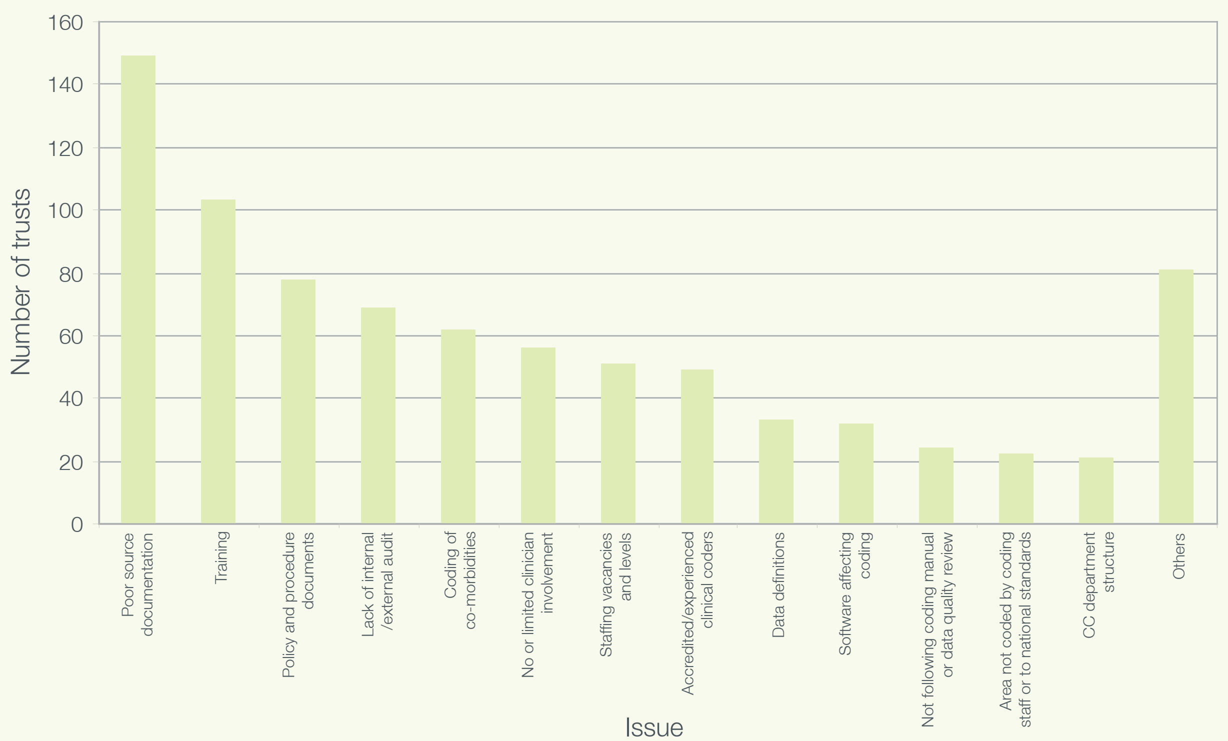
3 Factors affecting the accuracy of clinical coding

25 Analysis of the clinical coding audit reports produced for the assurance framework has revealed a number of issues which have led to clinical coding errors which in turn led to errors in the derivation of HRGs and subsequent financial inaccuracies. As part of the clinical coding audit methodology, auditors are required to record an error key to describe the nature of the clinical coding error identified. Analysis of these clinical coding error keys is outlined in Chapter 5. However, the clinical coding audit report often reveals wider, organisational issues that point to the root causes of the errors.

26 Figure 6 analyses the issues which were most commonly identified in the coding audit reports as affecting the quality of clinical coding.

Figure 6

Factors affecting the quality of clinical coding



Source: Audit Commission

27 The analysis of this data identified that there are five broad factors which have contributed to the errors identified:

- the quality of source documentation;
- issues relating to trust coding arrangements, for example, coder training, policies and procedures, numbers, experience and qualification of coders, and coding audit;
- clinician engagement and involvement;
- identification and coding of co-morbidities; and
- data definitions.

3.1 Source documentation

28 By far the most common issue raised by clinical coding auditors was that of the quality of source documentation used to inform the code. Auditors frequently commented on problems such as working from discharge summaries rather than full case notes, illegible or poorly structured case notes, lack of access to additional information systems by coders and insufficient information included on electronic patient records. If coding accuracy is to improve, and consequently improve the accuracy of payments made under PbR, then trusts must improve the standards of documentation used to inform clinical coding.

29 However, as Case study 1 demonstrates, there are some trusts that are making significant progress in addressing this issue and have seen the benefits in more accurate coding.

Case study 1

Improving documentation at the Whittington Hospital NHS Trust

At the Whittington Hospital NHS Trust they have successfully implemented a process for the efficient and effective tagging of case notes in order to ensure clear and prompt identification of all un-coded episodes. A clear plastic pocket is attached to the front of the case note and a printed sheet denoting 'episode requiring coding' is enclosed in the file.

In addition, the excellent team-working relationships between coders, ward support officers and medical records personnel have promoted the objectives of the coding function and enabled smooth case note process flow. This has resulted in 100 per cent completion of coding to local and national timescales.

Clinical cooperation contributed to the superior standard of the Trust case note files which fully supported the coding process, making navigation of clinical records easy for the coder. The structure of the case notes incorporated clear dividers for correspondence, specialty reports and results and clinical notations, and facilitated correct filing in chronological order, with all information well secured within the file.

Source: Westhill Consulting

3 Factors affecting the accuracy of clinical coding

3.2 Trust coding arrangements

30 As part of the clinical coding audit, coding auditors review trusts' coding arrangements. Analysis of the clinical coding audit reports highlighted a number of issues that contributed to the errors identified, including:

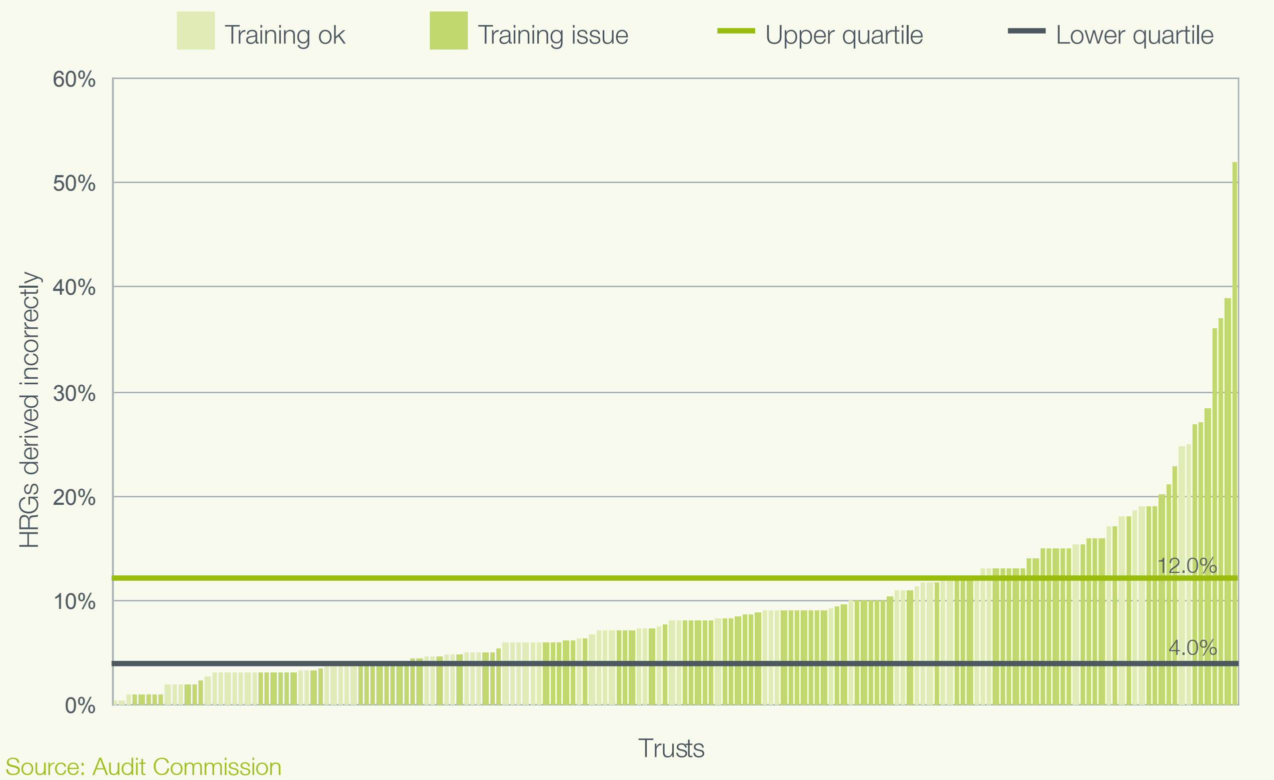
- coder staffing levels;
- training and development of coding staff;
- accurate and up-to-date policies and procedures; and
- regular internal and external auditing of coding.

31 Trusts often highlight the limited numbers and availability of coding staff as factors leading to problems in coding quickly and accurately. However, the analysis in Figure 7 shows that the level of HRG errors identified by the audits has no correlation to the ratio of FCE to whole time equivalent (WTE) coding staff.

Figure 7
Percentage of HRGs derived incorrectly by FCEs per WTE coder

Source: Audit Commission

Figure 8:
Percentage of HRGs derived incorrectly by training issues



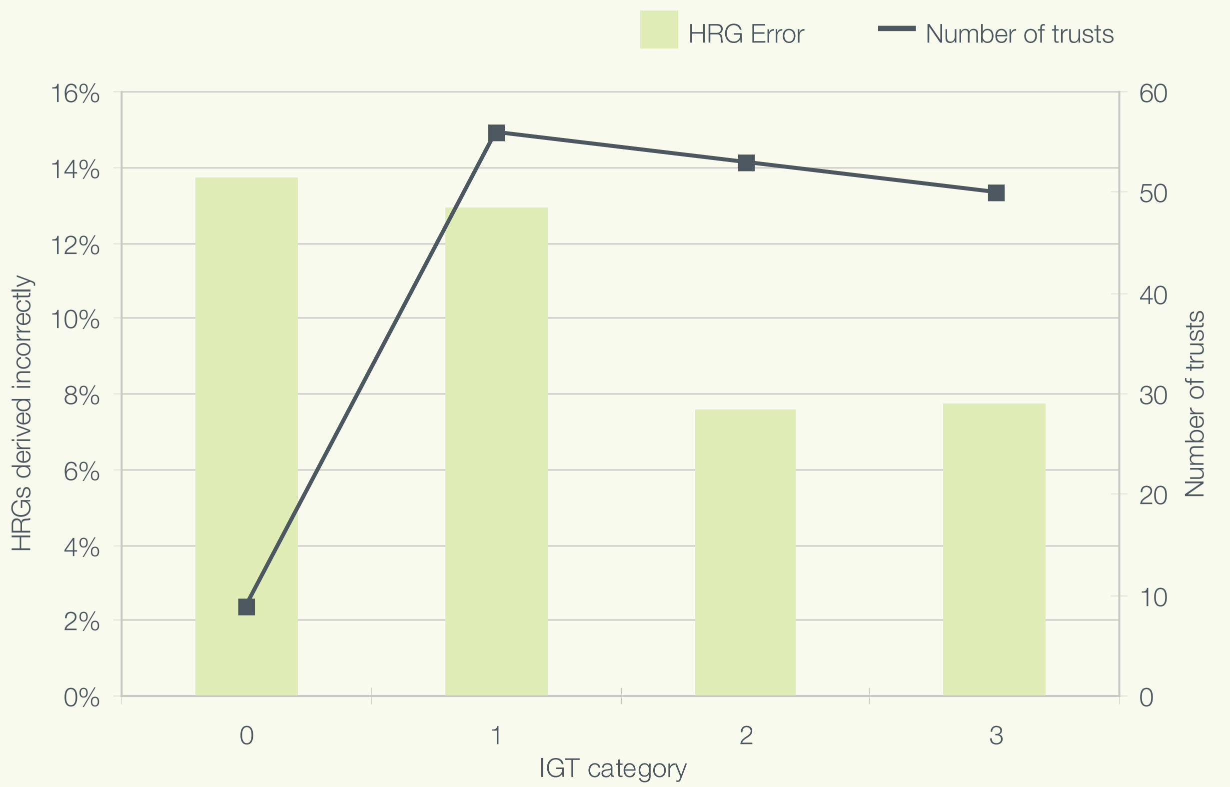
Source: Audit Commission

32 However, as Figure 8 demonstrates, there is a stronger relationship between HRG errors and trusts where training issues were highlighted by coding auditors.

