



# Diagnostic Review of ICT Capacity and Resources

## Cwm Taf University Health Board

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# Status of report

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The team who delivered the work comprised of Anne Beegan,  
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Although there are some positive aspects, our diagnostic work indicates that the current level of investment and commitment to ICT in the Health Board is not fully effectively supporting the delivery of healthcare with scope to integrate systems and reduce the reliance on paper

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# Summary report

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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 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<sup>1</sup> and along with its national programme for informatics, set aside a three-year investment package of £25 million in April 2013. This investment package was set up to support the local transformation of healthcare delivery in Wales through the introduction of new ways of working and treatments using modern technology. In its first year, Welsh Government allocated just over £9.5 million to health boards and trusts across Wales.
3. In 2014, the new NHS planning arrangements set out requirements for health boards and trusts to exploit opportunities of technologies and innovation, and to demonstrate how they intend to realise benefits from infrastructure and capital investments over the next three years. To support this, there is an expectation that health boards and trusts will have strategies in place, which demonstrate how they intend to develop their asset base to meet future service needs. This includes ICT equipment and infrastructure, covering all healthcare settings, including primary care.
4. The introduction of the three-year investment package has gone some way to start to support the vision set out in Welsh Government strategies by introducing new technology. However, in 2013, the Auditor General's report on **Health Finances** reported that the condition of assets such as ICT across Wales is mixed. It identified that the level of investment required just to replace existing ICT equipment classed as 'out of life' was estimated to be in the region of £68 million in March 2014, rising to £83 million by March 2015. The condition of ICT, along with other assets and estate, is a significant additional demand on the NHS's current and future revenue and capital expenditure budgets.
5. Poorly maintained and out-of-date technology has implications for the quality and safety of services being provided. To move towards a single Electronic Patient Record, it is important that clinical information systems are integrated with each other and that the same systems are used across different sites that provide the same services within the organisation. Poor access to clinical information because of limited numbers of PCs, laptops, etc or poor reliability of clinical systems also creates inefficiencies in the delivery of services and risks to patient care in the event that clinical information is not available.

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<sup>1</sup> **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.

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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 Cwm Taf 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 45 medical staff and 112 ward-based Band 5 to 7 nursing staff across Prince Charles Hospital and Royal Glamorgan Hospital. Further details of our audit approach are set out in [Appendix 1](#).
9. Based on this analysis, we have concluded that **although there are some positive aspects, our diagnostic work indicates that the current level of investment and commitment to ICT in the Health Board is not fully effectively supporting the delivery of healthcare with scope to integrate systems and reduce the reliance on paper.**

## Exhibit 1: Summary assessment

| Indicator   | Health Board performance  | Performance rating <sup>2</sup> |
|---|---|---------------------------------|
| <b>Overall spend on ICT is below average for Wales and remains below the recommended level of spend</b>                                     |   |                                 |
| Total spend on ICT  | The total level of spend on ICT is lower than the recommended two per cent of total revenue expenditure, and just below the all-Wales average at 0.7 per cent.                              | ●                               |
| Trend in expenditure  | Since 2010-11, total expenditure on ICT has seen a decrease.  | ●                               |
| Ability to attract additional ICT funding   | A total of £0.9 million additional funding for ICT was obtained during 2013-14, which compares just higher than the all-Wales average of £0.828 million.                                    | ●                               |
| Total spend on ICT workforce  | The level of spend on ICT workforce is above the all-Wales average at 0.4 per cent of total revenue expenditure.  | ●                               |
| Average spend per ICT whole-time equivalent (WTE)   | The average spend per ICT whole time equivalent (WTE) is £42,976 which is much higher than the all-Wales average of £35,467 and may reflect a high grade-mix of staff.                      | Descriptive indicator           |
| <b>Staffing levels for ICT are around average for Wales with the exception of information management staff which is the lowest in Wales</b> |   |                                 |
| Total ICT staff levels  | The total number of ICT staff per 1,000 health board staff is below the all-Wales average at 7.7 WTE.   | ●                               |
| ICT technical staff levels  | The total number of ICT technical staff per 1,000 health board staff is above the all-Wales average at 7.0 WTE and the third highest in Wales. It is also the highest of all health boards. | ●                               |
| Information management staff levels   | The total number of information management staff per 1,000 health board staff is below the all-Wales average at 1.1 WTE and one of the lowest in Wales.                                     | ●                               |
| 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.   | ●                               |

