Data Quality: Review of Arrangements at the Velindre Cancer Centre

Velindre NHS Trust

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The person who delivered the work was Paul Cunningham.

Contents

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Summary report

Summary

1. NHS 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;

    - enabling effective financial and productivity management;

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

    - identification and achievement of clinical and business outcomes.

2. The information used to support the management and delivery of healthcare 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 all 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 to underpin performance management and assurance processes.

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

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 the Trust. Whilst this review is not a direct follow-up of the 2008 CHIP review, we have sought to incorporate the issues covered by that review within this study.

5. The work has been designed with input from NWIS and is being undertaken at all Health Boards and NHS Trusts in Wales.

6. Velindre NHS Trust (the Trust) is made up of two divisions: Velindre Cancer Centre (VCC) and the Welsh Blood Service. Our review concentrated on approaches to data quality associated with the provision of patient care, which meant we focused on VCC. The audit has examined:

   - governance and accountability arrangements relating to data quality;

   - data quality operational arrangements, including local responsibilities, processes, procedures and policy; and

   - approaches to internal monitoring and reporting the effectiveness of data quality processes.

7. In undertaking this review, we have assessed key relevant documentation 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 Cancer Network Information System Cymru (CaNISC), of which VCC is a major user and the VCC Radiology Information System (RadIS) as an indicator of the effectiveness of data quality arrangements.

8. This review set out to identify whether VCC has effective data quality arrangements.

9. Our conclusion is that the Trust has appropriate, effective processes and procedures in place to ensure VCC's data is valid and accurate, although annual reporting to the Trust Board could be strengthened and the risks associated with new arrangements for informatics services will need to be managed. We reached this conclusion because:

   - governance arrangements relating to data quality are broadly sound, although annual reporting to the Board needs strengthening and recent changes to IM&T delivery and management may undermine progress;

   - despite the absence of a formal policy, data quality procedures and processes are well established and effective; and

   - performance against national data validity targets, along with the results of our own data analysis, indicates effective data quality processes, although the Board has not yet cleansed all of its data adequately.

Recommendations

10. To help the Trust make improvements in data quality arrangements, we have provided the following recommendations.

Data quality assurance

R1   Introduce an annual report on data quality, as recommended by the Welsh Government's CHIP in 2008, to provide organisational level assurance to the Trust Board which covers the arrangements in place to ensure data quality and the effectiveness of these arrangements.

R2   Formalise the Trust's Information Governance and IM&T Committee's responsibilities in relation to data quality and ensure data quality features as a standing item on the meeting agendas.

Data quality processes

R3   Establish a Trust-wide data quality policy or framework, as recommended by the Welsh Government's CHIP in 2008, that sets out:

- the governance structures;
- individual roles and responsibilities in relation to data quality;
- policy requirements and data standards;
- the use of patient records;
- how data security and confidentiality will be maintained;
- strengthening the quality of information used for performance reporting to the Board;
- quality arrangements for secondary data sourced from other providers; and
- training and communications in relation to improving data quality.

R4   Review the operational management arrangements in the light of the recent retirement of the Clinical Information Manager and the transfer of informatics staff to NWIS. Ensure the responsibilities and tasks previously undertaken in relation to data quality by these people are clarified, allocated to named individuals and, if appropriate, written into the Service Level Agreement (SLA) with NWIS.

R5   Complete the drafting of the minimum cancer data set and agree this with all relevant organisations, ensuring that the design minimises the likelihood of invalid, incomplete or incorrect data.

Data quality monitoring

R6   Prioritise work on data cleansing, in preparation for the all-Wales Enterprise Master Patient Index implementation, by reducing the incidence of CaNISC records without recorded NHS Numbers.

Detailed report

Governance arrangements relating to data quality are broadly sound, although annual reporting to the Board needs strengthening and recent changes to IM&T delivery and management may undermine progress

There are clear lines of accountability in relation to data quality, and a strong clinical commitment to data quality processes

11.   The data quality roles of the VCC Clinical Director and Velindre Trust Executive Medical Director are now split. The Clinical Director leads on data quality in VCC only. In the new structure, the Trust's Executive Medical Director will also be the Caldicott Guardian and so have an overall executive responsibility for data quality.It is planned that the Caldicott Guardian will receive training appropriate to that role. Early indications are that this split arrangement is an improvement on the previous situation where both roles were undertaken by the same person, with consequent heavy demands on their time.

12.   Senior clinical staff play an active role in both the VCC Health Records Group and Trust's Information Governance and IM&T Committee, both of which have an impact on data quality. On a day-to-day basis, front line clinical, support and administration staff meet regularly and work closely to promote good data quality as a normal part of clinical practice.

13.   In Velindre, the term 'data quality' itself is not widely used, although its constituent parts, the accuracy, availability and timeliness of data are widely referenced on the agenda of the Health Records Group with regular detailed analysis and comment.

14.   There is evidence of some financial investment that will help support good data quality. A recent example is the purchase in 2010 of a 3M Clinical Encoder to replace the inbuilt encoder in CaNISC. This has made it easier for the Coding Manager to complete data audits and has the additional benefit of being maintained and updated by a third-party supplier.

There are appropriate governance arrangements for data quality within the Velindre Cancer Centre, although corporate arrangements could be strengthened by ensuring that the Trust's Board receives an annual report on data quality

15. The VCC has appropriate governance structures to manage data quality (see Exhibit 1). There is evidence of regular scrutiny of data quality issues at the VCC Health Records Group and VCC Information Governance Committee; any specific issues are reported upwards to the Trust's Information Governance and IM&T Committee which in turn reports directly to the Board. The Health Records Group and the VCC Information Governance Committee cover the work of the VCC and meet monthly. The Trust's Information Governance and IM&T Committee has representation from both divisions and meets quarterly.

16. The Trust's Information Governance and IM&T Committee, chaired by the non-executive board member for information, has responsibility for providing assurance to the Board in relation to the Trust's arrangements for creating, collecting, storing, safeguarding, disseminating, sharing, using and disposing of information. This committee would receive exception reports should Trust data quality returns run into problems, although this circumstance has not yet arisen so involvement in this area has been limited so far.

