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Diagnostic Review of ICT Capacity and Resources

Hywel Dda University Health Board

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Despite above-average investment in ICT, our diagnostic work would indicate that current ICT resources in Hywel Dda University Health Board are not being used to their full potential to support healthcare delivery.

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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.

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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.

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.

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 the Hywel Dda 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 39 medical staff and 56 ward-based Band 5 to 7 nursing staff across Bronglais, Glangwili, Prince Philip and Withybush hospitals. Further details of our audit approach are set out in Appendix 1.

9. Based on this analysis, we have concluded that **despite above-average investment in ICT, our diagnostic work would indicate that current ICT resources in the Health Board are not being used to their full potential to support healthcare delivery.**

Exhibit 1: Summary assessment

Indicator	Health board performance	Performance rating[2]
The overall level of spend on ICT is generally above the average for Wales although it remains below the recommended level of spend		
Total spend on ICT	The total level of spend on ICT is lower than the recommended two per cent of total revenue expenditure at 0.9 per cent, but compares more favourably than the all-Wales average of 0.84 per cent.	🟡
Trend in expenditure	Since 2010-11, total expenditure on ICT has seen a slight increase.	🟡
Ability to attract additional ICT funding	A total of £0.7 million additional funding for ICT was obtained from other sources during 2013-14, which compares just lower than the all-Wales average of £0.828 million.	🟡
Total spend on ICT workforce	The level of spend on ICT workforce is below the all-Wales average of 0.38 per cent of total revenue expenditure, at 0.31 per cent.	🟡
Average spend per ICT Whole-Time Equivalent (WTE)	The average spend per ICT WTE is £28,931 which is lower than the all-Wales average of £35,467 which may reflect a less rich grade-mix of staff.	Descriptive indicator
Staffing levels for ICT are generally around the average for health bodies in Wales		
Total ICT staff levels	The total number of ICT staff per 1,000 health board/trust staff is just above the all-Wales average at 9.8 full-time equivalents and the second highest of all health boards.	🟡
ICT technical staff levels	The total number of ICT technical staff per 1,000 health board/trust staff is just above the all-Wales average at 4.3 full-time equivalents.	🟡
Information management staff levels	The total number of information management staff per 1,000 health board/trust staff is above the all-Wales average at 2.5 full-time equivalents and the second highest in Wales.	🟢
Data analyst staff levels	The total number of data analysts per 1,000 health board/trust staff is just below the all-Wales average at 0.5 full-time equivalents.	🟡

[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 around 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, there is a lack of commitment to ICT within the Health Board and the doctors' perception of ICT is the most negative in Wales		
Organisational commitment to clinical ICT	The level of commitment to clinical ICT is below the all-Wales average, and is the second lowest in Wales.	🔴
System integration	Six out of 10 clinical systems are integral or have two-way links to the core patient administration system (PAS). This level of integration is more favourable than all 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 £0.216 million.	🟡
Doctors' perception of the organisation and management of ICT	Only 7 out of 39 (18 per cent) doctors indicated positive views about the organisation and management of ICT, compared with the all-Wales average of 31 per cent. This was the lowest rate in Wales.	🔴
Physical access to PCs is perceived as problematic, more so for doctors, although the Health Board was unable to report the extent to which PCs are available		
Total number of devices (PCs, terminals, etc) per doctor	The Health Board was the only organisation unable to confirm the number of devices that it has.	-
Physical access to computers (doctors)	On average, 18 out of 39 (46 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 Health Board was the only organisation unable to confirm the number of devices that it has.	-
Physical access to computers (nurses)	24 out of 56 (42 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.	🟡
Access rights to clinical information systems	On average, 12 out of 56 (22 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]
The Health Board has a considerable amount of its ICT stock which is classed as out-of-life and reliability of systems is problematic		
Poor access due to problems with the systems (doctors)	On average 21 out of 39 (54 per cent) doctors indicated that access due to system crashes or non-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)	24 out of 56 (43 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	Records of planned and unplanned downtime only exist in relation to the mental health and pathology systems.	🟡
Level of unplanned downtime	The total reported unplanned downtime during 2013-14 was 120 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 second highest in Wales at £8.7 million.	🔴
The current arrangements for training are not 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 not offered to all new employees where the use of such systems is required.	🔴
Access to log-on ID and passwords	Clinical staff do not 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 3.6 hours, which compares with the all-Wales average of just below four hours.	Descriptive indicator
Proficient use of IT systems	23 out of 39 (59 per cent) doctors felt confident that they were proficient in using the IT systems they needed to use. This was below the all-Wales average and the second lowest in Wales.	🔴
Data protection and Caldicott training	Refresher training for data protection/Caldicott requirements is mandatory for all staff.	🟢

Indicator	Health board performance	Performance rating
The current arrangements for training are not supporting proficiency in the use of systems and the quality of the information contained on them		
Data quality training	Data quality training is optional but only 13 out of 38 (34 per cent) doctors said that they could rely on the information contained in the clinical systems. This was the lowest in Wales.	🔴
Training for temporary clinical staff	Training is provided to all temporary clinical staff, which compares favourably across Wales.	🟢
Clinical ICT systems are not supporting doctors to deliver patient care, and there is a greater rate of in-house applications in use		
Use of clinical systems to obtain clinical information	On average, only 6 out of 39 (15 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 third lowest in Wales.	🟠
Clinical information is easy to find	30 out of 39 (77 per cent) doctors identified that clinical information is easy to find on the system, compared with all-Wales average of 82 per cent. This is the lowest in Wales.	🔴
Use of clinical systems to complete clinical tasks	On average, only 9 out of 39 (23 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. This is the lowest in Wales.	🔴
Completion of the task is easy	26 out of 39 (67 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 second lowest in Wales.	🟠
Use of bespoke applications developed personally in-house	19 out of 39 (49 per cent) doctors identified that they used applications developed personally in-house compared with the all-Wales average of 43 per cent. This is the third highest in Wales.	🟠

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:

- the strategy for ICT is up-to-date and supported by staff;
- the profile of ICT is raised at the Executive Management Team;
- a clinical ICT user group is established to improve engagement with clinicians; and
- a clear ICT benefits management programme is set out.

Central management of ICT staff

R2   To ensure that the totality of ICT resources within the Health Board 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 staff are proficient in the use of the clinical systems, the Health Board needs to ensure that appropriate and timely training is in place. This is particularly important in relation to new starters in order to prevent them from accessing the systems without having the appropriate training.

