Diagnostic review of ICT capacity and resources

Velindre NHS Trust

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There is a proportionally higher level of investment in ICT than most other NHS bodies and our diagnostic work indicates that the current ICT resources in Velindre NHS Trust are largely effective in supporting the delivery of healthcare

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Introduction

1. Effective Information and Communications Technology (ICT) arrangements are essential parts of a modern and high quality healthcare service. Health boards and trusts are becoming more reliant on the use of ICT not only to ensure the safe and effective delivery of healthcare in Wales but also to enable service modernisation, support service improvement and deliver efficiency savings. The confidentiality, integrity and availability of patient information and using both resilient and 'fit-for-purpose' ICT systems play an important part in delivering patient focused care.

2. Welsh Government has recognised the importance that ICT plays[1] and along with its national programme for informatics, set aside a three-year investment package of £25 million in April 2013. This investment package was set up to support the local transformation of healthcare delivery in Wales through the introduction of new ways of working and treatments using modern technology. In its first year, Welsh Government allocated just over £9.5 million to health boards and trusts across Wales.

3. In 2014, the new NHS planning arrangements set out requirements for health boards and trusts to exploit opportunities of technologies and innovation, and to demonstrate how they intend to realise benefits from infrastructure and capital investments over the next three years. To support this, there is an expectation that health boards and trusts will have strategies in place, which demonstrate how they intend to develop their asset base to meet future service needs. This includes ICT equipment and infrastructure, covering all healthcare settings, including primary care.

4. The introduction of the three-year investment package has gone some way to start to support the vision set out in Welsh Government strategies by introducing new technology. However, in 2013, the Auditor General's report on **Health Finances** reported that the condition of assets such as ICT across Wales is mixed. It identified that the level of investment required just to replace existing ICT equipment classed as 'out of life' was estimated to be in the region of £68 million in March 2014, rising to £83 million by March 2015. The condition of ICT, along with other assets and estate, is a significant additional demand on the NHS's current and future revenue and capital expenditure budgets.

5. Poorly maintained and out-of-date technology has implications for the quality and safety of services being provided. To move towards a single Electronic Patient Record, it is important that clinical information systems are integrated with each other and that the same systems are used across different sites that provide the same services within the organisation. Poor access to clinical information because of limited numbers of PCs, laptops, etc. or poor reliability of clinical systems also creates inefficiencies in the delivery of services and risks to patient care in the event that clinical information is not available.

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[1] **Designed for Life** in 2005 and **Together for Health** in 2011 both referred to the need for services to be effectively supported by an information and communications infrastructure to be able to deliver world-class healthcare in Wales. This was further emphasised in a written statement by Mark Drakeford, Minister for Health and Social Services in April 2014.

6.   Given the increasing pressure on revenue and capital funds allocated to NHS bodies, the Auditor General for Wales has carried out a high-level diagnostic review of ICT capacity and resources to provide an indication as to how well existing ICT resources across Wales are supporting the delivery of healthcare, and to identify areas where greater focus is needed.

Summary assessment

7.   The diagnostic review is based upon an analysis of comparative data and the views of a sample of staff who use clinical ICT systems on a regular basis. The findings from the data analysis are set out in the main body of this report but Exhibit 1 sets out a summary assessment that uses a traffic light rating to show how Velindre NHS Trust (the Trust) compares with other health boards and trusts in Wales.

8.   For the Trust, our sample of staff included ten medical staff and six ward-based Band 5 to 7 nursing staff in Velindre Hospital. Further details of our audit approach are set out in Appendix 1.

9.   Based on this analysis, we have concluded that there is a proportionally higher level of investment in ICT than most other NHS bodies and our diagnostic work indicates that the current ICT resources in the Trust are largely effective in supporting the delivery of healthcare.

Exhibit 1: Summary assessment

Indicator	Trust performance	Performance rating[2]
The level of investment in ICT is above the recommended level and one of the highest in Wales		
Total spend on ICT	The total level of spend on ICT is higher than the recommended two per cent of total revenue expenditure at 2.7 per cent, and considerably higher than the all-Wales average.	🟢
Trend in expenditure	Since 2010-11, total expenditure on ICT has doubled to £2.6 million in 2013-14.	🟢
Ability to attract additional ICT funding	A total of £0.9 million additional funding for ICT was obtained during 2013-14, which is just above the all-Wales average of £0.828 million.	🟡
Total spend on ICT workforce	The level of spend on ICT workforce is above the all-Wales average at 0.9 per cent of total revenue expenditure and the second highest in Wales.	🟢
Average spend per ICT whole-time equivalent (WTE)	The average spend per ICT whole time equivalent (WTE) is £41,007 which is higher than the all-Wales average of £35,467 and may reflect a richer grade-mix of staff.	Descriptive indicator
Staffing levels for ICT compare higher than most other health bodies in Wales although many staff only cover the Welsh Blood Service and there are no in-house information management staff		
Total ICT staff levels	The total number of ICT staff per 1,000 trust staff is well above the all-Wales average at 20.1 full time equivalents.	🟢
ICT technical staff levels	The total number of ICT technical staff is the highest in Wales but these staff only cover the Welsh Blood Service.	🟡
Information management staff levels	The Trust has indicated that it has no information management staff.	-
Data analyst staff levels	The Trust has indicated that it has no data analysts.	-

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[2] Performance rating is based on comparative performance with other health boards and trusts in Wales. Green (🟢) indicates that performance is one of the most positive in Wales, Yellow (🟡) indicates that performance is above or below the all-Wales average, and Red (🔴) indicates that performance is one of the least positive in Wales.

