WALES AUDIT OFFICE

SWYDDFA ARCHWILIO CYMRU

Data Quality

Betsi Cadwaladr University Local Health Board

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Contents

The Health Board has improving arrangements for ensuring data is valid and accurate, but they need to become more formalised, remove variation in practice across sites and include approaches to provide improved assurance.

Summary report

1. The NHS in Wales uses information as an integral part of its approach to delivering health services. Operationally, NHS bodies are now fully reliant on electronic information systems to support a range of key activities including:

   - patient administration, scheduling and booking;

   - diagnostic processes, ordering tests, requesting and viewing results;

   - joining primary and secondary care pathways, sharing potentially lifesaving critical patient information;

   - effective financial management and enabling management of productivity;

   - identification of patient and demographic needs, so that services can be tailored and focussed in areas that will achieve most benefit; and

   - identification and achievement of clinical and business outcomes.

2. The information used to support management and healthcare delivery is only reliable if the quality of the underpinning data is sound. NHS Wales Informatics Service (NWIS) identifies six core elements that affect data quality which are timeliness, completeness, validity, consistency, precision and accuracy. While it is rarely possible to ensure data is 100 per cent correct, 100 per cent of the time, it is critical that health bodies have appropriate and effective data quality arrangements in place to minimise clinical risk, support effective operational delivery and management, and to underpin performance management and Health Board assurance processes.

3. In 2008, the Corporate Health Information Programme (CHIP) undertook a review across the former NHS Trusts to assess the data quality arrangements. The report identified a range a varying practices, and made a number of recommendations to improve arrangements. The recommendations were formally issued to all NHS Trusts and Local Health Boards in a Ministerial Letter, which was issued in September 2008. The work of the CHIP now forms part of NWIS. While NWIS has not formally followed up the original report, it continues to co-ordinate and monitor the validity of key data.

4. As part of its work to review NHS bodies' arrangements for ensuring efficient, effective and economical use of resources, the Wales Audit Office has examined data quality arrangements at Betsi Cadwaladr University Health Board (the Health Board).
   The work has been designed with input from NWIS and is being undertaken at all Health Boards and NHS Trusts in Wales.

5. Whilst this review is not a direct follow-up of the 2008 Ministerial recommendations, we have sought to incorporate each of these areas into our review work. The audit has therefore examined:

   - governance and accountability arrangements relating to data quality;

   - data quality operational arrangements, including local responsibilities, processes, procedures and policy, and approaches for internally monitoring and reporting the effectiveness of data quality processes; and

   - data quality performance.

6. In undertaking this review, we have assessed key relevant documentation, reports and undertaken a series of interviews with a range of staff. We have also undertaken a data analysis exercise to identify the extent of duplicate patient records in and between the main Patient Administration System/s (PAS) and the Radiology Information System, RADIS, as an indicator of the effectiveness of data quality arrangements. This review has focussed on data quality arrangements for the Health Board's own data, and therefore does not consider data quality arrangements for primary care datasets.

7. This review set out to identify whether the Health Board has effective data quality arrangements.

8. Our conclusion is that: the Health Board has improving arrangements for ensuring data is valid and accurate, but they need to become more formalised, remove variation in practice across sites and include approaches to provide improved assurance. We reached this conclusion because:

- there is commitment to improve data quality but governance and management arrangements need to be further developed;

- there are adequate data quality delivery responsibilities, procedures, processes and effective feedback arrangements but there is variation in approaches across sites; and

- our data analysis indicates reasonably effective data quality processes, but there are some areas for improvement.

Recommendations

9. To help the Board move forward we have provided the following recommendations.

Data quality assurance
R1   Introduce an annual report on data quality to provide organisational level assurance which covers the arrangements in place to ensure data quality, and the effectiveness of the arrangements.
R2   Ensure the new accountability and responsibility arrangements are: • clearly communicated and understood by all staff involved in data quality; • periodically monitored and reviewed; and • supported by an effective data quality forum.

Data quality process

R3   Ensure that consistent and standardised data quality processes are developed and implemented which cover:

- both the information held by the Health Board and also information that it uses which is provided from key stakeholders, such as primary care;
- data quality processes to support both performance and clinical information quality monitoring;
- standardised clinical coding processes;
- consistent support for the Master Patient Index project; and
- formal training to ensure consistent application of policies and procedures across sites.