Negative perceptions of medical staff

R4   The Health Board needs to understand and address the negative perceptions from medical staff in relation to access, reliability 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 the extent to which ICT equipment is classed as 'out-of-life' reduces.

Detailed report

The overall level of spend on ICT is generally above the average for Wales although it remains below the recommended level of spend

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 lower than the recommended two per cent, but compares more favourably than the all-Wales average at 0.9 per cent.

Exhibit 2: Total ICT expenditure as a proportion of total revenue expenditure in 2013-14
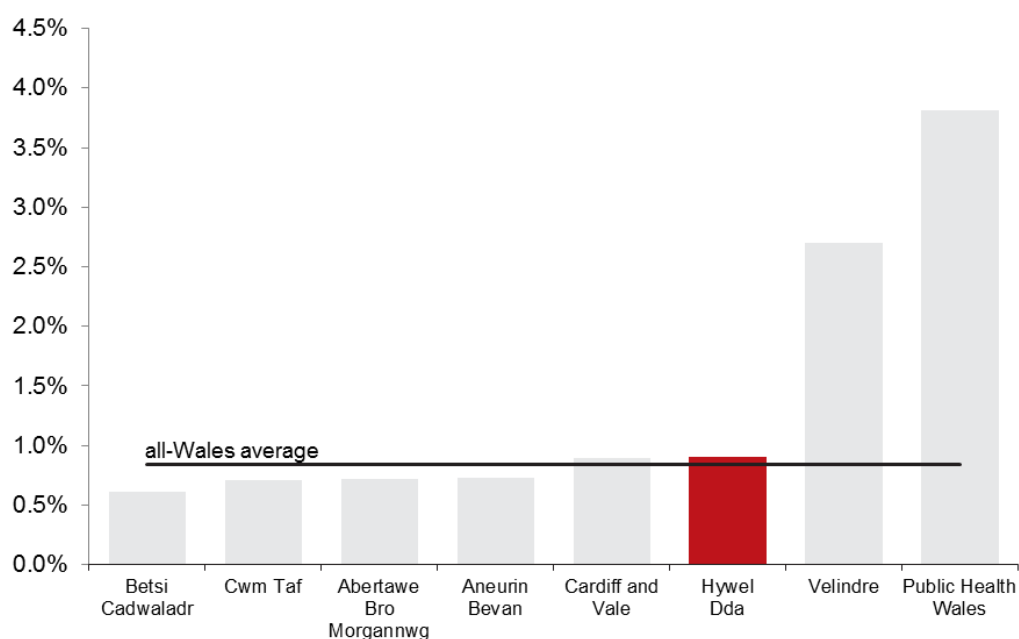
Source: Wales Audit Office survey, health board/trust financial accounts

13. Since 2010-11, the level of ICT expenditure is reported to have increased from £5.8 million to £5.9 million in 2013-14, although this is a slight reduction from the level of spend in 2012-13 of £6.3 million. In addition, the Health Board indicated that it had been able to attract additional funding in the region of £0.7 million during 2013-14[3]. This is positive, although compares just lower than the all-Wales average of £0.828 million. This additional funding was reported to have been made up of £0.285 million of discretionary capital and a further £0.415 million at the end of the year from Welsh Government funding. Our work however has not reviewed the extent to which this additional funding was actually used to invest in ICT.

14. During 2013-14, the Health Board reported spending £2.128 million on ICT workforce. This accounted for 36 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 below the all-Wales average (Exhibit 3) and the lowest in Wales.

Exhibit 3: ICT workforce expenditure as a proportion of total revenue expenditure in 2013-14
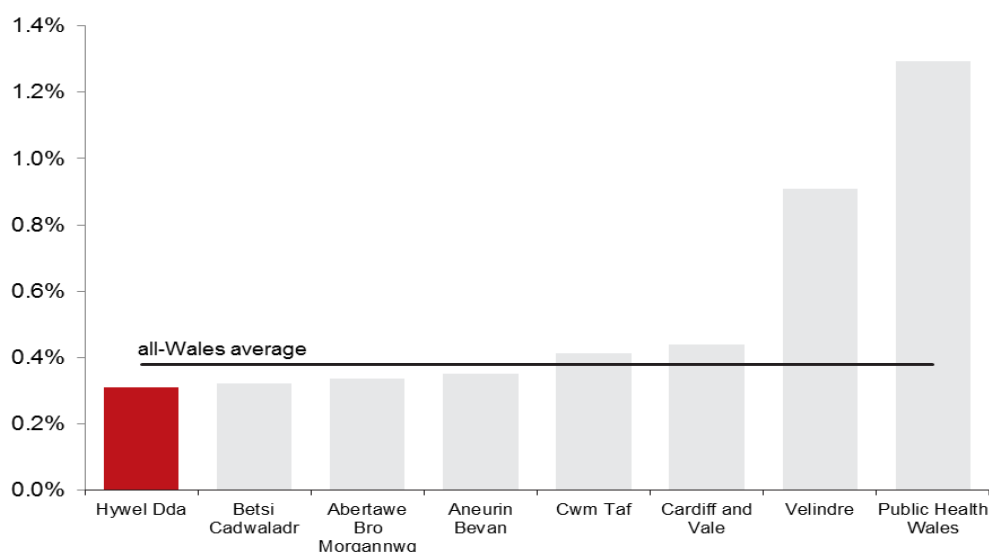
Source: Wales Audit Office survey, health board financial accounts

15. The average spend per ICT WTE is £28,931[4]. This is the lowest across Wales where the average spend is £35,467 per ICT WTE. This is likely to reflect a differing skill mix or less-rich grade mix of staff at the Health Board.

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[3] Non-recurring income specified by the Health Board against the categories 'Discretionary Capital', 'NWIS funding', 'Project Grants' and 'Other'.
[4] Figure includes any NWIS staff who are hosted by the Health Board/Trust

Staffing levels for ICT are generally around the average for health bodies 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 73.6 WTEs in post within the ICT department[5]. The number of ICT WTEs per 1,000 total health board staff is above the all-Wales average at 9.8 WTE per 1,000 total health board staff and the second highest of all health boards (Exhibit 4).