Indicator	Trust performance	Performance rating[3]
Overall there is a positive commitment to ICT within the trust and the doctors perception of IT facilities is better than the rest of Wales		
Organisational commitment to clinical ICT	The level of commitment to clinical ICT is above the all-Wales average, and is the third highest in Wales.	🟢
System integration	The level of integration between clinical information systems and CANISC is comparable with many other NHS organisations.	🟡
Management of ICT staff outside of the ICT department	There are no information management staff or data analysts outside the management of the ICT department, but there are ICT technical and other ICT staff in post equating to £0.076 million.	🟡
Doctors perception of the organisation and management of ICT	Half of the doctors (5 out of 10) indicated positive views about the organisation and management of ICT, compared with the all-Wales average of 31 per cent. This was the second highest in Wales.	🟢
The Trust has a good level of IT devices available to staff and physical access to PCs and clinical information systems is good		
Total number of devices (PCs, terminals, etc.) per doctor	The number of devices per WTE doctor is the second highest in Wales at 13.3.	🟢
Physical access to computers (doctors)	Only 1 doctor (out of 10) indicated that physical access to computers is problematic on a daily or weekly basis, compared with the all-Wales average of 33 per cent.	🟢
Total number of devices (PCs, terminals, etc.) per nurse	The number of devices per WTE nurse is the second highest in Wales at 3.1	🟢
Physical access to computers (nurses)	2 out of 6 (33 per cent) ward-based nursing staff indicated that access to computers is problematic on a daily or weekly basis, compared with the all-Wales average of 48 per cent.	🟢

[3] Performance rating is based on comparative performance with other health boards and trusts in Wales. Green (🟢) indicates that performance is one of the most positive in Wales, Yellow (🟡) indicates that performance is above or below the all-Wales average, and Red (🔴) indicates that performance is one of the least positive in Wales.

Indicator	Trust performance	Performance rating[4]
The Trust has a good level of IT devices available to staff and physical access to PCs and clinical information systems is good		
Access rights to clinical information systems	None of the ward-based nursing staff identified a clinical information system which they did not have access to but felt it would be useful if they did, compared with 24 per cent across Wales.	🟢
The Trust's ICT equipment is managed well and reliability of systems is generally adequate		
Poor access due to problems with the systems (doctors)	On average 2 out of 10 (20 per cent) doctors indicated that access due to system crashes or none-availability is problematic on a daily or weekly basis, compared with the all-Wales average of 21 per cent across Wales.	🟡
Poor access due to problems with the systems (nurses)	None of the ward-based nursing staff indicated that access due to system crashes or none-availability is problematic on a daily or weekly basis, compared with the all-Wales average of 28 per cent across Wales.	🟢
Records of planned and unplanned downtime	Records of planned and unplanned downtime exist for all of the Trust's clinical information systems.	🟢
Level of unplanned downtime	The total reported unplanned downtime during 2013-14 was just 15 hours.	Descriptive indicator
ICT equipment is classed as 'out-of-life'	The gross replacement cost of ICT equipment classed as out of life at 31 March 2014 was the lowest in Wales at £1.2 million.	🟢

[4] Performance rating is based on comparative performance with other health boards and trusts in Wales. Green (●) indicates that performance is one of the most positive in Wales, Yellow (●) indicates that performance is above or below the all-Wales average, and Red (●) indicates that performance is one of the least positive in Wales.

Indicator	Trust performance	Performance rating[5]
The current arrangements for training are generally supporting proficiency in the use of systems and the quality of the information contained on them		
Training on clinical information systems for new employees	Training on its clinical information systems is offered to all new employees where the use of such systems is required.	🟢
Access to log-on ID and passwords	Clinical staff have to attend a training session to obtain a log-on id and password for the systems they need to access, although nursing staff report delays accessing the training from NHS Wales Informatics Service (NWIS).	🟡
Length of training on PAS	The average length of training on the hospital's main patient system, CANISC is 1.3 hours, which is below the all-Wales average of just below four hours.	Descriptive indicator
Proficient use of IT systems	7 out of 10 (70 per cent) doctors felt confident that they were proficient in using the IT systems they needed to use. This was in line with the all-Wales average.	🟡
Data protection and Caldicott training	Refresher training for data protection/Caldicott requirements is mandatory for all staff.	🟢
Data quality training	Data quality training is optional although 8 out of 10 (80 per cent) doctors said that they could rely on the information contained in the clinical systems. This was the highest in Wales.	🟢
Training for temporary clinical staff	Training is provided to all temporary clinical staff, which compares favourably across Wales.	🟢

[5] Performance rating is based on comparative performance with other health boards and trusts in Wales. Green (●) indicates that performance is one of the most positive in Wales, Yellow (●) indicates that performance is above or below the all-Wales average, and Red (●) indicates that performance is one of the least positive in Wales.

Indicator	Trust performance	Performance rating[6]
Doctors are maximising the use of mainstream clinical ICT systems to provide patient care far more than many others across Wales		
Use of clinical systems to obtain clinical information	On average, 7 out of 10 (67 per cent) doctors use only computer systems to obtain information for a range of clinical tasks, compared with the all-Wales average of 21 per cent. This is the highest in Wales.	🟢
Clinical information is easy to find	8 out of10 (81 per cent) doctors using the computer identified that clinical information is easy to find on the system, compared with all-Wales average of 82 per cent.	🟡
Use of clinical systems to complete clinical tasks	On average, 4 out of 10 (43 per cent) doctors use only computer systems to complete a range of clinical tasks, compared with the all-Wales average of 28 per cent. This is the highest in Wales.	🟢
Completion of the task is easy	9 out of 10 (90 per cent) doctors identified that clinical tasks are easy to complete on the system compared with the all-Wales average of 72 per cent. This is the highest in Wales.	🟢
Use of bespoke applications developed personally in-house	7 out of 9 (78 per cent) doctors identified that they used applications developed personally in-house compared with the all-Wales average of 43 per cent, although most said that they rarely used them.	🟡

Source: Wales Audit Office

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[6] Performance rating is based on comparative performance with other health boards and trusts in Wales. Green (●) indicates that performance is one of the most positive in Wales, Yellow (●) indicates that performance is above or below the all-Wales average, and Red (●) indicates that performance is one of the least positive in Wales.

