



Diagnostic review of ICT capacity and resources

Abertawe Bro Morgannwg University Health Board

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Summary report

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 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 plays¹ 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

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.









delivery of services and risks to patient care in the event that clinical information is not available.

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 Abertawe Bro Morgannwg University Health Board (the Health Board) compares with other health boards and trusts in Wales.
8. For the Health Board, our sample of staff included 53 medical staff and 49 ward-based Band 5 to 7 nursing staff across Morriston, Neath Port Talbot, Singleton and Princess of Wales Hospitals. Further details of our audit approach are set out in [Appendix 1](#).
9. Based on this analysis, we have concluded that **the current level of investment in ICT in the Health Board is one of the lowest in Wales, and although there are some positive aspects, our diagnostic work would indicate that ICT is not effectively supporting the delivery of healthcare.**








Exhibit 1: Summary assessment

Indicator	Health board performance	Performance rating ²
Overall level of spend on ICT is below average for Wales, and remains below the recommended level of spend despite additional funding in the past year		
Total spend on ICT	The total level of spend on ICT is lower than the recommended two per cent of total revenue expenditure at 0.72 per cent, compared with the all-Wales average of 0.84 per cent.	
Trend in expenditure	Since 2010-11, total expenditure on ICT has reduced to £6.2 million.	
Ability to attract additional ICT funding	A total of £1.2 million additional funding for ICT was obtained during 2013-14, which compares above the all-Wales average of £0.828 million and the second highest in Wales.	
Total spend on ICT workforce	The level of spend on ICT workforce is just below the all-Wales average at 0.34 per cent of total revenue expenditure.	
Average spend per ICT whole-time equivalent (WTE)	The average spend per ICT whole time equivalent (WTE) is £35,774, which is just above the all-Wales average of £35,467.	Descriptive indicator
With the exception of data analysts, staffing levels for ICT are some of the lowest in Wales		
Total ICT staff levels	The total number of ICT staff per 1,000 health board staff is below the all-Wales average at 6.8 WTE and the joint lowest in Wales.	
ICT technical staff levels	The total number of ICT technical staff per 1,000 health board staff is below the all-Wales average at 3.3 WTE.	
Information management staff levels	The total number of information management staff per 1,000 health board staff is below the all-Wales average at 1.4 WTE.	
Data analyst staff levels	The total number of data analysts per 1,000 health board staff is above the all-Wales average at 0.7 WTE and one of the highest in Wales.	

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	Health board performance	Performance rating ²
Although there is better integration between systems, the Health Board is not fully committed to clinical ICT and doctors' perception of IT facilities is only marginally better than the average for Wales		
Organisational commitment to clinical ICT	The level of commitment to clinical ICT is just below the all-Wales average.	
System integration	Six of 11 clinical systems have two-way links to the core patient administration system (PAS). This level of integration is more favourable than many other NHS organisations.	
Management of ICT staff outside of the ICT department	There are 13 WTE ICT technical staff outside the management of the ICT department, which account for 8.3 of total ICT expenditure. This is above the all-Wales average.	
Doctors perception of the organisation and management of ICT	Nineteen out of 53 (36 per cent) doctors indicated positive views about the organisation and management of ICT, compared with the all-Wales average of 31 per cent.	
The Health Board has an average number of IT devices and physical access to PCs and clinical information systems is generally not problematic		
Total number of devices (PCs, terminals, etc.) per doctor	The number of devices per WTE doctor is marginally higher than the all-Wales average at 6.5.	
Physical access to computers (doctors)	On average, 17 out of 53 (33 per cent) doctors 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 marginally below the all-Wales average at 2.2.	
Physical access to computers (nurses)	Fourteen out of 45 (32 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. This was the lowest in Wales.	
Access rights to clinical information systems	On average, 13 out of 45 (28 per cent) ward-based nursing staff did not have access to a range of clinical information systems but felt it would be useful if they did, compared with 24 per cent across Wales.	

Indicator	Health board performance	Performance rating ²
Systems appear reliable although the Health Board is unable to report the condition of its IT assets and there are no records to monitor system downtime		
Poor access due to problems with the systems (doctors)	On average 4 out of 53 (8 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. This is the lowest in Wales.	
Poor access due to problems with the systems (nurses)	Seven out of 45 (16 per cent) 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	The Health Board identified that there are no records of planned and unplanned downtime in place for any of its clinical systems.	
Level of unplanned downtime	The Health Board was unable to report unplanned downtime for 2013-14.	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 in-line with the all-Wales average at £6.1 million.	
Training arrangements are generally good for permanent employees but staff are concerned about proficiency in using systems and there is no training provided for some temporary staff		
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.	
Length of training on PAS	The average length of training on the hospital's Patient Administration System is 2 hours, which is below the all-Wales average of just below four hours.	Descriptive indicator
Proficient use of IT systems	Twenty-nine out of 51 (57 per cent) doctors felt confident that they were proficient in using the IT systems they needed to use. This was lowest in Wales.	
Data protection and Caldicott training	Refresher training for data protection and Caldicott requirements is mandatory for all staff.	

Indicator	Health board performance	Performance rating ²
Training arrangements are generally good for permanent employees but staff are concerned about proficiency in using systems and there is no training provided for some temporary staff		
Data quality training	Data quality training is optional but only 28 out of 51 (55 per cent) doctors said that they could rely on the information contained in the clinical systems. This was just above the all-Wales of 52 per cent.	
Training for temporary clinical staff	Training is not provided to bank and agency nurses but is provided to locum doctors and staff with honorary contracts.	
Clinical ICT systems are not fully supporting doctors to deliver patient care, with an increased reliance on paper-based systems that is greater than many other health bodies		
Use of clinical systems to obtain clinical information	On average, only 6 out of 53 (11 per cent) doctors identified that they were able to rely solely on computer systems to obtain information for a range of clinical tasks, compared with the all-Wales average of 21 per cent. This is the second lowest in Wales.	
Clinical information is easy to find	Forty-six out of 53 (87 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. This is the second-highest in Wales.	
Use of clinical systems to complete clinical tasks	On average, 15 out of 53 (29 per cent) doctors identified that they were able to rely solely on computer systems to complete a range of clinical tasks, compared with the all-Wales average of 28 per cent.	
Completion of the task is easy	Thirty-nine out of 53 (74 per cent) doctors identified that clinical tasks are easy to complete on the system compared with the all-Wales average of 72 per cent.	
Use of bespoke applications developed personally in-house	Twenty-three out of 52 (44 per cent) doctors identified that they used applications developed personally in-house compared with the all-Wales average of 43 per cent.	

Source: Wales Audit Office

Recommendations

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

Commitment to clinical ICT

- R1 The Health Board needs to improve the corporate commitment to clinical ICT, by ensuring that:
- There is a strategy for ICT in place, which is supported by staff.
 - The profile of ICT is raised at the Executive Management Team.
 - There is increased involvement in the Clinical Governance programme.
 - A clear ICT benefits management programme is set out.

Central management of ICT staff

- R2 To ensure that the totality of ICT resources are used effectively, the Health Board needs to understand the roles and responsibility of ICT staff managed outside of the ICT department to ensure that these roles are aligned with those within the central managed team and that they are used to their full potential.