Exhibit 4: Total ICT staff (WTE) per 1,000 total health board/trust staff (WTE)
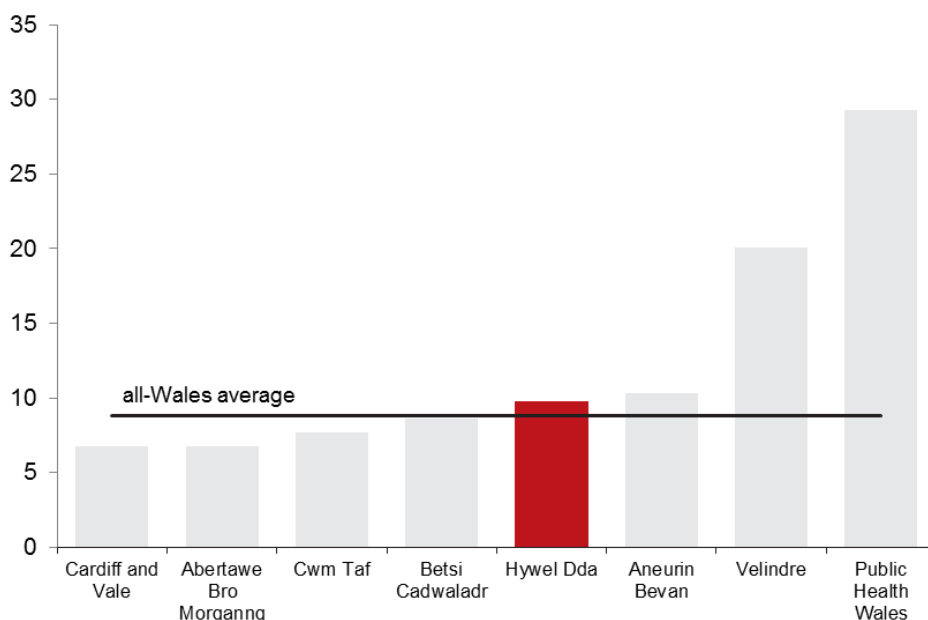
Source: Wales Audit Office survey, Stats Wales

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[5] Whole-time equivalents include NWIS staff who are hosted by the Health Board. For Hywel Dda University Health Board, this was reported to be 7.8 WTE.

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 31.8 WTE technical staff. The level of ICT technical staff per 1,000 total health board staff is just above the all-Wales average at 4.3 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 18.4 WTE information management staff. The level of information management staff per 1,000 total health board staff is just above the all-Wales average (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 3.52 WTE data analysts. The level of data analysts per 1,000 WTE total health board staff is just below the all-Wales average (Exhibit 7).

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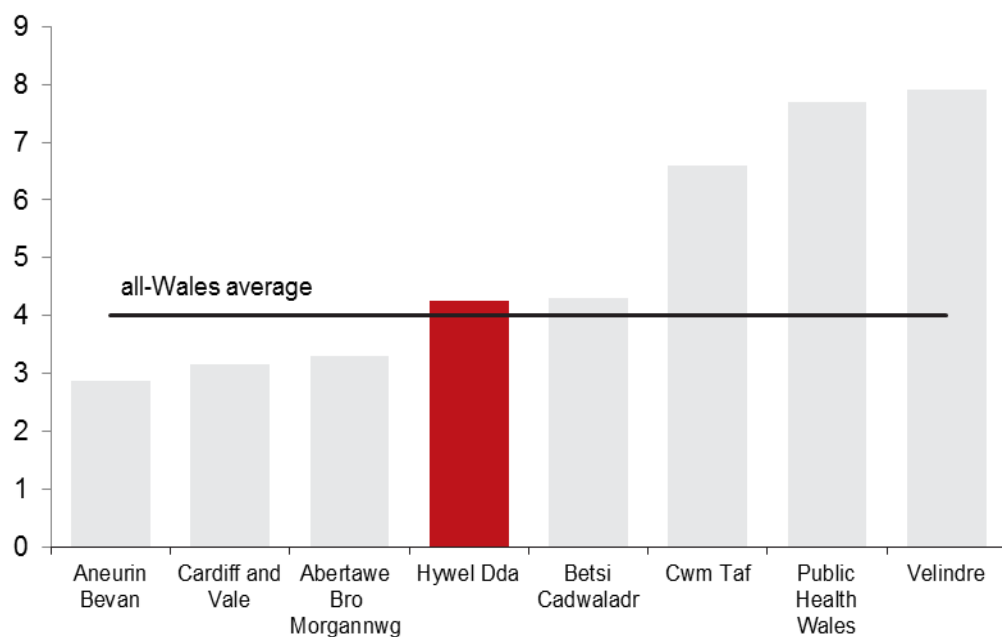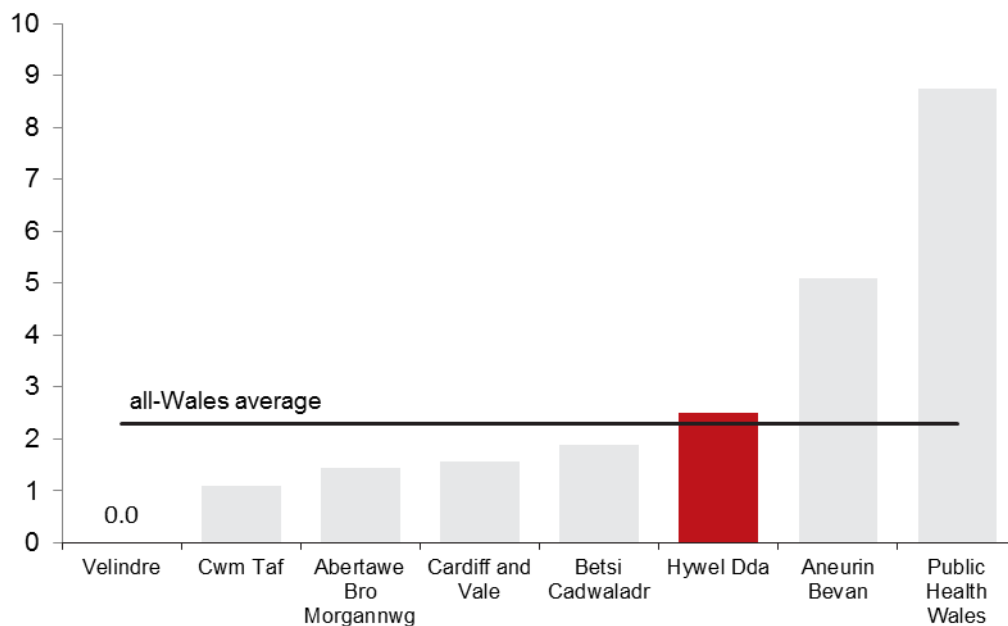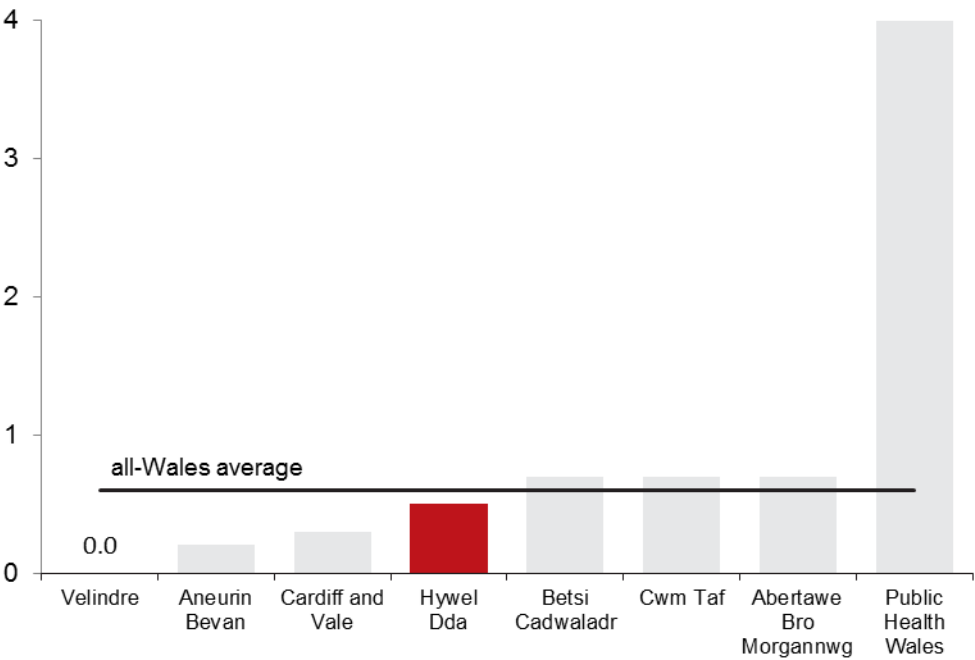

