

data remember

improving the quality of patient-based
information in the NHS



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Introduction

Why has this paper been written?

1. Information is vital to the NHS. Complex health services can only be provided to the patients who need them at the time they need them if those managing and delivering the services have access to reliable, well-structured and timely information. Clinicians, managers and researchers all depend on good-quality information to do their jobs. Patients need to know about the care that they can expect to receive. And the public is entitled to be fully and accurately informed about the performance of an organisation that spends 15 per cent of the government's annual budget.

2. The NHS has long recognised the importance of information, and spends a great deal of time and money collecting and processing data. Information systems are most developed in the secondary care sector: according to the Audit Commission's 1995 report *For Your Information*, 15 per cent of a typical hospital budget and 25 per cent of the time of its non-IT staff is spent on the collection of data and use of information (Ref. 1). In the last few years, systems have also developed

rapidly in primary care: nearly all general practices are now computerised, and half of them have full clinical records of their patients in electronic form.

3. But as the coverage of NHS information systems has grown, so too have concerns about the quality of the data on which the information is based. From the early 1990s, it was apparent that returns that should have shown similar results actually varied widely. Five years ago, one-third of trusts were mis-coding more than 5 per cent of the data they produced: performance has improved, but there is still a long way to go [EXHIBIT 1, overleaf]. And, more recently, the reviews of clinical governance undertaken by the Commission for Health Improvement (CHI) have found (alongside some good practice) a worrying number of examples of incomplete and inaccurate coding, missing data sets, double entry of data and a lack of awareness of information among senior staff.

4. Where improvement has come about it is because trusts have made the quality of information a corporate priority. They have been supported in this by the

Department of Health, which has launched a number of initiatives in recent years to draw attention to data quality issues. These initiatives have begun to have some impact at local level. But more rapid improvement is now called for – for three reasons.

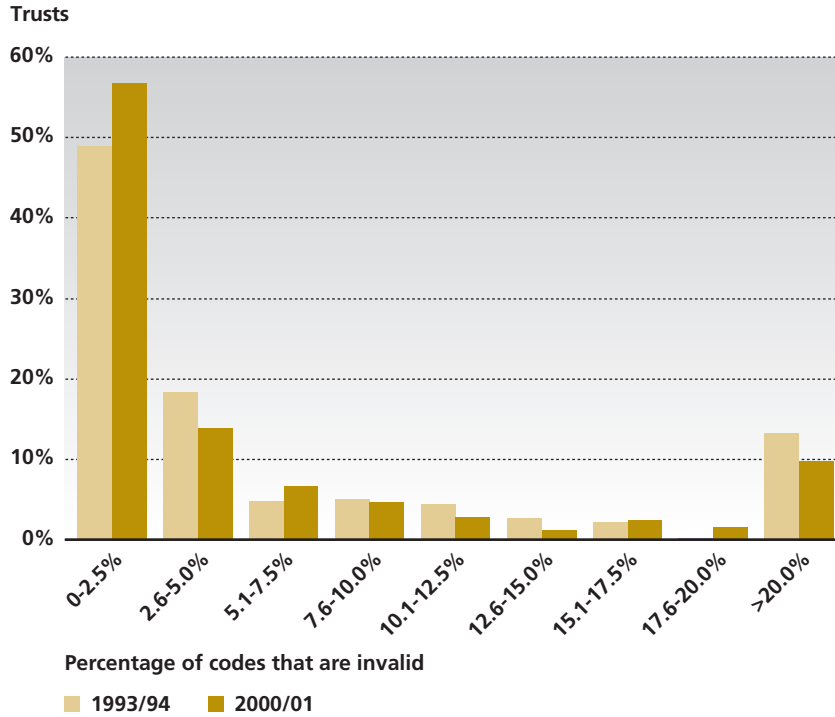
5. First, the NHS Plan, published in July 2000, emphasises the need to monitor and report the performance of local health services. A new Performance Assessment Framework (PAF) has been introduced to measure the performance of NHS trusts and the new primary care trusts (PCTs) in six key areas. New performance indicators are being developed, with the promise of greater freedoms for the organisations that perform best against them. There is thus a strong incentive to demonstrate good performance through indicators that can command full confidence.

6. Second, the NHS Plan also includes a commitment to make more information available to patients and to the wider public. PAF indicators are to be published annually in a 'report card' setting out how well each part of the NHS is performing. And, in time, it is

EXHIBIT 1

The percentage of invalid codes in diagnostic data

Coding performance has improved, but there is still a long way to go.



Source: Hospital Episode Statistics, Department of Health, 1993/94 and 2000/01

envisaged that patients will have direct access to their own health records. Both these developments will mean that greater reliance will be placed on patient-based information. So the integrity of the underlying data becomes all the more significant.

7. The third reason for focusing on the need for better information management follows from the structural changes outlined in *Shifting the Balance of Power* (Ref. 2). With the transfer of commissioning to PCTs, a larger number of commissioners will be looking for more information – including information on service quality as well as costs – from NHS trusts. At the same time, with the disappearance of health authorities and regional offices, there may be fewer external checks on the integrity of trust-generated information. For all these reasons, steps must be taken now to improve data quality.

For whom has this paper been written?

8. The focus of the paper is on those information systems that record the experience of patients in acute, community and mental health trusts (NHS trusts) in

England. These systems have for some years fed into a national database (the Hospital Episode Statistics database), and their development has been strongly influenced by the information demands of the Department of Health. As a result, they form the largest comprehensive set of patient-based information available to the NHS and the starting point for most attempts to monitor and compare the performance of different trusts.

9. It follows that the paper is directed primarily at the directors and senior managers of secondary care trusts. Some trusts have already made the quality of patient-based information a corporate concern; others need to do the same. Improvement requires the active involvement not only of the chief executive but also of non-executives and other directors, and of clinicians and managers who – whether or not they have yet become involved with data quality issues – ultimately generate and should be making use of the information that exists.

10. The paper will also be of interest to directors and senior managers of the new strategic health authorities and of PCTs.

Between April and October 2002, strategic health authorities will (subject to legislation) take over responsibility for the performance management of NHS trusts; at the same time, PCTs will expand their commissioning role, while remaining providers of many primary and community health services. PCTs will be particularly concerned to ensure that the comprehensive patient-based records they will be developing are based on sound data. The Commission's research, including reviews recently undertaken by auditors, also contains messages for those responsible for the central direction of efforts to improve NHS information systems – the Information Policy Unit of the Department of Health and the NHS Information Authority.

How should this paper be used?

11. The immediate practical purpose of the paper is to help NHS trusts to improve the quality of the data they collect and so of the information on which they and others base important decisions. The paper identifies some of the problems that trusts face in trying to ensure that accurate, relevant and timely information is available

to both internal and external users, and proposes a range of actions that trusts could take to address data quality issues. It should also be useful to those developing and reviewing data capture systems and processes in other parts of the NHS, particularly the boards and senior managers of PCTs.

12. In addition, by drawing attention to some of the main issues about data quality, the Commission aims to contribute to the wider debate on NHS information strategy. That debate has received new impetus following the Kennedy Report of the public inquiry into children's heart surgery at the Bristol Royal Infirmary, which was highly critical of the information systems in use to monitor clinical performance (Ref. 3). It is beyond the scope of this paper to consider what data should be collected, how they should be organised and for what purposes they should be used. But it is important for those taking those decisions at trust, PCT, strategic health authority or national level to keep in mind the potential implications for data quality of the different approaches that they might take.

The research behind the paper

13. This is not the first time that the Commission has looked at information management issues in NHS trusts. Two national reports published in 1995 considered different aspects: *For Your Information* was concerned with information systems and recommended a number of steps that trusts could take to improve data quality and manage the IT function more effectively; *Setting the Records Straight* focused on the use of casenotes and suggested some ways of improving the quality of care through better management of medical records. Both reports made recommendations that are still relevant today (Refs. 1 and 4).

14. In 2001 the Commission was asked by the Department of Health and CHI to develop and implement a 'light-touch' review of arrangements for managing systems for producing data in secondary care trusts. Auditors appointed by the Commission designed and undertook the first stage of the review, focusing on the quality of non-clinical data, between 1 July and 31 October 2001. The results provide a preliminary snapshot of the arrangements currently in place

to ensure data quality in all but a handful of secondary care trusts in England – 279 trusts in all. The second stage of the review will look in greater depth at the arrangements for producing clinical data.

15. The project team responsible for this paper also made over 30 field visits to health authorities, NHS trusts, the Department of Health and other organisations including universities and the Scottish Executive Health Department. Detailed discussions were held with a range of information managers and users, including clinicians, and preliminary findings were shared with an advisory group. The members of the advisory group are listed in Appendix 1.

16. The Commission gratefully acknowledges the contributions made by the advisory group, by all those organisations that participated in the light-touch review and by those who have discussed their experiences in greater detail and provided examples of good practice. The contents and conclusions of the paper remain, however, the responsibility of the Commission alone.

The structure of the paper

17. The paper is in four main sections. Section 1 outlines the processes through which data relating to the care of patients in NHS trusts are collected and draws on recent audit work and other evidence to indicate some areas in which the quality of information needs to be improved. Section 2 describes some of the initiatives that have been undertaken in recent years to make patient-based information 'fit for purpose' and considers how far these have been successful.

18. Significant changes are under way both in healthcare and in the organisational structure of the NHS that will make the maintenance of good-quality information even more critical in the future. These are considered in Section 3. Section 4 suggests some further actions that need to be taken to improve the quality of NHS information and the data from which it is derived. While some aspects will need to be addressed at national level, there is much that can be done by individual trusts and the focus is on these. Finally, the main messages of the paper are brought together in a brief conclusion.

1. From data to information

Data collection systems

19. In their search for information to manage, monitor and account for their use of resources – staff, money, buildings and equipment – as well as to provide healthcare to patients, NHS trusts collect an enormous variety of data. Some top-level management decisions depend on information from a wide range of sources, all of which need to be reliable. And many different variables feed in to the Performance Assessment Framework by which trust performance is to be judged.

20. Invariably, however, the largest and most complex set of data collected by any trust is that held in the Patient Administration System (PAS). PAS data record a patient's journey through secondary care. For admitted patients, these data include details of admission and discharge, organised according to the standard classifications of clinical activity that are used for statistical purposes [EXHIBIT 2, overleaf]. A trust's PAS may also include details of outpatient appointments made and fulfilled and how the trust has dealt with patients waiting for treatment or presenting in A&E.

21. PAS data are entered by a variety of different staff. Administrative details, including personal details of patients and dates of admission and discharge, are largely input by clerical staff. But a crucial part is played by clinical coders who enter clinical data taken from clinicians' casenotes or discharge summaries.

