

## Board of Directors (Public)

Item 6.6

## Board Report

**Subject:** Data Quality Strategy  
**Date of meeting:** 28<sup>th</sup> July 2015  
**Prepared by:** Tony Grayson, Head of Information Services and Jackson, Director of Research & Informatics  
**Presented by:** Dr Mark Jackson, Director of Research & Informatics

Data Quality Rating	BAF Ref	Impact on BAF Risk Rating
Mixed	3	Reduction in Likelihood score recommended

### Purpose

The purpose of this paper is to present a new framework for the assessment of data quality together with a plan for improving areas that have been identified as sub-optimal.

### Recommendation

The Board of Directors is asked to approve the data quality strategy for implementation.

# **Data Quality Strategy**

**July 2015**

**Mr Tony Grason & Dr Mark Jackson**

## Introduction

Assurance on the quality of data used across the Trust has historically been measured by combining the level of assurance about data quality with the volume of data used resulting in the below scoring matrix:

Approx. margin of error (sample size)	Unvalidated	Internally validated	Externally validated
> 10% (<= 100 data items)	Bronze	Bronze	Silver
5-10% (> 100 – 400 data items)	Bronze	Silver	Gold
< 5% (>= 400 data items)	Silver	Gold	Platinum

However, this approach is non-standard and has limited utility. An audit undertaken by MIAA of the Trusts arrangements for delivering the Quality Governance Framework recommended that a robust system and process was put in place for reviewing the quality of data reported to the Board and improving it. The decisions we take are crucially dependent upon the quality of our data, and as such the governance arrangements which underpin good data quality are equally as important as other governance arrangements (so called “data governance”).

There is a dependency between data quality and information quality in that poor data quality will constrain the quality of any information derived from that data. Data quality can therefore be seen as a key component of information quality.

Information is increasingly used in new and different ways, in a range of different settings, underpinning the continuity and quality of care. These developments create pressure to improve the quality and standardisation of existing information collections, but also lead to new and increased demands for information to be made available to different users.

The Trust should take reasonable steps to ensure accuracy of all data recorded and ensure systems and processes are developed to support data collection activities.

## Vision

The vision of the Trusts Data Quality Strategy is as follows:

*To strive to achieve\* the highest quality of data available for decision-making across the Trust*

\* The Trust will be constantly looking for opportunities to improve data quality that are both affordable and within our sphere of influence

## Objectives

### Primary objective

The primary objective of the Trusts Data Quality Strategy is to ensure that the key performance indicators (KPIs) reported to the Board through strategic and operational objectives meet the highest possible standard.

### Secondary objectives

Secondary objectives of the Trust Data Quality Strategy will include the following:

- delivering and maintaining the highest level of data quality within data submitted to the Secondary Uses Service (SUS), facilitating national analyses
- ensuring that data used as part of the NHS Choices initiative on Clinical Indicators is validated and signed off on a monthly basis, again facilitating national analyses
- ensuring a process for using external data quality measures as provided by Commissioners is in place and responding as appropriate to issues raised
- continuing delivery of the highest possible standard of data completeness and validity as measured by the Information Governance Toolkit
- continuing delivery of the highest possible standard of clinical coding
- ensuring robust processes are in place for all key data collection systems within the Trust and that poor data quality issues are proactively managed

## **Deilvery**

### *1. Primary Objective – ‘Six-Dimensions’ of Data Quality*

The primary objective will be measured by applying the ‘Six-Dimensions’ of Data Quality as recommended by the Audit Commission in 2009. A bespoke data quality assessment tool has been trialled and refined after testing on three performance measures (see Appendix 1).

Once routinely applied to all KPIs reported to the Board through strategic and operational objectives, the ‘Six-Dimensions’ of Data Quality will also measured across other KPIs not reported to the Board on a routine basis to ensure a richer source of data exists across the Trust at all levels.