Exhibit 1: Reporting and governance structure for data quality
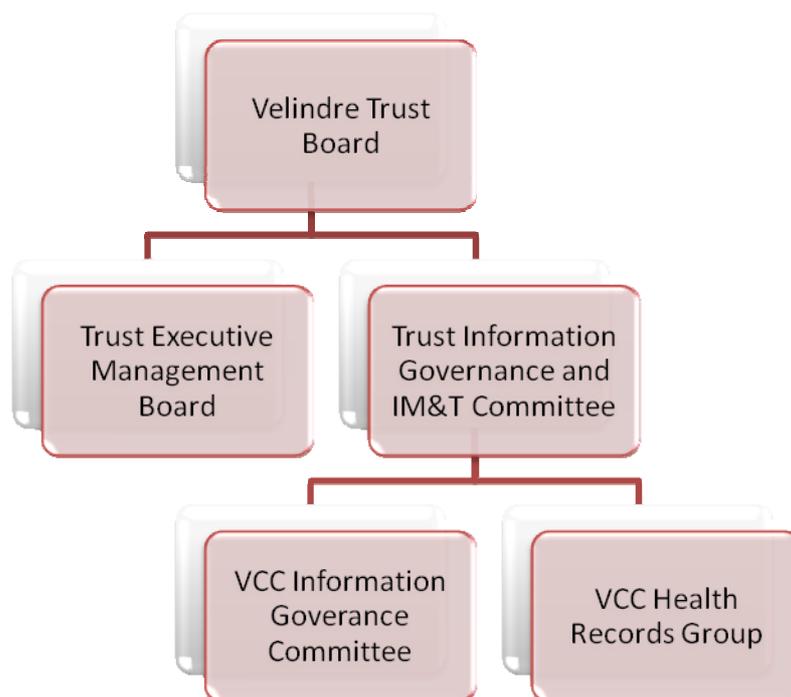
Source: Wales Audit Office interviews with staff from Velindre NHS Trust.

17.   Whilst there is an expectation that any issues with data quality would be reported to the Trust Board on an exception basis, there is no specific reference to data quality in the Information Governance and IM&T Committee terms of reference, and it does not feature as a core agenda item. However, data quality issues have been discussed at meetings where necessary. There is an annual report to the Board from the Information Governance and IM&T Committee although it does not contain a standard section on data quality.

18.   The CHIP report from 2008 recommended Trusts produce an annual report on data quality. This recommendation has yet to be implemented at Velindre although any significant data quality issues could be reported to the Board via the Quarterly Quality Management Framework Report. The Board is soon to establish a Planning and Performance committee intended to function alongside the Information Governance and IM&T Committee and provide a better framework for organisational assurance. Under the current arrangements, the Board has no regular agenda item on data quality. Without such an arrangement, there is no annual overview of performance in terms of data quality, and so the Trust Board is not in a position to judge whether or not it has met its obligations in this area.

There are clear operational roles and responsibilities for data quality but IM&T leadership and arrangements for its delivery have recently become less certain

19.   The VCC clinical and support staff are well informed about data quality. There is a comprehensive handbook aimed at all VCC staff with a responsibility for handling patient information with detailed instructions for different staff groups together with process flowcharts. It makes many references to the need for accuracy in dealing with patient information although it does not use the term 'data quality'. The handbook has been approved by the Trust Board, and is updated on a regular basis.

20.   The role of VCC Clinical Information Manager includes responsibility for data quality but the previous post holder retired in May 2012 and responsibility will now be split between an IT Manager and Information Governance Manager, and both of these roles will inherit the responsibilities for data quality, although at the time of the audit neither role had been filled.

The Trust will need to ensure that the transfer of the information function to NWIS does not compromise its data quality procedures and arrangements

21.   There is no longer an in-house informatics team within VCC, with all such work now being outsourced to NWIS. The NWIS is hosted by the Trust, which has responsibility for the governance and accountability only, not performance issues. The legal entity for both VCC and NWIS is now the Trust, and so all the national databases of NWIS, including CaNISC, come under the Trust as data owner along with responsibility for data quality.

22. The VCC Informatics Department is linked well with clinical teams and this has worked well historically. However, as the informatics service is now outsourced via a SLA to NWIS, the Head of Clinical Information had concerns about the continuity of these arrangements because the resource structure and therefore staff availability has changed. It is intended that the exact issues of how and who provides this service and the division of tasks, including data quality, will be regularly reviewed at SLA monitoring meetings. However, these meetings have not yet started.

23. The CaNISC trainers are involved in all requests for data changes to formats or standing data and this enables them to identify any poor practices or individuals with a training need and target training both in VCC and across Wales. DQ responsibility remains with VCC, although the transfer of the informatics function to NWIS has the potential to lead to the separation of these two activities. The VCC is intending to clarify these respective roles and responsibilities.

24. The VCC Head of Clinical Informationhad concerns because internal information staff formerly took responsibility for Validation at Source processes, but because the SLA between VCC and NWIS is not yet finalised, and with the informatics service outsourced to NWIS, responsibility for this may pass back to VCC as it is not included in the new job descriptions.

Despite the absence of a formal policy, data quality procedures and processes are well established and effective

There is scope for the Trust to strengthen its policy arrangements in relation to data quality

25. The Trust does not have a data quality policy as recommended by the CHIP report in 2008. An information security policy is in place which has been reviewed periodically. It is a comprehensive policy statement outlining responsibility of staff for all information and it does identify the availability and integrity of data as a high priority.
However, there is no coverage of accreditation, standards, training or performance monitoring and the policy has not been updated since 2009.

26. The absence of a data quality policy and consequent lack of standards increases the risk of inconsistent approaches to data quality. Common areas in data quality policies across Wales, which the Trust should consider, include:

- governance and structures;
- roles and responsibilities and management of data quality;
- policy requirements and data standards;
- use of patient records;
- security and confidentiality;
- data quality of information used for performance reporting to the Board;

- data sourced from other providers; and

- training and communications.