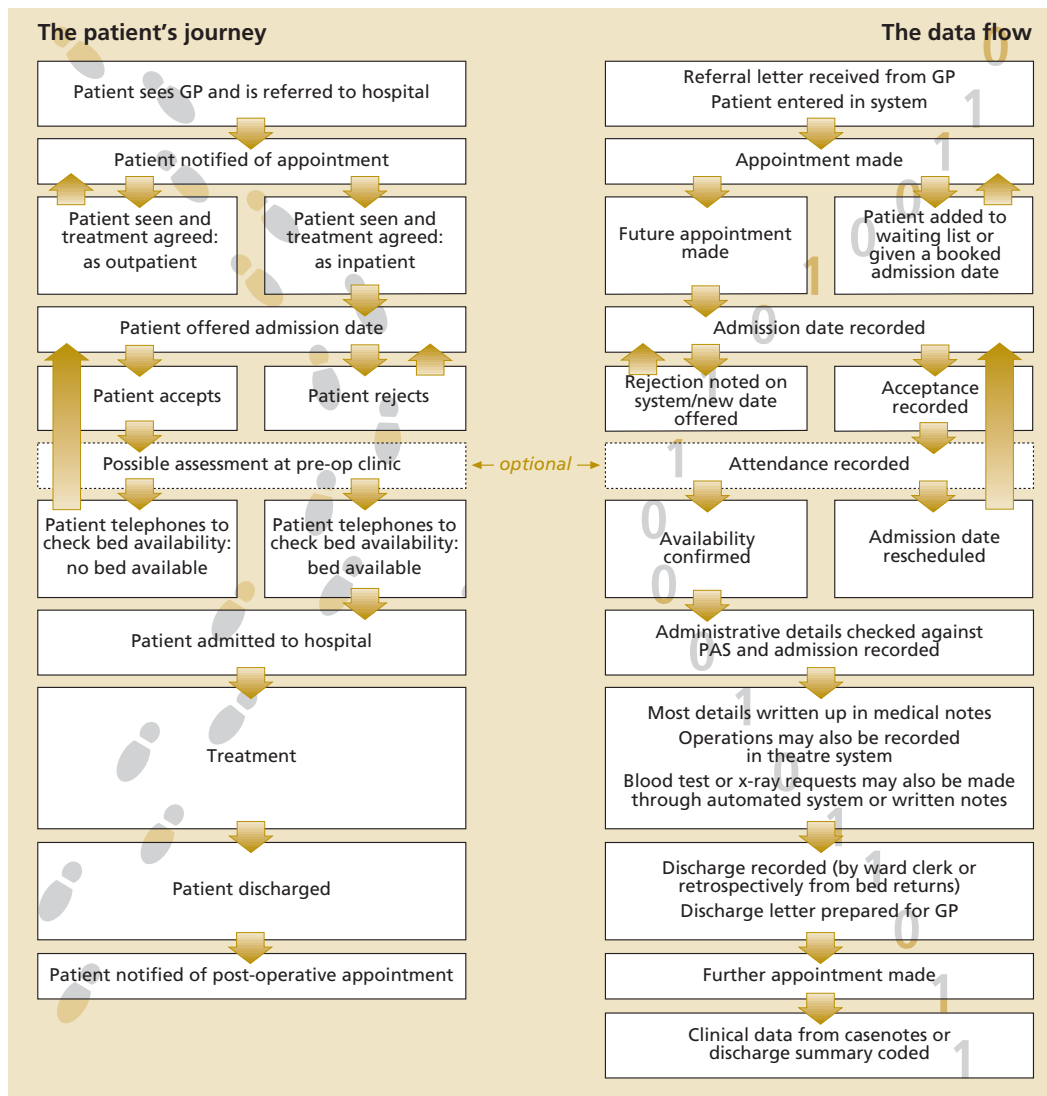
The way in which coders are used varies between and (sometimes) within trusts. In some areas they collect casenotes from the wards, where they have the opportunity to question junior doctors on aspects of the notes that are unclear; elsewhere, they may have to wait for records to be transferred from consultants' medical secretaries.



EXHIBIT 2

The patient's journey

PAS data record a patient's journey through secondary care.



Source: Audit Commission

22. On a regular (normally monthly) basis, every trust has an extract from its PAS data relating to admitted patients submitted, in the form of a 'commissioning data set', to the NHS-Wide Clearing Service (NWCS), which is managed by the NHS Information Authority (NHSIA). Because of the complexities of the messaging format in which NWCS requires the data, not all trusts are able to communicate directly with NWCS, and their data sets are handled by other, usually larger, trusts. As well as passing these data sets to commissioners of the trust's services – up to now, mainly health authorities, but in the future some 300 PCTs – NWCS also transfers them quarterly to the Department of Health's Hospital Episode Statistics database (HES).

23. HES is a very large database, collecting 12 million records a year. Each record contains over 50 items of information. Until recently, HES data were only aggregated after the year end, and were not available for a further eight months or so after that, but steps have now been taken to refresh the database quarterly as data are received from NWCS. Steps are also under consideration to extend the range of clinical and clinician team data

covered by HES, and further developments may include the collection of data on theatre sessions and other patient-based data covering outpatient procedures, A&E attendances and prescribing.

24. The collection of patient-level data through the PAS was originally driven by the demand from the Department of Health for comprehensive national data, which since 1989 have been collected in the form of HES. HES data continue to be used by the Department of Health to monitor healthcare activity, to help to identify trends and to inform decisions on investment and the allocation of resources at national level. But, as the only comprehensive set of data at patient level, they have been found to have a range of uses well beyond those for which they were originally collected [TABLE 1, overleaf].

25. The extended use of HES data for a much wider variety of purposes than those for which they were originally developed was strongly encouraged by the Kennedy Report (Ref. 3). That report drew attention to the dangers of continuing to collect information about patients through multiple

clinical and administrative systems – an approach it described as 'wasteful and anachronistic' – and called for a single approach to the collection of data and for greater support for the HES database.

26. But the Kennedy Report also recognised that HES data will only be used if they are viewed as reliable by the prospective users. At a national level, HES data have generally been considered 'fit for purpose': they are accurate and timely enough for epidemiologists and planners in central government who are looking at long-term healthcare issues nationally, and are broadly relevant to their needs. But there are widespread doubts as to whether the data are fit for all the purposes to which they are now being put. In particular, a much higher standard of accuracy is needed if decisions are to be based on information from relatively small local data sets that can easily be distorted by a few significant errors.

TABLE 1

Uses of HES data

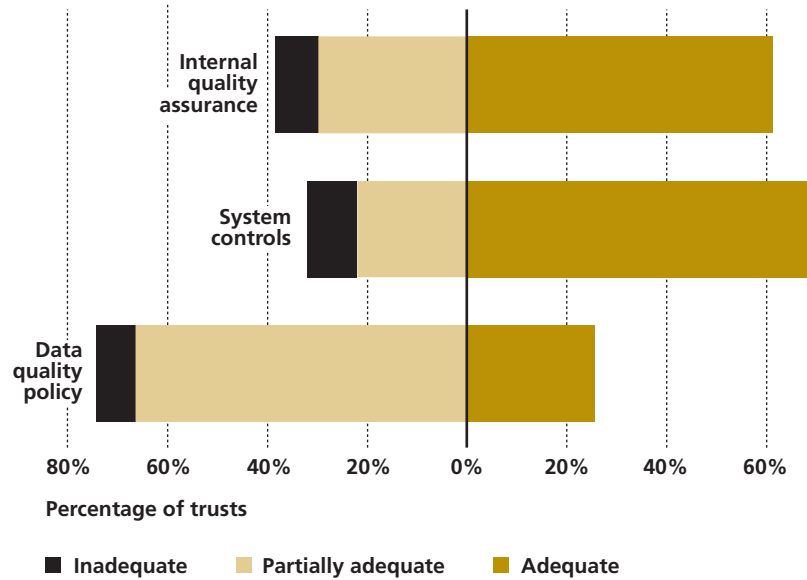
Purpose	Users	Comments
Performance management of trusts by the Department of Health	Regional offices of Department of Health (responsibility to be transferred to strategic health authorities during 2002)	HES data are the principal source of those performance indicators within the existing PAF that relate to activity in trusts. The new trust PAF will draw on HES data, as well as on financial returns and the results of patients' own assessments of the care they have received.
Performance management within trusts	Trust boards	HES data can be combined with data from resource management systems to measure efficiency. The NHSIA makes available a Performance Analysis Toolkit (PAT), which uses HES data to compare trusts' performance on length of stay, waiting times and costs (but not outcomes) for each Healthcare Resource Group. A web-based version of the PAT is under development.
Clinical governance	Trust boards	HES data can be combined with data from casemix systems or other clinical management systems using compatible data.
Research	Epidemiologists in Department of Health, health authorities and universities Clinical audit groups	
Planning	Department of Health Commissioners Trust boards Royal Colleges (for national service frameworks)	
Informing the public	Trust boards Audit agencies CHI	

27. The findings of the review that has been undertaken by auditors appointed by the Commission suggest that some of these doubts are well founded. Many trusts need to improve their management arrangements to ensure data quality. Over all, quality assurance arrangements were found to be satisfactory at only 61 per cent of trusts, and 9 per cent had no effective quality assurance processes. A higher proportion of trusts (68 per cent) were judged to make good use of systems controls, although there were 10 per cent of trusts where auditors expressed serious concerns. And, while the great majority of trusts had given some consideration to data quality issues, only one trust in four had a fully developed data quality policy [EXHIBIT 3].

EXHIBIT 3

Management arrangements to ensure data quality

Many trusts need to improve their management arrangements.