33 The message from these two pieces of analysis is clear: inaccurate clinical coding is neither exacerbated nor solved through higher staffing levels. Instead, professional accreditation and continuous, ongoing professional training are much more effective for improving accuracy.

3 Factors affecting the accuracy of clinical coding

Figure 9
HRG error rates and numbers of trusts by IGT level



Source: NHS Connecting for Health/Audit Commission

Case study 2

Policy and procedures

The Whittington Coding Department's Policy and Procedure document is comprehensive and readily available in electronic format for all coders to access. This document is well set out, clear in its stated objectives and easy to use. It is updated annually and indicates that good version-control procedures are in place. It contains details on the collection processes for coding source documentation; the standard in-patient coding procedures; the department structure and job descriptions; details of coding validation mechanisms, including error correction, monitoring performance and routine audit controls; absence reporting processes; procedures for disseminating updates to national standards and local clinician-agreed coding policies for individual specialties.

Source: Westhill Consulting

34 Coding auditors also often referred to the need for coding policy and procedure documents to be improved and kept up to date and that dedicated internal audit resources and programmes were evident at trusts where error rates were low. When comparing the Information Governance Toolkit (IGT) assessments for standard 505 – Does the Trust have in place a robust programme of internal and external data quality/clinical coding audit in line with the requirements of the Audit Commission and NHS Connecting for Health? – to HRG error rates from the clinical coding audits, there was a clear correlation between those trusts which attained levels 2 and 3 for this standard and lower errors. This is demonstrated in Figure 9.

35 Where trusts' coding arrangements are strong and where there is a strong organisational commitment to clinical coding and data quality more generally, the error rates identified by the audits were lower. However, at the audits of the 25 trusts with the highest derived HRG errors, training and policy issues were identified as being the most significant issues which contributed to these errors.

3.3 Clinician engagement and involvement

36 A consistent message from the coding audits was that no or limited clinician involvement with coding, or in the validation and verification of coding, resulted in higher error rates. Clinicians have an important role to play in ensuring the accuracy of clinical coding. Whilst the purpose of these audits has been to provide assurance of the quality of data for payment purposes, the accuracy of clinical coding is also important for clinical purposes as this information is often used to inform clinical audit and research and to provide valuable activity, performance and commissioning information.

37 Clinicians also have a clear role to play in ensuring that records are clear and concise and that they provide accurate information in order for coders to code accurately. They should actively engage with coding staff, provide clear guidance in cases of uncertainty and validate information in order to ensure the integrity of the data.

3 Factors affecting the accuracy of clinical coding

Case study 3

Clinical engagement works

Coders can only record to the standard of accuracy, completeness and consistency of the available clinical source documentation. Clinicians, therefore need to be mindful of their role in the provision of the data that underpins the funding of healthcare through the use of HRGs and PbR. Ideally, clinical coded data should be derived from essential clinical documentation, produced as an integral part of (and not supplementary to) the patient care process. Patient care documentation should contain all the relevant information to accurately and completely reflect the diagnosis, care and treatment of the patient.

At the West Middlesex University Hospitals NHS Trust, considerable effort has been devoted to making the necessary connections with clinical teams in order to ensure the provision of high quality source documentation for the coding process. The coding team has promoted continuous clinical engagement through regular weekly review meetings where clinicians validate and confirm the clinical information which underpins the coded record and provide additional information on request, increasing confidence in and clinical ownership of the coded data. Coders can also discuss inconsistencies and unclear clinical documentation provided on the discharge forms used for coding purposes and inform clinicians of the requirements for complying with national coding standards. This provides a mechanism for improving clinical recording which will benefit all those who deliver patient care and consequently improve the care delivered to the patient.

The results are visible in the Trauma and Orthopaedic specialty where coders were provided with clear, concise and complete clinical information. The involvement of clinicians in the coding process through timely and accurate completion of the standard computerised discharge summary provided an example of best practice and clearly contributed to the excellent primary diagnosis (100 per cent correct) and primary procedure percentages (100 per cent correct) documented in the audit report.

Source: Westhill Consulting

3.4 Identification and coding of co-morbidities

38 Co-morbidities are conditions that exist in conjunction with another disease. Any co-morbidity that affects the management of the patient and contributes to an accurate clinical picture within the current episode of care must be recorded. Common examples of co-morbidities are diabetes, asthma, hypertension, chronic obstructive airways disease and ischaemic heart disease. Co-morbidities might also include pre-existing conditions when relevant, such as the presence of a cardiac pacemaker or a personal history of malignant neoplasm. Conditions that relate to an earlier episode that have no bearing on the current episode should not be recorded.[I]

39 The correct recording of co-morbidities was an issue in over a third of all audits, whether through the inclusion of irrelevant co-morbidities or the exclusion of relevant ones. It is likely that this issue has a number of causes: clinical coder training and clinician involvement in coding (both of which have been highlighted already); and lack of adequate national guidance. The lack of national guidance is a key concern to all because it leads to subjectivity in both coding and auditing.

40 Co-morbidity is a complex area and NHS CfH and the DH are currently drafting revised guidance which will be subject to clinical review. The principle guiding this review is that the clinicians treating the patients are best placed to identify the co-morbidities relevant to an episode of care. However, this requires good local policies and procedures to be in place and for there to be a constructive, two-way dialogue between clinical coders and clinicians – both issues already highlighted as problems in many of the audits.

3.5 Data definitions

41 The problem of data definitions was first raised by the Audit Commission in its 2006 report on the findings of the assurance framework pilot. We followed this up by including the capture of local data definition issues in the 2007/08 assurance framework methodology. However, the national audit has shown that this is an issue of less significance than in the pilot study.

42 Whilst trusts and PCTs continue to report difficulties in the interpretation of definitions and guidance, coding auditors did not identify this as a significant issue. Of the 171 trusts audited, 116 had no identified data definition issues. Of the 54 trusts that did have issues, 17 raised issues about day cases, 9 about policies, 6 about ward attenders, 4 about clinics, 2 about inpatients and 24 about other issues.[II]

I Connecting for Health, *Clinical Coding Instruction Manual.*

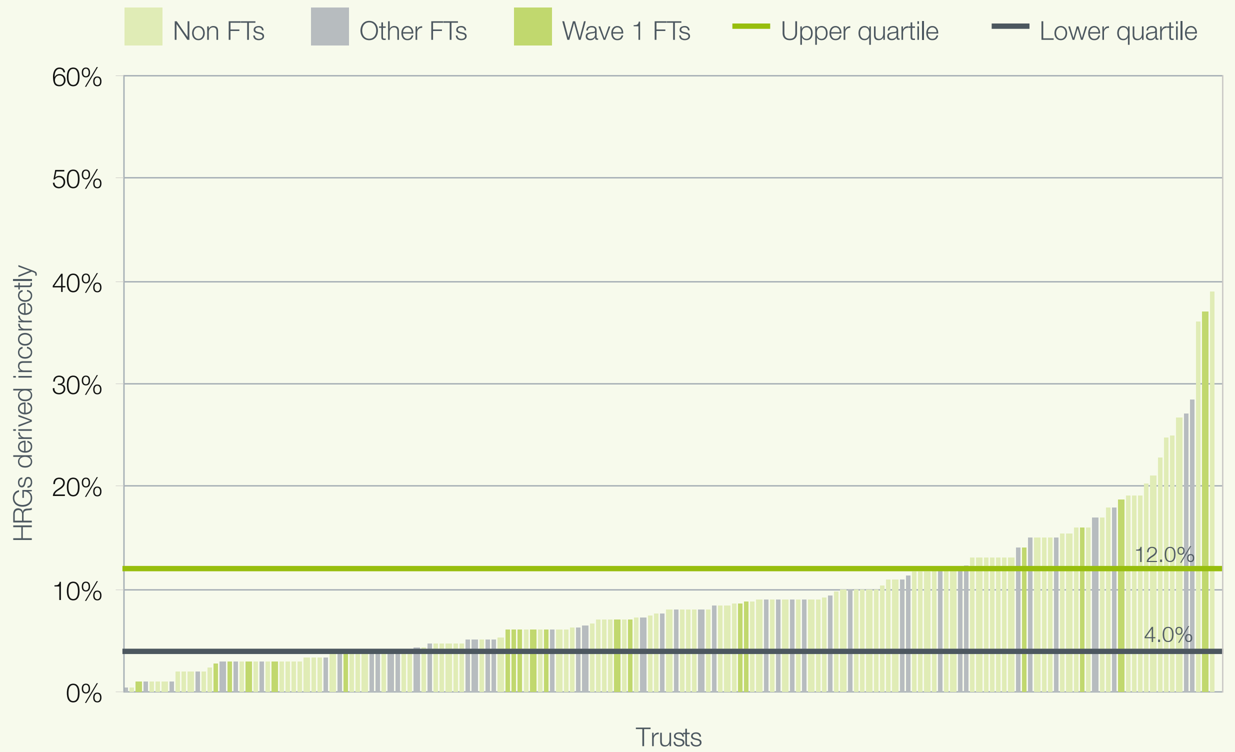
II Some trusts will have identified more than one type of issue.

3 Factors affecting the accuracy of clinical coding

43 It seems that the most common issue relates to the overlap between outpatient procedures and day cases. Our recent pilot work in outpatients indicates that data definitions are still a major issue in outpatient PbR. However, if, as is proposed for 2009/10, a single set of 'planned same-day treatment' tariffs is created to cover both these areas, then the issue may be resolved.