R4   Ensure that data is of a sufficient quality so that senior clinical and managerial time is not used inappropriately to resolve data quality issues.

Data quality monitoring

R5   Ensure that approaches for independent audit of data quality arrangements and testing are in place for core information areas. This audit work should be used to support assurance to the Board.

Detailed report

There is commitment to improve data quality but governance and management arrangements need to be further developed

The Health Board is aware of the importance of data quality and is committed to improving the data quality agenda

10. The Health Board established an Information Governance Committee which has met periodically over the last two years. Whilst the Health Board and its managers recognise that good data quality is business critical for planning, developing and delivering its services this arrangement did not provide an appropriate forum to address information quality and governance issues.

11. To strengthen the previous arrangements, the Health Board now has two Executives responsible for data quality and information governance. Currently, responsibility for data quality rests with the Medical Director and Director of Clinical Services, and responsibility for information governance, security and legislation with the Director of Governance and Communications. In addition, when responsibilities are split between two Executives there is always the risk that issues can be missed because managers are unsure how to escalate issues. To overcome this, the Health Board will need to ensure accountability and responsibility are clearly communicated and understood by all involved in data quality. The Board will need to monitor and periodically review its arrangements to ensure they remain effective.

12. Progress is being made to formalise arrangements and to re-energise the data quality agenda, which lost some impetus following re-organisation. Information governance and quality issues are complex and involve many different departments and professions within a health board. It is important that there is an appropriate and effective forum where issues and risks can be appropriately managed.

The Board is starting to establish management groups which will consider data quality, but assurance to the Board is weak

13. Data quality governance arrangements are not yet fully co-ordinated across the three main hospital sites within the Health Board. The groups that looked at data quality in the past were not carried forward into the new Health Board arrangements. More recently, new informatics governance arrangements have been put in place, which are aligned to the Informatics department re-organisation. The Information Governance Committee has underpinning groups which, whilst still in their infancy, are intended to support the data quality agenda. These include:

- Information Governance Group;
- Health Record Group;
- Health Informatics Group; and

- Informatics Development Group.

14. It is important that these groups become effective and the Board should regularly receive updates on these arrangements until it is confident that they are firmly embedded and data quality issues, risks and governance are well managed.

15. Currently, there is no data quality forum or formal data quality annual report, as recommended in 2008 by the previous Minister for Health and Social Services. Nevertheless, data quality does feature in discussions on other clinical groups but not as a core agenda item and there is no clear reporting line to provide data quality assurance to parent committees or groups. Examples of these groups include the Clinical Informatics Group, Clinical Audit Group and the Nursing Informatics Group.

16. In addition, data quality is regularly discussed in corporate groups such as at Finance and Performance, Audit, and Quality and Safety Committee, and Board of Directors meetings. It also features in Board discussions on both performance (clinical and operational) and finances.

17. National areas of importance are prioritised, such as NWIS data validation reports, owing to the availability of resources. This aligns with national guidance on data quality in Healthcare Standard 19. The Health Board also focuses on local areas, but this is generally reactive to identified issues or as part of local initiatives. It is positive that management buy-in to data quality issues has resulted in funding to support clinical coding resourcing and administration support.

18. Senior management demonstrates awareness of potential issues and sees data quality as essential for evidence-based decision making. Although systems across the three main sites do not always produce directly comparable data, management understands the reasons why and ensures that information can be relied upon. This forms part of the ongoing performance information quality assurance processes and does not result in any significant resource demands on the Informatics department. However, the use of senior clinical and managerial time to ensure data quality is not potentially the most efficient mechanism and the Health Board should seek to resolve this in the medium term.

Data quality roles and responsibilities are in place but these are inconsistent across the Health Board sites

19. Data quality roles, responsibilities and processes are in place but can vary across the sites. However, the formal role of a single corporate Data Quality Officer has not been created yet, and this would help provide a link between data quality operational arrangements, and assurance to the Board.

20. As part of ongoing restructuring, informatics job descriptions are currently being reviewed and data quality is being recognised as a key feature. The current job descriptions in some departments are old, but the job descriptions that we reviewed have reference to responsibilities for data validation. Accountability for data quality is being included in all new job descriptions, and we identified a good culture of

responsibility for data quality, which was evident for all levels of staff and management interviewed.