Source: Audit Commission

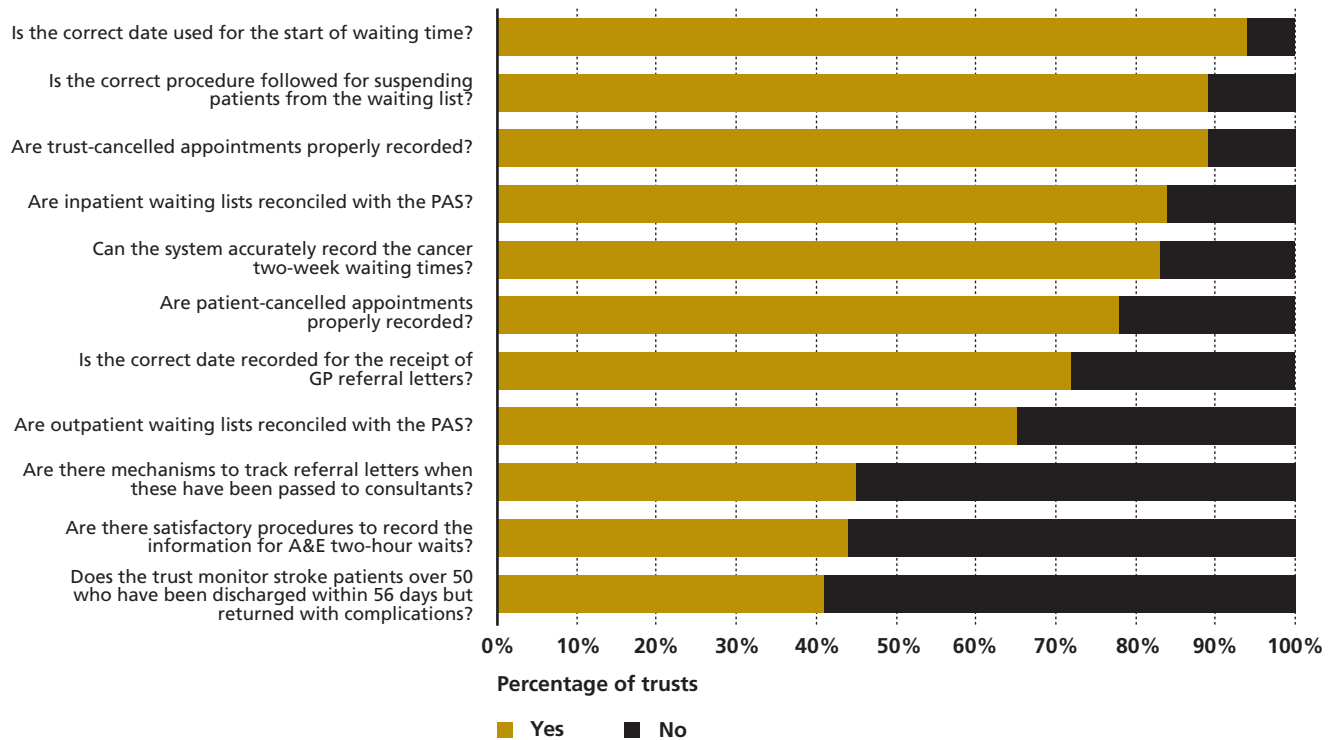
28. In looking at arrangements for producing specific sets of data relating to non-clinical activities that support effective patient care, auditors found considerable variation between different areas. In general, arrangements were

good in areas that had recently been a particular focus of attention but variable elsewhere [EXHIBIT 4]. It was, however, clear that most trusts need to improve at least some of their basic processes.

EXHIBIT 4

Arrangements to produce data on selected areas of activity supporting effective patient care

Most trusts need to improve basic processes.



Source: Audit Commission

29. The adequacy of arrangements also varied from trust to trust. A minority of trusts had satisfactory arrangements to ensure the quality of data in almost all the main areas covered by the review (the eleven areas highlighted in Exhibit 4 and

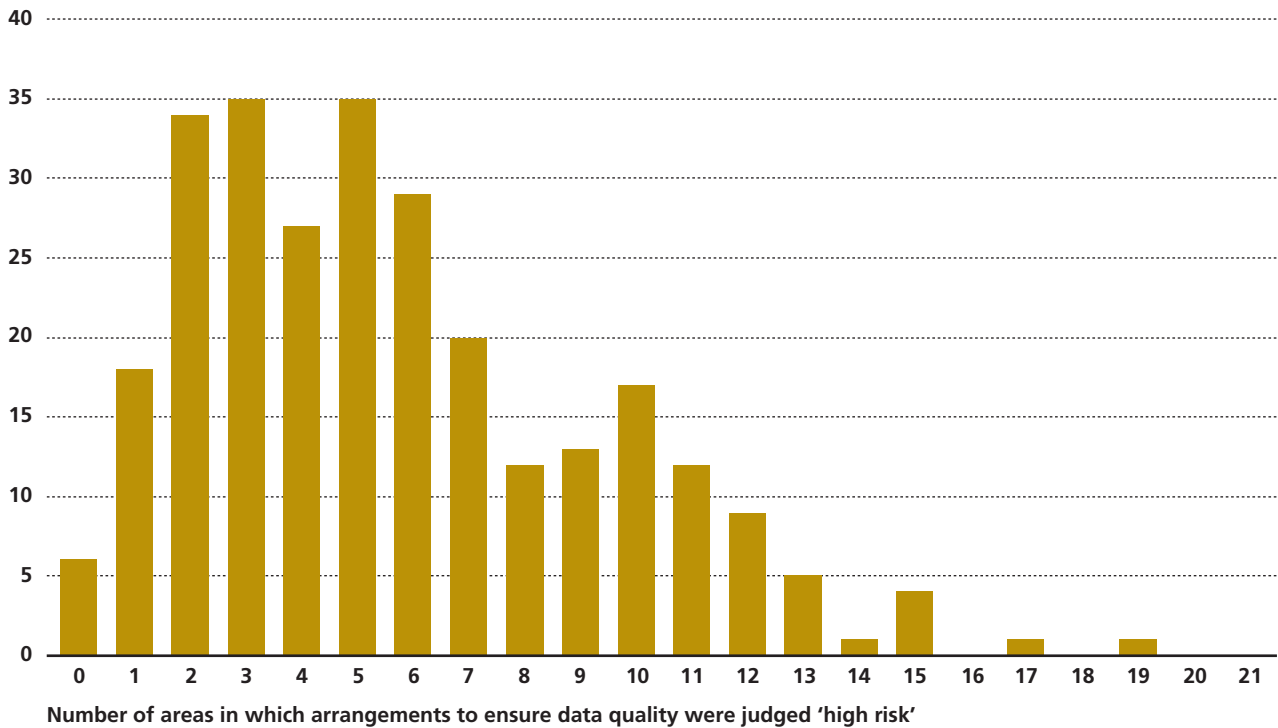
ten others). But nearly all trusts could take action in at least some areas to reduce the risk of poor data, and at 18 per cent of trusts there were ten or more areas in which little reliance could be placed on the data collected [EXHIBIT 5].

EXHIBIT 5

Trusts' ability to produce adequate data

Nearly all trusts could take action to reduce the risk of poor data.

Number of trusts (n = 279)



Source: Audit Commission

30. It should be noted that this first phase of the review focused on non-clinical, mainly administrative data, which should (in theory) be relatively straightforward to define and collect. It is, however, clear from the findings of the review that in some trusts even the administrative data cannot always be demonstrated to be reliable. Other studies have suggested that HES clinical data are no better, and clinicians and researchers interviewed in connection with this study all expressed reservations about the quality of information produced and scepticism about the purposes for which the underlying data had been collected. Some academic users of patient information claimed to prefer data sets from hospitals in the United States or Scandinavia, as they considered that NHS information would need to be put through lengthy cleaning and validation processes before reliance could be placed on it.

31. CHI has also expressed its concerns about the quality of the data available to support effective clinical governance at some of the trusts where it has undertaken reviews. As yet, the number of clinical governance reviews that CHI

has completed is quite small, so it is not possible to quantify these concerns, but they include:

- a lack of awareness among senior (particularly senior clinical) staff of the information resources available;
- late, inaccurate and inconsistent reporting;
- little integration of reports from different sources at trust board level; and
- outdated systems and inadequate contingency plans to minimise the risks of data loss.

32. Although there is more work to be done, it is already apparent that in many trusts the arrangements to ensure that patient-based information is fit for purpose are in need of strengthening. The next section describes the initiatives that have been taken by the Department of Health and the NHSIA, as well as by trusts themselves, to improve the quality of the information that is produced.

2. Improving the quality

33. Measures to improve the quality of patient-based information have focused on timeliness, relevance and accuracy. The timeliness of information has long been an issue, and the responses to the Department of Health's recent consultation on changes to the PAF suggest that it is still a major concern for many in the NHS. Trusts are dependent for usable comparative information on HES reports, which in the past have not been made available until long after the events they describe. This has meant that data for April have not been published until December the following year – and sometimes even later.

34. It will always take some time to put together a database as large and complex as HES. Even if checking and validation processes can be speeded up, there will still be a trade-off between speed of publication and accuracy. Steps have, however, recently been taken to bring forward the publication of annual HES reports – some data for the year to March 2001 were made available in August, and the Department expects to publish a full report for the year to December 2001 by March 2002. These changes, together with the move to refresh

the HES database quarterly, should ensure that timeliness is less of a concern in future.

35. Relevance has also been a long-standing problem. HES data are already used for a wider range of purposes than when they first began to be collected, and there has been no complete review of the ways in which information is classified since the Körner Steering Group on Health Services Information reported in 1982. During that time, there have been far-reaching changes in clinical practice, so that definitions based on the practice of the 1970s are no longer appropriate. These changes are considered further in Section 3. The biggest change has been the move to teamworking, so that the concept of a consultant episode – which has long been difficult to define – is increasingly seen as irrelevant. The replacement of the finished consultant episode by a finished care episode (which can be led by any healthcare professional) is now under consideration, but further changes are required if data are to be converted into information that is relevant to all the likely users.

36. Ensuring that the information for which data are requested is relevant is a task that can only be undertaken at national level. Accuracy, on the other hand, depends on appropriate action being taken locally, by data processing staff and clinical coders, and on the maintenance of systems that do not distort accurate data. It is the aspect of information quality on which trusts can most easily focus, and for which they will always remain ultimately responsible. The role of national and regional bodies must be to support and, where appropriate, challenge in a constructive manner, trusts' efforts to produce reliable data.

37. The national bodies involved in the collection and communication of patient-based data have taken different approaches to this supporting role. NWCS has focused primarily on data transmission – the role for which it was originally set up. Data sets received from trusts by NWCS are therefore checked only for technical correctness and completeness; and even where records are incomplete, they are still included on the national database and passed on to commissioners and to HES. The organisations

submitting returns are informed through a data quality report (DQR) of any missing fields and given the opportunity to submit an amended return. These organisations are not always the trusts whose activity is being reported: some smaller trusts do not have the skilled technical staff needed to translate data into the format required for NWCS purposes, and so contract this work to others.

38. NWCS does, however, make a data quality reporting tool (DQRS) available, which compares the records of all trusts across the region in terms of completeness, and allows problems to be identified. Until recently, DQRS was only provided to the eight regional offices of the Department of Health, some, but not all, of which shared the reports with trusts in the region. But since the end of 2001 a version of it has been available to NWCS users on the NWCS website. All trusts should now be able to find out how they have performed in relation to others in maintaining complete and technically correct data sets and to identify areas for further investigation and possible improvement – for example, most trusts could improve their recording of patients' NHS numbers [EXHIBIT 6].

39. Department of Health staff responsible for HES take ownership of trust data to a much greater extent than their colleagues in NWCS, reflecting the fact that they are publicly held to account for the information produced from HES. When data reach HES, two processes take place. First, data are 'autocleaned' to remove obvious errors (such as the use of out-of-date codes) and inconsistencies. Some data are also manually cleaned. This helps to eliminate many, but by no means all, of the coding errors that can cast doubt on the credibility of the data set as a whole. But cleaning can have some adverse effects: while HES staff aim to agree all changes resulting from the cleaning process with the trust concerned, this is not always possible; and trusts themselves do not always consult the individuals responsible for the original data. As a result, HES reports are sometimes unrecognisable to the clinical teams whose activity they purport to describe; this makes it very easy for clinicians and managers to deny any association with the data.