4 HRG findings

Figure 10
Percentage of HRGs derived incorrectly by FT status



Source: Audit Commission

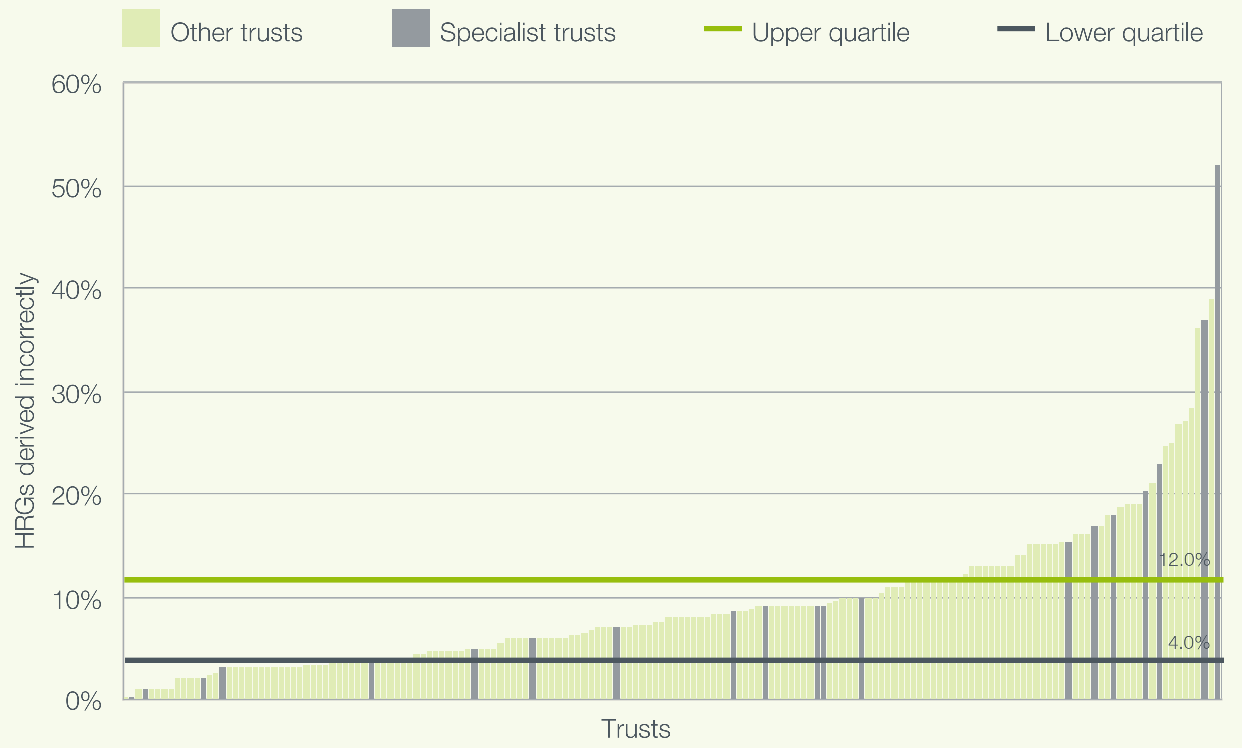
4.1 HRG error rates by foundation and specialist trusts

44 Figure 10 analyses the HRG error rates of foundation trusts (FTs) compared to all NHS trusts.

45 Although this analysis shows that FTs had marginally lower error rates than NHS trusts and that wave 1 FTs – those who have been authorised the longest – on average did better than their other FT peers, the differences are not statistically significant. However, as Figure 11 below demonstrates, some of the higher rates of error were encountered at specialist trusts, many of which are also FTs. When we removed the specialist trusts from the FTs we found that their results improved further, with a mean of 7.9 per cent and an inter-quartile range of 5.8 per cent compared to a mean of 9.0 per cent and an inter-quartile range of 7 per cent when specialist trusts were included.

4 Healthcare Resource Group (HRG) findings

Figure 11
Percentage of HRGs derived incorrectly by specialist trust status



Source: Audit Commission

46 We defined specialist trusts as trusts that are single speciality providers or that have significant levels of specialist services. As a group, specialist trust error rates were clearly higher than those of non-specialist trusts (mean HRG error rate of 12.8 percent compared to 8.9 percent for non-specialist trusts), although this was not true in every case.

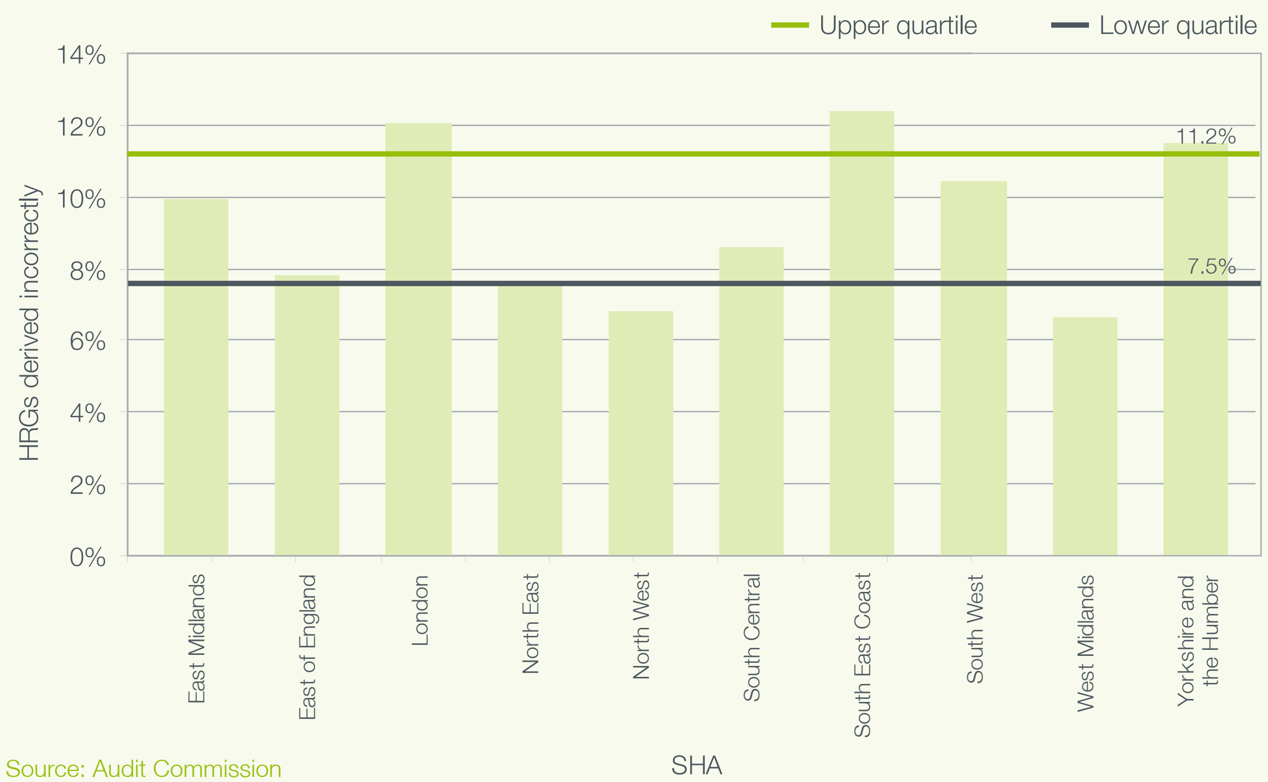
47 There are several possible explanations for specialist trusts' lower level of performance as a group. One possibility is that the OPCS and ICD-10 coding classification systems are not able to adequately describe specialist activity, or that specialist trusts believe that they are not, causing them to adopt systems and standards other than the nationally set ones. This may be particularly so for certain specialties. Another possibility is that, although the coding classification systems are capable of describing specialist activity, there is insufficient specialty-specific and specialist coder training and guidance available to support clinical coders working in specialist trusts. In addition, where there is inadequate internal auditing, coding errors are not picked up and rectified quickly, so bad practice becomes accepted as the standard. A third possibility is that problems with coding specialist activity are greater for certain specialities (see our analysis of the highest HRG, HRG chapter and specialty error rates in section 4.4) and this affects some specialist trusts differentially.

48 However, when we looked again at those specialist trusts with the worst performance, many of the issues raised by our auditors were the same as those raised for all trusts – for example, poor documentation and low levels of clinical engagement. With specialist trusts, we will undertake further research into this area and we will publish our findings later in the year.

4.2 HRG error rates by SHA

49 Figure 12 analyses the HRG error rates by SHA.

Figure 12
Percentage of HRGs derived incorrectly by SHA



Source: Audit Commission

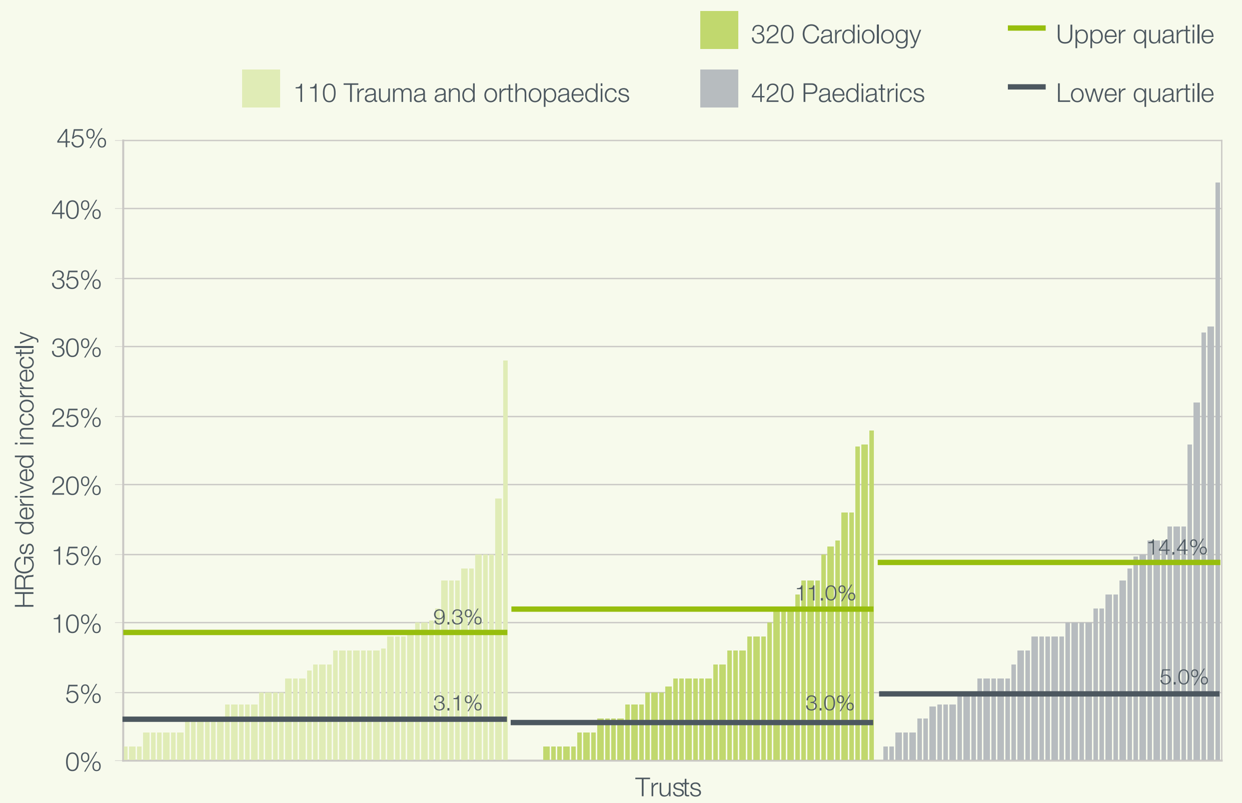
4 HRG findings

50 The quartiles used in Figure 12 are the same as those derived from the trust level data. South East Coast, London, and Yorkshire and the Humber SHAs have the highest percentage error rates, with the North West and West Midlands SHAs having the lowest. There appears to be no particular reason for this regional variation, other than for London, which has a high proportion of specialist trusts which, as outlined earlier, had generally higher error rates.