The ‘Six-Dimensions’ of Data Quality are shown on the following page:

Figures You Can Trust; A Briefing on Data Quality in the NHS (Audit Commission, 2009) presents the six dimensions of data quality.

Dimension	Description
<b>Accuracy</b>	Data should be sufficiently accurate for its intended purposes, representing clearly and in sufficient detail the interaction provided at the point of activity. Data should be captured only once, although it may have multiple uses. Accuracy is most likely to be secured if data is captured as close to the point of activity as possible. Reported information that is based on accurate data provides a fair picture of performance and should enable decision making at all levels. The need for accuracy must be balanced with the importance of the uses of the data, and the costs and efforts of collection. For example, it may be appropriate to accept some degree of inaccuracy where timeliness is important. Where compromises have to be made on accuracy, the resulting limitations of the data should be clear to its users.
<b>Validity</b>	Data should be recorded and used in compliance with relevant requirements, including correct application of any rules or definitions. This will ensure consistency between periods and with similar organisations. Where proxy data is used for an absence of actual data, organisations must consider how well this data is able to satisfy the intended purpose.
<b>Reliability</b>	Data should reflect stable and consistent data collection processes across collection points and over time, whether using manual or computer based systems or a combination. Managers and stakeholders should be confident that progress toward performance targets reflects real changes rather than variations in data collection approaches or methods.
<b>Timeliness</b>	Data should be captured as quickly as possible after the event or activity and must be available for the intended use within a reasonable time period. Data must be available quickly and frequently enough to support information needs and to influence the appropriate level of service or management decisions.
<b>Relevance</b>	Data captured should be relevant to the purposes for which it is used. This entails periodic review of requirements to reflect changing needs. It may be necessary to capture data at the point of activity which is relevant only for other purposes, rather than current intervention. Quality assurance and feedback processes are intended to ensure the quality of such data.
<b>Completeness</b>	Data requirements should be clearly specified based on the information needs of the organisation and data collection processes matched to those requirements. Monitoring missing, incomplete, or invalid records can provide an indication of data quality and can also point to problems in the recording of certain data items.

Any KPIs failing components of the 'Six-Dimensions' of Data Quality will have action plans for improvement put in place with agreed timescales and owners identified with responsibility for delivering such improvements.

As part of a baseline assessment to underpin the Trusts Data Quality Strategy, all KPIs forming part of the Boards strategic and operational objectives for 2015/16 have been assessed using Appendix 1, except for new KPIs for 2015/16 whose methodology remains to be established or data flows have yet to commence.

There are 30 indicators on the Trusts Strategic Dashboard; 6 of which are new indicators for 2015/16. Of the remaining 24 indicators all have been assessed (9 of these indicators are also operational objectives). The new indicators will be assessed before the end of September 2015, allowing sufficient time for methodologies to be established and data flows to commence.

With regards to the Trusts Operational Dashboard, there are 51 indicators (operational indicators only) and all assessments have been completed.

### Findings

#### a. Accuracy

Three indicators assessed have been rated as red with respect to the measure of accuracy. The indicators in question are Trust absence rate, Trust absence days, and mixed sex accommodation. Inaccuracies reported in the absence data are largely due to the current dependency on dual data entry into multiple systems. Issues in relation to mixed sex accommodation breaches are due to a historical incorrect interpretation of reporting guidelines specifically related to inclusion/exclusion criteria. The guidance allows for mixed sex accommodation breaches to be excluded from reporting when it is clinically appropriate to do so. Locally this had been interpreted as critical care, but patients who were deemed fit to leave critical care and therefore be in a bed on a ward were also being incorrectly excluded.

#### b. Validity

Four indicators have been rated as red in relation to validity and this is being driven by discrepancies in the definitions being used. The indicators rated as red are: turnover rate (Trust total and 1-2 years of service), mixed sex accommodation and emergency readmissions.