<sup>2</sup> 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  |
|--|--|---|
| <b>There is a lower level of commitment to ICT than other health boards, and the systems and resources lack integration</b>                    |  |   |
| Organisational commitment to clinical ICT  | The level of commitment to clinical ICT is below the all-Wales average, and is the third lowest in Wales.  |    |
| System integration   | Only one out of 10 clinical systems are integral or have two-way links to the core patient administration system (PAS). This level of integration is less favourable than many other NHS organisations.          |    |
| Management of ICT staff outside of the ICT department  | There are no information management staff or data analysts outside the management of the ICT department, but there are ICT technical staff in post equating to £0.154 million.                                   |    |
| Doctors perception of the organisation and management of ICT   | Only 12 out of 45 (27 per cent) doctors indicated positive views about the organisation and management of ICT, compared with the all-Wales average of 31 per cent.   |  |
| <b>The Health Board has the lowest number of devices although accessing PCs is generally less problematic than in many other health boards</b> |  |   |
| Total number of devices (PCs, terminals, etc) per doctor   | The number of devices per WTE doctor is the lowest in Wales at 3.4.  |  |
| Physical access to computers (doctors)   | On average, 13 out of 45 (29 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 the lowest in Wales at 1.6.   |  |
| Physical access to computers (nurses)  | 43 out of 104 (41 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, 21 out of 104 (21 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  |
|--|--|---|
| <b>The condition of ICT equipment and the reliability of systems appears typical of Wales although records for managing downtime are incomplete</b>  |  |   |
| Poor access due to problems with the systems (doctors)   | On average eight out of 45 (18 per cent) doctors indicated that access due to system crashes or none-availability is problematic on a daily or weekly basis, compared with the all-Wales average of 21 per cent across Wales.              |    |
| Poor access due to problems with the systems (nurses)  | Twenty-four out of 106 (23 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 exist in relation to a number of the Health Board's systems, although there are gaps.  |    |
| Level of unplanned downtime  | The total reported unplanned downtime during 2013-14 was 9 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 in line with the all-Wales average at £6.1 million.  |  |
| <b>There are good arrangements for training which support proficiency in the use of systems and the quality of the information contained on them</b> |  |   |
| 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 (PAS) is two hours, which compares with the all-Wales average of just below four hours.   | Descriptive indicator   |
| Proficient use of IT systems   | Thirty-three out of 43 (77 per cent) doctors felt confident that they were proficient in using the IT systems they needed to use. This was above the all-Wales average and the second highest 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  |
|--|---|---|
| Data quality training  | Data quality training is mandatory and 22 out of 42 (52 per cent) doctors said that they could rely on the information contained in the clinical systems, which is in line with the all-Wales average.                      |    |
| Training for temporary clinical staff  | Training is provided to all temporary clinical staff, which compares favourably across Wales.   |    |
| <b>The mainstream clinical ICT systems are not fully effective in supporting doctors to provide patient care</b> |   |   |
| Use of clinical systems to obtain clinical information   | On average, eight out of 45 (18 per cent) doctors identified that they are 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. |    |
| Clinical information is easy to find   | Thirty-six out of 45 (81 per cent) doctors using the computer identified that clinical information is easy to find on the system, compared with all-Wales average of 82 per cent.   |  |
| Use of clinical systems to complete clinical tasks   | On average, 15 out of 45 (34 per cent) doctors use only 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-one out of 45 (69 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  | Fourteen out of 45 (31 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 lowest across Wales.                          |  |

Source: Wales Audit Office

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## 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:
- a. The profile of ICT is raised at the Executive Management Team.
  - b. There is a greater level of clinical engagement with the ICT programme, for example, through the establishment of clinical champions.
  - c. A clear ICT benefits management programme is developed.

### **Separation of IT and Information management**

- R2 Given the separate arrangements between the design, support and maintenance of information systems (IT), and the management of the information contained within the systems, the Health Board needs to ensure that these arrangements are not hindering the ability for all ICT resources to provide a positive impact.