HRG error rates by national theme

51 As outlined in the introduction, one of the four areas reviewed at each trust was a national theme. Three national themes were selected in 2007/08 following consultation with pilot sites. These were: Cardiology, Paediatrics, and Trauma and Orthopaedics. Figure 13 analyses the HRG errors for each of these three national themes. This analysis does not include audits in these specialties when the specialty was recommended for audit by our national benchmarking.

Figure 13
Percentage of HRGs derived incorrectly for national theme areas



Source: Audit Commission

52 Figure 13 shows that Cardiology had the lowest mean HRG error rate, followed by Trauma and Orthopaedics, with Paediatrics having the highest. However, Trauma and Orthopaedics had a smaller range of results than Cardiology. Paediatrics had the largest range and a significant number of large outliers. This is most likely because Paediatric care can be complex and because it encompasses a number of sub-specialties.

4.4 HRG errors by specialty, HRG chapter and HRG

53 The clinical coding audits undertaken at each trust reviewed the accuracy of coding at three further levels: specialty, HRG chapter and HRG selected using benchmarking analysis or via local discussion. We have analysed the findings at the national level and, in addition, compared the error rates between non-surgical and surgical episodes.

54 Figure 14 shows the five specialties, with activity of 100 FCEs or more, with the highest error rates. Further analysis of specialty error rates can be found in Appendix 2.

Figure 14: Five specialties with the highest rates of HRG errors

Code	Name	Total no. of FCEs audited	No. of FCEs where HRG changed	% HRG error
410	Rheumatology	394	181	45.9
370	Medical Oncology	419	161	38.4
361	Nephrology	197	63	32.0
307	Diabetic Medicine	110	23	20.9
430	Geriatric Medicine	1398	292	20.9

Source: Audit Commission

4 HRG findings

55 The analysis shows that the highest error rates were in Rheumatology, although this was from a relatively small number of FCEs reviewed. Compared on the basis of the volume of FCEs reviewed, Geriatric Medicine appears to have a high error rate.

56 For many specialties, the issues which cause the inappropriate recording of HRGs most likely relate to the accuracy of the recording of minor procedures which, in the case of Rheumatology, may be undertaken in the outpatient clinic and are exacerbated when documentation is poor. For Geriatric Medicine, the issue is most likely related to the accuracy of documentation and coding of co-morbidities.

Figure 15: Ten HRG chapters with the highest rates of HRG errors

Chapter	Chapter title	Total no. of FCEs audited	No FCEs where HRG changed	% HRG error
D	Respiratory System	1890	380	20.1
Q	Vascular System	287	57	19.9
J	Skin, Breast and Burns	1937	291	15.0
L	Urinary Tract and Male Reproductive System	3343	501	15.0
S	Haematology, Infectious Diseases, Poisoning and Non-Specific Groupings	2753	369	13.4
T	Mental Health	146	19	13.0
H	Musculoskeletal System	8334	1026	12.3
A	Nervous System	2050	247	12.0
K	Endocrine and Metabolic System	454	54	11.9
R	Spinal Surgery and Primary Spinal Conditions	819	94	11.5

Source: Audit Commission

57 Figure 15 shows the 10 HRG Chapters with the highest error rates. Further analysis of HRG Chapter error rates can be found in Appendix 3.

58 Figure 16 shows the ten HRGs, with activity of 30 FCEs or more, with the highest error rates. Further analysis of individual HRG error rates can be found in Appendix 4.

Figure 16: Ten individual HRGs with the highest error rates

HRG chapter	Chapter label	HRG	HRG label	Total no. of FCEs audited	No. of FCEs where HRG changed	% HRG error
J	Skin, Breast and Burns	J10	Malignant Breast Disorders <70 w/o cc	49	42	85.7
J	Skin, Breast and Burns	J44	Minor Dermatological Conditions or Benign Tumours	39	23	59
L	Urinary Tract and Male Reproductive System	L31	Malignant Prostate Disorders	51	26	51.0
H	Musculoskeletal System	H26	Inflammatory Spine, Joint or Connective Tissue Disorders <70 w/o cc	110	47	42
H	Musculoskeletal System	H89	Other Neck of Femur Fracture w/o cc	47	20	42.6
D	Respiratory System	D33	Other Respiratory Diagnoses >69 or w cc	75	31	41.3
H	Musculoskeletal System	H25	Inflammatory Spine, Joint or Connective Tissue Disorders >69 or w cc	99	39	39.4
J	Skin, Breast and Burns	J31	Major Skin Procedures <50 w/o cc	33	13	39.4
D	Respiratory System	D25	Respiratory Neoplasms	85	33	38.8
L	Urinary Tract and Male Reproductive System	L48	Renal Replacement Therapy w/o cc	52	20	38.5

Source: Audit Commission

4 HRG findings

59 The analysis of errors at HRG chapter levels identifies that coding errors had a high impact on the accuracy of HRGs in three chapters: Chapter J – Skin, Breast and Burns, Chapter L – Urinary Tract and Male Reproductive System and Chapter H – musculoskeletal system. The two individual HRGs with the highest error rates fell in Chapter J: J10 – Malignant Breast Disorders <70 w/o cc and J44 – Minor Dermatological Conditions or Benign Tumours.

60 J10, J31, J44, L31 and D25 all relate or potentially relate to cancer treatment and so can involve complex activity that is more difficult to code. The pair of H25 and H26 relate to similarly complex procedures that can be more difficult to document and code accurately. H89 appears to be a genuine anomaly with no clear explanation as to why it should appear.

5 Clinical coding findings

61 Clinical coding is the foundation of PbR. Combinations of diagnosis and procedure codes are grouped together according to major body systems and clinical coherence – the HRGs – in an attempt to make them as iso-resource specific as possible. That is to say, all combinations of diagnosis and procedure codes within a particular HRG consume roughly the same amount of resources.

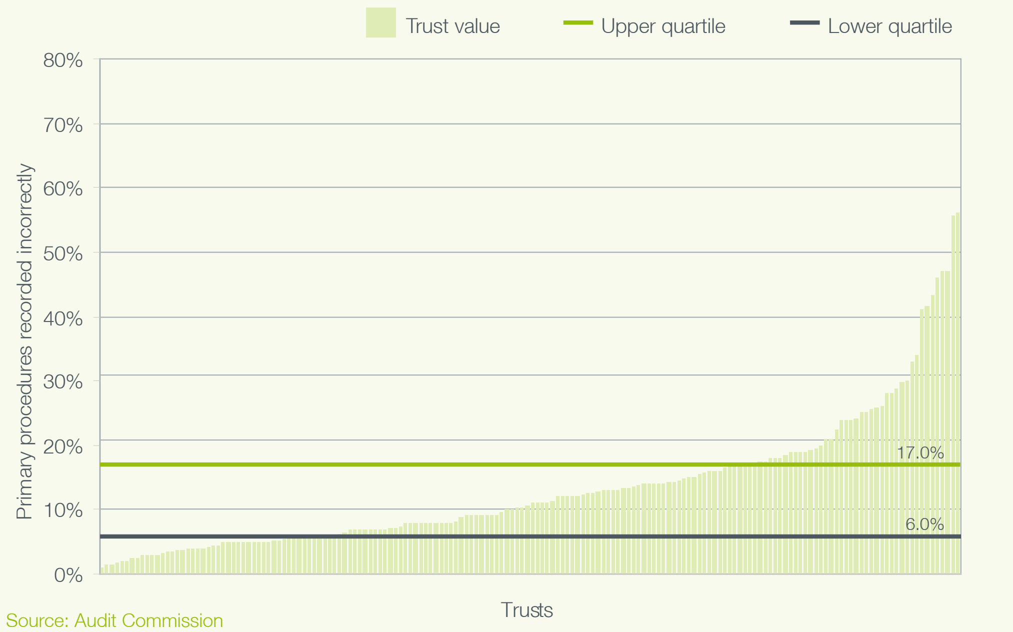
62 Whereas the grouping of diagnosis and procedure codes to an HRG is done automatically by a piece of software, the actual derivation of these codes involves manual input based on the interpretation and application of a set of rules upon the clinical documentation for each patient. This means it is the coding of these diagnoses and procedures codes that are key to the correct allocation of a HRG, and therefore the price that is paid for that activity.

5.1 Procedure and diagnosis coding errors by trusts

63 Figures 17-20 show the percentage of incorrect codes at all trusts for primary and secondary procedure and diagnosis codes.