The issue related to turnover rates is regarding a discrepancy between the nationally reported measure of turnover which includes all staff turnover and is not just focused on voluntary resignations. This means the Trust Board is reviewing a turnover measure that could be at odds with a measure being reviewed externally.

Mixed sex accommodation validity concerns are related to interpretation of guidelines as mentioned in accuracy.

Emergency readmission validity concerns exist due to the Trust being denied access to readmission data to other hospitals that was previously shared from Commissioners, resulting in the Board only being sighted on readmissions back to our Trust.

#### c. Reliability

Six indicators have been rated as red in relation to reliability with subsequent refresh of the data leading to material differences in whether these indicators are rated as above or below performance targets. The indicators rated as red are: number of potential harm events, number of reported incidents, number of medication errors, mixed sex accommodation, absence rate and absence days.

The first three are being driven by poor timeliness of data entry into the Trusts Risk Management system, but could also be related to lack of clarity in relation to definitions. During 2014/15, the number of medication errors reported changed from amber (above target but improved performance compared to the previous year) to a red rating (above target and worse performance compared to the previous year) following a refresh of data half way through the year which in turn impacted on the number of potential harm events and incidents reported.

Absence rate and therefore also the number of absence days is repeatedly shown to fluctuate each month from a previous month being reported as green and then changing to a red rating the following month. This is being driven primarily by sickness data missing the Trusts SVL deadlines and being captured therefore a month in arrears.

Issues relating to mixed sex accommodation have been mentioned earlier in accuracy.

d. Timeliness

Timeliness is the biggest issue identified in all assessments. There are 40 indicators flagged as red and therefore failing this specific dimension.

Issues related to timeliness are a mixture of delays in data capture and frequency/speed of reporting once captured. See Appendix 2 for more detail. A recent review by MIAA also identified timeliness as an issue impacting on the reporting of the number of falls, pressure ulcers and medication errors providing a useful external validation of the Trusts new process for assessing the data quality of its key performance indicators (MIAA Data Quality Review, June 2015).

e. Relevance

All indicators currently reported to the Board have either been selected to specifically measure strategic objectives for the year or are commonly reported to the Boards of other hospitals in accordance with a previous audit conducted by MIAA (MIAA Electronic Integrated Performance Review, February 2014). Therefore, no indicators have failed the relevance test for 2015/16.

f. Completeness

Five indicators assessed have been rated as red with respect to the measure of completeness. The indicators in question are Trust absence rate and days, mixed sex accommodation, and cancelled operations including the cancelled operations 28-day guarantee.

Absence data is noticeably incomplete at the time of reporting with inaccuracies reported in the data due to the current dependency on dual data entry. Mixed sex accommodation is affected by the issue raised in accuracy. Cancelled operations data is also known to be incomplete at the time of reporting to an unacceptable standard mostly as a consequence of poor process in relation to data capture.

Data Quality Score

All completed assessments are shown in Appendix 2, highlighting which components of the 'Six-Dimensions' failed for each indicator. Appropriate actions for improvement, owners and timescales for action are also included.

Based on the completed assessments, the current overall data quality score for indicators reported to the Board is **87%**. The Trust Data Quality Strategy aims to improve this score to **95%** or above by July 2016.