Source: Wales Audit Office survey, Stats Wales

Although there is better integration between systems, there is a lack of commitment to ICT within the Health Board and the doctors' perception of ICT is the most negative in 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[6]
The health board has a documented ICT strategy which is up to date (maximum score of 2)	1
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)	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

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

Good practice area	Health Board score[6]
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)	0
There is a mechanism to routinely seek staff feedback (maximum score of 2)	2
Total score (out of a maximum of 27)	**16**

Source: Wales Audit Office survey

23. The overall level of commitment to ICT in the Health Board is below the all-Wales average and is the second lowest in Wales (Exhibit 9). We are aware that since the data collection period, the ICT strategy has been updated and presented to the Board.

Exhibit 9: Overall score for commitment to ICT
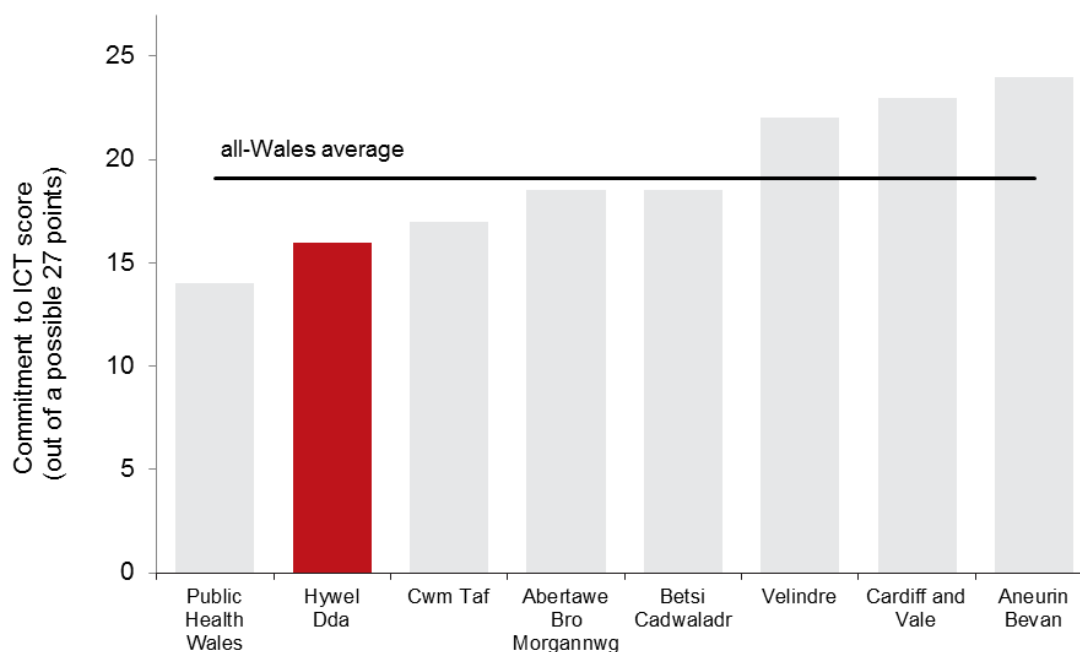
Source: Wales Audit Office survey, Stats Wales

24. The Health Board currently runs two separate patient administration systems (PAS), one for its acute services across its main district general hospital sites and one for its mental health services. 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 patient administration system.

25. Across each site, the Health Board has identified that, of the 10 clinical information systems reported to us, four are integral modules of the core acute PAS and four are linked to it (Exhibit 10), although two only have one-way links[7]. This level of integration with the main patient administration system is more favourable than all other NHS organisations across Wales (Exhibit 11). The Health Board identified that only the cancer and pharmacy systems had no links with the Patient Administration System.