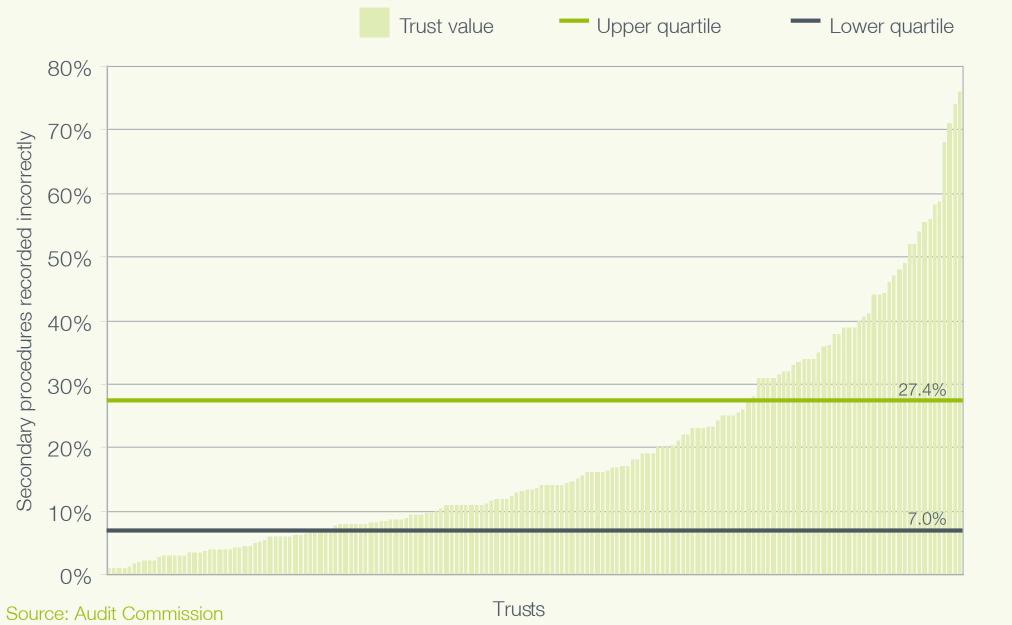
5 Clinical coding findings

Figure 17
Percentage of primary procedures recorded incorrectly, by trust



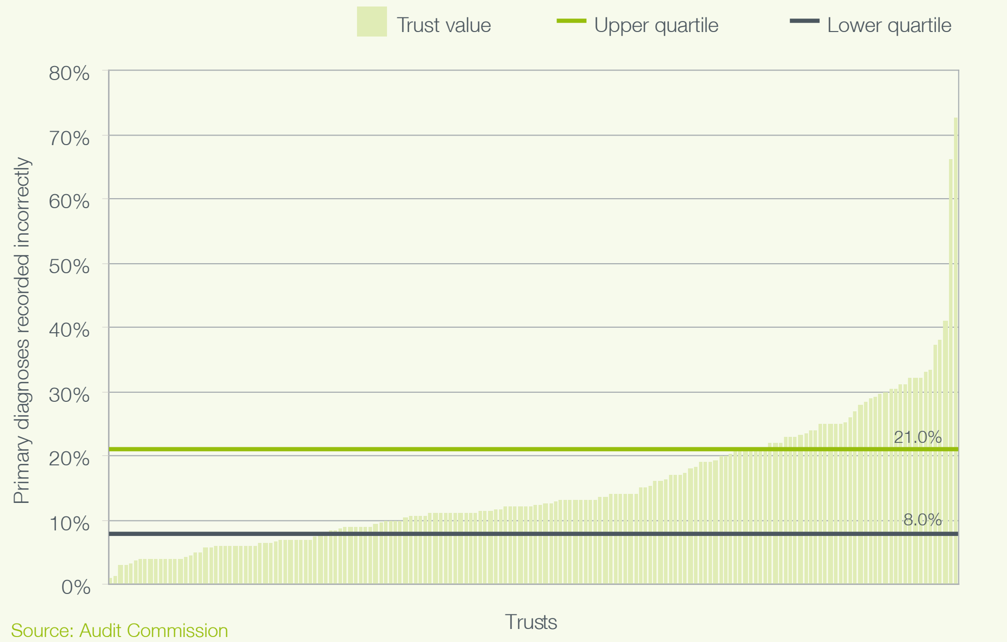
Source: Audit Commission

Figure 18
Percentage of secondary procedures recorded incorrectly, by trust



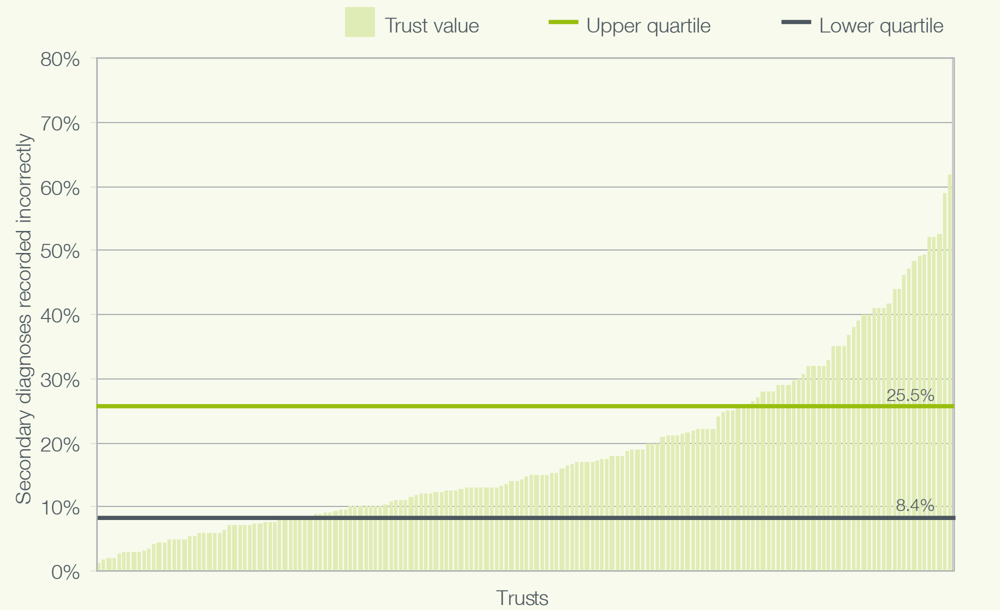
Source: Audit Commission

Figure 19
Percentage of primary diagnoses recorded incorrectly, by trust



Source: Audit Commission

Figure 20
Percentage of secondary diagnoses recorded incorrectly, by trust



Source: Audit Commission

5 Clinical coding findings

64 Looking at each chart in turn it is clear that the lines indicating upper and lower quartiles are closer together on the primary procedure and primary diagnosis charts, which signifies less variation. The primary procedure quartiles have the lowest values indicating the greatest level of accuracy, which is encouraging as the HRG grouping logic checks primary procedure first, then primary diagnosis. Whilst the results of primary diagnoses seem only marginally worse based on the quartile ranges, there are a couple of significant outliers in the upper reaches: specifically one trust that managed to get over 70 per cent of its primary diagnoses incorrect.

65 The quartiles are much further apart on the secondary diagnosis and procedure charts, which mean there is more variation in the quality of coding in these areas. Co-morbidities will have an impact on the secondary diagnoses. It is also clear that there are some issues with the accuracy of secondary procedures coding.

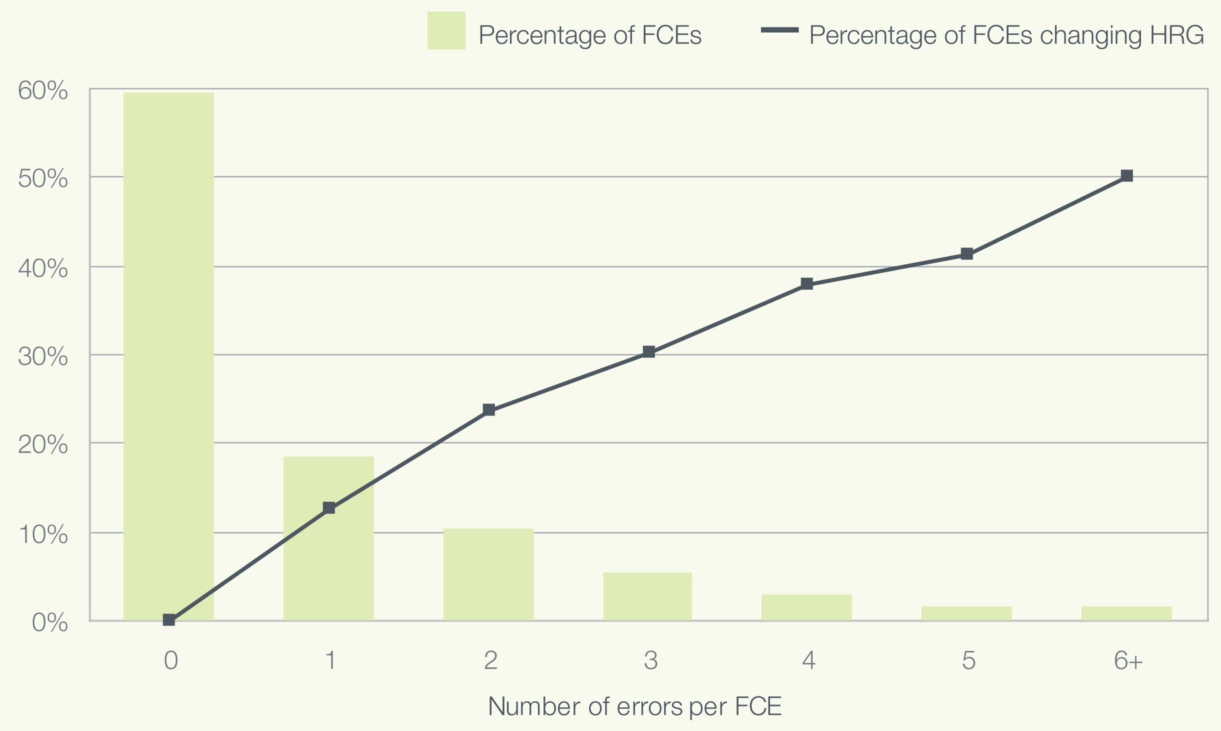
5.2 Analysis of error key classifications

66 As part of the clinical coding audit methodology, coding auditors have to record an error key for all of the clinical coding errors identified. A description of all of the error keys can be found in Appendix 5.

67 A high level of analysis of errors (for both diagnosis and procedure codes) shows that 60 per cent of episodes had no errors whatsoever. A little fewer than 20 per cent of episodes had one error, and only 3 per cent of episodes had five or more errors. Of those episodes with one error just 13 per cent of these errors caused the HRG to change (which equates to just under 3 per cent of all episodes). It is worth noting that even with six or more errors not all HRGs end up changing, meaning that using just HRG error rates as an indicator of coding quality will not give a complete picture (Figure 21).

68 For each of the errors, coding auditors firstly have to conclude whether the coding error is coder or non-coder related. After analysing all of the error classifications of the coding audits undertaken as part of the assurance framework, the coding audits concluded that a substantially higher percentage of errors were caused by coder (83 per cent) rather than non-coder (17 per cent) error. An example of a coder error would be a secondary diagnosis that was not relevant. An example of a non-coder error would be that information to inform the coding was available at the time of audit, but not available at the time of coding.