## 2. Secondary Uses Service

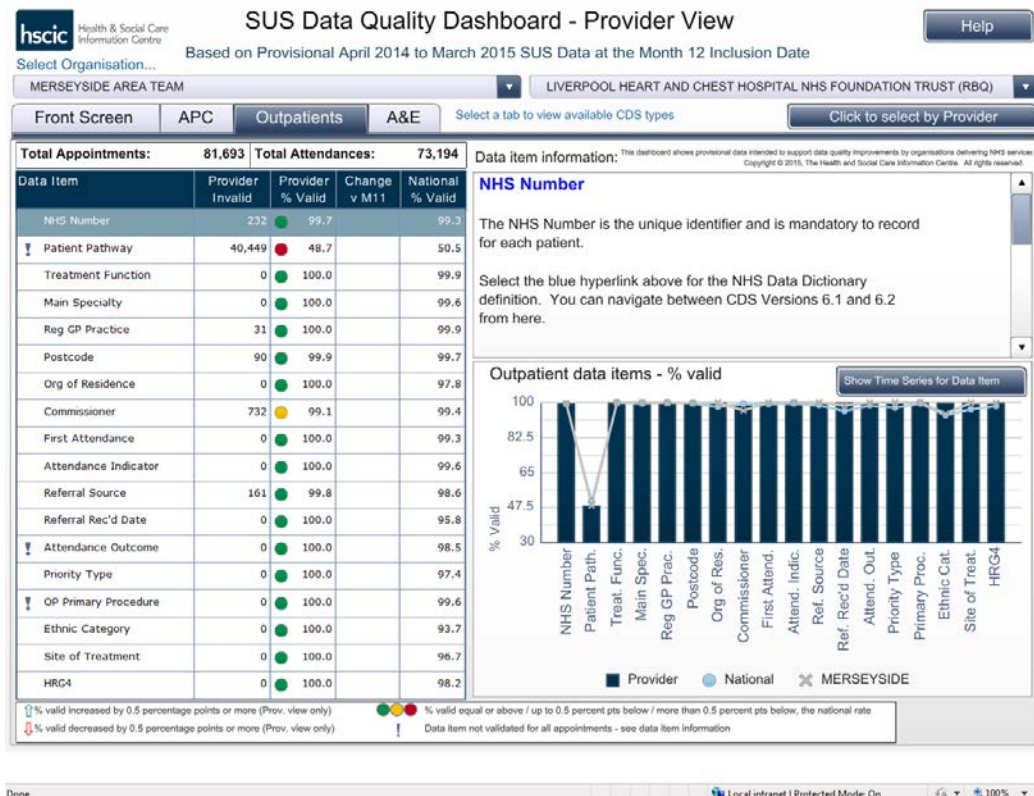
The Secondary Uses Service (SUS) is the single, comprehensive repository for healthcare data in England which enables a range of reporting and analyses to support the NHS in the delivery of healthcare services, e.g. healthcare planning, commissioning services, payment by results, improving public health and developing national policy.

The Trust is able to monitor data quality of SUS submissions from a dashboard provided by the Health & Social Care Information Centre (HSCIC). An overview of our data quality benchmarked to that of other providers is shown in the following Figures.

Figure: Inpatient data submitted to SUS



Figure: Outpatient data submitted to SUS



Inpatient data submitted to SUS is already of a high standard and the Trust will ensure that this position is maintained and improved further where possible. With respect to outpatient data, improvements will be made to ensure all relevant indicators achieve a standard above that of the national average. Data mappings are to be reviewed within the extraction process from PAS of the datasets submitted to SUS to correct erroneous data submissions.

### 3. NHS Choices Clinical Indicators

Each month the Trust receives a subset of analysed SUS data that represent those clinical indicators in use by the NHS to assess aspects of system wide performance. The Trust is invited through this process to “sign off” on the quality of data against each analysed indicator prior to its use. Compliance with this process is published as part of the NHS Choices website. A methodology to validate our data has been developed and implemented. The Trust will continue to actively participate in this national initiative.

### 4. Commissioner Data Quality Queries

Each month the Trust receives external reports from Commissioners which highlight data queries which require investigation and correction if necessary. The Trust will embed these reports into its monthly cycle of data cleansing within PAS to ensure data used for contract and commissioning purposes is of the highest standard. Any lessons identified within these data queries will be flagged accordingly and the necessary improvements to processes and data capture actioned. The Trusts BI Committee will oversee the implementation and any subsequent improvement plans that are required in relation to this new process.