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	Integral to PAS	2
Cancer	No link	-
Clinical portal	One-way link	1
Community system	No system identified	1
Maternity services	Integral to PAS	3
Mental health	One-way link	1
Pathology	Two-way link	1
Pharmacy	No link	-
Radiology	Two-way link	2
Theatres	Integral to PAS	3
Therapies	Integral to PAS	3

Source: Wales Audit Office survey

[7] 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
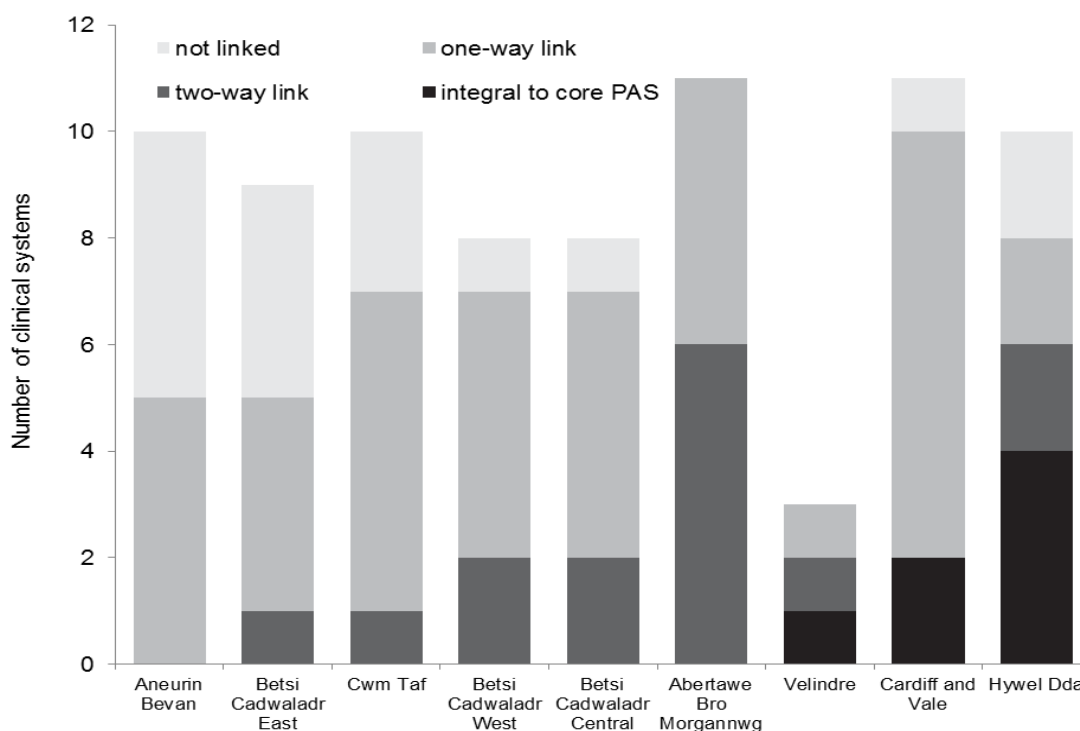
Source: Wales Audit Office survey

26. Although the Health Board reported that there is central co-ordination of IT and Information Management, the Health Board did report that it spent £0.216 million on ICT staff outside the direct management of the IM&T department. This was 2.9 per cent of total ICT expenditure, but is below the all-Wales average of 9.9 per cent and the second lowest in Wales. Technical staff within other departments accounts for £83,000, with the remainder of the costs associated with other staff including an IT trainer, a system developer and a project manager.

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;

- 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, 7 out of 39 (18 per cent) doctors responded positively, compared with an all-Wales average of 31 per cent. This was the lowest 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	15.8	24.2
The development of IT systems in this Health Board has improved patient care	30.6	46.8
The IT in this Health Board is better than the IT in other health boards that I have personally seen	6.3	20.7

Source: Wales Audit Office survey

Physical access to PCs is perceived as problematic, more so for doctors, although the Health Board was unable to report the extent to which PCs are available

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. The Health Board however was unable to confirm the number of devices that it had at the time of data collection, stating that it did not have the resources to track inventory. The Health Board was the only organisation unable to provide this information[8]. Across Wales, we reviewed the number of devices per WTE doctor and WTE nurse (Exhibits 13 and 14).

Exhibit 13: Total number of devices per doctor (WTE)
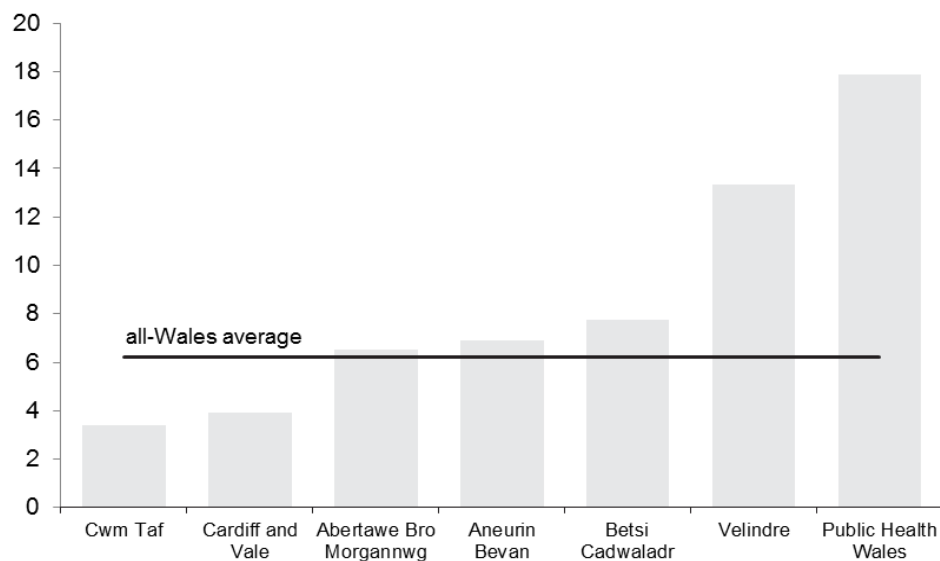
Source: Wales Audit Office survey, Stats Wales

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[8] The Health Board subsequently indicated that it had 1,148 PCs but was unable to report the number of other devices such as laptops. Based on PCs alone, the number of devices per doctor would be 1.8.

Exhibit 14: Total number of devices per nurse (WTE)
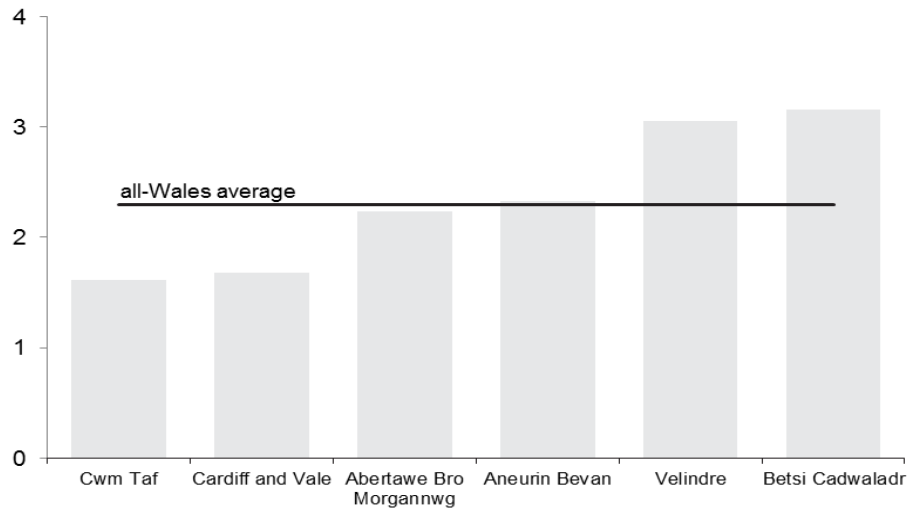
Source: Wales Audit Office survey, Stats Wales