### **Negative perceptions of medical staff**

- R3 The Health Board needs to understand and address the negative perceptions from staff in relation to inability to fully use the clinical information systems that currently exist within the Health Board to ensure that the systems potential is maximised.

### **Reliability of ICT equipment**

- R4 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.

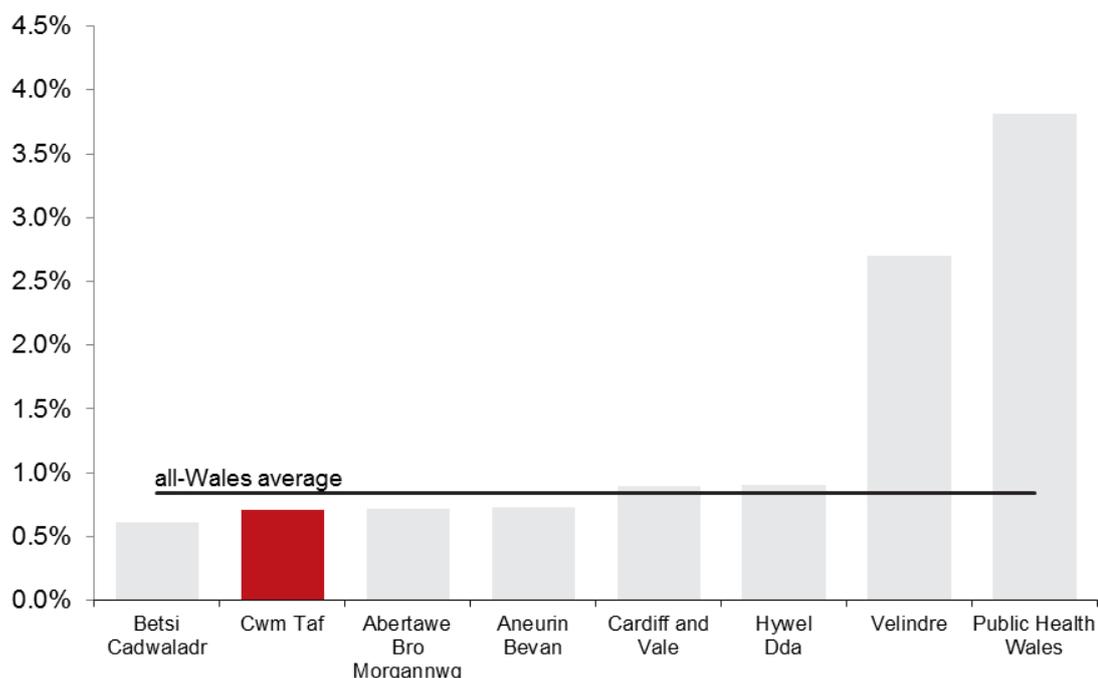
# Detailed report

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## Overall spend on ICT is below average for Wales and 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 and just below the all-Wales average at 0.7 per cent.

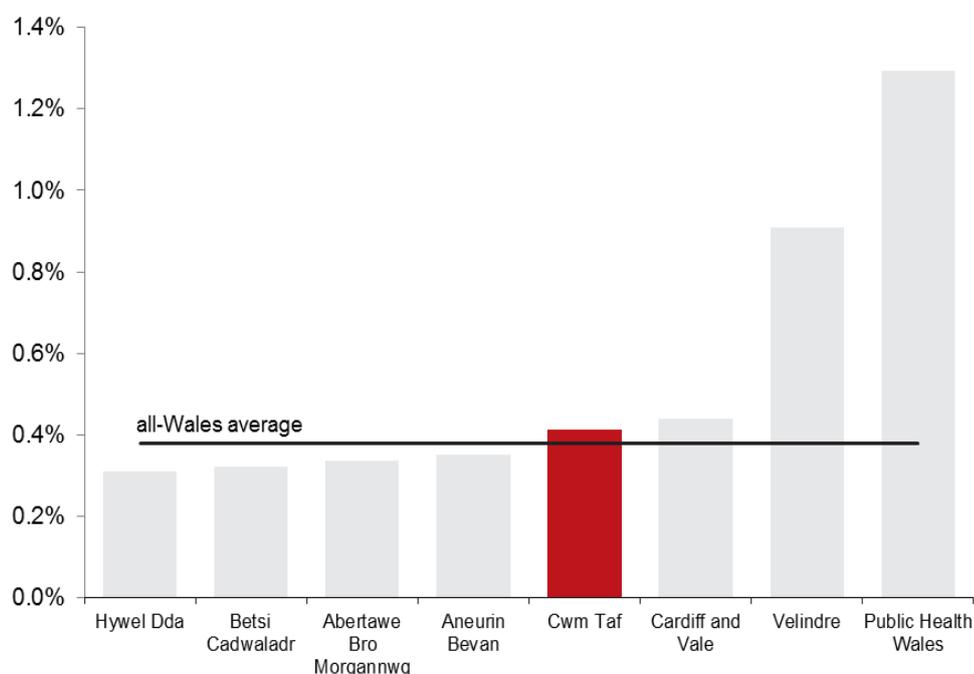
**Exhibit 2: Total ICT expenditure as a proportion of total revenue expenditure in 2013-14**