Recommendations

10. In undertaking this diagnostic work, our analysis would indicate that the Trust needs to focus attention on the following areas for improvement:

Provision of information management services

R1   Given the higher rate of medical staff who identified using applications developed personally in-house, the Trust should ensure that the level of information management services provided through the service level agreement with NHS Wales Informatics Service is adequate to meet the needs of clinical staff within the Trust, minimising the need for bespoke in-house systems to be used.

Detailed report

The level of investment in ICT is above the recommended level and one of the highest in Wales

11. The Welsh Government's previous strategy **Improving Health in Wales** in 2001 recognised that expenditure on ICT needed to be at least two per cent of total revenue expenditure. This recommendation continues to remain relevant to NHS bodies across Wales, but in times of austerity is becoming increasingly more challenging to meet.

12. For the financial year 2013-14, the proportion of total revenue expenditure spent on ICT across Wales was just 0.84 per cent (Exhibit 2). Within the Trust, the total level of spend on ICT is 2.7 per cent[7]. This is higher than the recommended two per cent and considerable higher than the all-Wales average.
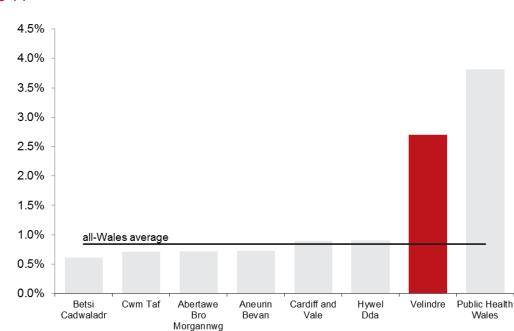
Exhibit 2: Total ICT expenditure as a proportion of total revenue expenditure in 2013-14

Source: Wales Audit Office survey, Health Board/Trust financial accounts

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[7] Income and Expenditure calculations for Velindre NHS Trust include data pertaining to the Welsh Blood Service, VCC and corporate services

13. Since 2010-11, the level of ICT expenditure is reported to have doubled from £1.3 million to £2.6 million in 2013-14. In addition, the Trust indicated that it had been able to attract additional funding in the region of £0.9 million during 2013-14 (of which approximately two-thirds related to the Welsh Blood Service)[8]. This is positive, and above the all-Wales average of £0.8 million.

14. During 2013-14, the Trust reported spending £0.878 million on ICT workforce in the financial year 2013-14. This includes a spend attributed to the Welsh Blood Service (WBS) of £0.486 million. This accounted for 34 per cent of the total spend on ICT. The level of spend on ICT workforce as a proportion of total revenue expenditure in the Trust is 0.9 per cent and the second highest across Wales (Exhibit 3).
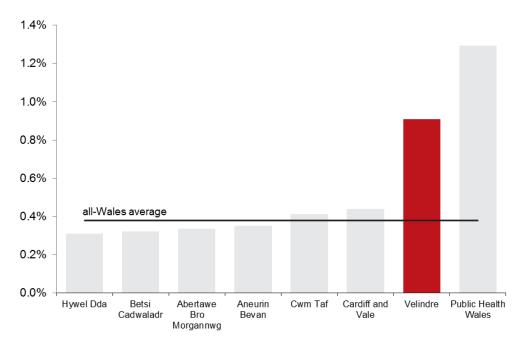
Exhibit 3: ICT workforce expenditure as a proportion of total revenue expenditure in 2013-14

Source: Wales Audit Office survey, Health Board/Trust financial accounts

15. The average spend per ICT whole time equivalent (WTE) is £41,007[9]. This is the second highest across Wales where the average spend is £35,467 per ICT WTE. This is likely to reflect a differing skill mix or richer grade mix of staff at the Trust.

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[8] Non-recurring income specified by the Health Board against the categories "Discretionary Capital", "NWIS funding", "Project Grants" and "Other"
[9] Figure includes any NWIS staff who are hosted by the Trust

Staffing levels for ICT compare higher than most other health bodies in Wales although many staff only cover the Welsh Blood Service and there are no in-house information management staff

16. The ability of the ICT department to effectively deliver and support an ICT infrastructure that best serves the needs of the organisation will depend on the extent to which appropriately skilled resources are available. Clinical information systems also hold a vast amount of information. It is therefore important that there is sufficient capacity within the ICT department to ensure that the systems are reliable and accessible to those who need them. It is also important that the data contained in the systems is the right data, is managed and presented appropriately, as well as analysed and transformed into useful information to provide the right business intelligence to make both strategic and operational decisions within the NHS.

17. For the financial year 2013-14, the Trust indicated that it had 21.4 whole time equivalents in post within the ICT departments for Velindre Cancer Centre and for the Welsh Blood Service[10]. The number of ICT staff per 1,000 total trust staff[11] is 20.1. This is well above the all-Wales average of 8.8 WTE per 1,000 total staff (Exhibit 4), however a significant proportion of these staff only covered the Welsh Blood Service and at the time of reporting, there were 7.0 WTEs from NWIS who were hosted and managed by the Trust ICT department through a service level agreement. The arrangements for these staff have subsequently changed.

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[10] Whole-time equivalents include NWIS staff who are hosted by the trust and sit within the management of the ICT team. For Velindre NHS Trust, at the time of data collection this was reported to be 7.0 WTE

[11] Total trust staff whole-time equivalents include all staff employed within the Velindre Cancer Centre, Welsh Blood Service and Corporate services
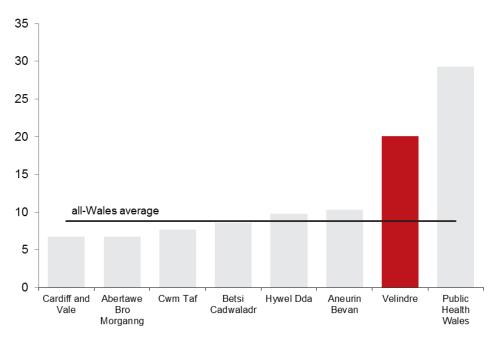
Exhibit 4: Total ICT staff (WTE) per 1,000 total health board/trust staff (WTE)

Source: Wales Audit Office survey, Stats Wales

18. As part of our work, we considered the extent to which different skilled staff are in post. This included:

- Technical staff whose roles include the development, implementation and operation of the core ICT infrastructure;

- Information management staff, including data analysts, whose roles include preparing management information reports, designing and maintaining databases and providing data interpretation and analysis; and

- Other staff, including helpdesk staff, software developers, project managers and ICT trainers.