There are adequate data quality delivery responsibilities, procedures, processes and effective feedback arrangements but there is variation in approaches across sites

There is no current live data quality policy, but it is currently being drafted

21. Currently, the Health Board does not have a data quality policy. However, the need for one is recognised, and it is in the process of being developed. The draft data policy which has not yet been approved does cover most of the key themes to manage and improve data quality, including:

- management of data quality;
- responsibilities;
- data standards;
- use of patient administration records;
- security and confidentiality;
- monitoring compliance with the policy;
- clinical coding;
- data and health records accreditation; and
- training and communications.

22. Whilst the draft policy covers all aspects of information held within the three current PAS systems, it has still to address all information held electronically within the Board. For example, information used for performance reporting and data sourced from other providers such as primary care.

23. The Health Board will need to ensure that the draft policy is formalised and quickly updated to include the current omissions. In addition, technology and information governance issues rapidly change and the policy should be regularly reviewed to address new and emerging issues.

Data quality processes and procedures are in place but these can vary across the Health Board sites and in some cases need updating

24. Data quality processes and procedures are documented for all informatics activities by speciality; whilst these are generally adequate some need updating. For example, the following processes are in place:

- daily procedures run in the PAS to pick up new registrations;

- weekly submissions to the Welsh Demographic Service for NHS number pick-up;

- policies and procedures for clinical coding activity;

- support procedures for admissions, transfers, and discharges;

- PAS system handouts for all systems used across sites on basic uses, and more specific areas, for example, for Medical Records staff; and

- case note tracing procedures.

25. A range of electronic systems support data quality, for example, Welsh Demographics, Medicode for clinical coding and RADIS for radiology information. These systems enable staff to cross-verify and validate patient information, and should help improve the quality of patient data, and coding administration.

26. Clinical coding processes are adequate but there are variations in ways of working from site to site. The Central team codes by speciality areas which are assigned to individual staff members, the West clinical coding team adopts a similar approach but the East team staff codes any speciality area. There are benefits and risks with both approaches, but a more consistent approach across sites is needed to ensure resources are used effectively and there is consistent quality monitoring.

27. There have been historic issues, in the West, with timeliness of clinical coding, which could affect the completeness and accuracy of some reports. To address this issue, additional funding has been made available for clinical coders and administrative support as part of a £1 million investment. As part of this programme to refocus resources, £600,000 was invested on staff resources. Coding backlog has now been addressed and is currently less than one month on average across all sites.

28. The Health Board has been selected as one of the pilot sites for a local Master Patient Index. This will support the implementation of future software such as the Welsh Clinical Portal and the Laboratory Information Management System. The Health Board formed a Data Standards Group early in 2011 to support the master patient index project. This provides a platform to standardise the corporate data quality agenda. As part of the project, data quality issues are being, or will be, identified and addressed. Some examples include:

- a national patient registration policy and process is being considered, although the pace of progress has been slow;

- the local data standards group has been set up and is addressing key issues and errors; and
- staff will, in future, run reports from the master patient index to support system data cleansing.

Data quality communication, education and training approaches are in place, but these could be improved and made more consistent

29. The Health Board uses a range of communication methods targeted at data entry staff and other professionals to promote improving data quality. The communication approaches include:
- written media such as emails, flyers, weekly newsletters, bulletin boards; and
- group and team sessions which promote data quality as part of the agenda.

30. Currently there is no consistent approach across the three main sites to data quality training and staff induction. Data quality training does not form part of staff induction in the West (Ysbyty Gwynedd). In Central (Glan Clwyd) there are induction days which include data quality awareness. Online induction is available for new starters in the East (Wrexham Maelor), but this is not always routinely completed before staff start their new job.

31. In addition, PAS refresher training, that includes data quality for all system users, varies across sites:
- In the West, there are no formal trainers, and refresher training is generally left to managers and supervisors to impart their knowledge. Medical Records staff are focussed in their approach to data quality but felt that they would benefit from training.
- In Central, there is an IT training unit that covers a wide range of training needs. This includes on-the-job training, courses and a refresher training programme.
- In the East, there is a training team in IT that covers a range of systems and also completes annual talks to junior medics. Basic and specific handouts are structured to local needs.