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

13. Since 2010-11, the level of ICT expenditure is reported to have fallen from £5.5 million to £4 million in 2013-14. This is a reduction of 27 per cent. However, the Health Board indicated that it had been able to attract additional funding in the region of £0.9 million during 2013-14<sup>3</sup>. This is positive, and just above the all-Wales average of £0.8 million.
14. During 2013-14, the Health Board reported spending £2.329 million on ICT workforce. This accounted for 58 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 above the all-Wales average ([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 £43,000<sup>4</sup>. This is the highest across Wales where the average spend is £35,467 per ICT WTE. This is likely to reflect a differing skill mix or higher grade mix of staff at the Health Board.

<sup>3</sup> Non-recurring income specified by the Health Board against the categories 'Discretionary Capital', 'NWIS funding', 'Project Grants' and 'Other'

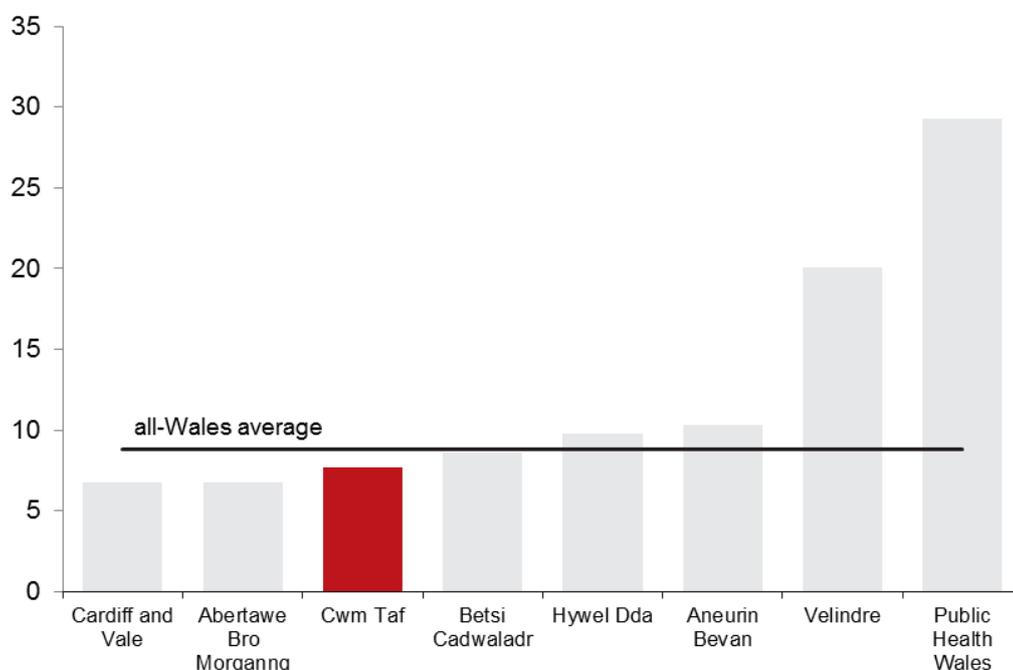
<sup>4</sup> Figure includes any NWIS staff who are hosted by the Health Board/Trust

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## Staffing levels for ICT are around average for Wales with the exception of information management staff which is 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 54.2 WTEs in post within the ICT department. The number of ICT staff per 1,000 total health board staff is 7.7. This is just below the all-Wales average of 8.8 WTE per 1,000 total health board staff ([Exhibit 4](#)).