19. The Trust has indicated that it has 8.4 WTE technical staff. All of these staff are based in the Welsh Blood Service, reflecting that all of the IT systems within the Velindre Cancer Centre are managed and supported by NHS Wales Informatics Service (NWIS). Across Wales, the level of ICT technical staff is 4.0 WTE per 1,000 total staff (Exhibit 5).
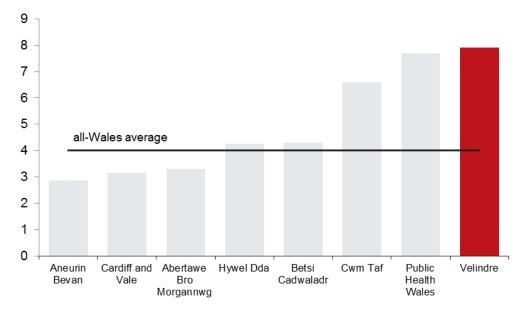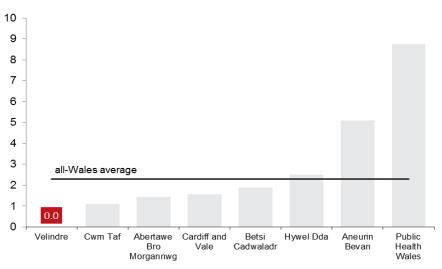
Exhibit 5: Total IT Technical staff (WTE) per 1,000 total health board/trust staff (WTE)

Source: Wales Audit Office survey, Stats Wales

20. The Trust has indicated that it has no information management staff. All information management services are provided through a service level agreement with NWIS. The level of information management staff per 1,000 total trust staff across Wales is 2.3 WTE (Exhibit 6).

Exhibit 6: Total Information Management staff (WTE) per 1,000 total health board/trust staff (WTE)

Source: Wales Audit Office survey, Stats Wales

21. The Trust has also indicated that it does not employ data analysts, but again receives this service through a service level agreement with NWIS. Across Wales, the level of data analyst support is just 0.6 WTE per 1,000 total staff (Exhibit 7).
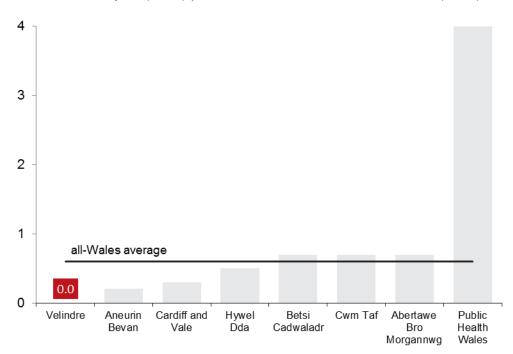
Exhibit 7: Total data analysts (WTE) per 1,000 total health board/trust staff (WTE)

Source: Wales Audit Office survey, Stats Wales

Overall there is a positive commitment to ICT within the trust and the doctors perception of IT facilities is better than the rest of Wales

22. Commitment to ICT by senior management and clinical staff is important in encouraging greater use of existing information systems and commitment to future developments. As part of our work, we have considered a number of areas of good practice to demonstrate whether there is a commitment to clinical ICT. These areas have been weighted using a scoring matrix to provide an overall indication of the level of commitment to ICT within the Trust (Exhibit 8).

Exhibit 8: Compliance with aspects of good practice to demonstrate a positive commitment to clinical ICT

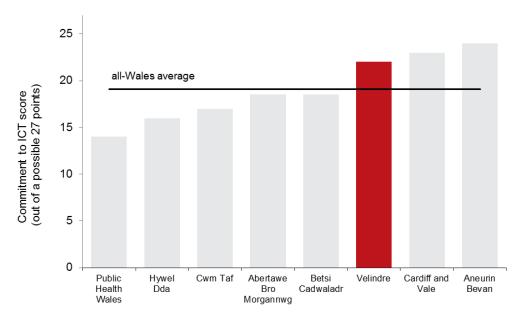| Good practice area	Trust score[12]
The trust has a documented ICT strategy which is up to date (maximum score of 2)	2
The ICT strategy or new ICT developments have been discussed at board level meetings during the last 12 months (maximum score of 2)	2
The trust has an ICT steering group with a board member (maximum score of 1)	1
The ICT steering group has clinical members (maximum score of 1)	1
The ICT strategy or new ICT developments have been on the agenda of executive level meetings during the last 12 months (maximum score of 2)	2
The ICT lead is a member of the Executive Management team (maximum score of 3)	3
There is central co-ordination of IT and Information Management (maximum score of 2)	1
There is active clinical involvement in the trust's ICT programme, including the identification of clinical champions (maximum score of 3)	2
There is a good understanding of the organisation's technical infrastructure (maximum score of 1)	1
There is a documented ICT benefits management programme (maximum score of 3)	0
There is involvement by the ICT lead in the Clinical Governance programme (maximum score of 3)	3

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[12] A detailed breakdown of the scoring principle is included in Appendix 2

Good practice area	Trust score[13]
There is a clinical ICT user group (maximum score of 2)	2
There is a mechanism to routinely seek staff feedback (maximum score of 2)	2
TOTAL SCORE (OUT OF A MAXIMUM OF 27)	**22**

Source: Wales Audit Office survey

23. The overall level of commitment to ICT in the Trust is above the all-Wales average and is the third highest in Wales (Exhibit 9).

Exhibit 9: Overall score for commitment to ICT

Source: Wales Audit Office survey, Stats Wales

24. The Trust reported that CANISC acts as its main electronic patient record for the Velindre Cancer Centre and there is a separate system for the Welsh Blood Service. As part of our work, we asked organisations to identify the extent to which the systems relating to a number of core service areas are integrated with the main patient system, in this case, CANISC.