There are established and effective data validation processes and procedures in place covering CaNISC and other key systems

27. The VCC's approach to clinical information is centred on CaNISC, a system developed and maintained with a high level of clinical involvement. It serves as both a patient administration system (PAS), tracking patient demographic information but also as a repository for clinical information. The CaNISC is viewed positively as a work tool by front line VCC staff; its accuracy is trusted and clinicians are willing to invest time inputting or checking information because they will later use this in making decisions about patients.

28. The CaNISC is used by workers in cancer treatment across NHS Wales, and so forms a relatively complete cancer record for Wales. A number of clinical data sets have been designed and are already in use within individual NHS organisations. The Head of Clinical Information reports a potential for improvement in terms of defining a single Minimum Cancer Data Set which has been approved and is currently under development. This would simplify collaboration, comparison and planning as well as reducing the need to fill in a separate Minimum Cancer Data Set at each participating organisation for each new patient and therefore reducing the likelihood of incorrect or inconsistent data entry.

29. 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 underpin it.

30. Quarterly reports are prepared for the Trust's Executive Management Team and the Welsh Government on VCC activity. The reports show the performance against nationally set targets for a range of performance indicators. These can be seen in the third section of this report (Exhibits 2 to 4) and, where applicable, the performance of VCC is good, scoring consistently at or near the top of the range shown in Wales.

31. Clinical staff are routinely contacted by coding staff if clarification of written patient notes is needed, and clinicians in turn are able to check that coding has been completed as they intended. Both groups are comfortable with this arrangement and it seems to operate as a positive 'no-blame' approach. This is an effective feedback process which, anecdotal evidence suggests, works well.

32. Demographic data entered into clinical systems is checked routinely against several sources – statistical models are used to identify likely mismatches and these are dealt with as closely as possible to the initial data entry. Validation at Source procedures are available within Medicode as well as the 3M Clinical Encoder and there are regular Validation at Source reports.

There is effective co-ordination, quality assurance and review of clinical coding activity

33. There is a team of 7.5 full time equivalent clinical coders who are all in one pool and so can support each other's work as necessary. The VCC is effectively one oncology specialty, so this arrangement is appropriate and effective. This is evidenced by the fact that there is no current coding backlog, nor has there been any significant backlog in the past.

34. The Coding Manager has a specific role to quality assure colleagues' coding and this is achieved through a programme of internal coding audits. The results are presented at the VCC Health Records Group; quality issues identified are reported in the Datix Risk Management System and then reported on up by exception to the Trust's Information Governance and IM&T Committee.

35. In addition, the Health Records Manager conducts a range of regular reviews, two of which specifically focus on data quality. There are currently no plans to commission any external experts to undertake a rolling programme of data quality audits or reviews. The Trust has been of the view that there has been no need for a specific data quality improvement programme in the past as data quality was already so much better in VCC compared with other Trusts and LHBs.

There are good arrangements for data quality training

36. There is a well-planned training programme covering all staff focusing mainly on CaNISC as the key clinical records system. This also covers ancillary systems including RadIS, the radiology system, and Chemocare, the chemotherapy system. These training programmes are prioritised as they are directly related to patient safety. The training is aimed at staff in general, with specific modules for those working in medical records and as clinical coders. Over the past three years, all coders have received either induction or refresher training. Trainees also receive appropriate training before going for their clinical coding qualifications.

Performance against national data validity targets along with the results of our own data analysis, indicates effective data quality processes, although the Board has not yet cleansed all of its data adequately

37. 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 a 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 gathered from across all the LHBs in Wales. We have also included an examination of the data set from CaNISC, the main clinical system used by VCC and VCC's radiology system.

38. Although our analysis focuses on just two of the large number of clinical and business data sets held by the Trust, CaNISC in particular is so fundamental to the clinical work of VCC that it provides a window onto the overall effectiveness of data quality arrangements. Complementary to this, our examination of radiology data from RadIS, allows us to draw direct comparisons between the performance of VCC and the LHBs.

The Trust is meeting data validity targets for key data sets

39. Across Wales, LHBs and Trusts submit data to NWIS which then undertakes validity checks. The results of this work are then communicated back to the organisations at regular intervals, usually monthly or bi-monthly. Because NHS organisations receive all the data relating to their own and others' performance, we have not anonymised the graphs shown in this section.

40. We have reviewed three of the four data validity reports covering the period between 1 April and 30 November 2011. These reports cover admitted patient care, outpatient referrals, and outpatient activity. A fourth report is available, showing data validity for emergency medicine (A&E), which is not applicable to the Trust. NWIS collects performance data against a basket of between 10 and 20 criteria for each of these four reports, with each having a specified individual validity target set at an appropriate level between 90 per cent and 100 per cent. The NWIS reports identify where data fields have met these national targets. The information presented in Exhibits 2 to 4 provides a summary of the NWIS reports and indicates the percentage of data fields which meet the national target for that indicator.

41. Overall the exhibits indicate that the Trust is consistently meeting all the validity targets, and in so doing is unique in Wales. There are factors which have helped this situation including the relatively compact nature of VCC, and the good working relationship between clinicians and informatics staff.