32. Whilst the approach to clinical coder training still varies across the three sites, there are more co-ordinated approaches for generic clinical coding training which is standardised across the Board. Staff must attend a foundation course before they are allowed to undertake coding activity. There is a refresher every three years and the training is co-ordinated by NWIS training unit through a contract with 3M. Clinical coders are members of the Clinical Coding User Group to share good practice. This group meets quarterly.

There is effective day-to-day validation reporting of data but independent data quality assurance arrangements are weaker

33.   There are effective arrangements to ensure the quality of data submissions to the Welsh Government. Validation At Source (VAS) reporting is used across all sites to support the checking and testing of data prior to submission to central government.

34.   In addition, the Health Board uses CHKS electronic monthly reports to support data analysis and these are provided in graphical form filtered data by site into league tables. This helps the Informatics team to identify anomalies and prioritise the key areas where data quality may require addressing.

35.   There are other internal feedback, monitoring and assurance approaches which help the Health Board manage the quality of data. These include:

- The Consultant Level Indicator Programme (CLIP). This provides individual consultant statistical data which it can use to identify any data issues in its specialist areas.

- Patient Episode Database Wales (PEDW), data which supports validation, for example, of NHS numbers and LHB names.

36.   Where arrangements have been centrally co-ordinated, data checking processes are more coherent but, as mentioned above, there remains some variation in processes and approaches in the different sites.

37.   The Board can only be assured on the quality of its information if there are effective feedback approaches to check the validity, accuracy, completeness and timeliness of data which underpins it. Arrangements are in place to ensure the quality of key performance information. Corporate monitoring and checking of performance information is a regular agenda item of the weekly 'Access' meetings to check and discuss data. There is an 'Access Group' which maintains close links with the Information Department to help ensure reliability of information and support improvement.

38.   Good record keeping is essential to ensure accurate clinical coding and therefore data quality. To address this the Board plans to undertake a Clinical Audit on 'record keeping'. However, the scope of the planned clinical audit was not available, and there is no timescale for the review. Other recent clinical reviews have included a mortality review as part of 1,000 lives initiative and a case note review in 2010. This has helped improve data quality by identifying errors in recording mortality and morbidity.

39.   Within the Health Board there is significant effort to check data and arrangements to collect, process and check data are standardised across all sites. For example, in 2010 the Health Board introduced a reporting and validation process to ensure the quality of extracted data and version control over changes to extraction programmes from the different PAS.

40.   The development of Service Line Reporting (attributing costs to clinical episodes of care) depends on good data quality. Staff put significant effort into standardising and checking data emerging from all three legacy PAS systems, both at corporate and

operational levels. There are also a number of less formal checks to support data validation and cleansing which have been brought about through initiatives such as local clinical coding audit checks against case notes.

41. There is currently no formal programme of data quality audits to provide assurance, but there are examples of locally commissioned reviews. The Board is considering a rolling programme of audit through externally commissioned providers.

42. Data quality audits are not formalised but Internal Audit plans include some specific aspects of information and data quality, such as waiting list quality. This should help independently assess, identify, verify and provide assurance on data quality issues and support improvement. Internal Audit also plans to assess the integrity and quality of Health Board reporting which will involve sample checks for a period of time to verify underpinning data.

Our data analysis indicates reasonably effective data quality processes, but there are some areas for improvement

43. As part of our audit approach, we have considered and targeted our assessment of data quality performance where it is nationally comparable, and where we could relate findings to operational process effectiveness, and consequent clinical or business risk areas. This includes review of the national data validation data sets and also electronic demographics data analysis of 8.5 million patient administration records and 5.2 million radiology administration records.

44. Our analysis, however, is narrow in scope in the context of the large number of clinical and business data sets held by the Health Board. Therefore the analysis can only be considered an indicator or proxy for the overall effectiveness of data quality arrangements in the Health Board.

The Health Board is generally meeting data validity targets for key data sets, but emergency department data could be improved further

45. Across Wales, health boards submit data to the NWIS which then undertakes validity checks. The results of this work are then communicated back to the health boards at regular intervals; usually monthly or bi-monthly.

46. We have reviewed the four data validity reports covering the 1 April to 30 November 2011 period. These reports cover admitted patient care, outpatient referrals, outpatient activity and emergency (A&E). The NWIS reports identify where data fields have met the national target (exhibits 1 to 4). The information presented in exhibits 1 to 4 provides a summary of the NWIS reports and indicates the percentage of data fields which meet the national target for that indicator.