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[13] A detailed breakdown of the scoring principle is included in Appendix 2

25. The Trust has identified that, of the three clinical information systems reported to us, all are linked with CANISC (Exhibit 10), although only one is fully integrated and one has two-way links[14]. The Trust reported that it does not have a pathology system, but relies on the pathology service in Cardiff and Vale University Health Board. Although there are less systems that you would find in a Health Board, the level of integration with the main patient system is comparable with the majority of other NHS organisations across Wales (Exhibit 11).
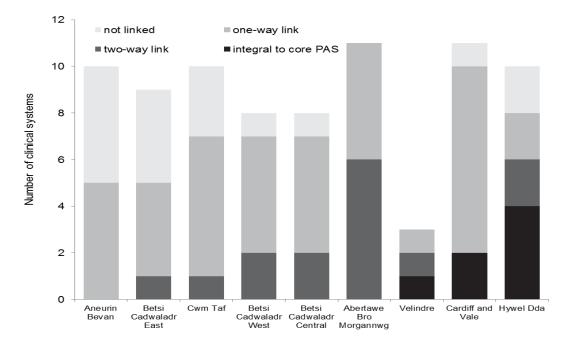
Exhibit 10: Extent to which clinical information systems are integrated with the core Patient System
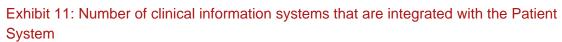
Clinical system	This Trust	Number of systems that are integral or have two-way links to the core health body PAS across Wales
Pathology	No system identified	1
Pharmacy	One-way link	-
Radiology	Two-way link	2
Therapies	Integrated	3

Source: Wales Audit Office survey

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[14] Two-way links allow information to be updated and shared in both directions, such as patient demographics, between the core patient system and the clinical information system. One-way links only allow information to be updated and shared in one direction, usually from the core patient system to the clinical information system. This means that if information is updated on the clinical information system, this is not automated updated on the core patient system, which creates a risk that the two systems contain inconsistent data.

Exhibit 11: Number of clinical information systems that are integrated with the Patient System

Source: Wales Audit Office survey

26. The Trust reported that IT and Information Management are separately managed but report to the same director. This is largely because core information management is provided through a service level agreement with NWIS. However, the Trust indicated that it also spent £0.076 million on ICT staff outside the direct management of the ICT department in 2013-14. This was 2.9 per cent of total ICT expenditure, but is below the all-Wales average of 7.2 per cent and the second lowest in Wales. These staff covered IT training and provided technical support on a specific clinical system, as part of a wider role within the regulation context of that particular clinical service.

27. As part of our staff survey, we asked doctors working in district general hospitals their views on the ICT available within their respective organisation. For the Trust, this included doctors working within the Velindre Cancer Centre. Specifically, we asked their views on:

• the organisation's use of the ICT facilities;

• whether clinical information systems has improved patient care; and

• whether ICT in the organisation is better than other organisations where they have previously worked.

28. Overall, half of doctors at the Trust responded positively, compared with an all-Wales average of 31 per cent. This was the second highest positive response rate in Wales. Although only a limited sample size, doctors were the least positive in relation to whether the Trust is making good use of its IT facilities (Exhibit 12). Free-text comments received by medical staff from the Trust in the survey, which provide some context to their views, are included in Appendix 3.

Exhibit 12: Percentage of doctors agreeing or strongly agreeing with the following statements relating to ICT within the Trust

	This Trust	All-Wales
This Trust is currently making good use of the IT facilities it has.	40.0	24.2
The development of IT systems in this Trust has improved patient care.	70.0	46.8
The IT in this Trust is better than the IT in other health organisations that I have personally seen.	50.0	20.7

Source: Wales Audit Office survey

The Trust has a good level of IT devices available to staff and physical access to PCs and clinical information systems is good

29. In order for staff to be able to access clinical information systems, it is important that there is a good level of devices (PCs, terminals etc.) available in clinical areas. Across Wales, we reviewed the number of devices standardised per whole time equivalent doctor and whole time equivalent nurse (Exhibits 13 and 14). The Trust has more devices per staff member than the all-Wales average.
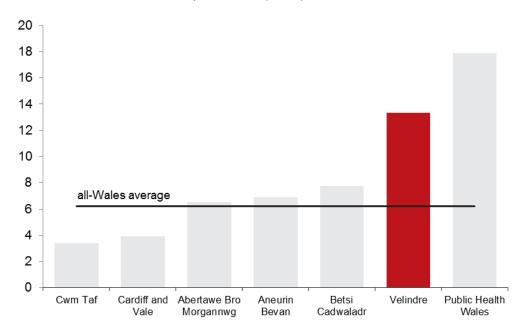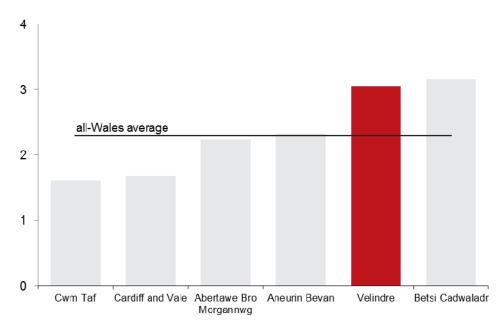
Exhibit 13: Total number of devices per doctor (WTE)

Source: Wales Audit Office survey, Stats Wales

Exhibit 14: Total number of devices per nurse (WTE)

Source: Wales Audit Office survey, Stats Wales

30. As part of our staff surveys, we asked both medical and nursing staff how often they were unable to use a computer to undertake tasks and obtain information due to insufficient computers being available. Results from the staff survey at the Trust are based on a very limited number of participants, but provide an indication that performance is more favourable than the all-Wales position (Exhibit 15).