Training of staff

- R3 To ensure that all staff are proficient in the use of the clinical systems, the Health Board needs to ensure that all temporary staff receive appropriate and timely training in order to prevent them from accessing the systems without having the necessary training.

Negative perceptions of medical staff

- R4 The Health Board needs to understand and address the negative perceptions from medical staff in relation to proficiency and inability to use the clinical information systems that currently exist within the Health Board to ensure that the systems potential is maximised.

Reliability of ICT equipment

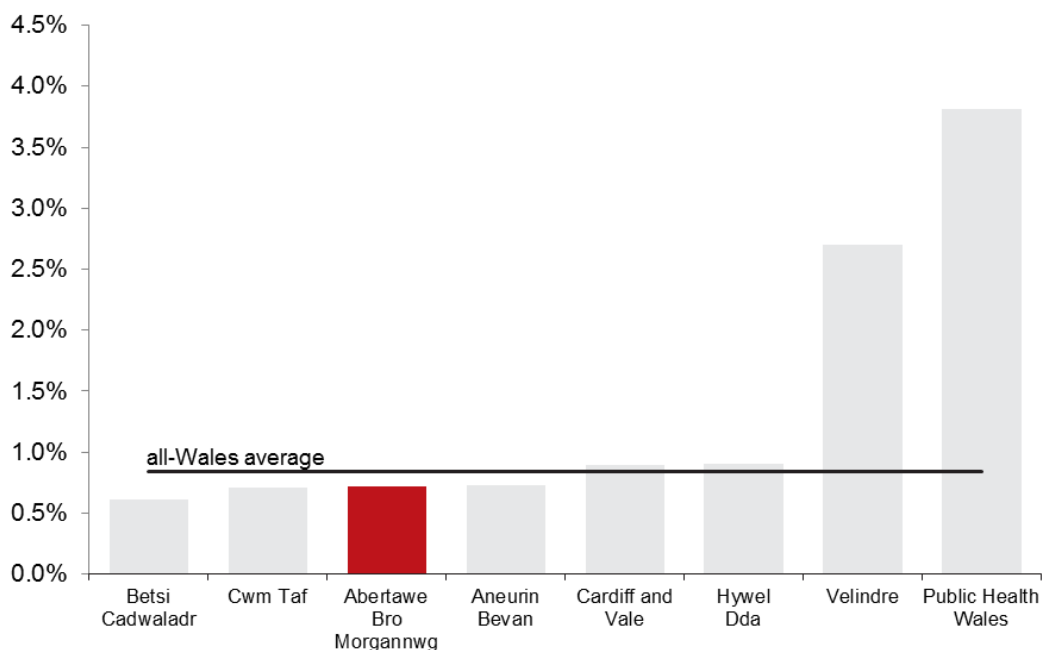
- R5 To minimise the extent to which there is lost time due to system failures, the Health Board needs to ensure that adequate records are in place to record unplanned downtime.
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Detailed report

Overall level of spend on ICT is below average for Wales, and remains below the recommended level of spend despite additional funding in the past year

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 Health Board, the total level of spend on ICT is 0.72 per cent which is lower than the recommended two per cent.

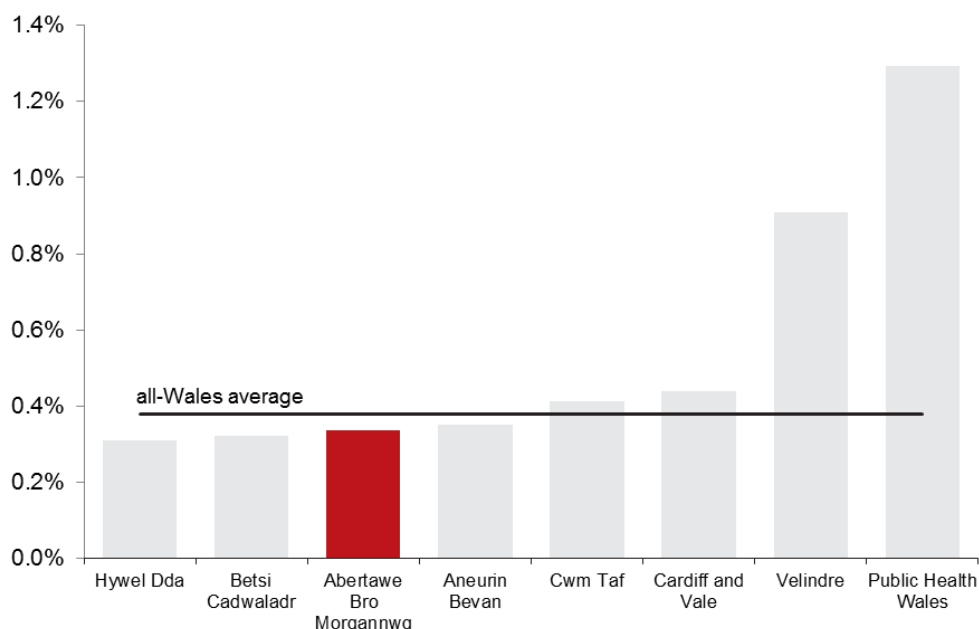
Exhibit 2: Total ICT expenditure as a proportion of total revenue expenditure in 2013-14



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

13. Since 2010-11, the level of ICT expenditure is reported to have reduced from £8.6 million to £6.2 million in 2013-14. This is a reduction of 28 per cent, although the Health Board indicated that it had been able to attract additional discretionary capital funding in the region of £1.2 million during 2013-14. This is positive, and above the all-Wales average of £0.8 million³.
14. During 2013-14, the Health Board reported spending £3.164 million on ICT workforce. This accounted for 47 per cent of the total spend on ICT. The level of spend on ICT workforce as a proportion of total revenue expenditure within the Health Board is around the all-Wales average at 0.34 per cent (Exhibit 3).

Exhibit 3: ICT workforce expenditure as a proportion of total revenue expenditure in 2013-14



Source: Wales Audit Office survey, Health Board financial accounts

15. The average spend per ICT whole time equivalent (WTE) is £35,774⁴. Across Wales as a whole, the average spend is similar at £35,467 per ICT WTE.

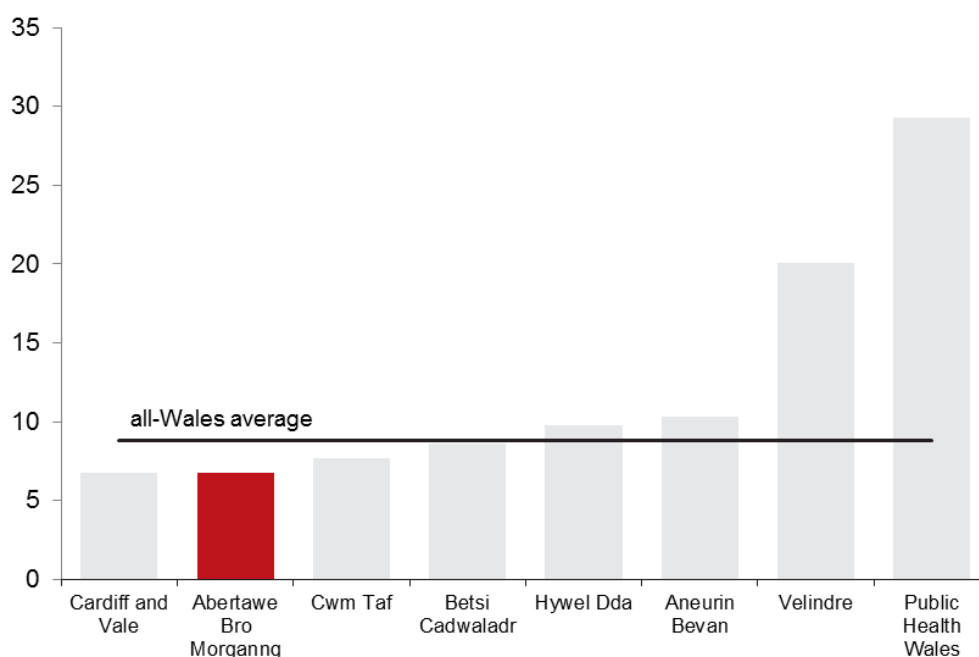
³ Non-recurring income was specified by health boards against the combined categories of 'Discretionary Capital', 'NWIS funding', 'Project Grants' and 'Other'