40. The second process is validation. Data are validated, to ascertain their overall quality, by checking that all related fields within a group include a valid code. Over the last five years, this validation process has been further developed and since 2000 has resulted in the trust receiving a data quality indicator (DQI) – a composite score, reflecting the completeness and validity of data. DQIs are among the performance indicators supporting the PAF, although they do not at present directly feed in to the performance rating system.

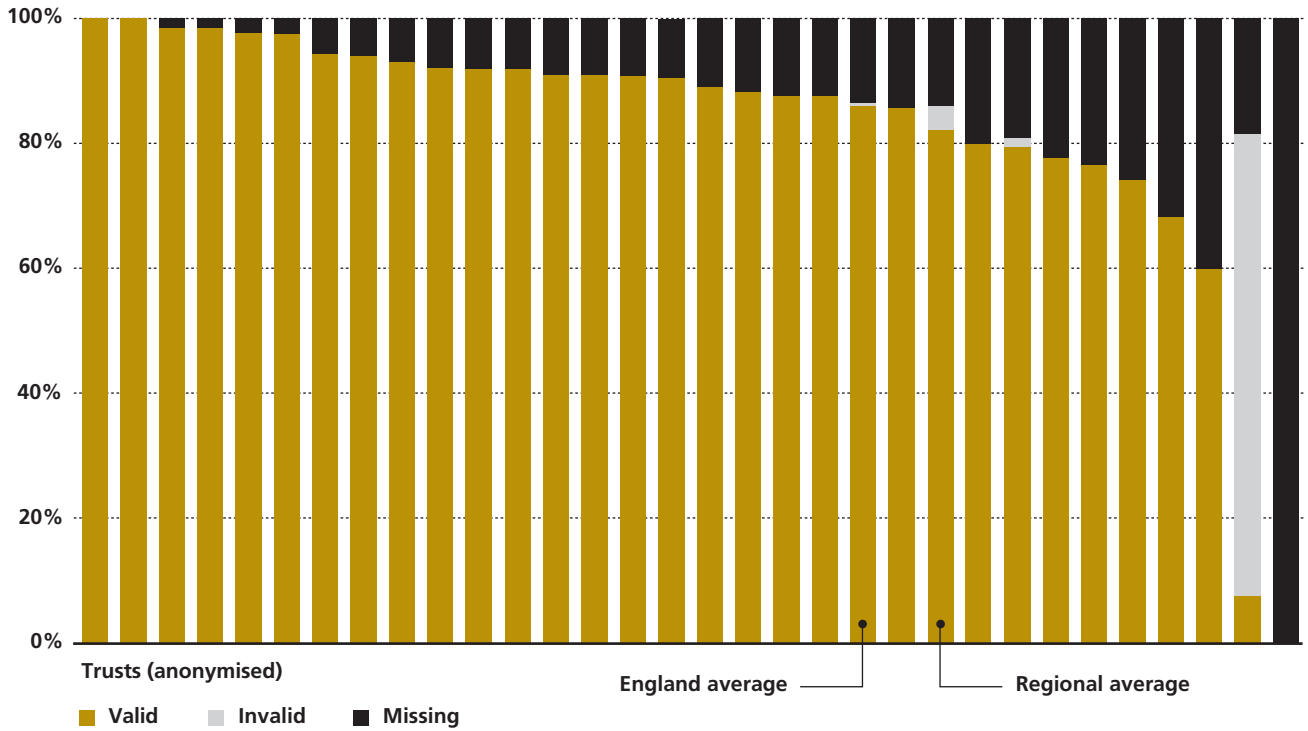
41. Checking for completeness, cleaning and validation are all valuable processes. If the DQI (with its supporting information), the DQRs and the data quality reports produced by the DQRS are well used, they can point managers to areas where data quality appears to be particularly poor. Data collection processes in these areas can then be investigated further and action taken where appropriate. But none of these reports provides any indication of data accuracy. This can only be examined at a more local level.

EXHIBIT 6

An example of a DQRS report

Most trusts could improve their recording of patients' NHS numbers.

Percentage of records



Source: DQRS

42. Until they were abolished in 1996, Regional Health Authorities (RHAs) were responsible for monitoring the data that were transmitted between trusts, commissioners and the Department of Health. So, although practice varied from region to region, all regions had some procedures in place to improve data quality including, in many cases, arrangements to assure the accuracy of data as well as the completeness and validity of data sets. When the RHAs were replaced by regional offices of the Department, these responsibilities were not transferred. Nor were they picked

up by the health authorities to which many of the former RHA responsibilities were devolved.

43. Despite the lack of explicit duties or powers in this area, most regional offices have assumed some responsibility for data quality. Each has a data quality lead officer, who works closely with a clinical coding co-ordinator assigned to the region by the NHSIA. How these officers carry out their roles varies between regions. Most data quality leads play some part in helping trusts to ensure that data sets are complete, and some provide analysis to supplement what is available from the DQRS and Performance Analysis

Toolkit. This analysis does not, however, extend to challenging the accuracy of trust data.

44. Some regional offices have gone further than this and taken an active role, in association with the NHSIA, in raising coding standards, arranging training for trust coders and disseminating good practice [BOX A]. And in a few places there have been ad hoc audits of coding accuracy. But regular programmes of coding audit have only been implemented where trusts and health authorities have agreed to fund a regional support team to undertake the work.



BOX A

Clinical coding audit

The data quality lead in the South West Regional Office asked the NHS Information Authority to address clinical coding as a priority issue during the year 2000/01. It was a matter of increasing concern to trusts in the South West that there had not been a routine programme of coding audits since 1995 when the South Western Regional Health Authority had ceased to exist.

Several trusts in the South West region agreed to participate in an audit programme led by the Central Clinical Coding Co-ordinator at the NHSIA. Trusts were paired and the coding managers or trainers from each trust then audited the partner trust's data. The data chosen for audit were those relating to incidents coded as fractured neck of femur and either myocardial infarction or cerebrovascular accident – procedures for which there were clinical indicators in the PAF.

The quality of clinical coded data was audited by comparing the information held on the PAS with what was recorded in the casenotes and discharge summaries. The audits traced the source of any problem found, identified areas for improvement and made

recommendations to maintain continuous improvement in the quality of data. They also highlighted good practice.

The NHSIA prepared a summary report, which identified several areas where care was taken to ensure data quality:

- ✓ casenotes were generally well organised with the required documentation present;
- ✓ where casenotes had been used as the source document the coding was more accurate and complete;
- ✓ the coding of primary diagnosis and primary procedures was very good; and
- ✓ there was good use of site and laterality codes.

The report also drew attention to a number of problems:

- ✗ omission of secondary diagnoses and procedures;
- ✗ unspecific external cause codes;
- ✗ some double-counting of episodes where medical assessment centres had been used or patients had been transferred between consultants; and
- ✗ lack of an audit policy.

The report also identified examples of good practice at individual trusts:

- a proforma discharge summary that had been agreed between the clinicians and the coders giving excellent information to assist with the coding of cerebrovascular accidents; and
- in relation to myocardial infarctions, good recording of high cholesterol, hypertension and smoking, all of which are required for the coronary heart disease data set.

And there were a number of recommendations for improvement, including:

- use of casenotes as the source documentation for clinical coding;
- use of a standard discharge letter or proforma agreed by both clinicians and clinical coders;
- in-house refresher training on the coding of co-morbidities and external cause codes; and
- the adoption by trusts of an audit policy with a commitment to undertaking regular audits.

45. Outside these specific programmes, health authorities have varied in the interest they have shown in data quality. In general, while the ‘internal market’ of the early 1990s made health authorities anxious to obtain accurate data for costing purposes, enthusiasm waned after 1997, and in the last few years issues of data quality have come to be seen as primarily a trust responsibility. Currently, just over half of all service-level agreements between trusts and health authorities (or PCTs) contain an explicit reference to data quality. But even in these cases the focus is not always on the main national data sets that are used for HES. In some areas there are parallel systems used for commissioning purposes between health authorities and trusts, which are not necessarily reconciled with the commissioning data sets passed to NWCS. This can result in duplication of effort and inconsistency.

46. The picture at national, regional and health authority level, then, is of some concern to improve the quality of the data that make up the national picture of patient activity, but only a limited involvement in doing anything

about it. There is, in any case, only so much that can be done at the higher tiers of NHS administration. Standards must be set, but are hard to enforce; remote correction of local data may cause more problems than it solves; and audit and analysis are only of value if they are followed up by local action. Real improvement is dependent, therefore, on trusts improving their own processes for data quality assurance.

47. Some trusts make good use of the feedback that is available from NWCS and HES on the quality of their data – DQRs, DQIs and the DQRS. And a growing number of trusts now obtain both assurance as to the accuracy of their own data and access to genuinely comparable benchmarks by subscribing to one of the quality assurance schemes run by independent providers. But 25 per cent of trusts do not act on external feedback, and some do not even consider the reports that are routinely available [EXHIBIT 7].

48. There have been three significant initiatives in the last few years to encourage trusts to pay more attention to data quality. The first was the Data Administration Project, launched in 1995. This project set good practice guidelines

for both secondary and primary care: pilot schemes had demonstrated that following these guidelines could lead both to greater efficiency and to better decision-making. While some trusts and general practices adopted the guidelines, there was no requirement for them to do so. The guidelines did, however, provide a ‘Highway Code’ of good data management, so complementing the second initiative – the Data Accreditation Scheme.

49. The Data Accreditation Scheme is a process aimed at enabling an organisation to demonstrate that it is maintaining good data quality. Focusing on the main PAS/NWCS/HES data flows, it comprises three stages:

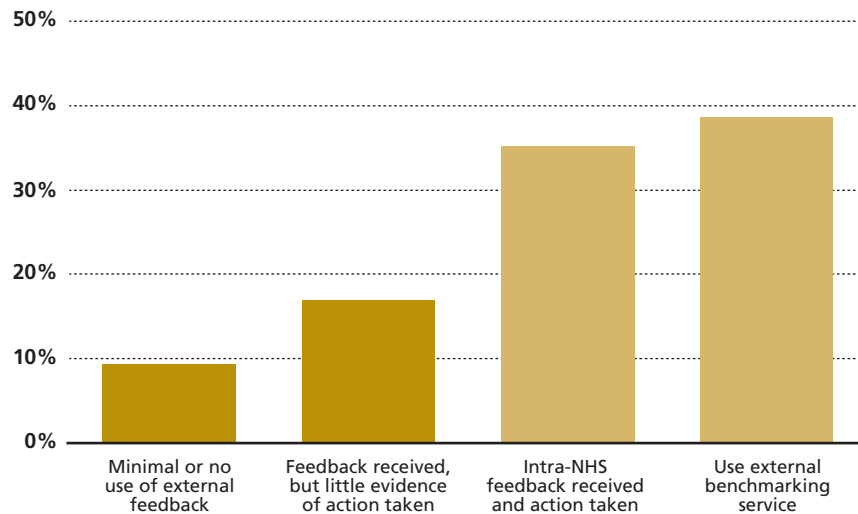
- checklist review – a high-level scrutiny of basic activities;
- review of data management processes – a more detailed examination of the main systems and administrative arrangements supporting the collection of patient-based data; and
- review of data outputs – a more detailed look at the data generated to support particular operational areas.