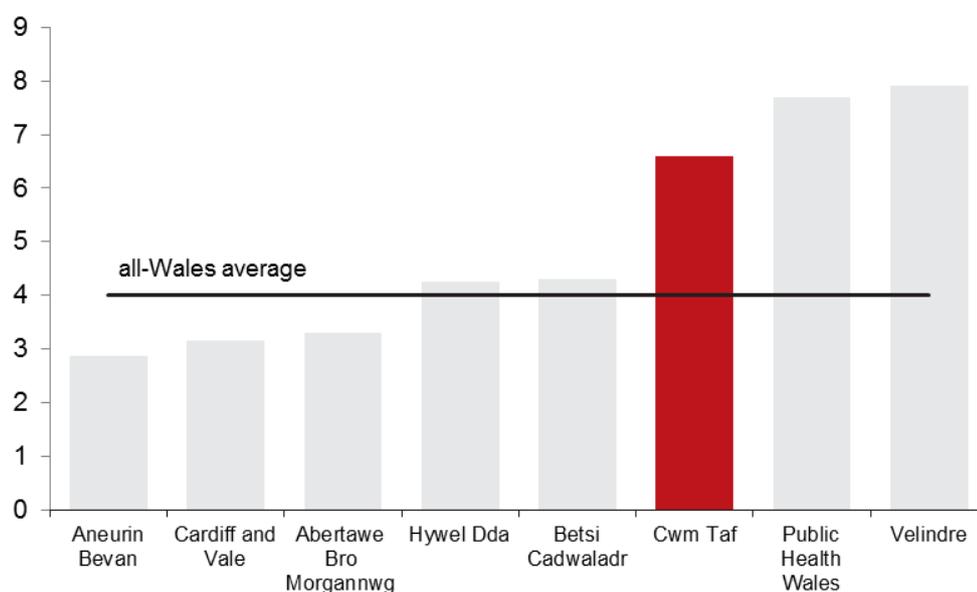
Exhibit 4: Total ICT staff (WTE) per 1,000 total health board/trust staff (WTE)



Source: Wales Audit Office survey, Stats Wales

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- 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 46.2 WTE technical staff. The level of ICT technical staff per 1,000 total health board staff is 7.0 WTE. This is well above the all-Wales average of 4.0 WTE per 1,000 total health board staff and the highest of all health boards in Wales ([Exhibit 5](#)).

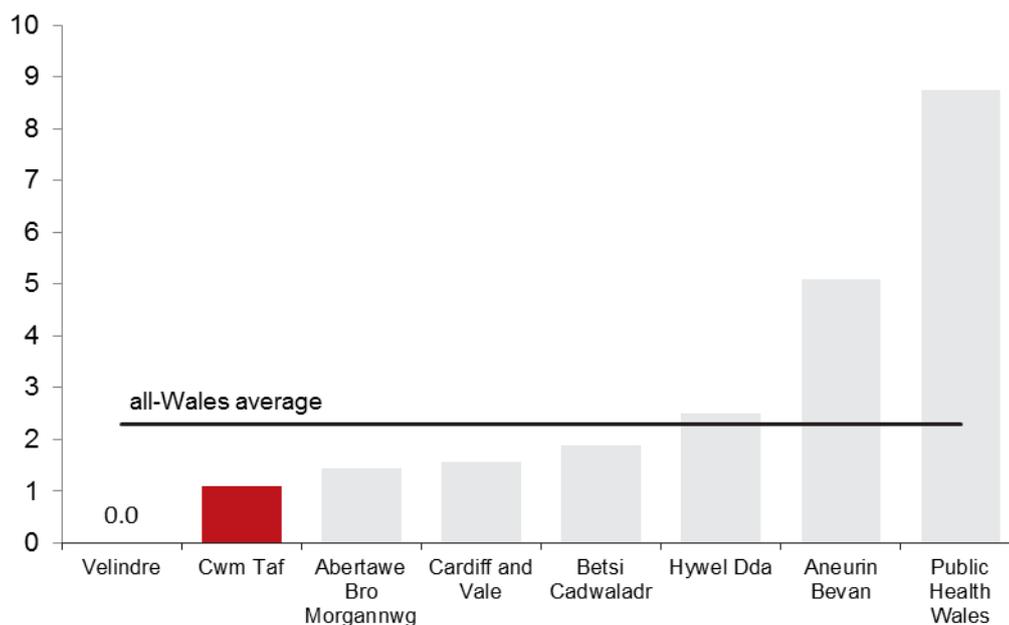
**Exhibit 5: Total IT Technical staff (WTE) per 1,000 total health board/trust staff (WTE)**