⁴ Figure includes any NWIS staff who are hosted by the Health Board/Trust

With the exception of data analysts, staffing levels for ICT are some of the lowest in Wales

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 Health Board indicated that it had 88.45 whole time equivalents in post within the ICT department. The number of ICT staff per 1,000 total health board staff is 6.8. This is below the all-Wales average of 8.8 WTE per 1,000 total health board staff and the joint-lowest in Wales ([Exhibit 4](#)).

Exhibit 4: Total ICT staff (WTE) per 1,000 total health board/trust staff (WTE)



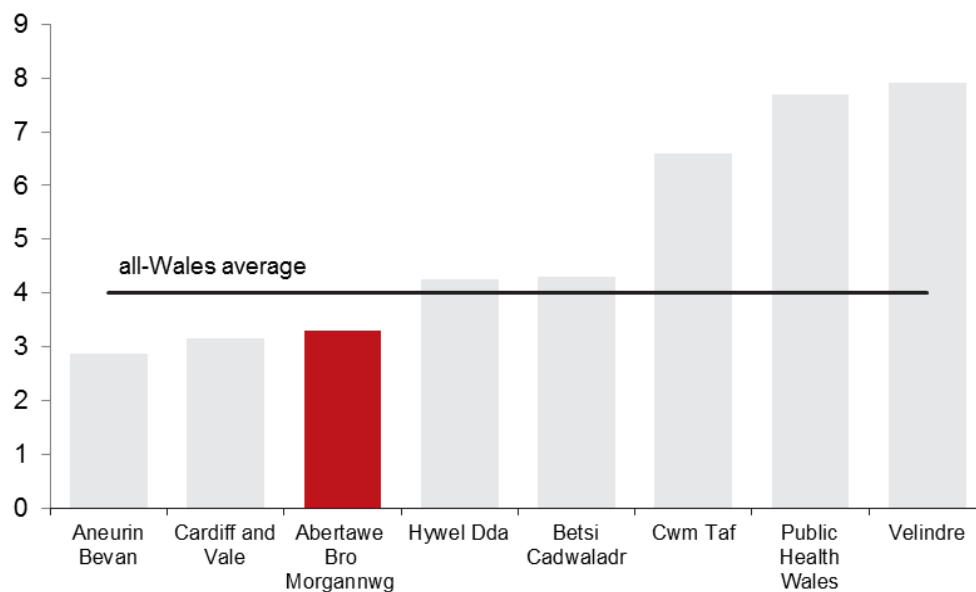
Source: Wales Audit Office survey, Stats Wales

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 Health Board has indicated that it has 43.0 WTE technical staff. The level of ICT technical staff per 1,000 total health board staff is 3.3, which is below the all-Wales average of 4.0 WTE per 1,000 total health board staff (Exhibit 5).

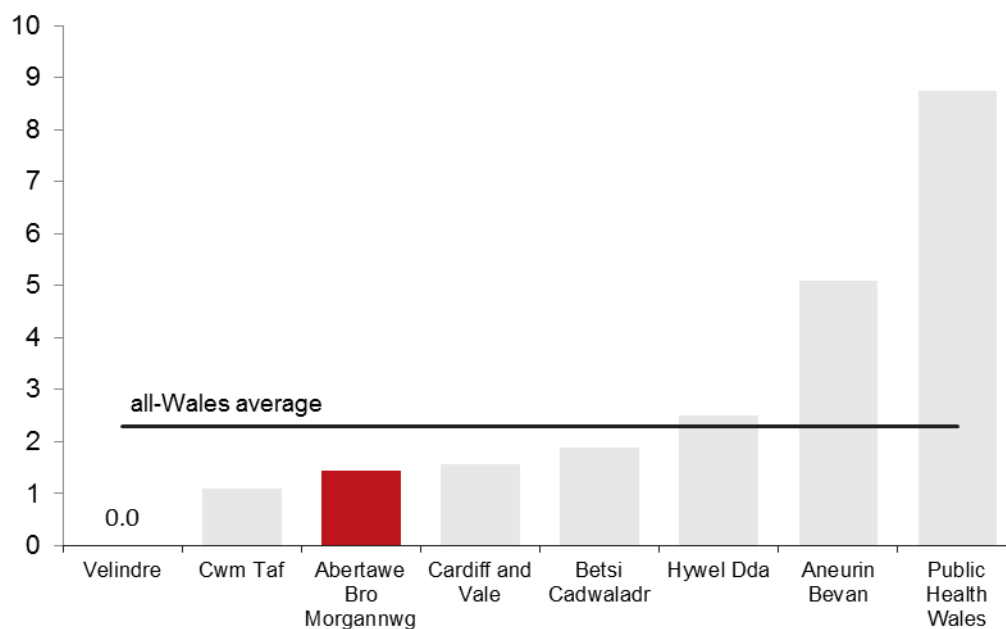
Exhibit 5: Total IT Technical staff (WTE) per 1,000 total health board/trust staff (WTE)



Source: Wales Audit Office survey, Stats Wales

20. The Health Board has indicated that it has 18.7 WTE information management staff. The level of information management staff per 1,000 total health board staff is 1.4, below the all-Wales average of 2.3 WTE per 1,000 total health board staff (Exhibit 6).