EXHIBIT 7

Percentage of trusts using external feedback on data quality

25 per cent of trusts do not act on external feedback.

Percentage of trusts



Source: Audit Commission

50. The scheme was introduced generally in 1997, but from November 2000 became a mandatory programme for secondary care trusts. All NHS trusts were required to have completed stage one by March 2001 and acute trusts to have completed stage two by March 2002. Stages two and three require the involvement of an approved external assessor to provide an independent view. The assessor's task is to judge whether the trust's data meet four criteria of timeliness, completeness, validity and accuracy. If they do so, accreditation at one of two levels – pass and distinction – may be awarded. If accreditation is withheld for one or more operational areas, the assessor will make recommendations. The internal review and external assessment must then be repeated for that area.

51. The recent review of data quality arrangements has revealed slow progress. Indeed, prior to November 2000, most trusts had done very little work towards accreditation. And despite the scheme now being mandatory, only 45 per cent of trusts have yet completed stage one (for which the deadline was March 2001), and very few are on target to meet the Department of Health's March 2002 deadline for stage two [EXHIBIT 8].

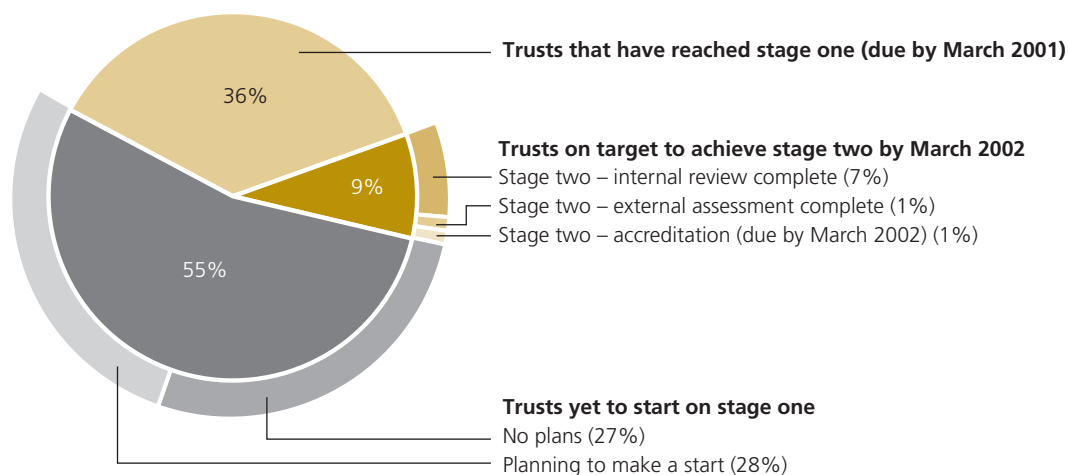
Stage three is now being revised to bring the operational areas for review in line with the priorities of the NHS Plan, and it is intended that the scheme should be extended to cover other secondary care trusts (in full) and PCTs. But it is clearly necessary to look again at the incentives for trusts to participate in this scheme, which some trusts see as disproportionately resource-intensive.

52. The third initiative to encourage trusts to improve data quality has been the introduction of a data quality 'sign-up' process. Chief executives of trusts have for the last two years been required to sign an annual declaration that the data sent to NWCS are fit for HES purposes – including performance rating and the compilation of performance indicators.

EXHIBIT 8

Progress with data accreditation as at September/October 2001

Few trusts are on target to meet the deadline for stage two.



Source: Audit Commission

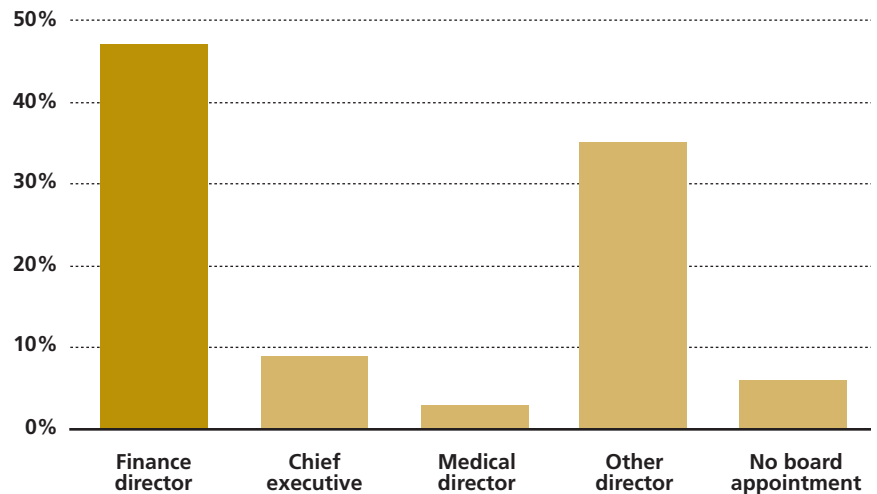
53. This requirement has undoubtedly led to many trust boards formalising responsibilities for data quality. Ninety-four per cent of trusts have assigned this role to a named board member: most frequently the responsibility falls to the same director as is responsible for finance, and only very rarely to a clinician such as the trust medical director [EXHIBIT 9]. Given the importance of reliable information about patients to corporate and clinical governance, it might have been expected that there would be more trusts in which the responsibility for patient-based information was aligned with the clinical governance responsibility.

54. Another criticism of the annual declaration is that the definition of 'fit for purpose' remains very narrow, being focused on the needs of the centre rather than the trust or its patients. This does nothing to dispel the view still held by some board members that the data collected through the PAS and the quality of those data are of interest primarily to people outside the trust – and of very limited interest to those delivering healthcare.

EXHIBIT 9

Board responsibility for data quality

Most frequently the responsibility falls to the board member responsible for finance.



Source: Audit Commission

3. The need to do more

55. Clearly, some trusts have done a great deal, both in response to national initiatives and independently, to improve the quality of information. But the first phase of the Commission's data quality review has shown that there are still too many trusts for which information has been too low a priority. For a number of reasons, this will have to change.

56. The first reason is the increasing need to collect and maintain clinical, as well as administrative, data in a systematic way. Models of care are changing very rapidly. Patients' needs can no longer usefully be defined – if they ever could – in terms of single episodes of treatment within a single speciality at a particular trust. Information, like the patient, will increasingly need to follow interdisciplinary care pathways. Different people will be making use of it in different settings, with different assumptions.

57. It follows that accuracy and consistency of interpretation of clinical records will be essential. Within the confines of a single episode of care delivered under the supervision of a single consultant, ad hoc records, in either electronic

or paper form, may be adequate. But once those confines are breached, as more and more often they are – for example, by the transfer of a patient to another hospital, or even to another department within the same trust – continuity and quality of care become dependent on data being collected in a consistent manner.

58. At the same time, clinical networks, which exist outside the formal organisational structure of trusts, are becoming increasingly important. The NHS Plan recognises that these networks will play a vital role in developing good practice. But that will not happen unless one part of the network is able to rely on the information produced by other parts.

59. These developments in clinical practice create pressure not only to improve the reliability and consistency of data that are already being collected, but also to widen the range of patient information that can be made available (subject to safeguards to protect confidentiality) to different users. Clinical data sets are already in use in mental health. Some of the benefits of integrating clinical and other patient data should be

similarly achievable if a similar approach is taken to acute services.

60. The development of clinical audit and clinical governance will also demand better-quality data. Clinical teams will be required to keep their practice under continuous review, and their ability to do this – and to satisfy CHI that proper systems of clinical governance are in place – will depend on their access to information. Some clinicians have managed in the past without becoming involved with complex information systems. But there is now a growing demand from clinicians for access (including on-line access) to central databases, coupled with pressure to make nationally held data both more robust and more accessible.

61. Reliable clinical data will also be in demand as a consequence of the new arrangements for appraisal of consultants and the related arrangements for revalidation of doctors by the General Medical Council. For their annual appraisals, consultants will be required to provide evidence of good medical practice, and this evidence and the appraisal outcomes will be considered by the GMC every five

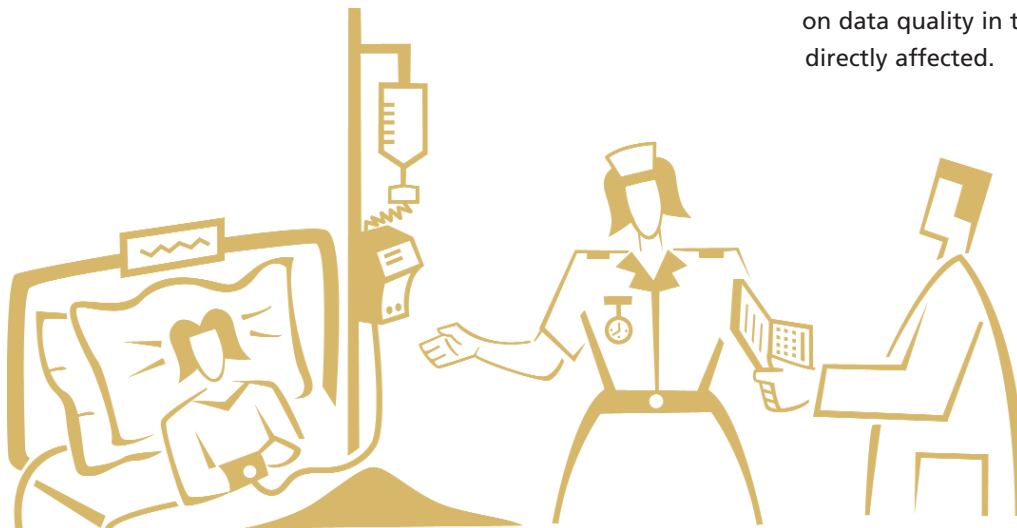
years. The GMC will then decide whether or not to revalidate the doctor concerned – without this revalidation, the doctor will be unable to practise or teach.

62. While the appraisal regulations do not prescribe the details of the evidence to be provided, it is expected to include information enabling the doctor's practice to be compared with that of his or her peers and with best practice. This will require records to be kept on a consistent basis. The growing volume of complaints and litigation gives clinicians a further incentive to want to see records of their own and others' practice maintained in a form that they can easily access and that enables comparisons to be drawn.

63. On top of all this, the government's NHS information strategy, *Information for Health*, looks forward to the development over the next few years of comprehensive patient-based records (Ref. 5). The first stage is to be an electronic patient record (EPR) containing a full history of a patient's experience within a hospital. A further development will be the electronic health record (EHR), which will bring together information from primary and secondary care and from social services. The Department of Health currently expects 35 per cent of acute trusts to have EPRs in place by March 2003, and all of them by 2005. If these targets are to be achieved and reliable EPRs

produced, the quality of patient-based data will need to improve – in some trusts, very rapidly.