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 would indicate that access to computers is problematic for medical staff and less favourable than the all-Wales position. Nursing staff were more positive about ward access to computers (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	79.0	57.0	42.0	48.0
In outpatient rooms	23.0	20.0		
In the office	32.0	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. Our survey of ward-based nursing staff indicated that 22 per cent of staff did not have access to certain clinical information systems but felt it would be useful if they did. This closely matched the profile across Wales, where the figure was 24 per cent of all nursing staff surveyed. A further two per cent of Health Board nurses said that, although they did have access to those systems, other nursing staff who should have access did not.

32. Particular systems were access was highlighted as problematic included those serving community care, social care and mental health. One third of nurses responding to the survey at the Health Board also indicated that access to a system to support nurse care planning would be useful.

The Health Board has a considerable amount of its ICT stock which is classed as out-of-life and reliability of systems is problematic

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 21 out of 39 (54 per cent) doctors and 24 out of 56 (43 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 is a poor level of performance compared against the all-Wales position (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	55.0	24.0	43.0	28.0
In outpatient rooms	52.0	20.0		
In the office	56.0	19.0		

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 was unable to provide full information about its downtime records, stating that systems were hosted by NWIS who could only provide limited information in relation to downtime. The Health Board was, however, able to confirm that there were records in relation to downtime due to:

- software failure for the pathology and mental health systems only;

- network failure that would affect the running of clinical information systems for all systems; and

- server failure that would affect the running of clinical information systems for the pathology and mental health systems only.

36. Where records exist, the Health Board identified three occasions of planned downtime on its mental health system during 2013-14 with no unplanned downtime, which is positive. However, the Health Board was unable to specify the number of planned downtime occasions on its pathology system but did report seven occasions of unplanned downtime during 2013-14 amounting to 120 hours. We are unable to provide a comparison of unplanned downtime across Wales due to the incompleteness of downtime records.

37. 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 from five years for PCs up to 12 years for telecoms equipment and desktop operating systems. As part of our work, we have captured the extent to which existing ICT equipment is classed as 'out of life'[9]. The gross replacement cost of ICT equipment classed as 'out of life' at the end of March 2014 in the Health Board was the second highest in Wales at £8.7 million (Exhibit 17).

Exhibit 17: Gross replacement cost (£000's) of ICT equipment classed as 'out of life' at 31 March 2014
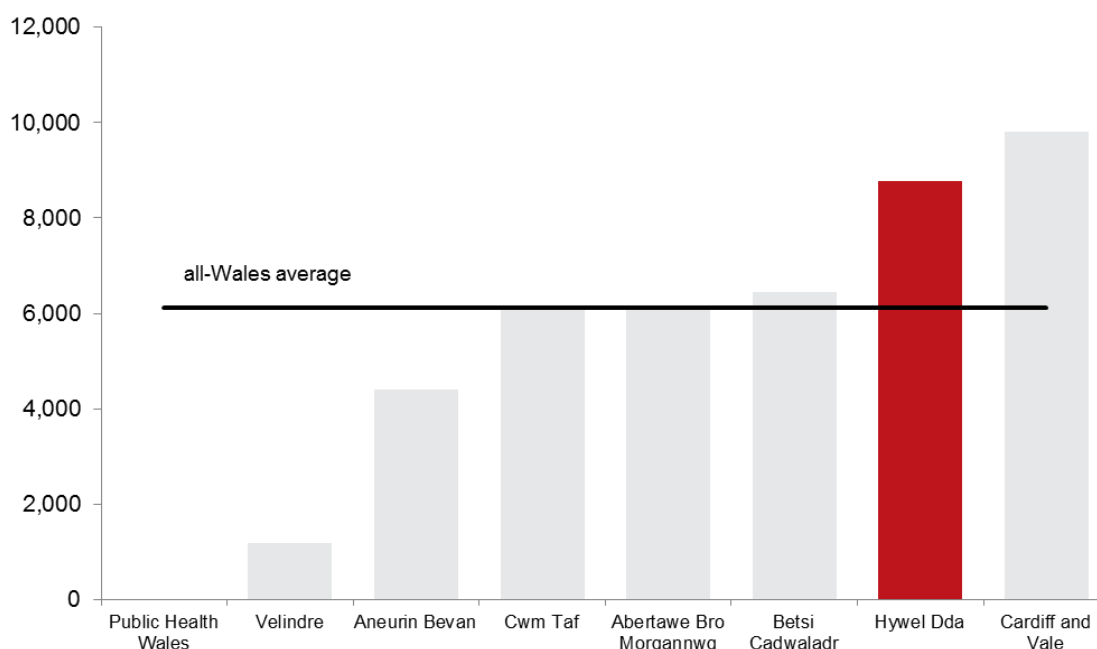
Source: NHS submissions to Welsh Government

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

The current arrangements for training are not 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 Health Board identified that training on its clinical information systems is not offered to all new employees where the use of such systems is required. The Health Board also identified that clinical staff do not have to attend a training session to obtain a log-on ID and password for the systems they need to access. This is contrary to arrangements across the majority of other NHS organisations in Wales.

40. The nursing staff survey suggests that delays are perceived in the receipt of training which may explain why staff are able to access passwords prior to attending training. At the Health Board, 39 out of 56 (69 per cent) ward-based nurses 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'. This is the second highest in Wales and above the all-Wales average of 60 per cent.

41. The average length of training on the hospital's Patient Administration System is 3.6 hours, ranging from two hours for doctors and clinical directors up to five hours for medical secretaries and ward clerks. Across Wales, the average duration of training across all staff groups is just below four hours. Our medical staff survey identified that 23 out of 39 (59 per cent) doctors felt confident that they were proficient in using the Health Board IT systems that they needed to use. This was below the all-Wales average of 70 per cent and was the second lowest in Wales.