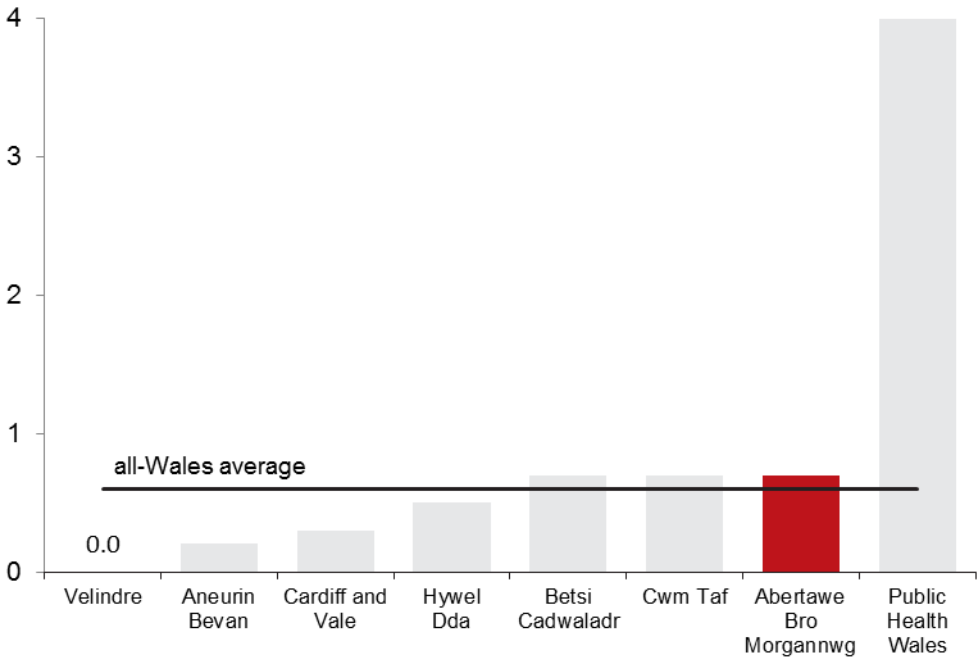
Exhibit 6: Total Information Management staff (WTE) per 1,000 total health board/trust staff (WTE)



Source: Wales Audit Office survey, Stats Wales

21. Within the information management staff, the Health Board has indicated that it has 9.0 WTE data analysts. The level of data analysts per 1,000 whole time equivalent total health board staff is just above the all-Wales average at 0.7 and in-line with two other health boards and one of the highest in Wales (Exhibit 7).

Exhibit 7: Total data analysts (WTE) per 1,000 total health board/trust staff (WTE)



Source: Wales Audit Office survey, Stats Wales

Although there is better integration between systems, the Health Board is not fully committed to clinical ICT and doctors' perception of IT facilities is only marginally better than the average for 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 Health Board ([Exhibit 8](#)).

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

Good practice area	Health Board score ⁵
The Health Board has a documented ICT strategy which is up to date (maximum score of 2)	0.5
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 Health Board 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)	1
There is central co-ordination of IT and Information Management (maximum score of 2)	2
There is active clinical involvement in the Health Board's ICT programme, including the identification of clinical champions (maximum score of 3)	3
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

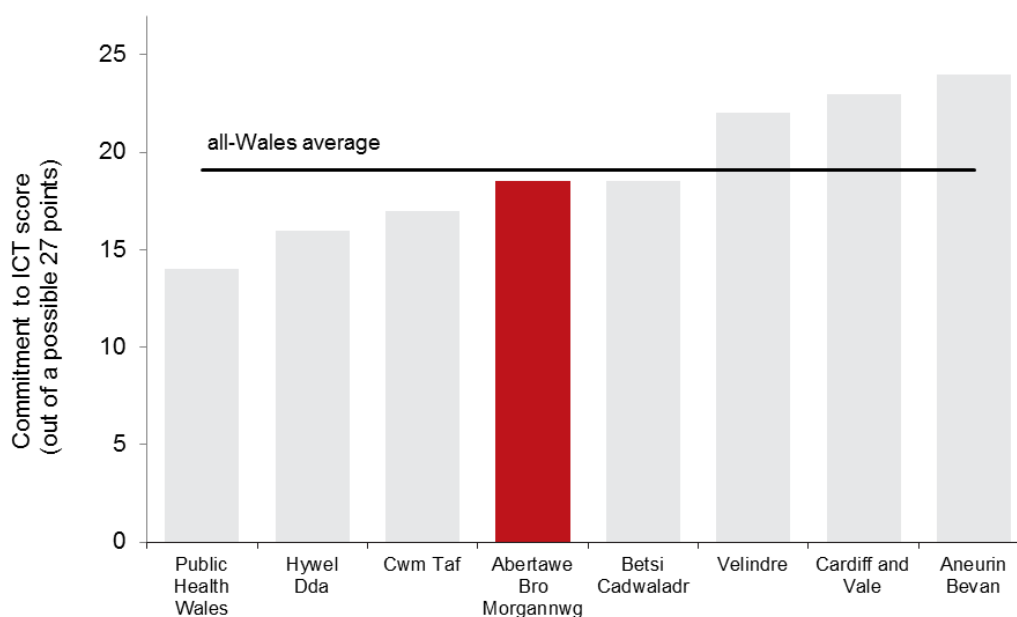
⁵ A detailed breakdown of the scoring principle is included in [Appendix 2](#)

Good practice area	Health Board score ⁵
There is involvement by the ICT lead in the Clinical Governance programme (maximum score of 3)	1
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)	18.5

Source: Wales Audit Office survey

23. The overall level of commitment to ICT in the Health Board is just below the all-Wales average (Exhibit 9).

Exhibit 9: Overall score for commitment to ICT



Source: Wales Audit Office survey, Stats Wales

24. The Health Board runs a single Patient Administration System for its main district general hospital. As part of our work, we asked health boards to identify the extent to which the systems relating to a number of core service areas are integrated with the main PAS.

25. Across each site, the Health Board has identified that, of the 11 clinical information systems reported to us, all are linked to the main Patient Administration System (Exhibit 10), although five of these systems only have one-way links⁶. This level of integration with the main PAS is more favourable than the majority of other NHS organisations across Wales (Exhibit 11).

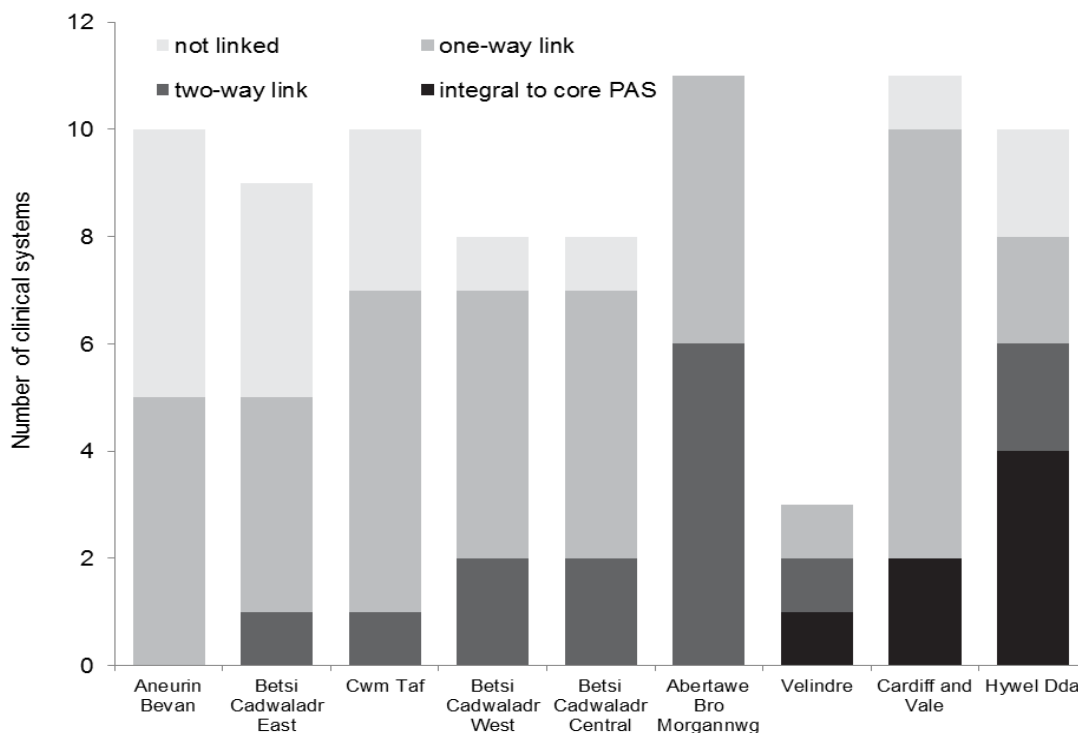
Exhibit 10: Extent to which clinical information systems are integrated with the core Patient Administration System