Exhibit 2: Admitted patient care – dataset validity

Percentage of admitted patient care data where target has been met
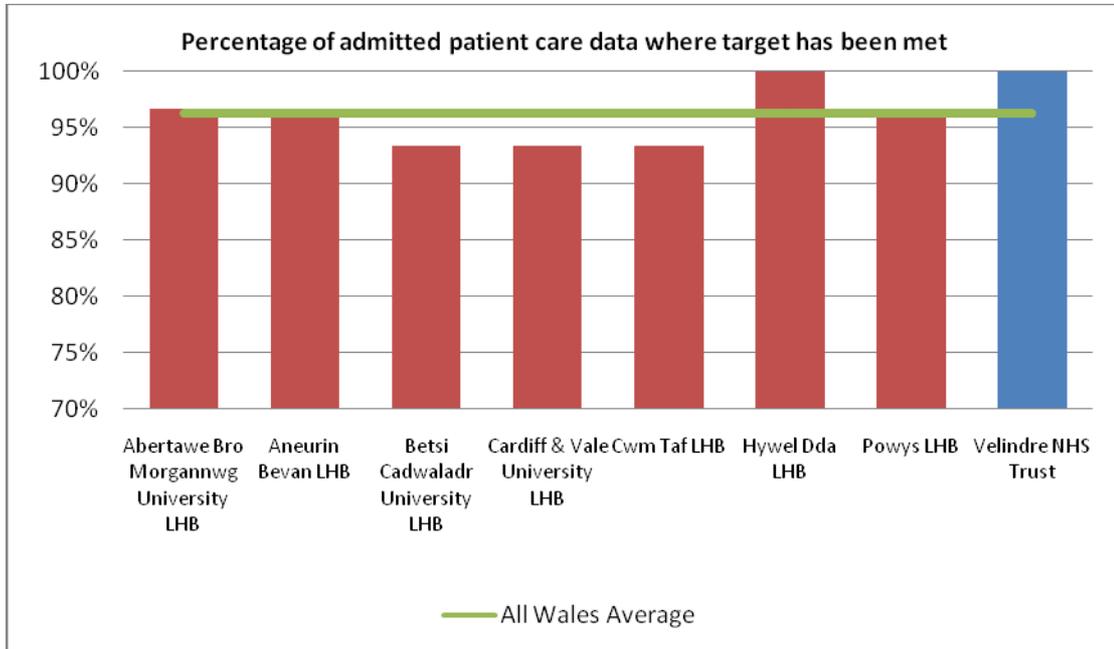
Source: NWIS, April to November 2011.

Note: The admitted patient care department data set includes 32 separate indicators and a target is given for each indicator. This exhibit shows the extent to which the organisations have achieved these targets for the period 1 April to 30 November 2011.

Exhibit 3: Outpatient referral – dataset validity

Percentage of outpatient referral data where target has been met
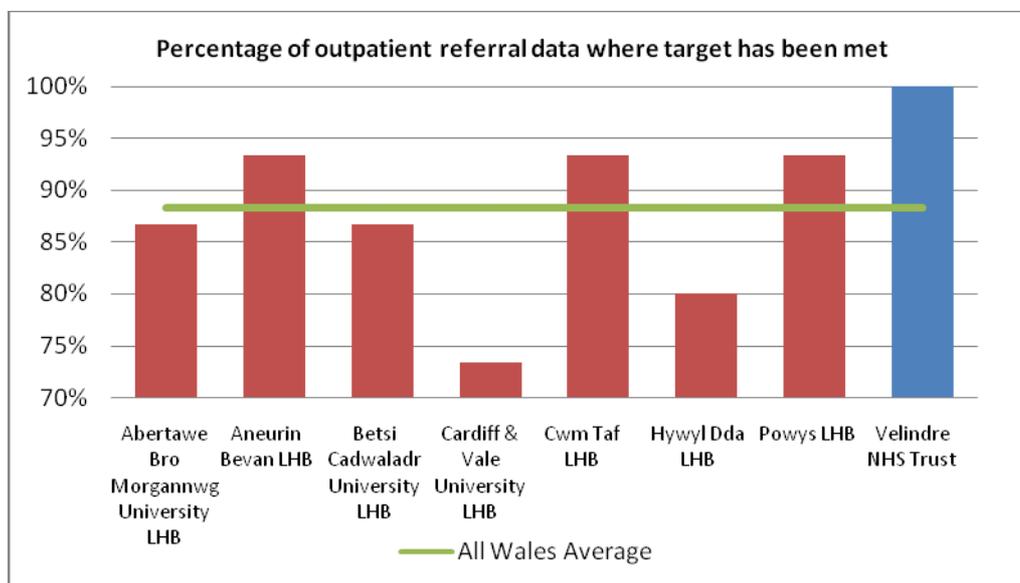
Source: NWIS, April to November 2011.

Note: Outpatient referral data set includes 15 separate indicators and a target is given for each indicator. This exhibit shows the extent to which the organisations have achieved these targets for the period 1 April to 30 November 2011.

Exhibit 4: Outpatient activity – dataset validity

Percentage of outpatient activity where target has been met
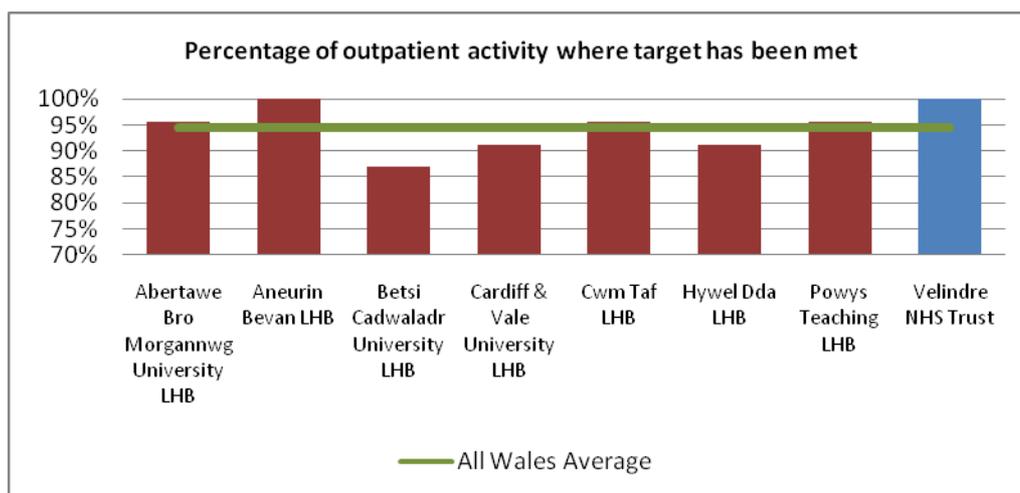
Source: NWIS, April to November 2011.