Figure 21
Percentage of HRGs derived incorrectly by number of recorded errors per episode

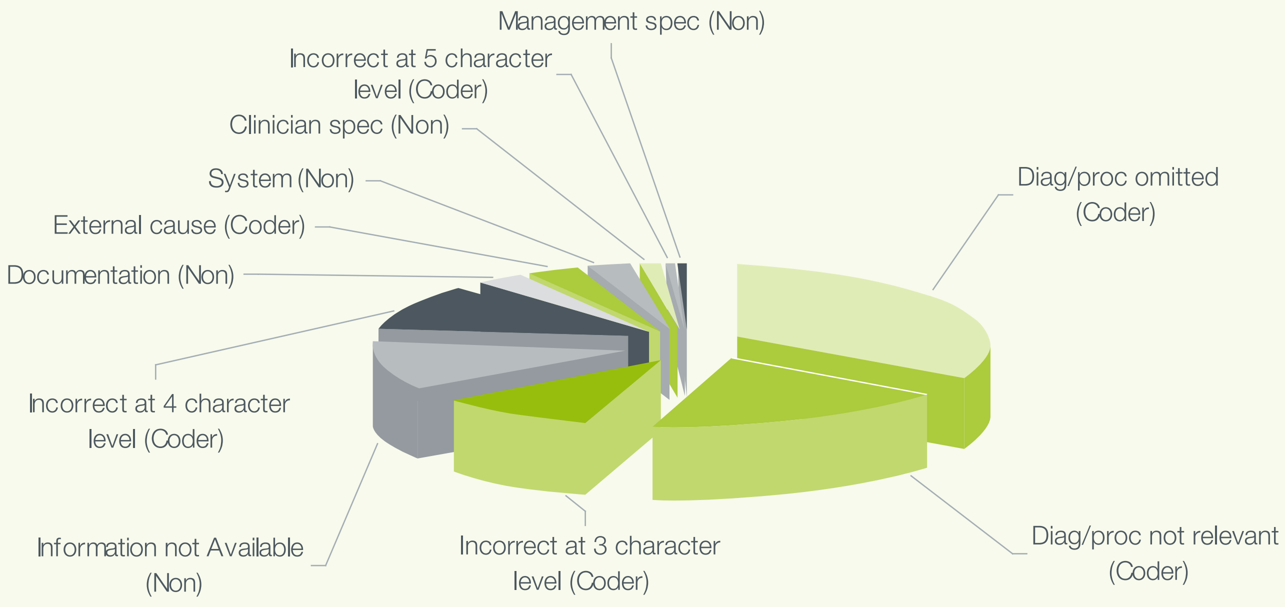


Source: Audit Commission

69 Figure 21 analyses the error key classifications recorded for all procedure and diagnosis coding, both primary and secondary, reviewed by the coding audits, and groups the error keys under similar headings (for example, all references to coding to management specification, be it for a primary diagnosis or a secondary procedure error, is grouped under 'management specification'). The mapping of error keys to issue groupings can be found in Appendix 6.

5 Clinical coding findings

Figure 22:
Error codes for all diagnoses and procedures

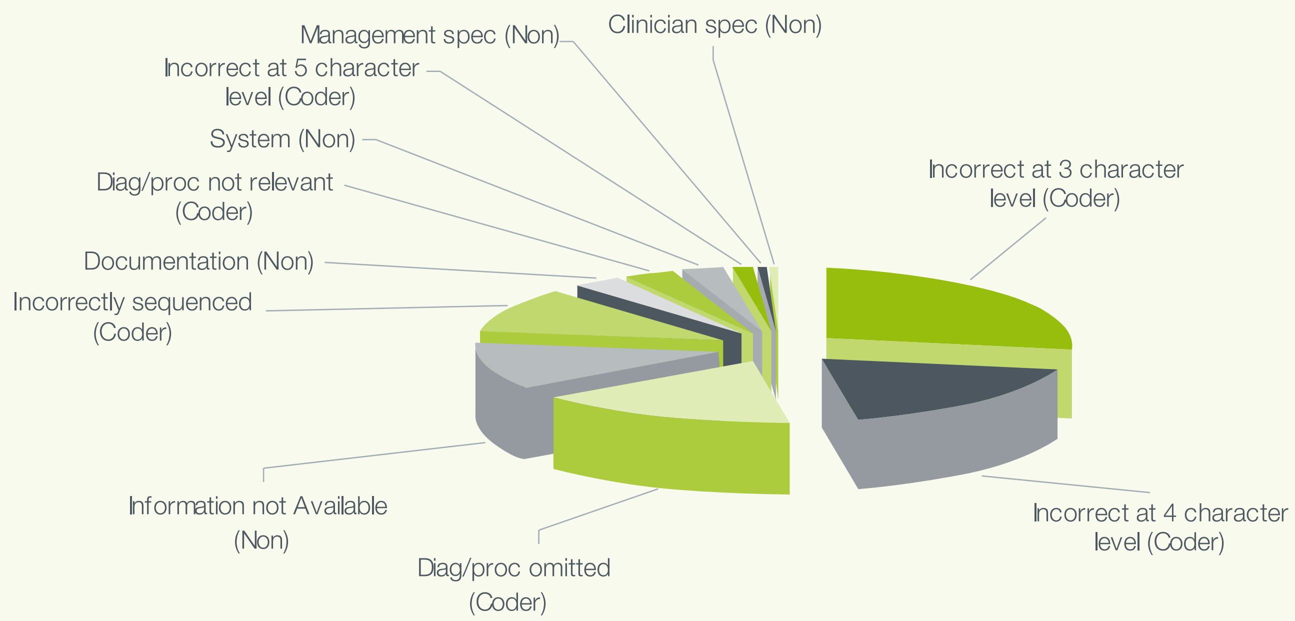


Source: Audit Commission

70 The main reasons for errors were that the diagnosis or procedure codes were either omitted or irrelevant. There are clear links between these and the main causes of errors, outlined in Chapter 3 – for example between poor documentation and the omission of a code, and with the fourth most common error, 'Information not available'. The problem of coding co-morbidities can also be seen in the second highest frequency of error, diagnosis or procedure code not relevant.

71 The following two figures show these error keys at a primary and secondary level.

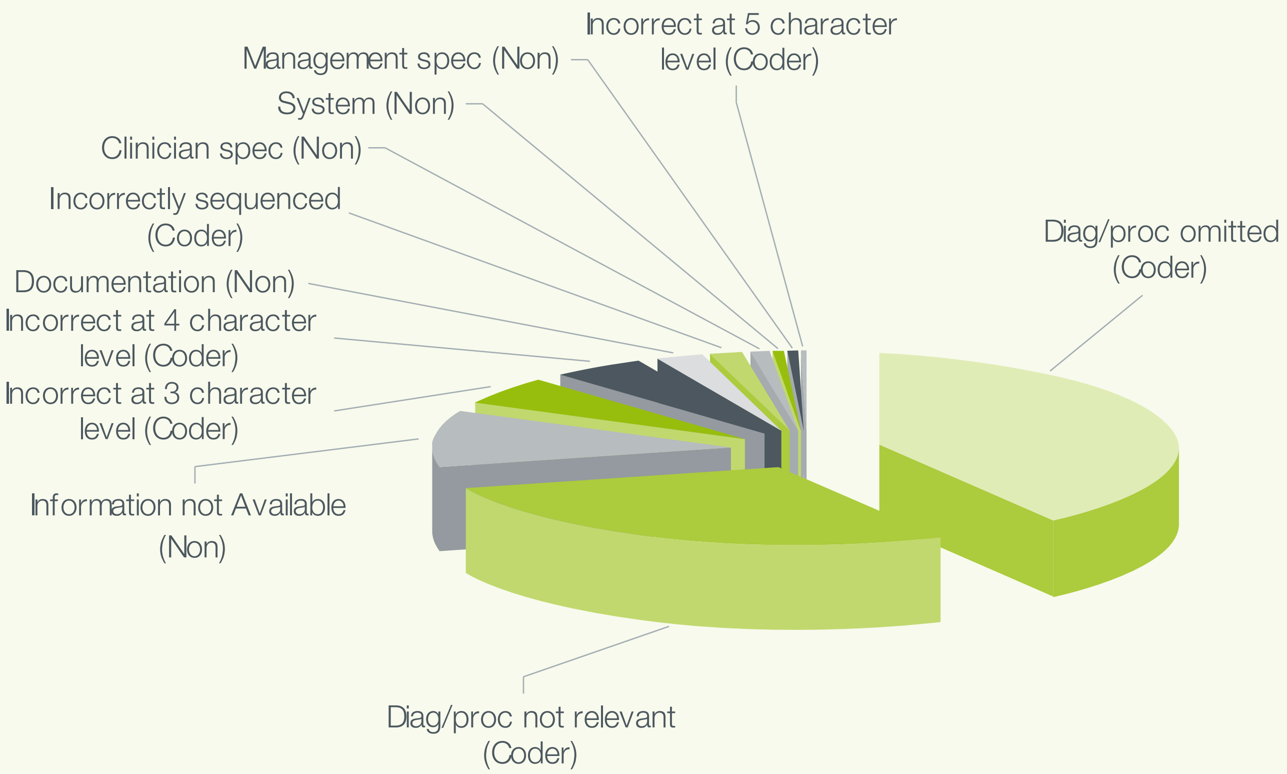
Figure 23:
Error codes for all primary coding



Source: Audit Commission

5 Clinical coding findings

Figure 24:
Error codes for all secondary coding



Source: Audit Commission

72 At the primary level, it seems that the issues in coding relate most clearly to incorrect recording, rather than complete omission, and point to a need to improve accuracy through training and possibly clinician involvement. For secondary coding, the issues of omission or irrelevance become more dominant, as described above.

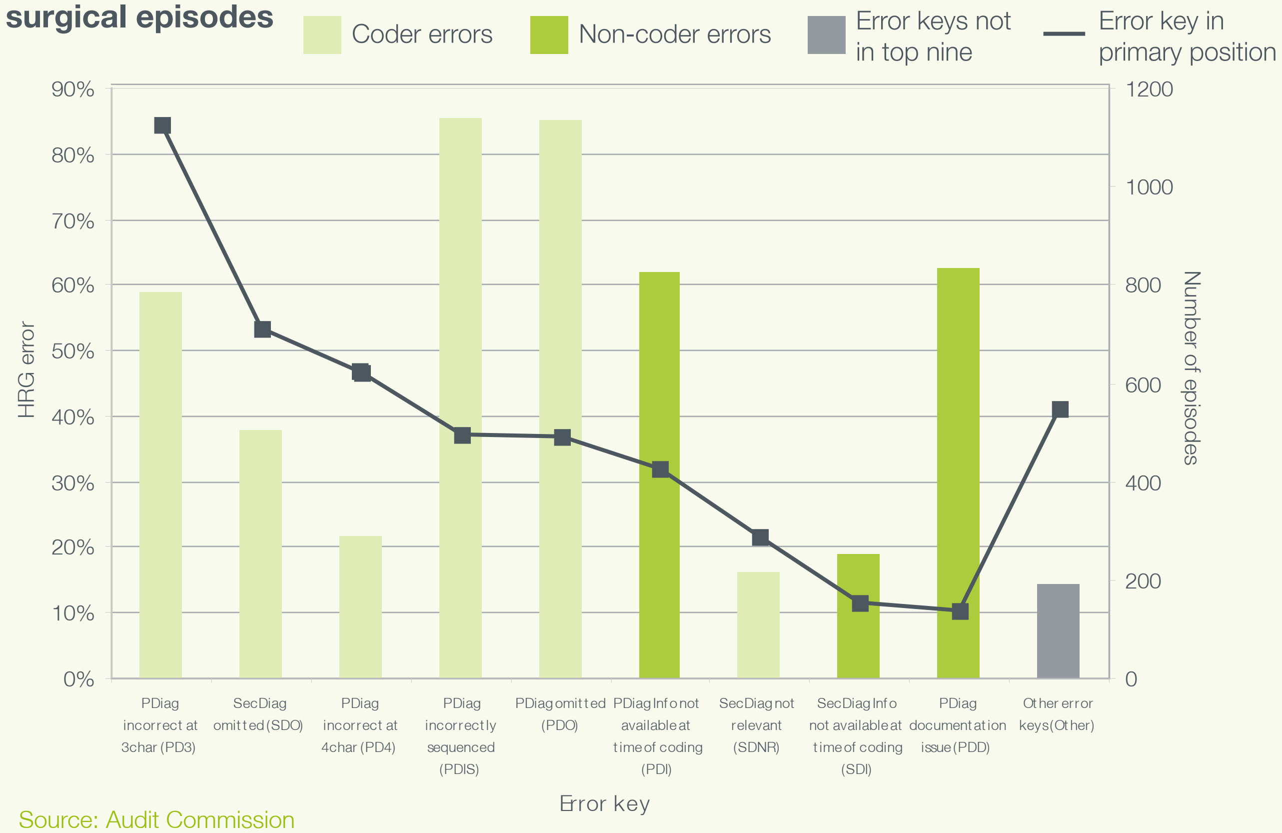
5.3 Implications of coding errors for HRGs and PbR

73 Our analysis shows that surgical HRGs are more likely to be affected by errors in procedure coding, and non-surgical HRGs by errors in diagnosis coding. We know that these are not the only factors that impact the HRGs, but that they are very likely to represent the main reason for HRG change.