64. The drive for better-quality data will also receive considerable impetus from the changes in the structure of the NHS foreshadowed in *Shifting the Balance of Power* (Ref. 2). The commissioning role will move between April and October 2002 from fewer than 100 health authorities to more than 300 PCTs. Not only will these smaller units need to familiarise themselves with the data sets produced by trusts, but they will also be much more sensitive to small errors in the data, and will demand greater accuracy. The precedents are encouraging: the rise of GP fundholding in the mid-1990s had a very positive effect on data quality in the areas most directly affected.



65. But these changes, as well as raising expectations of data quality and producing pressure to improve, also bring the risk that an imperfect situation may be allowed to deteriorate further. There are three dangers:

- At the same time as PCTs are developing their commissioning role, they are also taking on provider functions from existing community trusts. In the absence of any requirement to produce commissioning data sets for anyone other than themselves, PCTs may be tempted to allow quality to slip. Even if the will is there to maintain robust data sets, the resources may not be. Some small community trusts already have difficulty managing the complex communication requirements of NWCS, and PCTs may have even more difficulty getting hold of the necessary skills.
- The changes will add to the problems that inevitably arise when organisations merge – even when those organisations are large acute trusts where information has been well managed. Systems are often incompatible; clinicians and

managers from the merging trusts may disagree about definitions and standards; and the task of bringing together people from separate organisations and attempting to create a common culture should never be underestimated. All these problems are exacerbated by the climate of uncertainty that often precedes a merger, when skilled staff may prefer to seek new opportunities in more stable organisations than live through an unsettling change process, the outcome of which is unclear.

- Up to now, the eight regional offices of the Department of Health, while lacking a specific remit in this area, have nevertheless maintained some of the oversight of data quality that was an official responsibility of the old RHAs. The 28 strategic health authorities will have a formal responsibility for data quality, but it remains to be seen whether they will have the resources to provide effective support in this area.

66. Last but not least, members of the public need data that are comparable across trusts and over time to be properly informed about how their local hospitals, and the NHS as a whole, are performing. The NHS Plan speaks of strengthening patient choice, which will only be possible if proper comparisons can be made. Those who provide the public with assurance – including auditors and inspectors – also need to be able to base their judgements on reliable and consistent information. And as clinical audit develops as an assurance mechanism, as well as a means of spreading good practice, clinical auditors will increasingly be concerned to work to common standards and compare like with like.

4. Action required

67. All these changes mean that action to improve the quality of information is urgently needed. Over the last ten years, a great deal has been done to improve data quality in the NHS. But it needs to become a higher priority. Action plans need to be developed by the Department of Health, the NHSIA, strategic health authorities, PCTs and, in particular, by NHS trusts.

Action by trusts

68. For trusts, the aim should be to create and (what will be no less challenging) maintain a trust-wide commitment to data quality. While priorities for action will be different for different trusts, all trusts should review their current practice in four key areas:

- making use of patient-based information;
- involving board members;
- training and developing staff; and
- keeping systems up to date.

Using the information

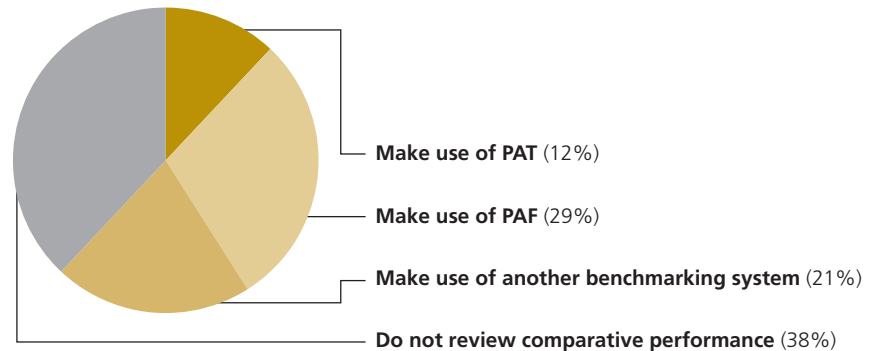
69. The biggest obstacle to data quality over all is that information systems are not actively used. A system that is well used is likely to improve. But a system that is seen as hard to use, remote or irrelevant will tend to become more so as potential users ignore or circumvent it. Yet many trusts ignore the information that is available:

although the Performance Assessment Toolkit has been available for more than a year, very few trusts so far make use of it to identify areas of variation that may be due to data quality. And only 62 per cent of trusts make use of any form of comparative information (including the PAF indicators) for this purpose [EXHIBIT 10].

EXHIBIT 10

Use of comparative performance information

Only 62 per cent of trusts make use of any form of comparative information.



Source: Audit Commission

70. While HES reports and the PAF indicators that are derived from them are insufficiently detailed for the benchmarking of specific services, they do present an opportunity for the board to reflect on trust practice and to identify areas for closer investigation. For specific benchmarking purposes, there are a number of schemes commercially available that validate HES data and marry them up with data from other sources within the trust. They then provide comparable data to all the subscribing trusts. By this means, trusts have access to timely and credible information about their comparative performance that would not otherwise be available [CASE STUDY 1]. But there is a cost – which could be greatly reduced if more reliance could be placed on the data already collected.

71. One way in which trusts could make more use of patient-based information is in performance management of clinicians and others whose performance those data purport to measure. That few trusts do so may in part be because the relevant information is not always readily accessible from the PAS, and is out-of-date for performance management purposes

CASE STUDY 1

Using an independent benchmarking service

Barts and the London NHS Trust has used a comparative benchmarking service since 1995. In addition to the basic service, the trust has used extension modules covering clinical indicators and clinical governance, and has purchased modelling support services to help develop plans for a major rebuild and refurbishment under the private finance initiative. The main benefits accrue from the ability to benchmark the trust against peer groups chosen by the trust from the supplier's extensive customer base.

The service to which the trust subscribes now has over 100 subscribers from all parts of the UK. More than 50 hospitals currently use its performance benchmarking network, launched in 1998 with the aim of helping hospitals use benchmarking clubs to examine their practice and patient-based processes.

An aspect of the service that the trust particularly values is the availability of skilled, experienced and knowledgeable consultants who are able to provide significant added value to the basic reports.

by the time HES reports are available. This should, however, be seen as a reason to invest in more timely patient information flows, not to set up parallel systems for performance review.

72. It is important when developing performance management systems to ensure that the assessments of performance and the language used by those managing the process reflect shared corporate values. One reason for

the traditionally low involvement of clinicians in performance management has been that performance indicators and the information systems through which they are produced have been seen as focused on measuring efficiency rather than the quality of care. With the development of an appraisal system for hospital doctors based on standards of practice, that need no longer be the case. But trusts will still need to take care to

engage clinicians and other staff in the design of the systems through which data will be collected for performance management purposes.

73. Another principle of performance management is that those whose performance is being managed should gain some perceptible benefit from their involvement. It follows that there should be some direct benefit to staff from greater involvement in ensuring data quality. This is best approached by ensuring that information systems support staff in their day-to-day work – particularly their work with patients – rather than being designed around the needs of the corporate centre [CASE STUDY 2].

CASE STUDY 2

Encouraging trust staff to use information

City Hospital NHS Trust sees getting staff to use information in their day-to-day work, as well as to support audit, planning and research, as the best way to improve data quality. If the information is useful to them, staff take on the ownership of data quality, ensuring that their data are collected accurately and appropriately. Working on this principle, the trust has developed an extensive intranet to improve access to and use of electronic information.

The development of the intranet has been predominantly user led, developing reports in a format and to a timescale that staff want. Reports that have been produced include:

- an electronic patient record so that doctors and nurses can easily view attendance history, clinical coding, test results and clinical letters;
- a doctor's ward round report with similar information; and
- reports for clinical nurse specialists and staff responsible for infection control that highlight when their patients are due to be admitted or have been admitted.

The intranet also provides a wide range of data quality reports – simplifying the process of identifying missing or inaccurate information. These are available to all staff involved in data checking.

Involving board members

74. One group within the trust that needs to use – and be seen to use – the available information is the trust board. The fact that a trust has nominated a board member with corporate responsibility for data quality does not always mean that it is recognised by the board as a whole as an essential element of corporate governance. For this to be the case, the board must demonstrate that it uses and relies on the available patient-based information, including HES reports, in its monitoring and planning processes. If this does not happen, some of the information may easily come to be seen, in other parts of the organisation if not by board members, as produced for external needs only.

75. Even where trust boards do ‘own’ their data, non-clinical directors sometimes have difficulty sharing this ownership with clinicians. Ensuring that high-level data are of sufficient quality (and signing the annual declaration to that effect) is clearly a task for corporate management, but managers will need the assurance that the underlying data reflect

actual patient experiences. This they cannot always obtain. Some clinicians are reluctant to engage in what they see as a flawed process; but if the good performers fail to play their part in ensuring data quality, there will always be the danger of a few using poor quality data to conceal poor practice.

76. One way for trust boards to demonstrate their commitment to data quality is by taking the process of data certification as seriously as the process of signing off the annual accounts. At present, financial data are rigorously checked before publication, with a clear audit trail showing who has taken responsibility for accuracy and completeness of the accounts at each stage of preparation. The final accounts require full board approval, and are then subjected to external audit on an annual basis. Patient-based information, in contrast, requires only to be certified by the chief executive, who may have little incentive to question its accuracy [TABLE 2]. In the Commission’s view, public service organisations should check and validate the reports they make of the outputs and outcomes they

have delivered with the same rigour as they apply to their accounts of the inputs they have consumed. This is all the more important where the reports are the main source of information on clinical governance.

TABLE 2

Comparison of sign-off processes for final accounts and patient-based data

Final accounts	Patient-based data
Draft accounts sent to auditors by 24 May.	Final corrections to data sent to NWCS by 1 June.
Auditors audit draft accounts and report to the board.	Trust data are validated by the Department of Health and a DQI provided.
Board receives auditors' report and formally approves accounts.	Arrangements for review of feedback on data quality are at the discretion of trust management.
Directors accept responsibility for: <ul style="list-style-type: none"> • making reasonable and prudent judgements and estimates; • following standards; • consistent application of policies; • reasonable accuracy; and • adequate systems of internal financial control. 	Chief executive is required to confirm only that data quality has been assessed, using DQRs and other information.
Chief executive and director of finance sign statement of responsibilities on behalf of the board.	Chief executive signs data quality sign-up document (without necessarily involving other board members).
Auditors issue opinion (for the benefit of all potential users of the accounts) as to whether the accounts provide a true and fair view.	Chief executive certifies that data are fit for national information purposes as source data for HES.
Accounts are published by 30 September.	Data are made publicly available through HES – complete data set available in December.
Public meeting held within six months of year-end.	No specific opportunity for public questioning.