47. Overall the exhibits indicate that the Health Board is meeting the majority of validity targets, but is performing below the Wales average. For example, Exhibit 1 indicates that the Health Board meets the national validity targets for 93 per cent of the data items checked within that dataset of admitted patient care. However, Exhibit 4 shows the Emergency Data set validity targets are being missed by a wider margin in the Health Board. This is a common issue across most health boards in Wales.
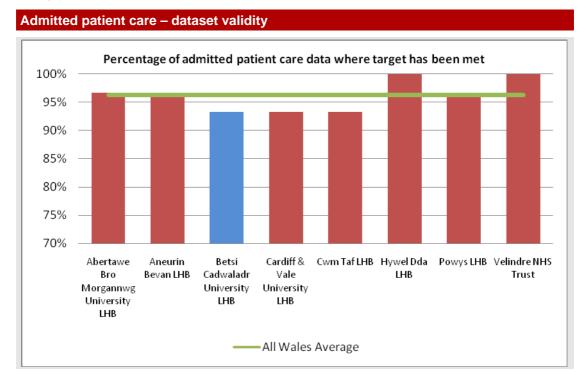
Exhibit 1

Admitted patient care – dataset validity

Percentage of admitted patient care data where target has been met

Exhibit 2

Outpatient referral – dataset validity

Percentage of outpatient referral data where target has been met

(Bar chart showing percentages for Abertawe Bro Morgannwg University LHB, Aneurin Bevan LHB, Betsi Cadwaladr University LHB, Cardiff & Vale University LHB, Cwm Taf LHB, Hywyl Dda LHB, Powys LHB, Velindre NHS Trust, with All Wales Average line.)

Exhibit 3

Outpatient activity – dataset validity

Percentage of outpatient activity where target has been met

(Bar chart showing percentages for Abertawe Bro Morgannwg University LHB, Aneurin Bevan LHB, Betsi Cadwaladr University LHB, Cardiff & Vale University LHB, Cwm Taf LHB, Hywel Dda LHB, Powys Teaching LHB, Velindre NHS Trust, with All Wales Average line.)

Exhibit 4

Emergency Department – dataset validity

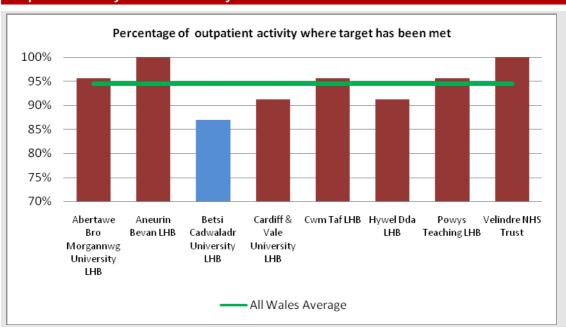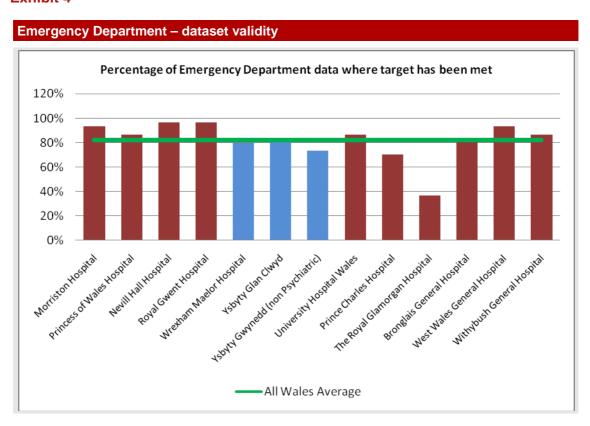Percentage of Emergency Department data where target has been met

Our analysis of PAS and RADIS system demographic data indicates reasonably effective controls are in place but records with no NHS number present a risk to the Board

48. A key building block of good quality data in the NHS is patient demographic information, for example, name, address and date of birth. Separate patient information systems are often in use across different hospitals and departments such as Radiology. This means that a patient who has received care in a number of different settings can have numerous records and identifiers. In such a scenario, all the clinical information about that patient is unlikely to be held in one place creating potential clinical safety risks and making it more difficult to locate the right records for the right patient.