Clinical system	This health board	Number of systems that are integral or have two-way links to the core PAS across Wales
Accident and emergency	Two-way link	2
Cancer	One-way link	-
Clinical portal	Two-way link	1
Community system	Two-way link	1
Maternity services	Two-way link	3
Mental health	Two-way link	1
Pathology	One-way link	1
Pharmacy	One-way link	-
Radiology	One-way link	2
Theatres	One-way link	3
Therapies	Two-way link	3

Source: Wales Audit Office survey

⁶ Two-way links allow information to be updated and shared in both directions, such as patient demographics, between PAS and the clinical information system. One-way links only allow information to be updated and shared in one direction, usually from PAS to the clinical information system. This means that if information is updated on the clinical information system, this is not automated updated on the PAS, which creates a risk that the two systems contain inconsistent data.

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



Source: Wales Audit Office survey

26. The Health Board reported that IT and Information Management are managed within the same department. The Health Board spent £0.517 million on ICT staff outside the direct management of the IM&T department. This was 8.3 per cent of total ICT expenditure, which is above the all-Wales average of 7.2 per cent. Technical staff within other departments account for all of this spend. No information management or other ICT staff are identified outside of the ICT department.
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. Specifically, we asked their views on:
 - the organisation's use of the ICT facilities that it has;
 - whether clinical information systems has improved patient care; and
 - whether ICT in the organisation is better than other organisations where they have previously worked.

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- 28.** Overall, 19 out of 53 (36 per cent) doctors responded positively, compared with an all-Wales average of 31 per cent. This was the third-most positive response rate in Wales. Doctors were the least positive in relation to whether ICT is better than other organisations where they have previously worked ([Exhibit 12](#)). Free-text comments received by medical staff from the Health Board 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 Health Board

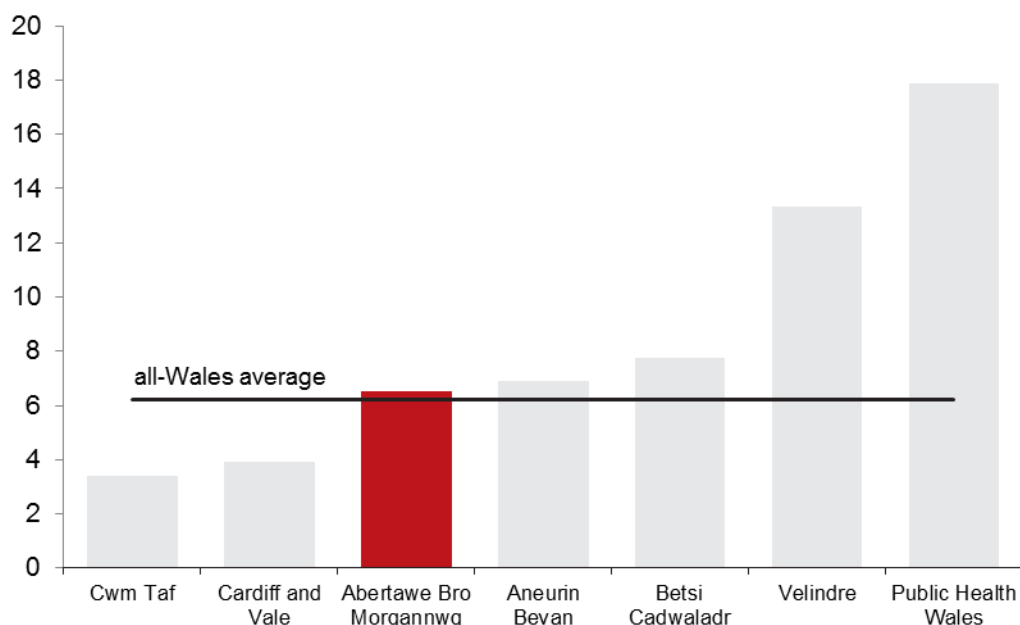
	This health board	All-Wales
This health board is currently making good use of the IT facilities it has.	28.6	24.2
The development of IT systems in this health board has improved patient care.	56.0	46.8
The IT in this health board is better than the IT in other health boards that I have personally seen.	21.1	20.7

Source: Wales Audit Office survey

The Health Board has an average number of IT devices and physical access to PCs and clinical information systems is generally not problematic

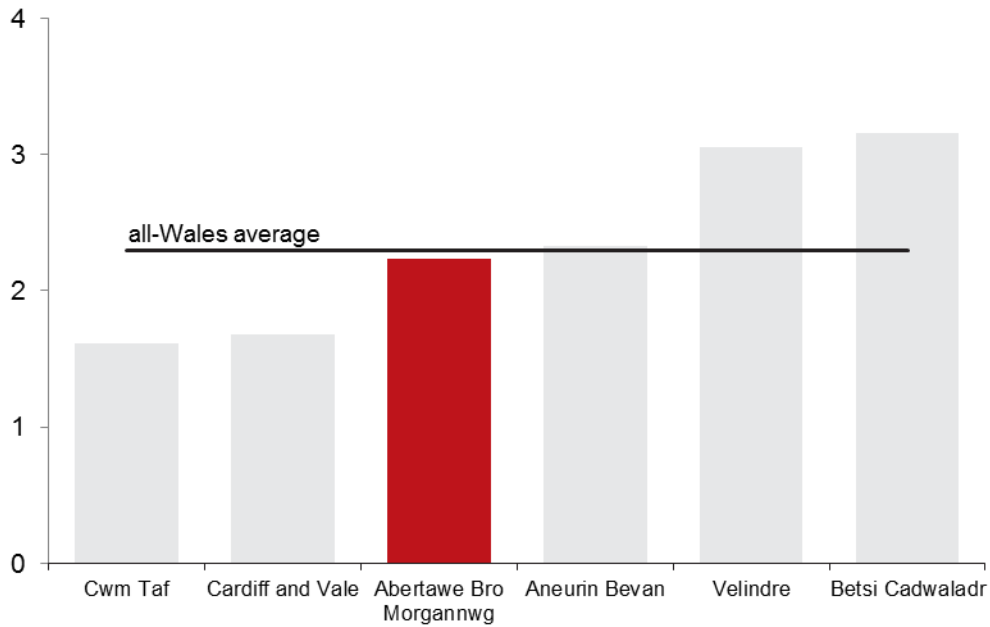
29. In order for staff to be able to access clinical information systems, it is important that there is a good level of devices (PCs, terminals etc.) available in clinical areas. Across Wales, we reviewed the number of devices standardised per whole time equivalent doctor and whole time equivalent nurse ([Exhibits 13 and 14](#)). The Health Board has approximately the same number of devices per staff member as 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 district general hospitals would indicate that performance is similar to the all Wales position for medical staff, but is viewed more favourably by nursing staff (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 health board	All Wales	This health Board	All Wales
On the ward	55	57	32	48
In outpatient rooms	23	20		
In the office	22	22		

Source: Wales Audit Office survey

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- 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. Our survey of ward-based nursing staff indicated that 28 per cent of staff did not have access to certain clinical information systems but felt it would be useful if they did. This is slightly less positive than the profile across Wales, where the figure was 24 per cent of all nursing staff surveyed. Two per cent of Health Board nurses additionally stated that, although they did have access to those systems, other nursing staff who should have access did not.
- 32.** Particular systems where at least one-third of nurses stated that access would be useful included the main PAS, pharmacy, radiology and social care. In addition, half of the nurses responding to the survey felt that access to a nurse care planning system would be useful.