## 5. *Information Governance Toolkit*

The Trust will continue to assess the IG Toolkit data completeness and validity check process and ensure that the highest level of attainment is achieved, which is a level 3 on this particular component of the toolkit. An automated process already exists to measure the level of attainment for this particular aspect of the toolkit and this will be reviewed on a regular basis through the Trusts BI Committee to ensure the historically achieved level 3 is maintained.

## 6. *Clinical Coding*

The Trust will continue to ensure that its clinical coding of patient medical records is maintained at the highest possible standard and processed in a timely manner. The high standards within Clinical Coding have ensured a year on year delivery of level 3 attainment for clinical coding as measured within the IG toolkit and CHKS Data Quality Awards for Specialist Trusts in 2011, 2012, 2013, and 2015.

Standards will be maintained and reviewed with the following measures:

- Coding deadline of 100% completeness by day close of play on the 3<sup>rd</sup> working day of the following month
- Absence of 'U-codes' within inpatient data submitted to SUS
- Absence of the use of signs & symptoms codes within data submitted to SUS
- Continued high standard of coding depth within data submitted to SUS

## 7. *Robust Data Collection Processes*

The delivery of robust data quality is largely dependent on assurances that key data collection systems have robust standard operating procedures (SOPs) in place and that these SOPs are adhered to.

The Trusts Clinical Systems Change Board (CSCB) is working on ensuring SOPs are in place for key systems and the Trusts Data Quality Strategy requires the establishment of a Systems Data Quality Committee (SDQC) to ensure SOPs are embedded across the Trust and that these SOPs are adhered to by staff involved in the entering of data into Trust systems.

The SDQC will be chaired by the Trusts PAS & Data Quality Manager and involves membership from representatives from the following systems:

- PAS – Patient Administration System
- EPR – Electronic Patient Record
- EDMS – Electronic Document Management System
- RIS – Radiology Information System
- LSS – Liverpool Scheduling System

Other key stakeholders representing staff groups entering data into key systems will also form part of the membership to ensure a collaborative approach to data capture is adopted.

Robust data collection processes will also be underpinned by identifying opportunities to remove dual data entry and to streamline data capture accordingly. Such examples include absence data collection and theatres/cancelled operations.

The Trusts Data Quality Strategy also requires new data collection processes to be evaluated against current system capabilities, potential development needs or whether a new bespoke system or external purchase is required. This will be managed by the CSCB and overseen by the Business Intelligence (BI) Committee.

### **Oversight and Structure for Delivery**

Oversight for the delivery of the Trusts Data Quality Strategy will be led by the BI Committee who will ensure that Trust indicators are assessed via the 'six-dimensions' approach and to oversee the necessary improvements to data quality that are identified. The BI Committee will receive regular progress reports and track performance against each specific objective of the Data Quality Strategy.

The newly formed SDQC will work towards ensuring the building blocks for robust processes are in place overseeing the delivery of SOPs for key systems. The SDQC will be able to call upon the CSCB and BI Committee to ensure robust processes exist and that rich quality of data is embedded across the Trusts systems.

### **Measuring Success**

1. Data quality score for indicators reported to the Board to achieve  $\geq 95\%$ , July 2016
2. Data quality score for indicators reported to Operations Board, Finance & Performance Committee, Clinical Quality & Patient Experience Committee, and within Ward Dashboards to achieve  $\geq 95\%$ , December 2016
3. All SUS Data Quality Dashboard indicators above the national average, August 2015
4. Continued sign-off of NHS Choices Clinical Indicators process, July 2015
5. Established progress reports to BI Committee on improvements to Commissioner Data Quality Queries from the Systems Data Quality Group
6. Data completeness and validity check attainment level 3 achieved in IG Toolkit submission for 2015/16 and 2016/17, March 2016 and March 2017 respectively
7. Presence of U Codes (uncoded inpatient records)  $< 0.1\%$
8. Presence of R codes (signs and symptoms)  $< 10\%$
9. Future MIAA reviews on Monitor Reporting and Data Quality continue to receive significant assurance.