49. In addition to considering the arrangements for achieving data quality as discussed in the earlier sections of this report, we undertook demographic data testing. Our testing approach is designed to support our assessment of the Health Board's data quality arrangements, by looking at an indicator of good quality data. We analysed the core demographic patient data held both on PAS and RADIS, to assess the extent of duplicate entries, or cases where patient identifiers are missing. The key findings from this work are that:

- The patient demographic data held on the PAS systems has 19,026 (1.2 per cent) total duplicate NHS numbers, but there are 11,429 (2.0 per cent) duplicates on the Ysbyty Gwynedd PAS. This indicates reasonable approaches to cleansing and will help minimise error, risk and inefficiency, although ideally there should be no duplicates.

- 295,000 (18 per cent) patient records on PAS have no NHS number. Taking into account legacy and overseas patient records there should still only be a limited number of new patients without NHS numbers. Our work indicates that around 5,000 to 10,000 such records are being added each year, although nearly 50,000 occurred in 2009. This may indicate that protocols for setting up new patients are not being effectively followed. This performance suggests there are potential clinical risks in identifying the correct patient records. However, this may also present a financial cost because the Health Board can only charge other health boards and English trusts for services provided to their patients where the NHS number allows them to be identified.

- The patient demographic data held on each RADIS system has only 0.09 per cent duplicates on the Central and West System but has 2.28 per cent duplicate NHS numbers on the East. More concerning is the number of patients without NHS numbers on the system, which stands at 11.3 per cent in Central and West, and 15.1 per cent in the East. This may be as a result of primary or community care based diagnostic requests, but it may make tracking and linking the full radiology diagnostic activity for a patient to their PAS record difficult. Hence, potentially, one of these patients may be exposed to more X-rays than legally permitted under IRMA regulations.

50. The findings above align to our review of the data quality processes in place which include the Health Board's recent and ongoing IM&T and informatics work. The Board's work has improved key data in preparation for the implementation of the Myrddin and the Master Patient Index. While our data analysis does not suggest significant risk to the Board, there may be both clinical risk and business inefficiency arising from patients with no NHS number, as mentioned above. Areas for improvement should be incorporated into existing master patient index plans and cleansing processes. Further details on our data testing results are provided in Appendix 1.

Appendix 1

Patient demographic data analysis results

As part of the data quality fieldwork, the Wales Audit Office undertook an analysis of PAS and Radiology System patient demographic data. This appendix provides a summary of our findings.

The table below identifies key relevant statistics from our records analysis. We have also included a set of charts which provide an indication of the data quality in the Board.

Indicator	The Health Board	Wales
Total number of electronic patient records (PAS) in the Board: • Records in Ysbyty Gwynedd (West) • Records in Ysbyty Glan Clwyd (Central) • Records in Wrexham Maelor (East)	1,644,991 577,191 607,495 460,225	8.5 million (total)
Total number of records with no NHS number recorded: • Ysbyty Gwynedd (West) • Ysbyty Glan Clwyd (Central) • Wrexham Maelor (East)	295,224 (18%) 124,608 125,229 45,337	1,150,090 (total) 16% (average)
Total number of multiple PAS registrations in the Board between BCU sites only: • Between West and Central systems • Between Central and East systems • Between East and West systems	219,714 (13%) 104,206 86,664 28,891	
Total number of multiple registrations within each single PAS system: • West • Central • East	19,026 (1.2%) 11,429 (2.0%) 2,698 (0.4%) 4,899 (1.1%)	6.2% (average)
Total Number of Radiology records in the Board: • Ysbyty Gwynedd and Glan Clwyd (West and Central) • Wrexham Maelor (East)	782,754 375,975 406,779	5.2 million (total)
Records in PAS with more than one corresponding Radiology record by NHS Number.	11,727 (2) 150 (three or more)	5,821 (two records) 237 (three or more records) Note: Average

Indicator	The Health Board	Wales
Records in Radiology with more than one corresponding PAS record.	36,440 (two) 556 (three or more)	20900 (two) 758 (three or more) Average

Well-controlled and clean demographic information is a pre-requisite for a good level of overall data quality. The indicators we evaluated above and presented in the graphs which follow, generally compare favourably with the rest of Wales. However, there is a higher than expected number of PAS records which do not have NHS numbers in the Central and West divisions. There is also an above average incidence of radiology records which lack both NHS numbers and hospital identifiers. These issues may present clinical risk because patients' case notes may be duplicated, and treatment may be based on only partial case history. Records with no NHS number are more difficult to track and trace and this may have a financial impact, because the Health Board may not be able to re-charge other health boards appropriately.