Exhibit 15: Percentage of medical and nursing staff reporting that they were unable to complete tasks and obtain information due to insufficient computers being available on a weekly or more frequent basis

	Medical staff		Nursing staff	
	This Trust	All Wales	This Trust	All Wales
On the ward	11.1	57.0	33.3	48.0
In outpatient rooms	10.0	20.0		
In the office	None	22.0		

Source: Wales Audit Office survey

31. As well as physical access to the hardware, staff also need to have appropriate access rights to the information systems so they are able to access the clinical information that will help them to complete their job. Across the six nursing staff who responded to our survey, none identified a Trust system where they did not have access but felt that access would be useful. Across Wales access rights are more of a concern, with 24 per cent of nursing staff identifying systems where they do not have access but recognise that such a facility would be useful.

The Trust's ICT equipment is managed well and reliability of systems is generally adequate

32. To support the delivery of services, clinical information systems also have to be reliable. If users of the systems continually have trouble (real or perceived) accessing the systems, then the benefits from have electronic systems will be largely reduced as staff will become reluctant to use them or will create parallel systems such as maintaining paper records.

33. Our surveys suggest that doctors and nursing staff at the Trust tend not to experience system crashes or unavailable systems on the wards, although there is potentially an issue for medical staff in outpatient rooms and offices where system crashes or lack of availability on a weekly or more frequent basis is more likely to be experienced. Across Wales, around one-quarter of staff reported frequent problems of systems being unavailable (Exhibit 16).

Exhibit 16: Percentage of medical and nursing staff reporting that they were unable to use the computer due to system crashes or the system not being available on a weekly or more frequent basis

	Medical staff		Nursing staff	
	This Trust	All Wales	This Trust	All Wales
On the ward	11.1	24.0	None	28.0
In outpatient rooms	30.0	20.0		
In the office	20.0	19.0		

Source: Wales Audit Office survey

34. To monitor the extent to which the clinical information systems are not available for use, health boards and trusts should be maintaining a record of planned and unplanned downtime. The Trust identified that it had partial downtime records across all of its systems for software failure, network failure and server failure.

35. Where records exist, the Trust identified having 36 occasions of planned downtime, and nine occasions of unplanned downtime in 2013-14. These impacted on the core CANISC system. The total amount of unplanned downtime was five hours. We are unable to provide a comparison of unplanned downtime across Wales due to the incompleteness of downtime records.

36. The age of equipment can be a major contributory factor in relation to system failures and downtimes. Where information was available, the Trust reported that the average age of equipment varies between five years for servers and desktop operating systems, and 12 years for telecoms equipment and software.

37. As part of our work, we have captured the extent to which existing ICT equipment is classed as 'out of life'[15]. The gross replacement cost of ICT equipment classed as 'out of life' at the end of March 2014 in the Trust was the lowest in Wales at £1.2 million (Exhibit 17).

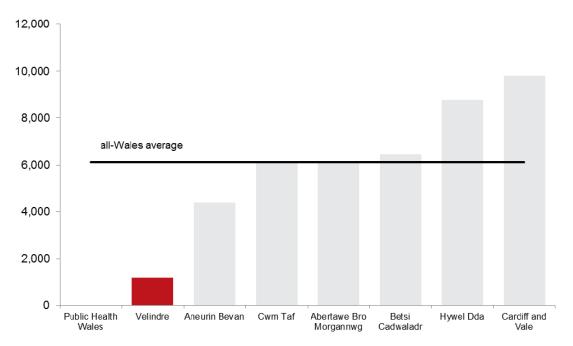[15] 'Out-of life' is defined as being beyond its useful life and economic repair.

Exhibit 17: Gross replacement cost (£000's) of ICT equipment classed as 'out of life' at 31 March 2014

Source: NHS submissions to Welsh Government

The current arrangements for training are generally supporting proficiency in the use of systems and the quality of the information contained on them

38. To be able to make the best use of the clinical information systems available to clinical staff and to understand the requirements placed upon them in terms of data quality and data protection, an appropriate level of training needs to be put in place.

39. The Trust identified that training on its clinical information systems is offered to all new employees where the use of such systems is required. The Trust also identified that all clinical staff have to attend a training session to obtain a log-on id and password for the systems they need to access (with the exception of clinical staff at the Welsh Blood Service). This is in line with the majority of other NHS organisations across Wales.

40. The nursing staff survey suggests however that there may be an issue with delays in the receipt of training at the Trust. Four out of the six nursing staff who expressed an opinion disagreed with the statement that *'New staff on the ward do not have to wait to get the training/passwords they need to use the hospitals IT systems'*. Across Wales, 60 per cent of nursing staff also disagreed with the statement. All training for nursing staff is provided through the service level agreement with NWIS.

41. The average length of training on the Trust's CANISC system across all staff groups is 1.3 hours. The Trust states that the actual time spent training will be tailored according to individual requirements of what access is needed. Across Wales, the average duration of training across all staff groups on the core patient system is just below four hours. Our medical staff survey identified that seven out of the ten respondents felt confident they were proficient in using the Trust IT systems that they needed. This is in line with the all-Wales position, with 70 per cent of doctors reporting that were confident of their proficiency in using the required systems.

42. When asked, the Trust reported that refresher training for data protection and Caldicott requirements was mandatory for all staff. Data quality training is reported to be not routinely offered to staff at the Trust, however we understand that aspects of data quality are covered in the broader Information Governance training which also includes data protection and Caldicott. Across Wales, data protection and Caldicott training is mandatory at all organisations except for one, while data quality training is only mandated at one health board. Eight out of ten doctors responding to our survey at the Trust said that they could rely on the information contained in the clinical systems, compared with an average of 52 per cent across Wales. In addition, eight out of the ten respondents said that the information on the IT systems was accurate. Across Wales, only 42 per cent of doctors agreed that the information on their IT systems was accurate.