42. When asked, the Health Board reported that refresher training for data protection and Caldicott requirements was mandatory for all staff. Data quality training however is optional, although these arrangements largely mirror those in place at other health boards in Wales. Interestingly, in our medical staff survey, only 13 out of 38 (34 per cent) doctors said that they could rely on the information contained in the clinical systems. This was the lowest response in Wales compared with the average of 52 per cent. In addition, only 12 out of 37 (32 per cent) doctors said that the information on the IT systems is accurate. This was below the all-Wales average of 42 per cent and the lowest in Wales.

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 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
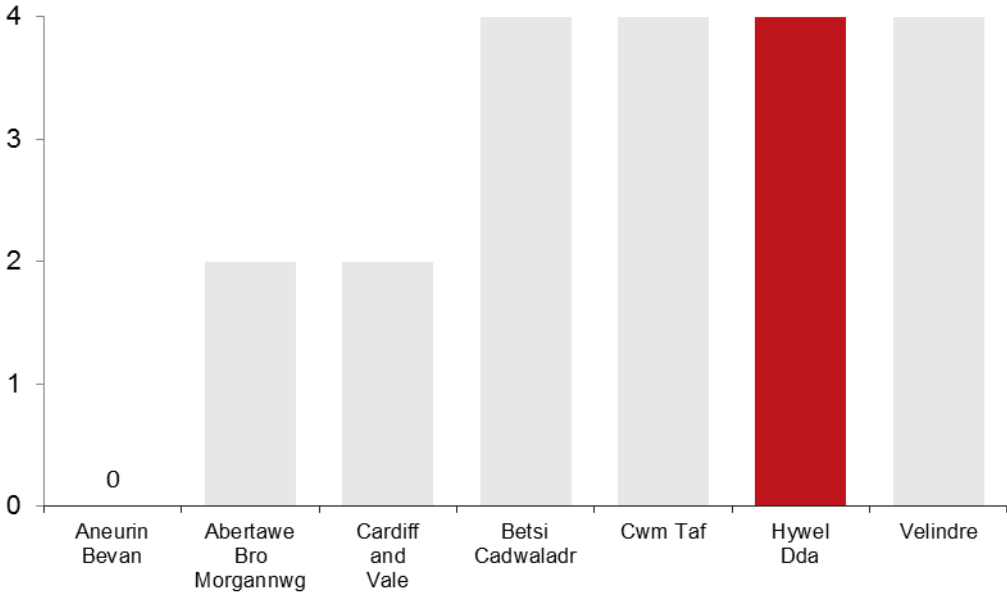
Source: Wales Audit Office survey

Clinical ICT systems are not supporting doctors to deliver patient care, and there is a greater rate of in-house applications in use

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 below the Wales average, with an average of 6 out of 39 (15 per cent) doctors reporting that they use computer only. Of those who use the computer systems, the proportion of those who consider that information on the computerised system is easy to find is also the lowest across Wales (Exhibit 19). In contrast, 25 out of 39 (64 per cent) doctors reported that they use paper only, 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
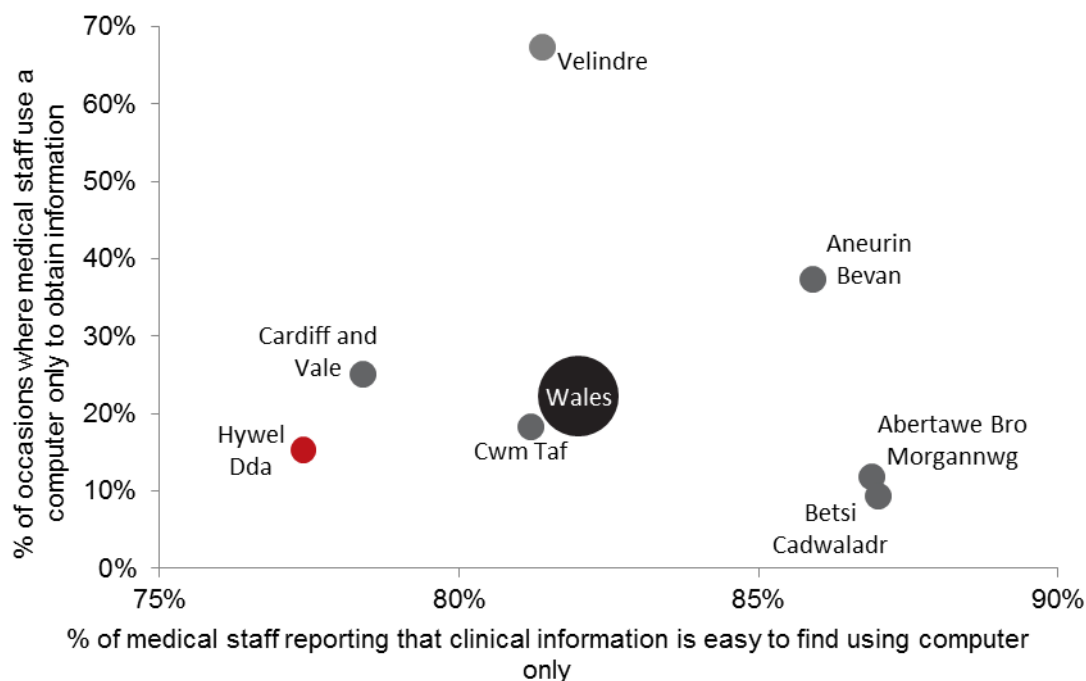
Source: Wales Audit Office survey