Note: The outpatient activity data set includes 23 separate indicators and a target is given for each indicator. This exhibit shows the extent to which the organisations have achieved these targets for the period 1 April to 30 November 2011.

Our CAATs testing indicates there is a reassuringly lowlevel of duplicate registrations within the CaNISC and RadIS systems, although further data cleansing is needed because NHS Numbers are not recorded as widely as they should be

42. 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 governance risks and making it more difficult to locate the right records for the right patient. Low levels of both multiple registration, where more than one record relates to the same patient, and missing NHS Numbers would be the ideal, but do not by themselves guarantee a high level of data quality. However, they are a pre-requisite for it. High incidences of these two factors would mean that patients are not being clearly and unambiguously identified in an organisation's systems, and so it follows that overall data quality would be compromised.

43. In addition to considering the arrangements for achieving data quality as discussed in the earlier sections of this report, we have undertaken demographic data testing using Computer Assisted Audit Techniques (CAATs). We analysed the core demographic patient data held on CaNISC and RadIS, to assess the extent of duplicate entries, or cases where patient identifiers are missing. Recognising that VCC is a major user of CaNISC, but not the only one, we have compared the position regarding data quality in these two key systems with that of the data held by health boards in Wales. At present, the comparative data is presented anonymously as the findings are still subject to clearance with the NHS bodies concerned.

44. Our findings from the data analysis suggest a broadly low potential risk to the Trust; the principal area of concern being the higher incidence of CaNISC records without an NHS Number. Other than this, there are minimal clinical and business efficiency implications, although if additional work in data cleansing is to be undertaken as part of the preparation for the Enterprise Master Patient Index, it would be most productive if it focused on reducing the instance of records without a valid NHS Number. The key findings from this work are shown in Exhibits 5 to 10.

There are no multiple registrations by NHS Number on CaNISC

45. The patient demographic data held on CaNISC showed no multiple registrations (individual patients with more than one electronic record)when viewed by NHS Number. This is an ideal result, comparing very well with PAS in the rest of Wales where values range from under one per cent to over 25 per cent (Exhibit 5). The Trust can take significant assurance from this finding. However, it should be noted that the position on multiple registrations may change when issues relating to missing NHS Numbers are addressed (see paragraph 47).

Exhibit 5: Percentage of multiple registrations within individual PAS and CaNISC in Wales
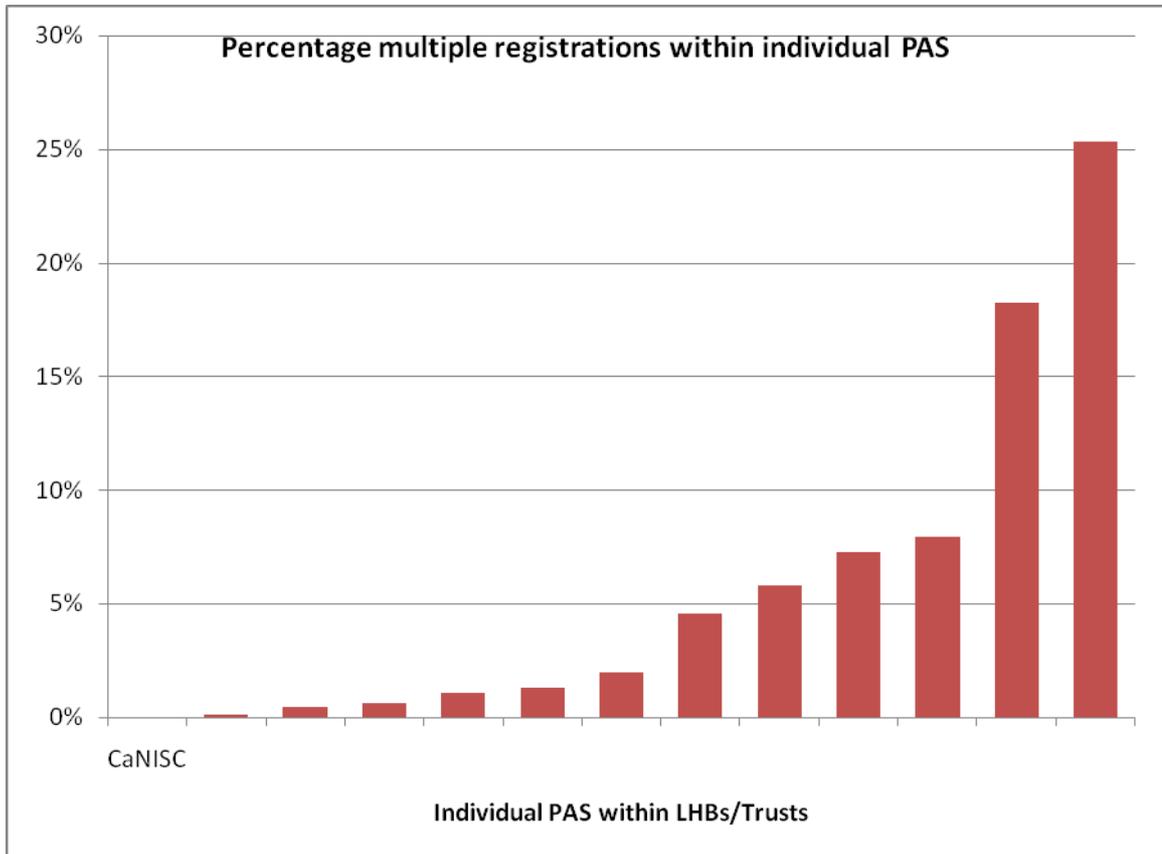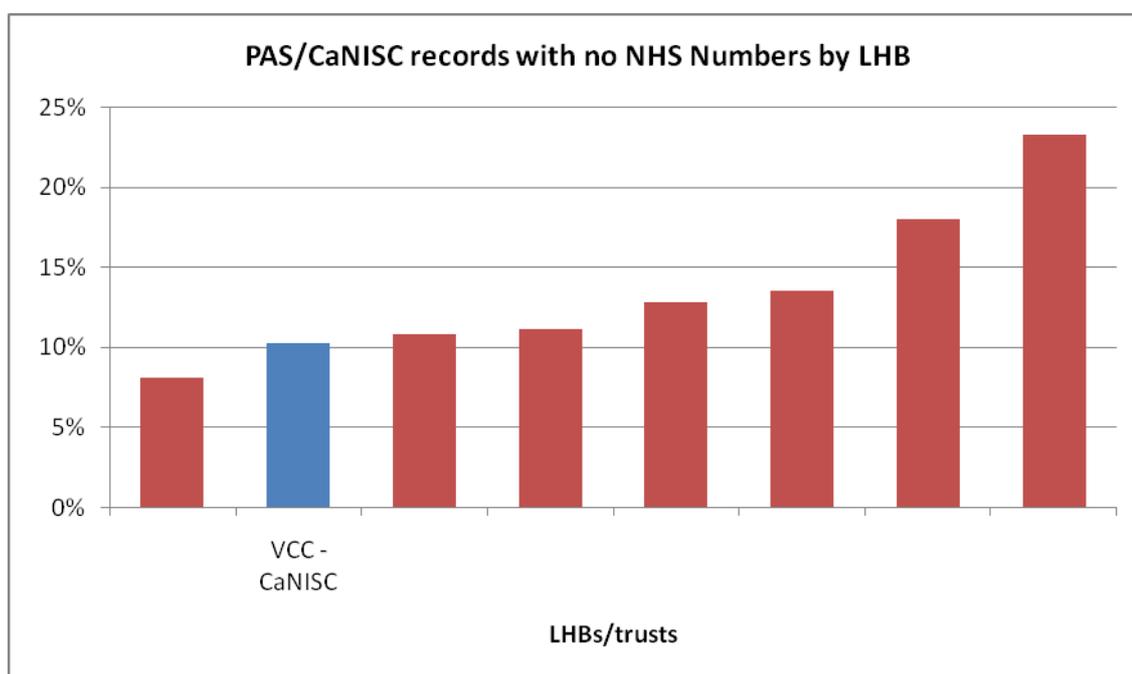