Systems appear reliable although the Health Board is unable to report the condition of its IT assets and there are no records to monitor system downtime

- 33.** 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.
- 34.** Our staff survey identified that three out of 47 (8 per cent) doctors and seven out of 43 (16 per cent) ward-based nursing staff reported being unable to use a computer on the ward due to system crashes or the system being unavailable on a weekly or more frequent basis. This compares very well against the all Wales average, suggesting that system crashes are comparatively rare at the Health Board ([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

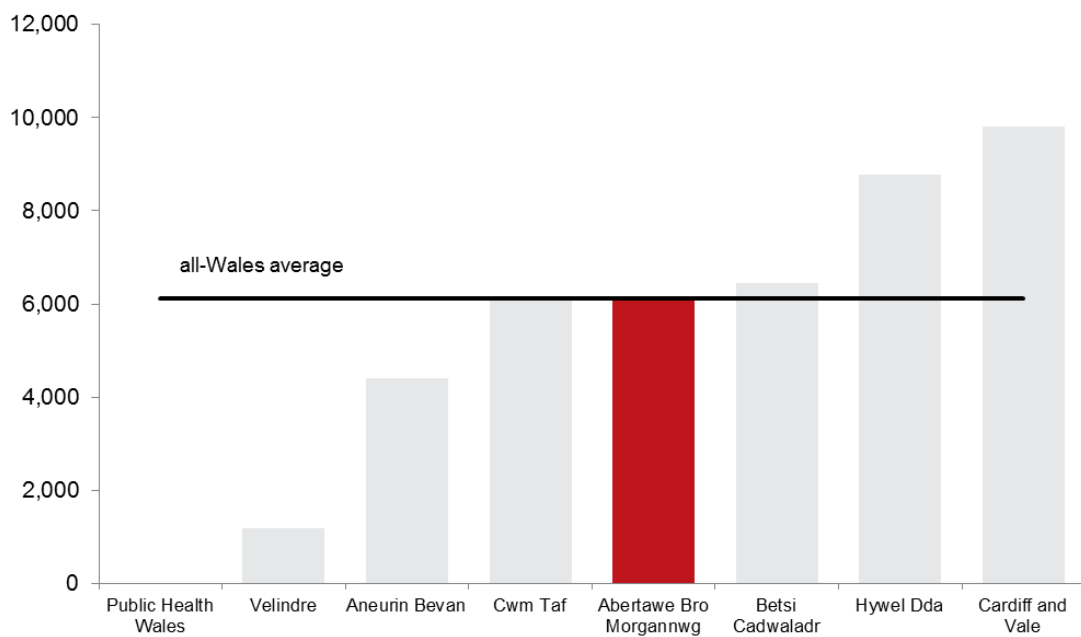
	Medical staff		Nursing staff	
	This health board	All Wales	This health Board	All Wales
On the ward	6	24	16	28
In outpatient rooms	9	20		
In the office	8	19		

Source: Wales Audit Office survey

- 35.** 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 Health Board stated that it had the no records of downtime in relation to software, network or server failure. We are unable to provide any comparative profile 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 Health Board reported that the average age of equipment varies between four years for PCs and more than eight years for server operating systems.

-
37. As part of our work, we have captured the extent to which existing ICT equipment is classed as 'out of life'⁷. The gross replacement cost of ICT equipment classed as 'out of life' at the end of March 2014 in the Health Board was in-line with the average for Wales at £6.1 million (Exhibit 17).

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

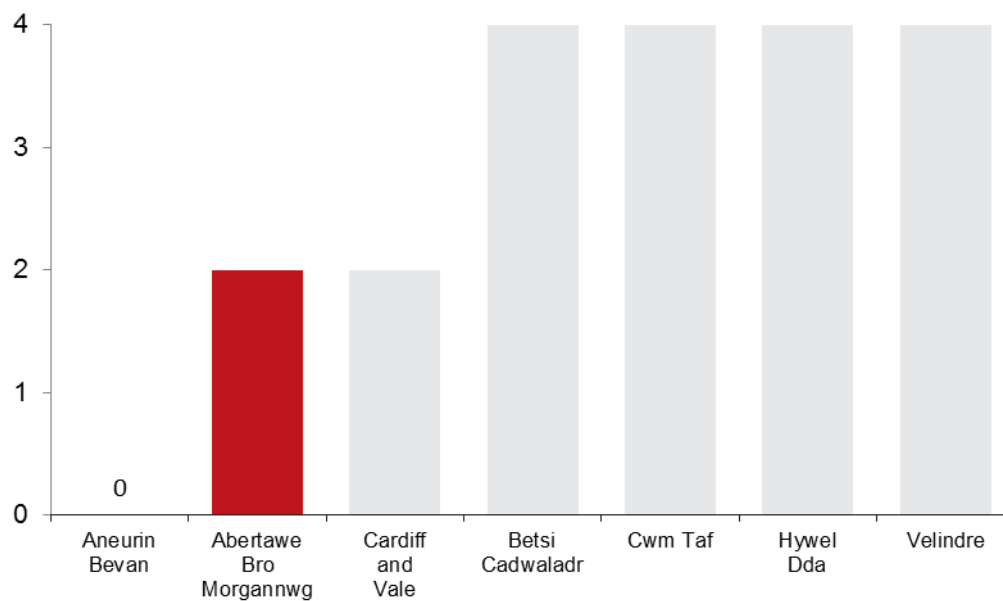
⁷ 'Out-of life' is defined as being beyond its useful life and economic repair.

Training arrangements are generally good for permanent employees but staff are concerned about proficiency in using systems and there is no training provided for some temporary staff

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 Health Board identified that training on its clinical information systems is offered to all new employees where the use of such systems is required. The Health Board 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. This is in line with the majority of other NHS organisations across Wales.
40. The nursing staff survey suggests that there can be delays in the receipt of training. At the Health Board, 22 out of 40 (55 per cent) 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'. The view of nurses who responded to this question at the Health Board mirrors that of surveyed nurses across Wales, where the average was 60 per cent disagreement with the statement.
41. The average length of training on the hospital's Patient Administration System across various staff groups is two hours, ranging from one hour for medical staff to four hours for ward clerks. Across Wales, the average duration of training across all staff groups is just below four hours. The limited duration of Patient Administration System training for medical staff at the Health Board may be reflective of their wider perception of IT systems training. Only 29 out of 51 (57 per cent) doctors felt confident that they were proficient in using the Health Board IT systems that they needed to use. This was the least positive response across Wales, where the average was 70 per cent.
42. When asked, the Health Board reported that refresher training for data protection and Caldicott requirements was mandatory for all staff. Data quality training is optional at the Health Board. Across Wales, data protection and Caldicott training is mandatory at all health boards except for one, while data quality training is only mandated at one health board. In our medical staff survey, 28 out of 51 (55 per cent) doctors said that they could rely on the information contained in the clinical systems compared with the average of 52 per cent across Wales. However, only 18 out of 45 (40 per cent) doctors said that the information on the IT systems is accurate. This was just below the all-Wales average of 42 per cent.