In examining multiple registrations in the PAS system, we found that each of the three individual PAS had very low instances of multiple registrations, averaging around 1.2 per cent which is amongst the lowest in Wales (lower is better). This means that the Health Board has had some success in removing unnecessary duplicates within each system and so reduces the risk of its own records containing only partial information.

A further complication is the number of records held without an NHS number, which in the Health Board are 295,224 (18 per cent). Historically, these records occur at the rate of around 5,000 to 10,000 per year except during 2009 where over 50,000 appeared, which may be due to a previous merger of hospital systems. This is a more significant issue, and will need to be addressed to as part of the new Master Patient Index project.

Chart 1 – PAS: Patients with several different identifiers

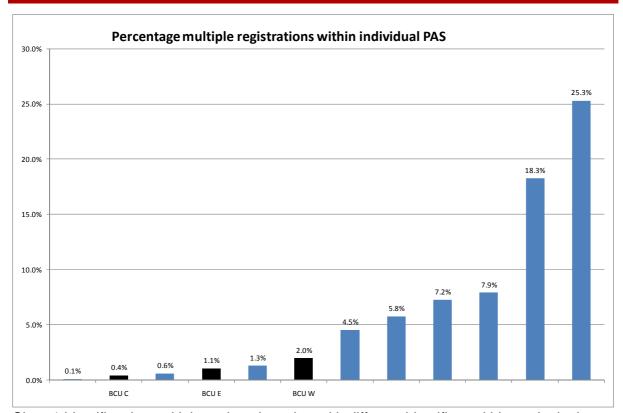**Percentage multiple registrations within individual PAS**

Chart 1 identifies the multiple registrations, but with different identifiers within each single PAS system in Wales. This means that there are instances of individual patients with more than one electronic record at a single site. This may present a clinical risk if the patient also has duplicate written case notes. The chart indicates that the Health Board has 1.1 per cent which is multiple registrations of the same patient (identified by a duplicate NHS number or a match of name and date of birth) which equates to an actual number of 14,099. Other LHBs in Wales are anonymously included, and the Health Board compares favourably to these.

Chart 2 – PAS: Patients with no recorded NHS numbers
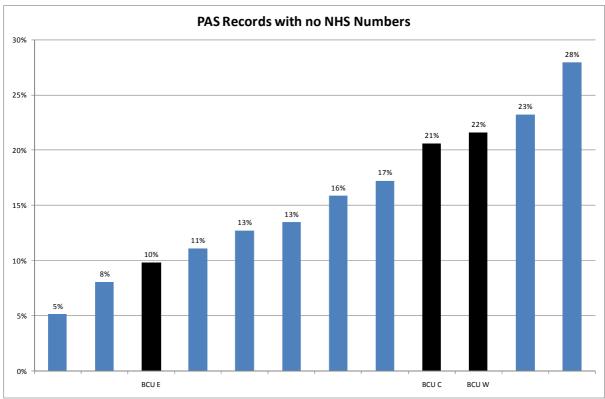
PAS Records with no NHS Numbers

Chart 2 identifies the incidence of records with no NHS number between different PAS systems across Wales. Whilst it is still possible to identify patients by their personal details, or using existing hospital numbers, these methods are less precise than using NHS numbers; personal details may be unclear or unavailable, and there have been a number of hospital number systems used across Wales. Furthermore, the lack of an NHS number can have a financial impact in that LHBs cannot recover treatment costs associated with patients from other LHBs in Wales or in the rest of the UK without quoting the NHS number.