Source: Wales Audit Office CAATS analysis of all CaNISC data to November 2011.

Note: Some LHBs have multiple PASs.

46. Instances of individual patients with more than one electronic record at a single site can present a clinical risk if the patient also has duplicate written case notes at a single site, should these not all be available to clinicians involved in the patient's care.

47. Our analysis of CaNISC identified 38,951 records where there was no NHS Number – around 10 per cent of the total records on CaNISC. This compares favourably with the majority of other NHS bodies in Wales (Exhibit 6). However, with one in ten records missing an NHS Number, this is an area where the Trust could usefully look to make some improvements.

Exhibit 6: PAS and CaNISC Records with no NHS Numbers by LHB/Trust

Source: Wales Audit Office CAATS analysis of all PAS and CaNISC data to November 2011.

48. The absence of an NHS Number presents a risk to patients resulting from misidentification or partial records. 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 are many incompatible hospital number systems used across Wales. In addition, missing NHS Numbers may mask some hidden multiple registrations; individual patients may have been added several times to CaNISC without any record of their NHS Number. Once the NHS Number is added, VCC may find some of these cases are actually multiple registrations.

49. Furthermore, the lack of an NHS Number can have a financial impact in that organisations cannot then recover treatment costs associated with patients referred from another LHB in Wales, or from England.

50. Our analysis was also applied to the Trust's radiology system, RadIS. Across Wales we found that the duplicate or missing NHS Numbers were generally less of a problem for radiology systems than they were for the main PASs. Although when problems do occur they can present risks in terms of difficulties in matching patients' radiology records to their main PAS record. This may result in incomplete diagnostic information being available and patients having more radiological investigations than is necessary.

51. At Velindre, we found a very low incidence of multiple radiology registrations, which compared favourably to other NHS bodies in Wales (Exhibit 7).