43. As well as permanent staff, it is also important that temporary staff employed to work in clinical areas (including those who hold honorary contracts) are also provided with the necessary training. The Trust identified that each of four different groups of temporary staff (agency nurses, bank nurses, locum doctors and medical staff with honorary contracts) are offered training. This compares favourably against the profile across Wales (Exhibit 18).
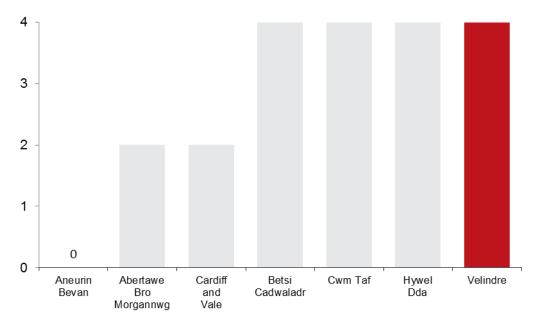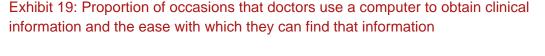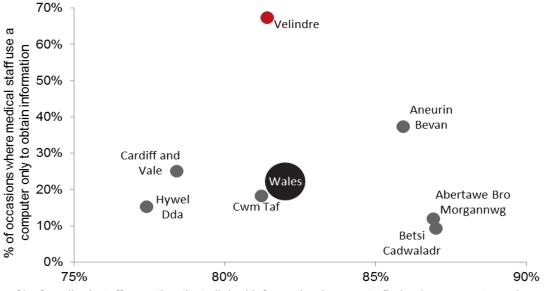
Exhibit 18: Number of temporary staff groups who are offered training

Source: Wales Audit Office survey

Doctors are maximising the use of mainstream clinical ICT systems to provide patient care far more than many others across Wales

44. As part of our staff survey, we asked doctors their views on the ability to use ICT systems to obtain clinical information and to undertake a number of clinical tasks, without the need to rely on paper-based systems.

45. The extent to which doctors working in the Trust's hospital are able to rely solely on the use of a computer to obtain a range of clinical information is significantly higher than the all-Wales average. Doctors at the Trust reported that they use only a computer to gather clinical information on 67 per cent of occasions[16]. Of those who use the computer systems, the proportion of tasks where the information was considered easy to find on the computerised system was around the Wales average (Exhibit 19). Significantly, doctors at the Trust reported that they rely solely on paper across just three per cent of information-gathering tasks, compared with the all-Wales average of 35 per cent.

Exhibit 19: Proportion of occasions that doctors use a computer to obtain clinical information and the ease with which they can find that information

Source: Wales Audit Office survey

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[16] Medical staff were questioned across a series of 12 tasks and asked to state whether they used a computer, computer and paper, or paper only (as applicable). They were also asked to state how easily they were able to complete those tasks.

46.   The sample of doctors who responded to our survey identified that they were most likely to use a computer to obtain radiology and laboratory test results, and to review outpatient appointments and information about patient diagnosis. They rarely relied entirely on paper records (Exhibit 20).

Exhibit 20: Proportion of doctors using paper only and computer only to obtain clinical information

	Computer use only		Paper records only	
	This Trust	All Wales	This Trust	All Wales
GP referral	50.0	8.1	20.0	63.5
Diagnosis	80.0	8.9	None	37.1
Outpatient appointment	80.0	26.2	None	26.7
Episode history	66.7	16.2	None	38.8
Clinical history	60.0	7.9	None	46.2
Investigations requested	60.0	24.9	10.0	17.1
Laboratory test results	70.0	46.7	None	2.4
Radiology report	80.0	49.6	None	3.4
Procedure	44.0	10.8	None	42.2
Therapy referral	33.3	16.4	None	38.6
Therapy session	55.6	13.7	None	49.1

Source: Wales Audit Office survey

47.   At the Trust, our sample of medical staff identified 43 occasions out of 100 where a computer only would be used to complete a clinical task. On all but one of those occasions, medical staff considered that completion of the task was fairly easy or very easy. Despite the limited sample size of medical staff at the Trust, these findings suggest that computer use for clinical tasks is much more common at the Trust than at other sites across Wales, while ease of use is also well ahead of the Wales average (Exhibit 21). Doctors at the Trust reported that they rely solely on paper across 41 per cent of clinical tasks, compared with an all-Wales average of 54 per cent.
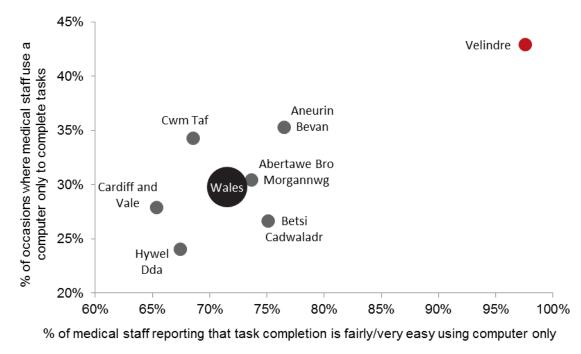
Exhibit 21: Proportion of occasions that doctors use a computer to complete clinical tasks and the ease with which they can complete those tasks

Source: Wales Audit Office survey

48. Within the Trust, the most common tasks that doctors identified they would undertake using a computer were to write outpatient appointment notes and access evidenced-based literature, public health information and clinical guidelines. All of the doctors in our survey at the Trust relied solely on paper to order laboratory tests and radiological investigations (Exhibit 22).

Exhibit 22: Proportion of doctors using paper only and computer only to complete clinical tasks

	Computer use only		Paper records only	
	This Trust	All Wales	This Trust	All Wales
Write a note about an outpatient appointment	100.0	11.6	None	60.1
Clerk the patient on admission	33.3	5.5	33.3	75.3
Order laboratory tests	None	6.7	100.0	74.5
Order a radiology investigation	None	2.9	100.0	86.0
Write a prescription	None	0.2	60.0	92.9
Refer a patient to another consultant's team	20.0	2.5	60.0	71.4
Refer a patient to a non-medical clinician	20.0	2.4	40.0	67.2
Prepare a discharge letter	33.3	25	33.3	36.0
Check a hospital clinical guideline	90.0	72.6	10.0	3.4
Access evidence based literature	80.0	88.3	None	0.7
Access public health information	80.0	87.3	None	0.8

Source: Wales Audit Office survey

49. Our medical staff survey also identified that seven out of nine responding doctors at the Trust use applications developed personally in-house to meet needs such as NCEPOD or royal college logbooks. This performance is much higher than the all-Wales position, where 43 per cent of doctors reporting using in-house applications for this purpose. Two of the seven medical staff at the Trust stated that they would use the application monthly, while the remainder however stated that they rarely accessed the facility.