Chart 3 – Radiology: Patients with several different identifiers

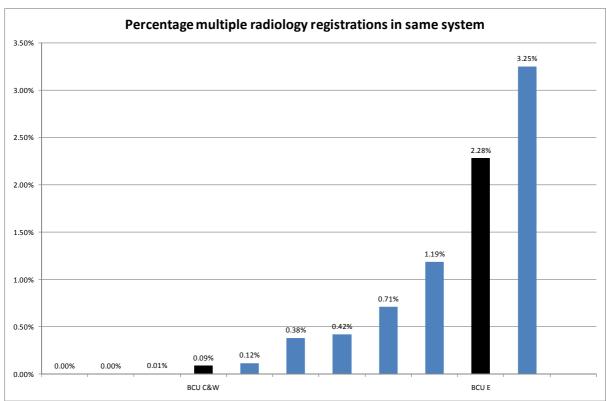**Percentage multiple radiology registrations in same system**

Chart 3 identifies the multiple registrations, but with different identifiers within each single radiology system within Wales. This means that there are instances of individual patients with more than one electronic record at a single site. This may present a clinical risk and may result in an incomplete diagnostic record if results are recorded only on one of the patient's electronic records. Other LHBs are anonymously included, and the Health Board's data held within the newly merged Central and Western division systems compares favourably to other LHBs in Wales. The data for the Eastern region is relatively higher and may require some additional work to minimise duplicate records.
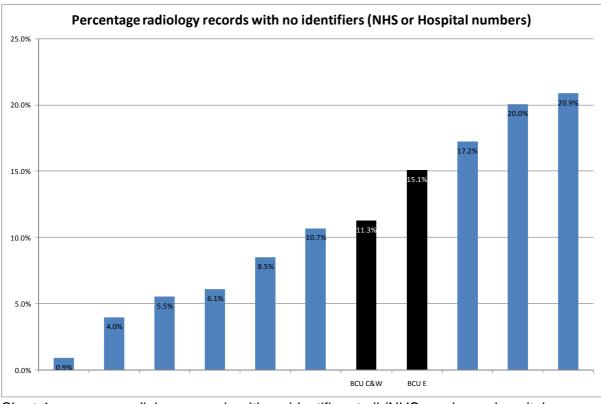
Chart 4 - Radiology: Patients with no recorded identifiers

Percentage radiology records with no identifiers (NHS or Hospital numbers)

Chart 4 compares radiology records with no identifier at all (NHS number or hospital number) within each radiology system in use in Wales. These records are difficult to match to a corresponding PAS record.

This may present a clinical risk because a search for a patient's information via the PAS may result in only a partial representation of their full electronic record. In terms of efficiency, this may result in patients having more radiology investigations than necessary. Other Welsh LHBs are anonymously included, but the Health Board compares less favourably to these, being towards the higher end.

Chart 5 – PAS and Radiology: Patients with 2 or more Radiology records

More than one Radiology record matches a PAS record

Chart 5 compares the number of cases where a patient with at least one record in the PAS has two or more associated records within the radiology system. In this case, we have considered all the PAS and all the Radiology systems within each health board together.

This means a single patient has more than one Radiology record. In the Health Board, we found around 12,000 patients with two separate Radiology records (which is above the average incidence for Wales) and 150 with three or more (less than the all-Wales average). These levels are likely to reflect the patient flow through the Health Board which we have already seen in previous data. This may also arise from the historical situation where previous systems have merged. The risks here are that an incomplete picture may be available to clinicians at the time of treatment, or that patients may have undergone more radiology investigations than necessary.

More than one PAS record matches a single Radiology record

Legend:
- Three or more PAS records per Radiology record
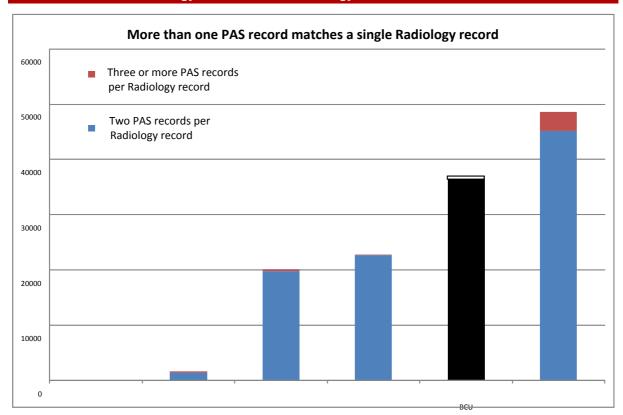- Two PAS records per Radiology record

Chart 6 shows cases where a patient has at least one Radiology record and more than one PAS record. The pattern for Wales is very similar to that in Chart 5, although the numbers involved are considerably larger. This is likely to be because multiple registrations in PAS are much more common than in Radiology systems. The same clinical risks apply as it is difficult to guarantee that all radiology information is visible when searching for individual patients.

Wales Audit Office

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