Exhibit 7: Percentage multiple radiology registrations in same system
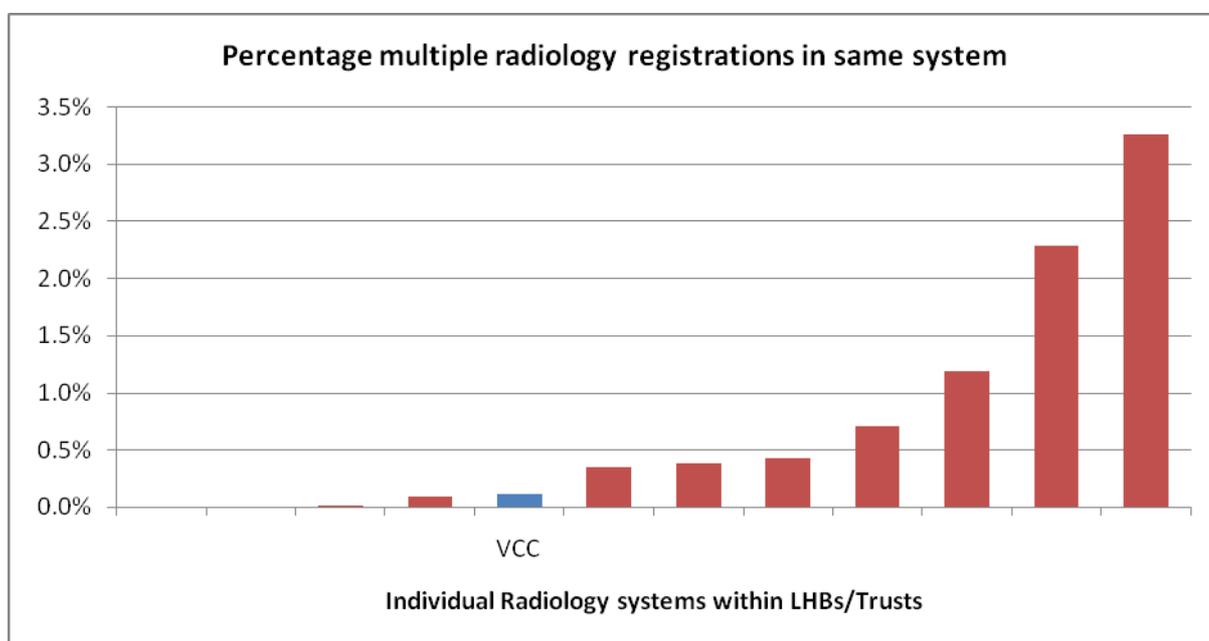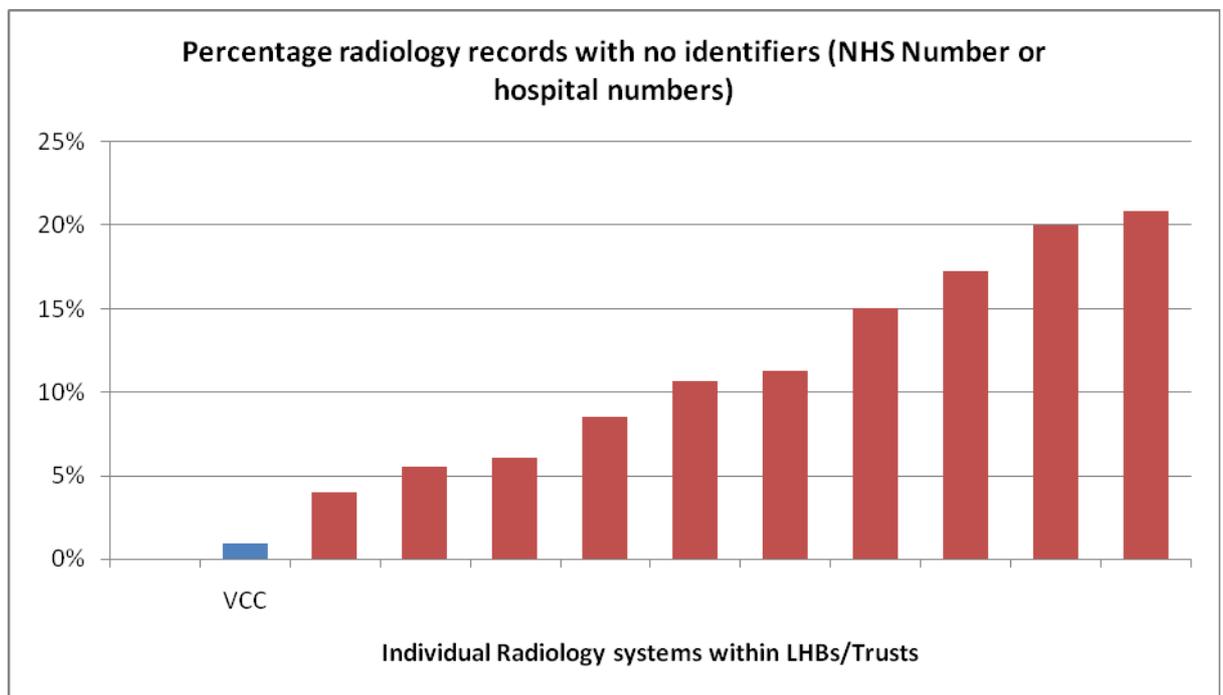

Source: Wales Audit Office CAATS analysis of all NHS Radiology Data to November 2011.

Note: Some LHBs have multiple radiology systems. Powys LHB does not have a radiology system but Velindre NHS Trust does.

52. Exhibit 8 shows a similar picture when the numbers of radiology records with no identifier at all (NHS Number or hospital number) are examined. There was a low incidence of missing patient identifiers on the Trust's RadIS system, a position which compares favourably to other NHS bodies in Wales.

53. The Trust can therefore take assurance that it is not exposed to significant risks associated with duplicate or missing radiology patient identifiers.

Exhibit 8: Percentage radiology records with no identifiers (NHS Number or hospital numbers)

Source: Wales Audit Office CAATS analysis of all NHS Radiology Data to November 2011.

Note: Some LHBs have multiple radiology systems. Powys LHB does not have a radiology system but Velindre NHS Trust does.

There are few CaNISC records with links to more than one radiology record

54. In VCC, CaNISC, which fulfils the role of both a PAS and a clinical information system, should be the basic patient record, all other clinical information leading from it. A potential risk arises where there are multiple CaNISC records associated with a single radiology record or when there are multiple RadIS records associated with a single CaNISC record. This is because these situations could lead to clinicians having incomplete information about patients on which to base clinical decisions, and that additional radiological investigations may need to be performed as a result of not having the patient's information available in one place.

55. Exhibit 9 compares the number of cases where a patient with at least one record in CaNISC/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 organisation together.

56. In Velindre, we found only 66 patients with two separate Radiology records and none with three or more, which is reassuring.