Appendix 1

Audit approach

Our diagnostic review of ICT capacity and resources took place between September 2014 and March 2015. The diagnostic review included all health boards and trusts across Wales with the exception of Powys Teaching Health Board and Welsh Ambulance Services NHS Trust. Details of the audit approach are set out below:

Document review

We requested and analysed a range of Trust documents. These documents included the ICT strategy, Board minutes considering ICT development, minutes of ICT steering groups, ICT related policies, ICT system maps and budget positions.

Data capture survey

We asked health boards and trusts to complete a survey providing details of their ICT expenditure, staffing and training. We also asked health boards and trusts to provide details in relation to clinical information systems and the ICT infrastructure. The completed survey for Velindre NHS Trust was submitted on 6 November 2014. A second survey for the Welsh Blood Service was also received on 6 November 2014. Where applicable, returns were combined to provide a Velindre/WBS profile.

Medical staff survey

A survey covering a range of issues in relation to ICT along with a number of separate questions relating to medicines management (as part of a separate review of medicines management) was issued to all medical staff working in ward-based specialties in the main district general hospital sites across Wales. The survey was issued electronically to Velindre NHS Trust on 25 September 2014. A reminder was issued on 3 November 2014. Responses were received from 10 medical staff in Velindre NHS Trust.

Ward-based nursing staff survey

A survey covering a range of issues in relation to ICT along with a number of separate questions relating to medicines management (as part of a separate review of medicines management) was issued to all Band 5 to 7 nursing staff working on wards in the main district general hospital sites across Wales. The survey was issued electronically to Velindre NHS Trust on 29 September 2014. A reminder was issued on 25 November 2014. Responses were received from six nursing staff in Velindre NHS Trust.

Appendix 2

Scoring principle used to measure commitment to clinical ICT

Aspect of good practice to demonstrate commitment to clinical ICT, with possible responses	Score per response
Does the health board/trust have a documented ICT strategy, which is up to date?	
A: There is a strategy and evidence that it is supported by staff	2
B: There is a strategy, but no evidence that it is supported by staff	1.5
C: There is a strategy, but it is out of date	1
D: There is evidence a strategy is being developed	0.5
E: There is no strategy written/produced post April 2011	0
Has the ICT strategy or new ICT developments been discussed at board level meetings during the last 12 months?	
A: Yes	2
B: No	0
Does the health board/trust have an ICT steering group with a board member?	
A: Yes	1
B: No	0
C: No ICT steering group	0
Does the health board/trust's ICT steering group have clinical members?	
A: Yes	1
B: No	0
C: No ICT steering group	0
Has the ICT strategy or new ICT developments been on the agenda of executive level meetings during the last 12 months?	
A: Yes	2
B: No	0
Is the ICT lead a member of the Executive Management team (i.e. the team that reports directly to the Chief Executive)?	
A: Yes	3
B: No, but the ICT lead reports directly to someone on the management team	1
C: No and the ICT lead does not report to someone on the management team	0
How co-ordinated are IT and Information?	
A: They are in the same department	2
B: They are managed separately but report to the same director	1
C: They are managed separately and report to different directors	0

Aspect of good practice to demonstrate commitment to clinical ICT, with possible responses	Score per response
What is the degree of clinical involvement in the trust's ICT programme?	
A: Clinical champions have been identified and lead the change	3
B: Active clinical support e.g. representation on working groups	2
C: Minimal involvement e.g. some attendance at meetings	1
D: Planned clinical involvement	1
E: None	0
Does the health board/trust have an inventory of its technical infrastructure?	
A: Yes	1
B: No, but one is currently being collated	0.5
C: No	0
Does the health board/trust have a documented ICT benefits management programme?	
A: Yes, currently in use	3
B: Yes, at earlier stage in the development of the health board's systems	2
C: No, but one is currently being developed	1
D: No	0
To what extent is the ICT lead involved in Clinical Governance?	
A: Works jointly on some projects	3
B: Regularly supplies the Clinical Governance department with information	2
C: Attends relevant meetings	1
D: Not involved	0
Does the trust have a clinical ICT user group?	
A: Yes	2
B: No	0
Other than any clinical ICT user groups, is there a mechanism for staff to feedback ICT issues, e.g. user-surveys, briefing, intranet page for comments or other opportunities to comment?	
A: Yes	2
B: No	0

Appendix 3

Free-text comments submitted as part of the medical staff survey

As part of the medical staff survey, we asked respondents to provide any free-text comments they had about information technology issues within their organisation. The responses from the medical staff in the Trust are set out below.

ABUHB where I spend 2 days a week leads the way. Velindre systems such as CANISC are out dated, clunky and unreliable.

If there is a problem it can take longer to sort out through NWIS than when the CANISC team was based on-site. There are several problems with pulling data from CANISC and this is no longer seen as a priority through the CANISC development board due to overriding network issues.

The IT systems I used in England in 2002 are much better than any used in Wales in 2014.

The main problem is system crashes that stop us accessing any clinical information - this seems to happen frustratingly frequently.

The recent "upgrades" are becoming less and less Velindre-purpose driven but conforming to a generic National IT policy not necessarily tailored to Velindre's vision.

Too unreliable - when system crashes clinical work is paralysed

Velindre provides an excellent IT service, and as a consequence we rely very heavily on IT to undertake a large proportion of our work. CANISC and Chemocare seem not to have been as reliable since NWIS provided these services. The hospital network speed could be faster at times for intensive tasks, e.g. looking at scans. I appreciate the need for good information governance, but feel at times this is to the detriment of patient safety -- e.g. internal e-mails lacking adequate patient identification details. VPN and cross trust networking are very valuable in increasing productivity