74 The relationship between error key codes and HRG error are presented separately for non-surgical and surgical HRGs. For non-surgical HRGs the error key codes recorded against the primary diagnosis are presented and for surgical HRGs the primary procedure error key codes are analysed.

75 On the charts, the columns represent the percentage of episodes that resulted in an HRG error where that error key was recorded. The light green columns represent coder errors and the dark green columns the non-coder errors. The grey bar represents the group of other error keys that are not in the top nine. The grey line represents the number of episodes with the error key recorded in the primary position.

Figure 25
Relationship between primary diagnosis error keys and HRG error rates for non-surgical episodes

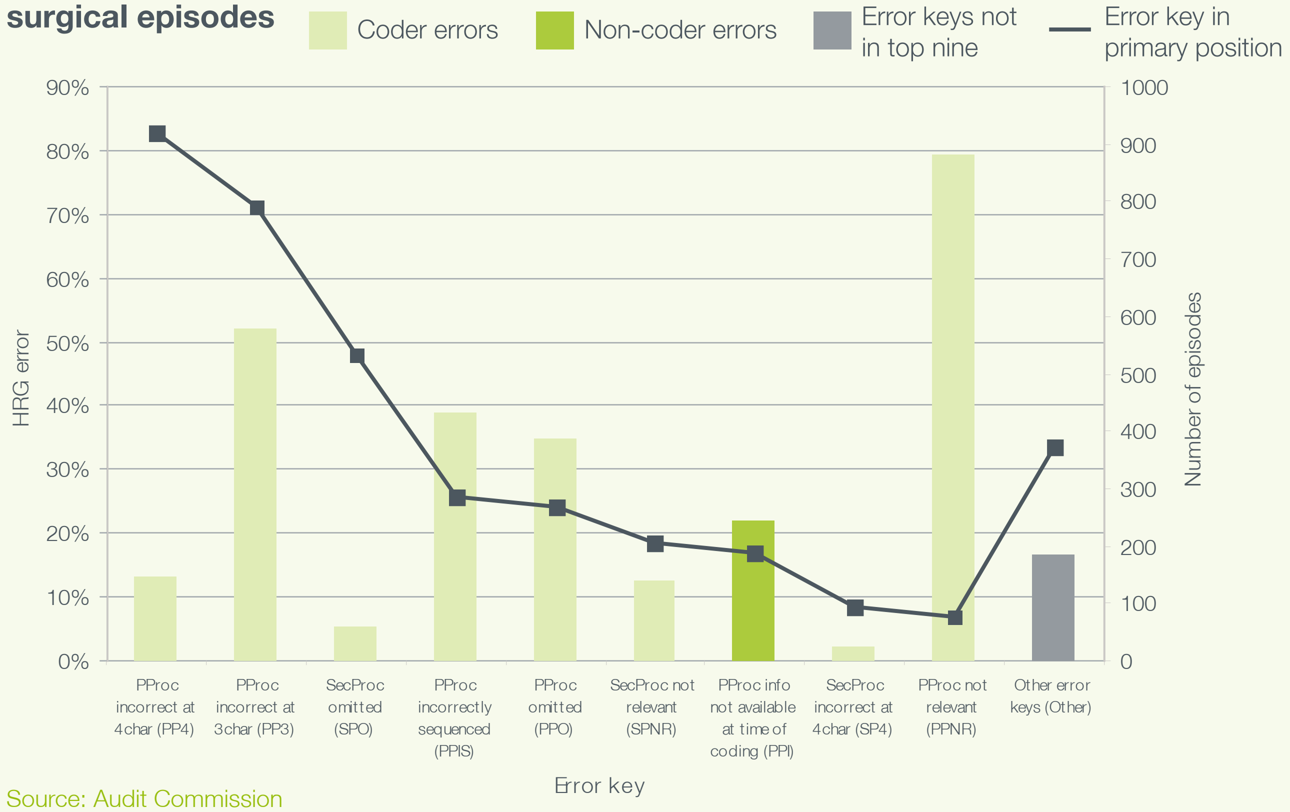


Source: Audit Commission

76 The error keys of most significance are those that have a combination of both high frequency and high likelihood of leading to an HRG error. In the case of non-surgical episodes, these are: 'Primary diagnosis incorrect at three-character level', 'Primary diagnosis incorrectly sequenced', 'Primary diagnosis omitted' and 'Primary diagnosis information not available at the time of coding'. For surgical episodes, the same types of error keys ('Code incorrect at three-character level', 'Code incorrectly sequenced', 'Code omitted and information not available at the time of coding') are of most significance but the combinations are less clear cut. In both surgical and non-surgical episodes, three of the four most significant error keys are due to coder rather than non-coder error.

Figure 26

Relationship between primary diagnosis error keys and HRG error rates for surgical episodes



Source: Audit Commission

5.4 Wider implications of coding errors

77 The accuracy of clinical coding has an impact on the finances of both providers and commissioners through the inaccuracy of payments, and in determining the baseline for contracts each year.

78 However, clinical coding data is important for a number of other purposes: planning and monitoring healthcare provision, commissioning and epidemiology, research, clinical audit and consultant job planning. In other words, the accuracy of this information not only affects the finances of the NHS, but also how and where care is delivered. For example, without accurate and appropriate clinical coding, commissioners would not be able to accurately assess activity that could be redesigned for delivery in primary care.

79 At the local level, trust and PCT boards should ensure that they are fully assured about the quality of the information underpinning many different areas of trust and PCT activity. This is not just for planning and finance purposes; as we move toward a fully electronic NHS, and with the involvement of practice-based commissioners in monitoring and managing budgets, this information, and the clinical coding on which it relies, will have an increasingly direct impact on the care provided to individual patients. The Darzi Review also signalled an increasing importance in the use of information and the development of quality measures to assess performance and to establish a link between quality and payments. Without sufficiently robust assurance about the quality of data, confidence in the accuracy of information may undermine the vision for its wider use within the NHS and by patients and the public.

6 PbR data assurance framework 2008/09

80 The assurance framework is a key component of the PbR system and has been established as a rolling programme of work. Its overall aim is to improve the quality of data which underpins PbR. The 2008/09 programme has already commenced, following consultation with the DH and the Commission's External Advisory Group. The key components of the 2008/09 programme are:

- the continuation of the clinical coding audit programme at all acute trusts;
- reviews of outpatient data quality at approximately a third of acute trusts;
- piloting of reviews covering the independent sector and Accident and Emergency activity; and
- the further development and refinement of the National Benchmarker, including the addition of outpatient benchmarking.

81 A number of processes have also been refined and developed to address known problem areas identified in 2007/08. Further information can be found on our website: www.audit-commission.gov.uk/pbr.

7 Conclusions

82 There are four main conclusions to be drawn from the findings of the first year of the PbR assurance framework. Firstly, we have found considerable variation in error rates, both between and within organisations and between different levels of data, that is, between coding error rates and rates of inappropriate assignment of HRGs. Secondly, we found a marked difference between the gross and net financial impact of these errors which suggests, at the national level, that there is not a consistent trend of either under- or over-charging. Thirdly, it is important to remember that clinical coding data underpins more than just PbR and that the errors and our findings have wider implications for planning and epidemiological research, for example. Lastly, in less well performing trusts, we found that the main areas for improvement needed to address errors were: poor documentation, clinician involvement in coding and the training and development of the clinical coding profession.

83 This first year of audits has raised a number of questions. It is difficult to give a conclusive response to many of the issues we have uncovered. Therefore, we will be undertaking an ongoing programme of further research and briefings to help the NHS come to a better understanding of how and where to improve.

84 Accurate recording of activity is the foundation for taking the NHS forward. The inpatient acute sector is more fortunate than most in having comparatively well-developed systems of coding and classification. The task now is to make these systems as accurate and beneficial as possible. This is in everyone's interests and it is everyone's responsibility: clinician and manager, provider and commissioner.

Appendices

Appendix 1: PbR National Benchmarker

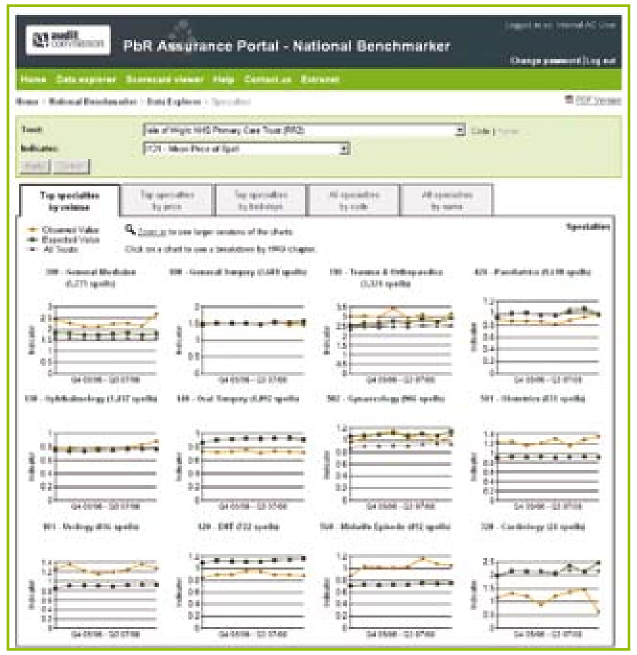
Throughout the 2007/08 audit programme the Audit Commission has been developing its online PbR benchmarking tool, the National Benchmarker, to target areas for the clinical coding audits and to provide added value to the NHS as part of the assurance framework.

Initially designed to target clinical coding audits, the benchmarking is based on 23 separate data quality indicators, ranging from generic tests such as 'Mean price of spell' and 'Mean length of spell', to very specific indicators such as 'Complication spell ratio' and 'Mean pre-op period of elective spell'. The analysis uses indirect standardisation and funnel plots to ensure the process of identifying outliers is as representative and equitable as possible. This is driven by a data warehouse containing over 700 million records – representing the largest and most complex dataset ever compiled by the Audit Commission.