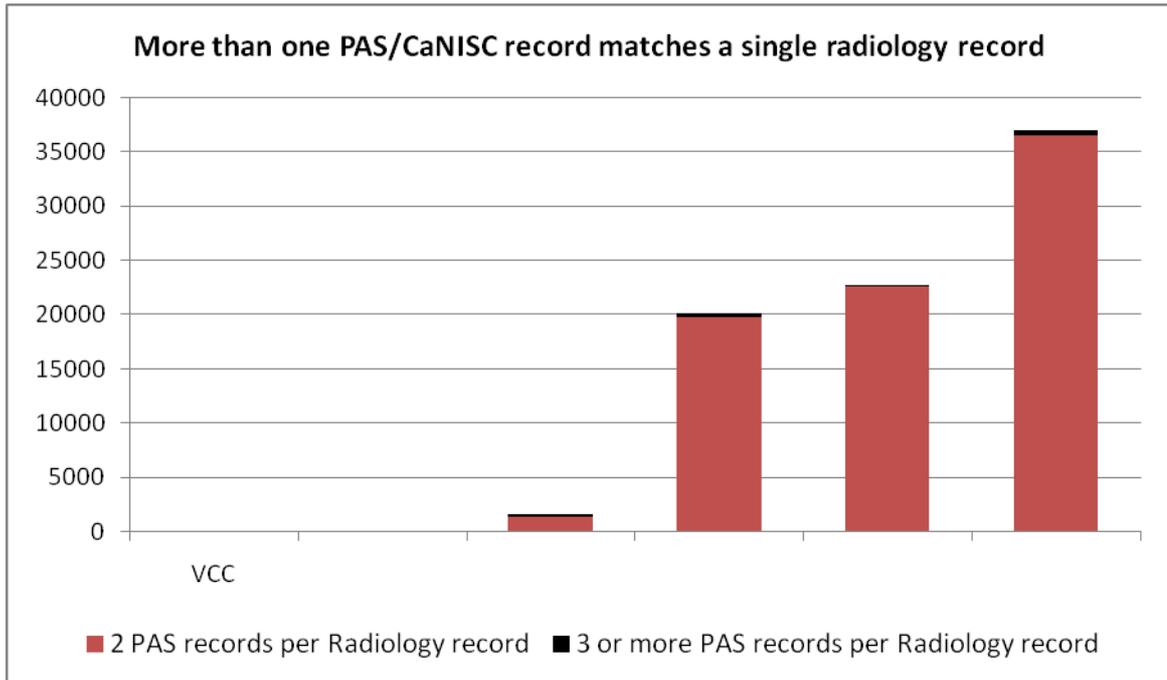Exhibit 9: More than one radiology record matches a PAS/CaNISC record
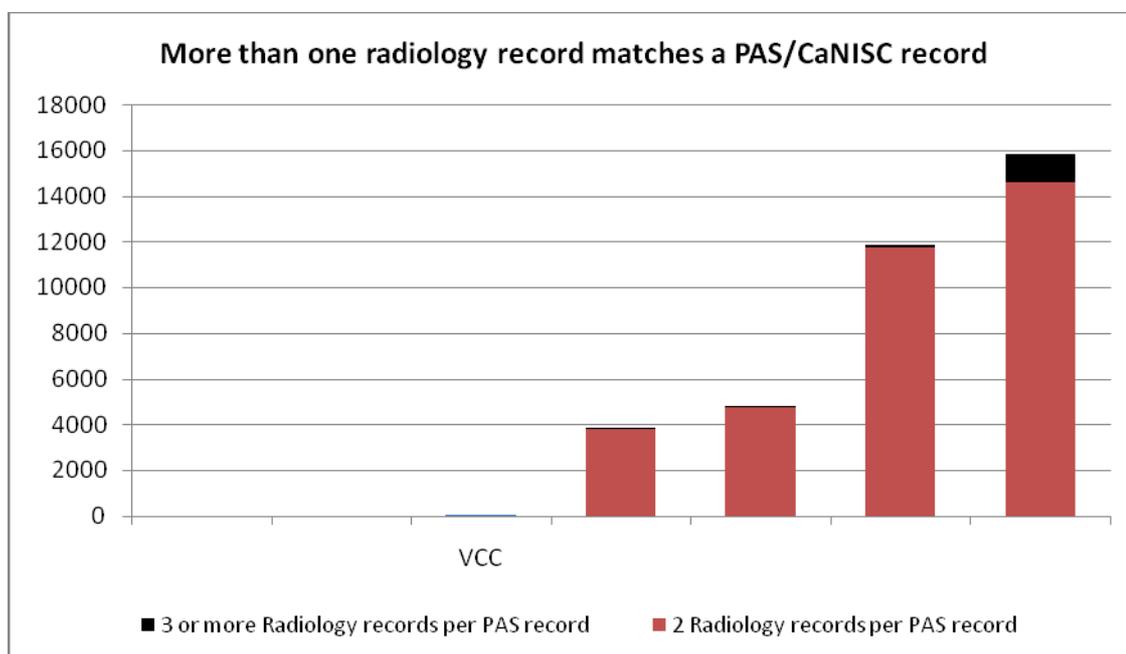
Source: Wales Audit Office CAATS analysis of all NHS Radiology PAS and CaNISC Data to November 2011.

Note: There are only six LHBs in Wales with both a PAS and radiology system. Velindre NHS Trust has a radiology system but uses CaNISC rather than a dedicated PAS. Powys LHB has a PAS but no radiology system.

57. Exhibit 10 shows cases where a patient has at least one radiology record and more than one CaNISC/PAS record. We found no such cases in Velindre, which again is reassuring.

Exhibit 10: More than one PAS/CaNISC record matches a single radiology record

Source: Wales Audit Office CAATS analysis of all NHS Radiology PAS and CaNISC Data to November 2011.

Note: There are only six LHBs in Wales that have both a PAS and radiology system. Velindre NHS Trust has a radiology system but no PAS, and Powys LHB has a PAS but no radiology system.

Appendix 1

Patient demographic data analysis results

As part of our fieldwork, we undertook an analysis of PAS, CaNISC and Radiology System patient demographic data. This Appendix provides a summary of our findings.

Indicator	Velindre NHS Trust	Wales
Total number of electronic patient records	380,000	8,461,547 (PAS)
Total number of records with no NHS Number recorded	38,951 10%	1,150,090 16% average
Total number of multiple patient registrations within the CaNISC	0 0%	589,347 6.2% average (PAS)
Total number of Radiology records	111,743	5,216,510
Total number of Radiology records with no NHS or hospital number recorded	1,026 0.90%	443,570 10% average
Total number of multiple Radiology registrations	132 0.12%	39,539 0.73% average
Records in PAS/CaNISC with more than one corresponding Radiology record by NHS Number	66 (two records) 0 (three or more records)	4,999 (two records) 203(three or more records) Average across Wales
Records in Radiology with more than one corresponding PAS/CaNISC record	0 (two records) 0 (three or more records)	17,914 (two records) 650(three or more records) Aveage across Wales

Note: All-Wales percentage figures are based on the average results per system (across the seven health boards in Wales and Velindre NHS Trust) rather than the average across all records.

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