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 Health Board identified that two out of four different groups of temporary staff (agency nurses, bank nurses, locum doctors, and medical staff with honorary contracts) are offered training. This compares less favourably than the majority of health boards across Wales (**Exhibit 18**).

Exhibit 18: Number of temporary staff groups who are offered training

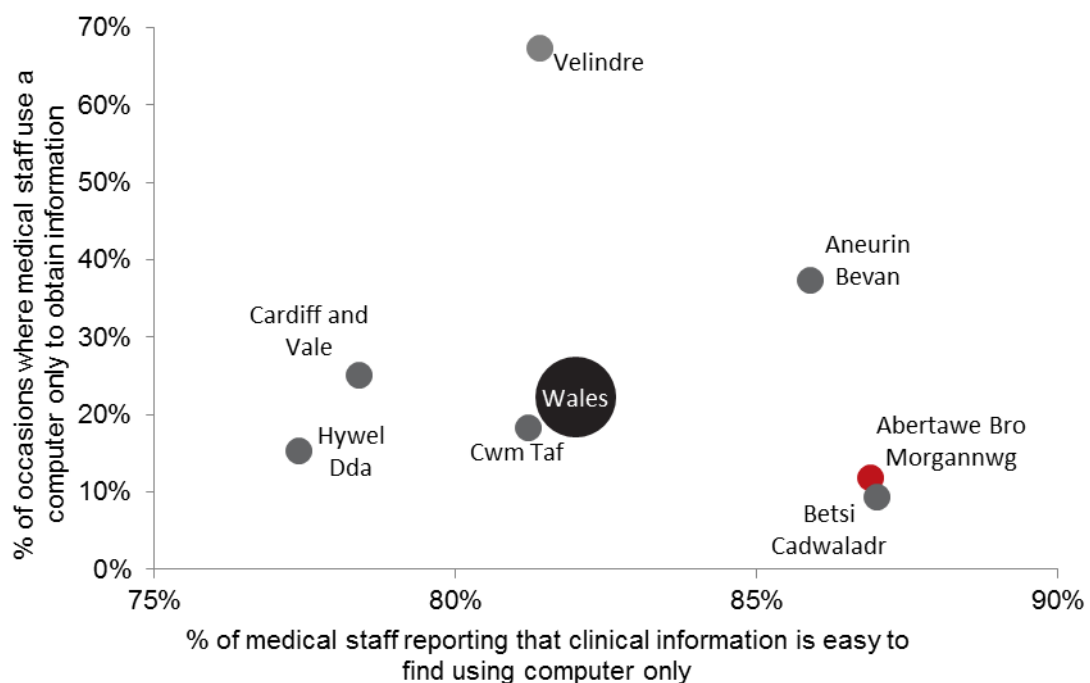


Source: Wales Audit Office survey

Clinical ICT systems are not fully supporting doctors to deliver patient care, with an increased reliance on paper-based systems that is greater than many other health bodies

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 Health Board's district general hospitals are able to rely solely on the use of a computer to obtain a range of clinical information is one of the lowest in Wales, with only 6 out of 53 (11 per cent) doctors reporting that they use computer only. However, of those who do use the computer systems, the proportion of those who consider that information on the computerised system is easy to find is among the highest across Wales ([Exhibit 19](#)). Twenty-five out of 53 (47 per cent) doctors reported that they use paper only across a range of information-gathering areas, compared with an all-Wales average of just 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

46. The sample of doctors who responded to our survey at the Health Board identified that there were no information-gathering tasks where they were more likely than their colleagues across Wales to use a computer. The most common uses for the computer at the Health Board were to obtain radiology reports and laboratory test results. The majority of information-gathering tasks showed a relatively high level of sole reliance on paper, most commonly to review GP referrals and patients' clinical histories (Exhibit 20).

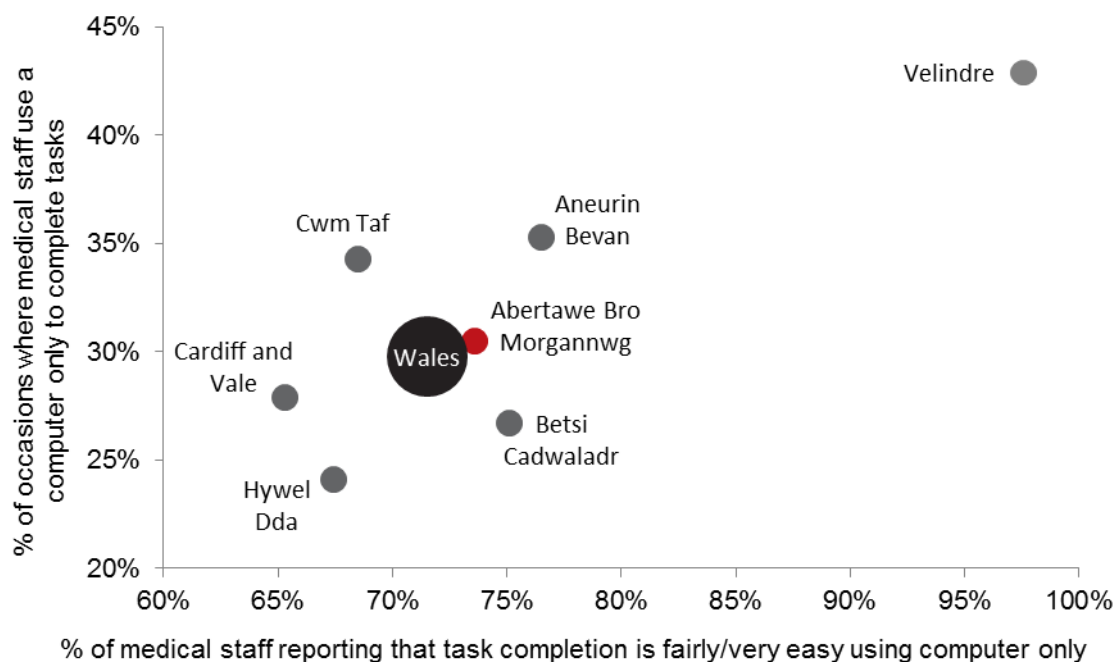
Exhibit 20: Proportion of doctors using paper only and computer only to obtain clinical information

	Computer use only		Paper records only	
	This Health Board	All Wales	This Health Board	All Wales
GP referral	None	8.1	74.4	63.5
Diagnosis	None	8.9	60.0	37.1
A&E attendance	4.7	21.3	65.1	42.5
Outpatient appointment	13.3	26.2	40.0	26.7
Episode history	None	16.2	61.7	38.8
Clinical history	None	7.9	73.5	46.2
Investigations requested	14.3	24.9	22.4	17.1
Laboratory test results	46.0	46.7	None	2.4
Radiology report	38.0	49.6	2.0	3.4
Procedure	4.2	10.8	62.5	42.2
Therapy referral	2.3	16.4	55.8	38.6
Therapy session	2.9	13.7	60.0	49.1