Training and developing staff

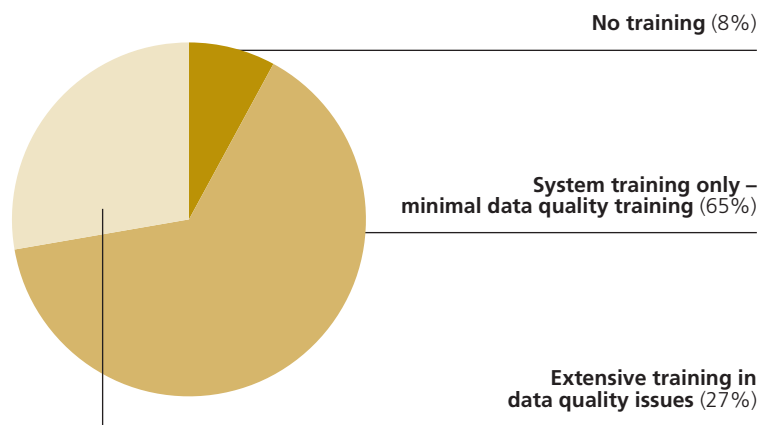
77. A problem in some trusts is that too few individuals understand the data collection system, so it is seen as a 'black box'. Auditors' reviews reveal that 90 per cent of trusts now provide some training or guidance in the use of IT systems, but data quality issues are rarely covered in any depth [EXHIBIT 11]. Few trusts have clearly documented procedures to ensure that proper use is made of data standards. And management training rarely focuses on the management of information as a key competency.

78. There is a need for staff at all levels to be trained in the uses of information, and to learn how appropriate use of information systems can empower them in their jobs. With appropriate training, data input clerks, coders and clinicians, in particular, could be better equipped to see the bigger picture, and so to provide mutual support, recognising the requirement for different types of expertise. The NHS Modernisation Agency has developed a number of initiatives in this area, bringing together information professionals and clinical teams, and the Department of Health's Information for Health programme includes

EXHIBIT 11

Percentage of trusts providing training in information systems

Data quality issues are rarely covered in any depth.



Source: Audit Commission

training for clinicians in the effective use of IT.

79. It is particularly important to recognise the expertise of the clinical coders, on whom the accuracy of some very important patient information depends. In Australia and the United States, clinical coding is largely a graduate profession; in England, in contrast, the professional status and the remuneration of coders have both traditionally been low. There is now a national clinical coding qualification, but achievement of the qualification is not always

accompanied by additional recognition within the trust or any tangible reward.

80. Against this background, it is not surprising that many trusts report recruitment and retention problems. An immediate upgrading of large numbers of clinical coders would be a costly option and would not necessarily solve the immediate difficulties. But there are selective actions that could be taken in trusts to enhance the status of clinical coders by rewarding those (hitherto, few in number) who succeed in reaching high levels of

competence, with a view to improving recruitment and retention in the profession as a whole.

81. As well as encouraging coders to develop their skills, and rewarding those that do, there are other steps that trusts can take to improve the quality of coding. The NHSIA has produced an audit framework for coded clinical data for use by trusts, and several trusts have undertaken coding audits, using internal audit staff or (in some cases) teams of clinical coders. Others are examining ways in which the information contained in casenotes could be more rapidly transferred into a usable form, by rethinking the respective roles of coders, ward clerks and medical secretaries and through the application of modern encoding systems.

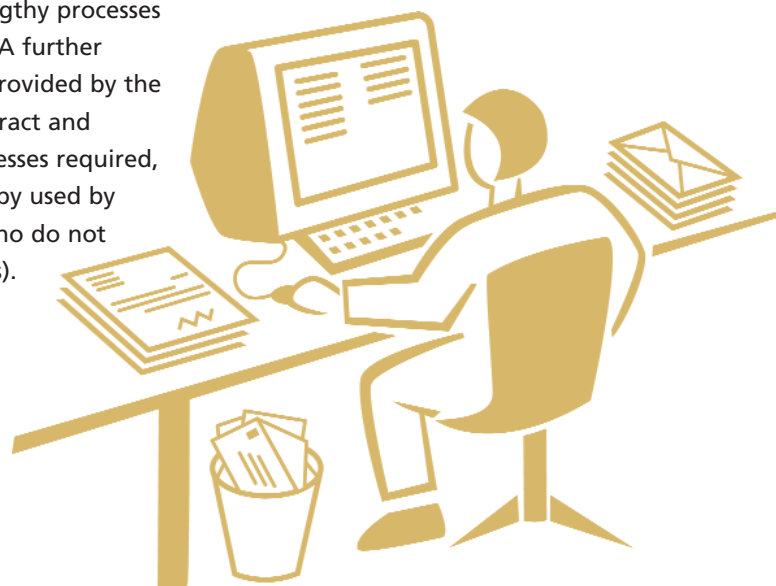
Keeping systems up to date

82. Improving data quality is more about encouraging positive attitudes than installing the best IT systems. Nevertheless, quality problems can be aggravated by out-of-date systems. In many trusts, the PAS is more than ten years old, and was never designed to process the range of data that is required

today. Auditors have reported some systems becoming unacceptably slow under the weight of data they are now asked to collect and have found evidence of staff turning off automatic internal data validation checks to speed up system performance.

83. Another problem with current information systems is that they yield no immediate benefits for those who use them. In many trusts, it is difficult to extract even the trust's own performance data from the PAS, and structured comparative information only becomes available to the trust once data have made their way through the NWCS to the HES, and gone through the lengthy processes required there. A further disincentive is provided by the complicated extract and messaging processes required, which can only be used by trained staff (who do not exist in all trusts).

84. The inadequacy of the information systems in use in many trusts can be attributed partly to a lack of investment. In many trusts, auditors have found poor data quality and slow take-up of data accreditation associated with low levels of funding for these activities. And even when specific funding has been made available from the Department of Health, trusts have had difficulty in justifying the costs when faced with apparently more urgent priorities. There are no formal mechanisms requiring trusts to keep their systems up to standard – as there are, for example, in primary care.



85. Commitment to data quality should involve a continuing commitment to keep systems up to date. Internal validation is clearly an essential feature of a modern PAS, and should ideally be built in to the system in a way that ensures that it remains fully functioning. System capacity should be brought in line with today's information requirements. And, where possible, it makes sense to rationalise systems, collecting data through a single system – or at least systems that are regularly reconciled [CASE STUDY 3].

86. The key is to invest on a continuous basis, rather than waiting until change is inevitable. EPRs will undoubtedly require modern systems, but that should not be an excuse for postponing necessary investment in the modernisation of the PAS, which in some trusts is already overdue. Auditors' reviews have shown that a number of trusts have shelved planned investments in information systems, presumably in anticipation of major changes when they move to the production of EPRs.

CASE STUDY 3

Linking clinical and administrative systems

The standards for the development of small clinical databases at Great Ormond Street Hospital for Children NHS Trust include a requirement that, wherever possible, patient demographic information must be sourced from the patient administration system (PiMS). This approach has already been implemented on a number of existing small databases (including those covering haematology and oncology, haemophilia, and speech and language). Users of the clinical system can either view PiMS data or download them into the clinical system. In either case, the data cannot be changed in the clinical database; they must be changed in PiMS and the clinical database 'refreshed'. Key referral, inpatient and outpatient activity data can be accessed through the clinical systems in the same way.

This approach has several advantages. Data common to two or more systems only need to be entered once, saving staff time. The Trust moves closer to having a single version of key data items. And owners of the smaller systems have real ownership of the PiMS data as well as their own, with an incentive to keep PiMS up to date.

The trust is continuing to develop its Electronic Patient Record (EPR) approach, which will provide better linkage over a wider range of data, as well as technically superior performance. In the mean time, however, the approach adopted is seen to be delivering real benefits.

Action by PCTs

87. The actions that trusts need to take are equally relevant to PCTs in their roles as providers of healthcare. But PCTs should also make use of their power as commissioners to ensure that their provider trusts maintain and improve the quality of the data that is provided for commissioning purposes. This is best done by including a data quality requirement in every service agreement.

Action by the NHSIA

88. The first step for the NHSIA should be to ensure that the definitions in use – now some 20 years old – are brought up to date. The decision to move to new schemes, both of classification coding (ICD-10 and OPCS-4) and of clinical terminologies (SNOMED-CT), provides a window of opportunity. The NHSIA and clinicians need to work together to ensure that future definitions are both robust and have general acceptance.

89. The difficulties of coming to an agreement on workable definitions should not be underestimated. While there is widespread acceptance of the broad categories

such as healthcare resource groups (HRGs), not all clinicians agree with the more detailed definitions maintained by the Office of National Statistics (ONS) or by the NHSIA. And clinicians sometimes differ among themselves about how patients' conditions should be classified. Nevertheless, in many clinical areas it should be possible to resolve these differences; and resolution is clearly necessary if full use is to be made of the information.

90. There is also a need to clarify non-clinical data standards. Common standards are a clear prerequisite if data are to be compared, and the centre has long accepted a responsibility for their quality. The NHSIA is responsible for maintaining common definitions of the data items that are collected through the NWCS, as well as rules for their compilation and transmission. Where standards are lacking, there is wide scope for local interpretation. This can put data quality at risk – for example, in the classification of day cases and of waiting times.

91. Both definitions and standards need to be kept up to date. This is no easy task. The responses to the Department of Health's recent consultation on changes to the PAF point to the difficulties of maintaining consistent, up-to-date definitions at a time when not only organisational boundaries, but also models of care, are changing. And definitions need to be updated from time to time to take account of the different ways in which data will be used – what is adequate for one purpose may be wholly inappropriate for another.

92. The way forward should become clearer over the next few months as the NHSIA develops its national data quality strategy. The purpose of this strategy is to 'provide a coherent framework for individual developments, provide formal authorisation for investment in this work, integrate approaches to data quality and provide coherence as the NHS moves to electronic records systems'. This is an important agenda, which the Commission is committed to support.

Action by the Department of Health

93. The efforts of the NHSIA to develop and maintain more appropriate standards need to be supported by a disciplined approach from the Department of Health. The key here is to focus on information that is really needed – as many trusts have urged. It will be equally important to avoid making ad hoc requests or setting up parallel information flows. Where clinical data sets are required to support national service frameworks they must be linked in to the main data collection systems through the NWCS.

94. The Department has a key role, too, in encouraging and supporting trusts' efforts to improve data quality through the national performance management framework. At present, this provides few direct incentives to improve data quality, and completing the process of data quality sign-off can sometimes appear to have a higher priority than ensuring the accuracy of the data submitted. Consequently, it is possible for some trusts to be given performance ratings on the basis of poor quality information.

95. One possible response would be to make the data quality sign-off process more rigorous by requiring an independent assessment of the systems in place to produce the return. Another, which is now under consideration, would be to integrate the Data Accreditation Scheme with the performance rating system so that failure to maintain data quality would influence a trust's 'star' rating, and so the degree of freedom granted it to manage its own affairs. This would make a clear link between 'earned autonomy' and the quality of corporate governance, of which data quality is a crucial element.