46. The sample of doctors who responded to our survey identified that they were more likely to use computer only to obtain radiology and laboratory test results but were more reliant on paper to obtain clinical information relating to referral, diagnosis and clinical history (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	73.5	63.5
Diagnosis	2.6	8.9	60.5	37.1
A&E attendance	11.4	21.3	60.0	42.5
Outpatient appointment	11.4	26.2	40.0	26.7
Episode history	8.3	16.2	61.1	38.8
Clinical history	5.3	7.9	71.1	46.2
Investigations requested	18.9	24.9	16.2	17.1
Laboratory test results	40.5	46.7	5.4	2.4
Radiology report	43.2	49.6	5.4	3.4
Procedure	2.9	10.8	60.0	42.2
Therapy referral	14.7	16.4	41.2	38.6
Therapy session	12.9	13.7	54.8	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 also the lowest across Wales, with an average of 9 out of 39 (23 per cent) doctors, compared with the all-Wales average of 28 per cent. Of those who use the computer systems, the proportion of those who consider that completion of the task is easy is also well below the Wales average (Exhibit 21). In contrast, 23 out of 39 (60 per cent) doctors reported that they use paper only, 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
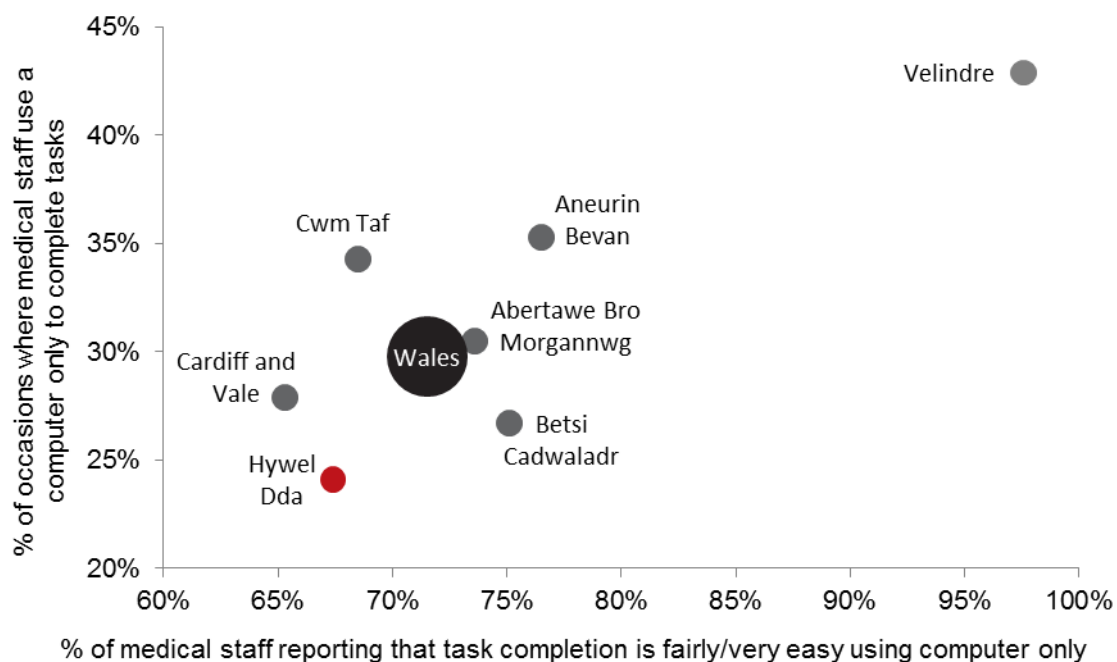
Source: Wales Audit Office survey

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 radiology investigations, write prescriptions, make onward referrals and write operation notes (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	5.9	11.6	67.6	60.1
Clerk the patient on admission	3.3	5.5	80.0	75.3
Order laboratory tests	13.5	6.7	54.1	74.5
Order a radiology investigation	5.3	2.9	81.6	86.0
Write a prescription	None	0.2	97.6	92.9
Write an operation note	7.4	21.9	77.8	58.3
Refer a patient to another consultant's team	None	2.5	76.3	71.4
Refer a patient to a non-medical clinician	2.7	2.4	78.4	67.2
Prepare a discharge letter	6.7	25.0	66.7	36.0
Check a hospital clinical guideline	62.2	72.6	5.4	3.4
Access evidence based literature	76.9	88.3	None	0.7
Access public health information	73.7	87.3	None	0.8

Source: Wales Audit Office survey

49. Our medical staff survey also identified that 19 out of 39 (49 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. Seven out of 19 (37 per cent) of these doctors reported using these 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 Hywel Dda University Health Board was submitted on 15 September 2014. Clarifications to submitted data were confirmed by the Health Board on 29 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 Hywel Dda University Health Board this included Bronglais, Glangwili, Prince Philip and Withybush hospitals. The survey was issued electronically on 25 September 2014. A reminder was issued on 3 November 2014. Responses were received from 39 medical staff in Hywel Dda University Health Board. Across Wales, we received responses from 446 medical staff.

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 Hywel Dda University Health Board this included Bronglais, Glangwili, Prince Philip and Withybush hospitals. The survey was issued electronically on 29 September 2014. A reminder was issued on 25 November 2014. Responses were received from 56 nursing staff in Hywel Dda University Health Board. Across Wales, we received responses from 386 ward-based nursing staff.

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 eg representation on working groups	2
C: Minimal involvement eg 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, eg 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 Health Board are set out below.

There is virtually no budget year on year so unlikely to improve.

Difficult access of IT requiring multiple phone calls for one problem. On one occasion, my request was closed without any action taken, apparently because time had passed on the waiting list and I had not contacted IT again to inform them the problem had not been solved.

All computers need more RAM added to speed up the search process.

Server crashing - access emails sometimes difficult.

Accessing results and requesting investigations are both clumsy processes. It is probably not the worst in Wales.

It is in the dark ages, it is painfully slow, it is unhelpful. It doesn't have access to clinical guidelines and the need to do discharge letters to GPs.

There is frequent freezing of the pages on the computer such as laboratory results, hospital emails and constant annoying messages of the system communication failure especially in OPD setting which puts patient care at risk due to not being able to access the results and causing delays in OPD in trying to sort it out. Frequent calls to IT unfortunately unsuccessful as the problem only sorted temporarily after spending valuable time at OPD setting resulting in delay in seeing patients. I have been told the server is very slow and cannot cope with volume of data!

I would strongly urge you to move whole Wales IT systems to Linux based systems. The Welsh gave the NHS to the UK. Surely we can take the lead in IT innovation and show rest of the UK how IT systems in health services should be run. If we moved to Linux based systems, for a fraction of the costs we currently incur in running IT departments and facilities on Microsoft's software, we will be able to produce a whole IT infrastructure for Welsh health services that will be far more stable, run smoothly, and safer than Microsoft based systems.

Old, slow hardware. Poor monitors in a number of clinical areas (for assessing X rays).

The IT staff are excellent and helpful but are disadvantaged in the systems they are employed to support are poor. Previously extremely slow systems (waiting for result while wheel turns). A bit better now. Repeated system crash, inaccess and loss of contact between terminal and database means in clinic I sometimes cannot access letters/results and busy doctors on call have sometimes to spend time phoning the lab for results (inexcusable). Sometimes my access to printer fails unpredictably (clinical letters wont print etc). These problems were reported to head of IT but no reply/response so stopped reporting them.

The Myrddin system crashes frequently - we do use Myrddin for secondary care doctors letters and have doctors' letters and radiology/ histology reports from the pre-Myrddin era available at WGH.

Computer is very slow.

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