Source: Wales Audit Office survey

47. The extent to which doctors working in the Health Board's district general hospitals rely on the use of a computer to complete clinical tasks is just above the all-Wales average. Fifteen out of 53 (31 per cent) doctors in our survey reported using only a computer to complete a range of clinical tasks, compared with the all-Wales average of 30 per cent. Of those who use the computer systems, the proportion of those who consider that completion of the task is easy is also just above the Wales average (Exhibit 21). Thirty out of 53 (56 per cent) doctors reported that they use paper only to complete tasks, compared with the 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 Health Board, the most common tasks that doctors identified they would undertake using a computer were to access evidenced-based literature, public health information or hospital clinical guidelines. The most common tasks conducted using paper only were to order laboratory tests and radiology investigations, or to write prescriptions (Exhibit 22).

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

	Computer use only		Paper records only	
	This Health Board	All Wales	This Health Board	All Wales
Write a note about an outpatient appointment	2.4	11.6	76.2	60.1
Clerk the patient on admission	2.6	5.5	76.9	75.3
Order laboratory tests	2.1	6.7	93.6	74.5
Order a radiology investigation	None	2.9	95.9	86
Write a prescription	None	0.2	91.3	92.9
Write an operation note	36.0	21.9	24.0	58.3
Refer a patient to another consultant's team	None	2.5	75.0	71.4
Refer a patient to a non-medical clinician	None	2.4	75.6	67.2
Prepare a discharge letter	29.4	25	23.5	36
Check a hospital clinical guideline	76.6	72.6	None	3.4
Access evidence based literature	95.8	88.3	None	0.7
Access public health information	95.7	87.3	None	0.8

Source: Wales Audit Office survey

49. Our medical staff survey also identified that 23 out of 52 (44 per cent) doctors reported using applications developed personally in-house to meet needs such as NCEPOD or royal college logbooks. This compares with the all-Wales average of 43 per cent. Eleven of these 23 doctors (48 per cent) reported using the applications on a daily or weekly basis.

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 Health Board 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 Abertawe Bro Morgannwg University Health Board was submitted on 26 September 2014.

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. For Abertawe Bro Morgannwg University Health Board this included Morriston, Neath Port Talbot, Singleton and Princess of Wales Hospitals. The survey was issued electronically on 25 September 2014. A reminder was issued on 3 November 2014. Responses were received from 53 medical staff in Abertawe Bro Morgannwg University Health Board.

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. For Abertawe Bro Morgannwg University Health Board this included Morriston, Neath Port Talbot, Singleton and Princess of Wales Hospitals. The survey was issued electronically on 29 September 2014. A reminder was issued on 25 November 2014. Responses were received from 49 nursing staff in Abertawe Bro Morgannwg University Health Board.

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 B: There is a strategy, but no evidence that it is supported by staff C: There is a strategy, but it is out of date D: There is evidence a strategy is being developed E: There is no strategy written/produced post April 2011	2 1.5 1 0.5 0
Has the ICT strategy or new ICT developments been discussed at board level meetings during the last 12 months? A: Yes B: No	2 0
Does the Health Board/Trust have an ICT steering group with a board member? A: Yes B: No C: No ICT steering group	1 0 0
Does the Health Board/Trust's ICT steering group have clinical members? A: Yes B: No C: No ICT steering group	1 0 0
Has the ICT strategy or new ICT developments been on the agenda of executive level meetings during the last 12 months? A: Yes B: No	2 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 B: No, but the ICT lead reports directly to someone on the management team C: No and the ICT lead does not report to someone on the management team	3 1 0
How co-ordinated are IT and Information? A: They are in the same department B: They are managed separately but report to the same director C: They are managed separately and report to different directors	2 1 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 B: Active clinical support e.g. representation on working groups C: Minimal involvement e.g. some attendance at meetings D: Planned clinical involvement E: None	3 2 1 1 0
Does the Health Board/Trust have an inventory of its technical infrastructure? A: Yes B: No, but one is currently being collated C: No	1 0.5 0
Does the Health Board/Trust have a documented ICT benefits management programme? A: Yes, currently in use B: Yes, at earlier stage in the development of the Health Board's systems C: No, but one is currently being developed D: No	3 2 1 0
To what extent is the ICT lead involved in Clinical Governance? A: Works jointly on some projects B: Regularly supplies the Clinical Governance department with information C: Attends relevant meetings D: Not involved	3 2 1 0
Does the Trust have a clinical ICT user group? A: Yes B: No	2 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 B: No	2 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 Health Board are set out below.

I have been trying to innovate and use IT to improve access to data for clinicians. This is extremely hard without adequate IT support. I am trying to develop a smart phone app for use by ED clinicians at the Princess of Wales- the Health Board has so far been totally unsupportive and unhelpful (I have tried many different avenues to move this forward). I am now liaising with outside companies and awaiting responses.

IT is very helpful on the whole but hardware is a major issue which blocks efficiency of services.

Let's face it, public sector IT is a mess. Out of date systems that are different in every hospital and are a nightmare to link together. X-rays done in Neath not on PACS for fracture clinics. MRI requested here, done elsewhere and not accessible. What's the point of an investigation I can't see?

Massive improvement to access to information with universal Wi-Fi in the hospital.

Not enough computers on the ward for the junior doctors to be efficient (especially with printer access).

NWIS is a source of frustration to the HBs as it is failing to deliver national products in a timely fashion. Technology interfaces determine clinical behaviour - better systems will enable better care Informatics requires more investment in people working at the clinical interface and clinical system design needs to work from them backwards to product delivery.

On the whole I find the I.T. team in our organisation very helpful.

Our computers in cardiac theatres have crashed several times and to get them up and running has caused several connection and networking issues leading to inability to access Cardiac PACS and PATS and other networked applications like the TEG and ROTEM. This leads to delivering substandard care and could lead to patient harm.

Our work has been revolutionised by the access to the Canisc system. we use it partly in lieu of a paper system within the wider team.

Sometimes the security is so pernicious as to make the system inaccessible. It is much easier to log on to my online bank than the NHS Wales appraisal site for example, and i doubt if anyone has a desire to steal my appraisal information.

Terrible slow computers.

The implied need for staff to be in possession of a smart 'phone to facilitate applications usage puts financial strain on individuals.

The IT support desk on the phone is great. There's a softly-spoken person called Sarah who must be an IT genius when it comes to fixing glitches on the system. Effortless! Thank you Sarah.

The requirement for security and multiple passwords and at multiple levels within the same programme renders the hospital IT slow and frustrating to use.

There doesn't seem to be a plan to develop things in a logical way. If there is a plan it hasn't been communicated to me.

Very good help desk with rapid resolution once got through to them. Very poor workstation design on Ward 20 at Singleton. Insufficient easy access to integrated database design to solve prospective audit data issues. Need better/easier Wi-Fi access in Singleton. Consider an IT drop in or booked 'clinic' to facilitate contact and reduce sense of frustration with some IT systems.

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