96. In all this, it will be vital for the Department (and the NHSIA) to maintain a dialogue with trusts on the ways in which data are collected and used. Consultations, such as that recently carried out on changes to the PAF, are valuable as a way of engaging trusts in the wider debate on how their performance is measured, as well as obtaining their views on specific issues of data quality.

97. An example of how a partnership approach to the management of information could work in England and Wales is provided by the experience of the NHS in Scotland. Here, patient records have been collected in a similar form for over 30 years. The Information and Statistics Division (ISD) of the Common Services Agency plays a key role in keeping data quality high, and is seen as supporting the front-line work undertaken in trusts. As a result, NHS bodies can link data in ways that clearly have the potential to improve patient care. While the relatively small size of the country (one-tenth that of England) undoubtedly helps communication within and outside the NHS, the principles of continuous improvement on which the Scottish system has developed are equally applicable to much larger health economies [BOX B].

BOX B

NHSScotland – a model of excellence in data quality

NHSScotland's Information and Services Division (ISD), which is responsible for collecting, validating, interpreting and disseminating information about the NHS in Scotland, provides a statistical information and intelligence service to a wide variety of customers. The patient databases held by ISD contain information on over 35 years of hospital activity within Scotland.

ISD receives health service activity, manpower and finance data from health boards, NHS trusts and general practices. The data are collected, validated, interpreted and disseminated by ISD, securely and in accordance with the requirements of data protection legislation.

Some of ISD's main areas of work include:

1. Support with national standards and reference files

ISD updates and distributes reference files weekly to all organisations that use them. Trusts are responsible for applying the regularly updated files to their own information systems.

2. The national SMR databases

The Scottish Morbidity Record has been collected in a similar form since 1969.

The recognised excellence of both data content and quality are attributed to:

- national coverage: hospitals, health boards and other healthcare providers send patient-level data for up to 48 different 'data schemes' ('data sets' in England). These include: admitted patients, outpatients, maternity, neonatal, waiting list, geriatric long stay, cardiac surgery, drugs misuse, A&E waiting times, prosthetic services and mental health;
- full conformance with national standards and definitions: standards are defined and agreed as national according to an agreed process, which follows a cycle of full consultation, defining, publishing, monitoring and advising. This process is used for data definitions and for ad hoc papers on specific subjects; and
- ISD support for source generation of SMR data at trust level, through activities such as training, monthly feedback, consultancy services relating to PAS, HISS¹ and other (especially new) systems, monitoring completeness, quality and timeliness of data on an ongoing basis, and user manuals.

3. Data quality

ISD provides a rigorous data quality support service. Data quality is checked at all stages of collection, generation, processing, use and analysis, and there is retrospective sampling of national SMR data.

The support for data quality includes a complex cross-validation service. The majority of validation is undertaken locally by the trusts themselves using software supplied to them free of charge.

There has also been a data accreditation scheme in operation since 1997. To achieve accredited status data must be 99 per cent error free for three months.

4. Clinical coding support

ISD provides training for all of Scotland: several hundred staff were trained for implementation of ICD10.

ISD hosts a specific Clinical Coding Centre, with a complement of staff working with trusts to support the data accreditation process and audit the SMR data.

¹ Hospital Information Support System.

5. Conclusion

98. The government expects information used for management purposes in the NHS to be ‘accurate, relevant and timely to inform decision making which is appropriate and based on evidence’ (Ref. 6). Patient-based information does not yet meet those criteria. This paper has set out some of the steps that should be taken to improve the availability and the quality of the evidence on which important decisions will need to be based. While some improvements will take a long time to be fully implemented, immediate action is required if the NHS is to meet the demands now being placed upon it.

99. The government has expressed its determination to improve the quality of patient-based information. In its response to the Kennedy Report, the Department of Health has outlined plans to establish an Office for Information on Health Care Performance with a focus on the monitoring of clinical performance nationally (Ref. 7). Among its duties will be:

- to assess the adequacy of current data;
- to evaluate the systems for data collection and analysis; and
- to make recommendations for improving these.

100. The Department of Health and the NHSIA also have key roles in supporting trusts’ own efforts to improve. While maintaining continuity and standards, they need to keep an eye on the possible consequences of technological change, and of organisational and structural change within the NHS. Above all, they must promote:

- a partnership approach to determining information needs;
- an environment within which good practice can be shared and discussed; and
- a performance culture focused on continuous improvement.

101. But the key to better quality information is held by trusts themselves. The most urgent priority, therefore, is that every trust should have a well-considered and well-resourced plan of action for improving the quality of information and actively monitoring that improvement at all levels – from clinical team to trust board. The suggestions in section 4 of this paper (which are brought together in a pull-out checklist) should help trusts and others to analyse where they stand and to set appropriate priorities.

102. The Commission and its appointed auditors are committed to helping in this process. Work on data quality is now a core part of the annual audit for NHS trusts. Every trust board has received a report from its auditor providing an overview of the issues that the trust faces, and these will be followed up in 2002. Data quality work in 2002 will also, at the request of the Department of Health, include in-depth reviews of those trusts identified in the light of the 2001 reviews as being most at risk.

103. For all trusts, the 2002 reviews will assess the adequacy of the arrangements for producing key performance indicators, including inpatient and outpatient waiting times. Auditors will look at a further 15 indicators in acute hospitals, as well as considering issues around the internal use of data and focusing more closely than has been possible in 2001 on the accuracy of clinical coding. The reviews, which will also cover PCTs and ambulance trusts, should provide an up-to-date picture of the further progress that has been made in this critical area.

Appendix 1

Members of the external advisory group

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4. Audit Commission (1995) *Setting the Records Straight: A Study of Hospital Medical Records*.
5. NHS Executive (1998) *Information for Health: An Information Strategy for the Modern NHS 1998-2005: A national strategy for local implementation* (Department of Health).
6. House of Commons Hansard (26 November 2001), Col. 737W.
7. Department of Health (2002) *Learning from Bristol: The Department of Health's Response to the Report of the Public Inquiry into children's heart surgery at the Bristol Royal Infirmary 1984-1995*.

The Audit Commission has produced a number of studies covering related issues. The following may be of interest to readers of this paper:

Setting the Records Straight

A Study of Hospital Medical Records

The result of an extensive study of NHS hospitals, *Setting the Records Straight* provides practical guidelines for organising medical records based in the good practice that was identified. It looks at the content of records, the way that they are stored and distributed, their overall management and possible future development.

Contents: On the record; The paper chase; The management agenda; More radical solutions.

*National Report, 1995, ISBN 0118864122, £10,
stock code HNR1134*

Setting the Records Straight

A review of progress in health records services

This update examines what progress has been made since the original report (above).

Contents: Introduction; Overview of the role; Understanding the health service; Behaviour; Boards' working practices; Responsiveness to the community.

*Update, 1999, ISBN 1862401888, £5,
stock code HUP1357*

Change Here!

Managing Change to Improve Local Services

Managing change is one of the greatest challenges facing public services. *Change Here!* is a guide for top managers in local government and the NHS that draws together the Audit Commission's considerable knowledge and experience of how local bodies can manage change successfully and overcome barriers to improving services. A light and interesting read for chief executives and their executive teams, this guide is illustrated with case studies which highlight some of the key lessons and show how they have been applied in practice in a variety of situations.

Contents: Introduction; Role of the leadership team; Local ownership; Sustaining focus on the key priorities; Focus on users; Managing the change programme; Using external help; Building capacity for continuous improvement; Conclusion

*Management Paper, 2001, ISBN 1862402752, £25,
stock code GMP1804*

Hidden Talents

Education, Training and Development for Healthcare Staff in NHS Trusts

This report explores methods that trusts can adopt to help them to proactively manage education, training and development for their staff, from creating an organisation-wide training and learning culture, through to setting up effective support systems to make it a reality. The study focuses on nurses, midwives, health visitors, allied health professionals, scientific and technical staff and health care staff without a professional qualification.

Contents: Getting the best from training and development; Identifying training needs; access to education, training and development; Improving access; The way forward.

*National Report, 2001, ISBN 1862402701, £20,
stock code HNR1519*

The Audit Commission has also published a number of general publications on the principles and practice of performance management, including the use of performance indicators:

Aiming to Improve

The Principles of Performance Measurement

*Management Paper, 2000, ISBN 1862402272, £15,
stock code LMP1400*

On Target

The Practice of Performance Indicators

*Management Paper, 2000, ISBN 1862402280, £15,
stock code LMP1398*

Getting Better All the Time

Making Benchmarking Work

*Management Paper, 2000, ISBN 1862402531, £14,
stock code LMP1497*

**To order Audit Commission publications, please telephone 0800 502030,
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NHS performance is under close scrutiny. The NHS Plan emphasises the need for continuous improvement, supported by a comprehensive system of performance assessment. But there are serious doubts about the quality of the information on which performance assessments are currently based. At the same time, there has been a growing awareness that more use could and should be made of the wealth of patient-based data that the NHS collects.

This paper presents the results of the first phase of a review of data quality in NHS trusts undertaken by auditors in 2001. It highlights the problems of ensuring that data are fit for the range of uses to which they need to be put – including patient care and clinical governance as well as performance management. It provides practical advice on the steps that trusts should take to improve the quality of the information available to support both clinical and corporate decision-making. A checklist of questions is included to help those with clinical or corporate governance responsibilities to evaluate their own performance in this area.

The paper and the checklist are intended to stimulate discussion at board level in NHS trusts, primary care trusts and strategic health authorities on data quality issues, and to help both board members and senior managers to improve the quality of the information on which they, their staff and their patients base vital decisions.

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SELF-EVALUATION QUESTIONS
FOR NHS TRUSTS AND PCTS

data
remember

improving the quality of patient-based
information in the NHS



Using information

- 1 To what extent does the trust use comparative performance information (PAF, PAT or an external benchmarking service) to identify areas of variation that may be due to data quality?
- 2 How frequently is this done?
- 3 How is patient-based information used in performance management?
- 4 How recently has the trust reviewed its approach to performance management of staff? What has been done to ensure that the performance management system is seen to address agreed corporate priorities?
- 5 What steps have been taken to involve staff (including clinicians) more closely in the design of data collection systems?
- 6 What has been done to encourage staff to engage with data quality issues?

Involving board members

- 1 In what ways can the trust board be seen to make use of patient-based information?
- 2 What action has been taken to ensure that responsibility for data quality is shared by all board members?
- 3 How does the trust involve clinicians in assuring the quality of patient-based information?

Training and developing staff

- 1 What percentage of staff have received training in the use of information systems?
- 2 What form did that training take?
- 3 How far does training in the use of information systems include training in data quality?
- 4 What action has the trust taken to review the incentives for clinical coders and other information staff to improve their professional skills?
- 5 Has the trust considered undertaking a data quality audit?

Keeping systems up to date

- 1 What mechanisms are in place to ensure that systems are continuously updated?
- 2 Have any opportunities been taken to rationalise systems?
- 3 What action has the trust taken to ensure that all new systems are compatible with, and able to be linked to, the PAS?

Commissioning

- 1 Do service-level agreements include a requirement for data quality?