The first release of the National Benchmarker in September of 2007 was solely intended to provide transparency to the benchmarking process, exposing the Audit Commission's internal analysis and database to the NHS. Since then, the tool has developed into something that is user-friendly and intuitive to use, particularly with the third release at the end of June 2008.

Figure 27

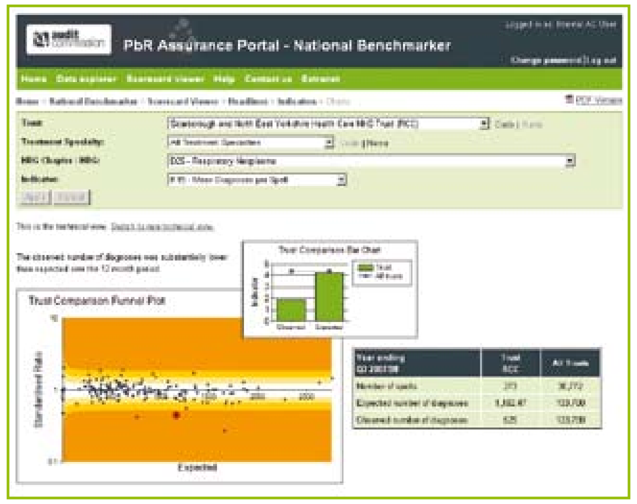
Screenshot from the data explorer section of the National Benchmarker



Source: Audit Commission

Figure 28

An example of indicator level results from the National Benchmarker



Source: Audit Commission

The National Benchmarker is not a performance management tool. It highlights where a trust is different from the norm against one (or a collection) of the Audit Commission's 23 PbR and coding related indicators – either above or below the benchmark. No judgment is made on whether performance is good or bad. It should be supplemented by local knowledge and used to inform local discussions and decision making.

The National Benchmarker is an extremely powerful tool for both commissioners and providers to use in assessing potential issues in data quality.

During the coming year the Commission will be working with the NHS to ensure each organisation gets the best out of the National Benchmarker, whilst continuing to refine not only the underlying methodology, but also the tool itself. The National Benchmarker is funded through the PbR audit fee and is freely available to all NHS staff. Passwords can be obtained via the PbR Assurance portal, which can be requested at www.audit-commission.gov.uk/pbr.

Appendices

Appendix 2: Highest HRG error rates by specialty

Specialty code	Specialty name	Total no. of FCEs audited	No. FCEs where HRG changed	% HRGs incorrectly derived
410	Rheumatology	394	181	45.9
370	Medical Oncology	419	161	38.4
361	Nephrology	197	63	32.0
307	Diabetic Medicine	110	23	20.9
430	Geriatric Medicine	1398	292	20.9
104	Colorectal Surgery	129	25	19.4
300	General Medicine	4419	738	16.7
190	Anaesthetics	304	41	13.5
340	Respiratory Medicine	619	83	13.4
101	Urology	2697	360	13.3
180	Accident and Emergency	1392	179	12.9
103	Breast Surgery	149	18	12.1
420	Paediatrics	6121	684	11.2
100	General Surgery	3615	374	10.3
800	Clinical Oncology	546	55	10.1
214	Paediatric Trauma and Orthopaedics	205	20	9.8
303	Clinical Haematology	1041	99	9.5
150	Neurosurgery	339	30	8.8
171	Paediatric Surgery	205	18	8.8
110	Trauma and Orthopaedics	7540	656	8.7
320	Cardiology	5397	468	8.7
330	Dermatology	157	13	8.3
160	Plastic Surgery	376	29	7.7
502	Gynaecology	2311	158	6.8
140	Oral Surgery	338	21	6.2

Source: Audit Commission

Appendix 3: Highest error rates by HRG chapter

Chapter code	Chapter name	Total no. FCEs audited	No. FCEs where HRG changed	% HRGs incorrectly derived
D	Respiratory System	1890	380	20.1
Q	Vascular System	287	57	19.9
J	Skin, Breast and Burns	1937	291	15.0
L	Urinary Tract and Male Reproductive System	3343	501	15.0
S	Haematology, Infectious diseases, Poisoning and Non-Specific Groupings	2753	369	13.4
T	Mental Health	146	19	13.0
H	Musculoskeletal System	8334	1026	12.3
A	Nervous System	2050	247	12.0
K	Endocrine and Metabolic System	454	54	11.9
R	Spinal Surgery and Primary Spinal Conditions	819	94	11.5
F	Digestive System	4975	566	11.4
G	Hepato-Biliary and Pancreatic System	717	68	9.5
P	Diseases of Childhood	5347	491	9.2
E	Cardiac Surgery and Primary Cardiac Condition	7489	680	9.1
M	Female Reproductive System	1969	125	6.3
C	Mouth Head Neck and Ears	2411	140	5.8
B	Eyes and Periorbita	1338	74	5.5
N	Obstetrics and Neonatal Care	4051	217	5.4
	Total	50310	5399	11.46%

Source: Audit Commission

Appendices

Appendix 4: Highest error rates by HRG

HRG	HRG label	Total no. FCEs audited	No. FCEs where HRG changed	% HRGs incorrectly derived
J10	Malignant Breast Disorders <70 w/o cc	49	42	85.7
J44	Minor Dermatological Conditions or Benign Tumours	39	23	59.0
L31	Malignant Prostate Disorders	51	26	51.0
H26	Inflammatory Spine, Joint or Connective Tissue Disorders <70 w/o cc	110	47	42.7
H89	Other Neck of Femur Fracture w/o cc	47	20	42.6
D33	Other Respiratory Diagnoses >69 or w cc	75	31	41.3
H25	Inflammatory Spine, Joint or Connective Tissue Disorders >69 or w cc	99	39	39.4
J31	Major Skin Procedures <50 w/o cc	33	13	39.4
D25	Respiratory Neoplasms	85	33	38.8
L48	Renal Replacement Therapy w/o cc	52	20	38.5
H27	Non-Inflammatory Bone or Joint Disorders >69 or w cc	122	46	37.7
H98	Chemotherapy with a Musculoskeletal System Primary Diagnosis	99	37	37.4
S31	Admission for Unexplained Symptoms	127	47	37.0
C07	Minor Medical Head, Neck or Ear Diagnoses <70 w/o cc	38	13	34.2

continued

HRGs ordered by per cent FCEs where HRG changes from pre to post audit. The list only includes valid HRGs (that is, not U01 – U09) where number of FCEs >= 30.

Appendix 4: Highest 25 error rates by HRG *continued*

H85	Intracapsular Neck of Femur Fracture with Fixation w/o cc	45	15	33.3
B32	Non-Surgical Ophthalmology with los <2 days	79	26	32.9
S99	Complex Elderly with a Haematology, Infectious Disease, Poisoning, or Non-Specific Primary Diagnosis	65	21	32.3
H28	Non-inflammatory Bone or Joint Disorders <70 w/o cc	78	25	32.1
S33	Examination, Follow-up and Special Screening	152	48	31.6
H53	Pathological Fractures or Malignancy of Bone and Connective Tissue >69 or w cc	100	30	30.0
F37	Large Intestinal Disorders <70 w/o cc	67	20	29.9
S35	Other Specified Admissions and Counselling	57	17	29.8
H09	Anterior Cruciate Ligament Reconstruction	31	9	29.0
D41	Unspecified Acute Lower Respiratory Infection	228	65	28.5
L24	Ureteric or Bladder Disorders	60	17	28.3
J38	Skin Ulcers	32	9	28.1

Source: Audit Commission

Appendices

Appendix 5: Glossary to error keys

Unsafe to Audit Error Key
UTA Unsafe to audit

Primary Diagnosis Error Key Descriptions: Coder Error
PD3 Primary diagnosis incorrect at three-character level
PD4 Primary diagnosis incorrect at four-character level
PD5 Primary diagnosis incorrect at five-character level
PDIS Primary diagnosis incorrectly sequenced
PDO Primary diagnosis omitted

Primary Diagnosis Error Key Descriptions: Non-Coder Error
PDI Information available at the time of audit not available at the time of coding
PDD Primary diagnosis documentation issue
PDM Primary diagnosis coded to management specification
PDC Primary diagnosis coded to clinician specification
PDSC Primary diagnosis coded due to system constraint

Secondary Diagnosis Error Key Descriptions: Coder Error
SD3 Secondary diagnosis incorrect at three-character level
SD4 Secondary diagnosis incorrect at four-character level
SD5 Secondary diagnosis incorrect at five-character level
SDIS Secondary diagnosis incorrectly sequenced
SDNR Secondary diagnosis not relevant
SDO Secondary diagnosis omitted
ECI External cause code incorrect
ECO External cause code omitted
ECNR External cause code not relevant

Secondary Diagnosis Error Key Descriptions: Non-Coder Error
SDI Information available at the time of audit not available at the time of coding
SDD Secondary diagnosis documentation issue
SDM Secondary diagnosis coded to management specification
SDC Secondary diagnosis coded to clinician specification
SDSC Secondary diagnosis coded due to system constraint

Appendix 5: Glossary to error keys *continued*

Primary Procedure Error Key Descriptions: Coder Error
PP3 Primary procedure incorrect at three-character level
PP4 Primary procedure incorrect at four-character level
PPIS Primary procedure incorrectly sequenced
PPO Primary procedure omitted
PPNR Primary procedure not relevant

Primary Procedure Error Key Descriptions: Non-Coder Error
PPI Information available at the time of audit not available at the time of coding
PPD Primary procedure documentation issue
PPM Primary procedure coded to management specification
PPC Primary procedure coded to clinician specification
PPSC Primary procedure coded due to system constraints

Secondary Procedure Error Key Descriptions: Coder Error
SP3 Secondary procedure incorrect at three-character level
SP4 Secondary procedure incorrect at four-character level
SPIS Secondary procedure incorrectly sequenced
SPO Secondary procedure omitted
SPNR Secondary procedure not relevant

Secondary Procedure Error Key Descriptions: Non-Coder Error
SPI Information available at the time of audit not available at the time of coding
SPD Secondary procedure documentation issue
SPM Secondary procedure coded to management specification
SPC Secondary procedure coded to clinician specification
SPSC Secondary procedure coded due to system constraints

Source: NHS Connecting for Health

Appendices

Appendix 6: Mapping error keys to issue groupings

Non-coder error				
PDI	SDI	PPI	SPI	Information not available at the time of coding
PDD	SDD	PPD	SPD	Documentation issue
PDM	SDM	PPM	SPM	Coded to management specification
PDC	SDC	PPC	SPC	Coded to clinician specification
PDSC	SDSC	PPSC	SPSC	Coded due to system constraint
Coder Error				
PD3	SD3	PP3	SP3	Incorrect – three-character level
PD4	SD4	PP4	SP4	Incorrect – four-character level
PD5	SD5			Incorrect – five-character level
PDIS	SDIS	PPIS	SPIS	Incorrectly sequenced
PDO	SDO	PPO	SPO	Omitted
	SDNR	PPNR	SPNR	Not relevant
	EC*			External cause code incorrect/omitted/not relevant

Source: Audit Commission

PD*: primary diagnosis – SD*: secondary diagnosis
PP*: primary procedure – SP*: secondary procedure

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