Source: Wales Audit Office survey, Stats Wales

- 20.** The Health Board has indicated that it has 8.0 WTE information management staff. The level of information management staff per 1,000 total health board staff is 1.1 WTE, which is below the all-Wales average of 2.3 WTE per 1,000 total health board staff and one of the lowest in Wales ([Exhibit 6](#)).

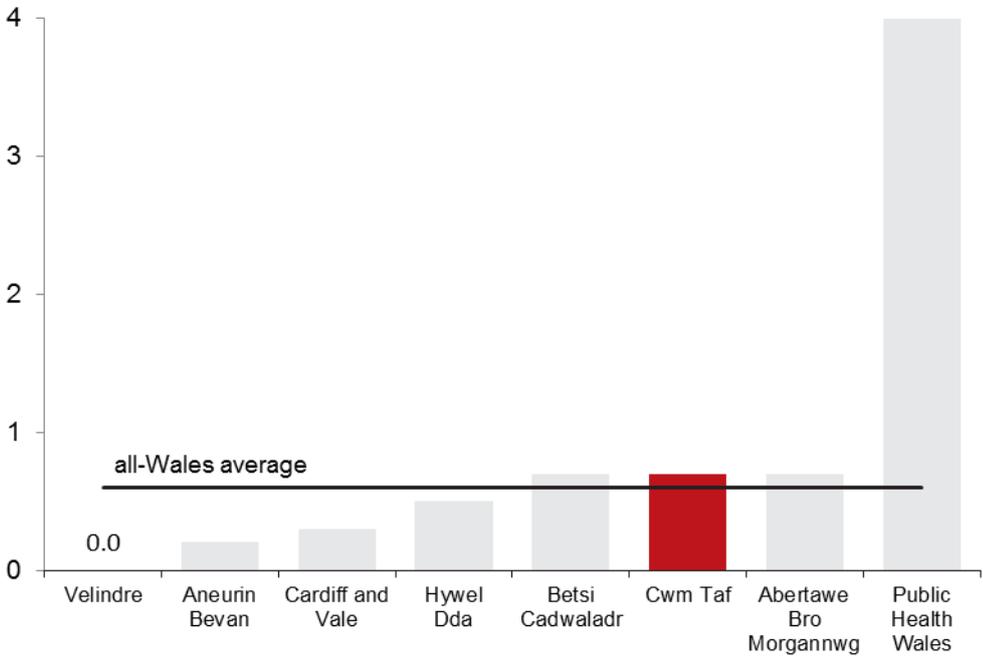
Exhibit 6: Total Information Management staff (WTE) per 1,000 total health board/trust staff (WTE)



Source: Wales Audit Office survey, Stats Wales

21. Within the information management staff, the Health Board has indicated that it has 5.0 WTE data analysts. The level of data analysts per 1,000 total health board staff is above the all-Wales average at 0.7 WTE and in-line with a number of other health boards (Exhibit 7).

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



Source: Wales Audit Office survey, Stats Wales

## There is a lower level of commitment to ICT than other health boards, and the systems and resources lack integration

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 <sup>5</sup> |
|---|---------------------------------|
| The Health Board has a documented ICT strategy which is up to date (maximum score of 2)   | 2                               |
| The ICT strategy or new ICT developments have been discussed at Board level meetings during the last 12 months (maximum score of 2)               | 2                               |
| The 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)  | 0                               |
| 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                               |
| There is involvement by the ICT lead in the Clinical Governance programme (maximum score of 3)  | 1                               |

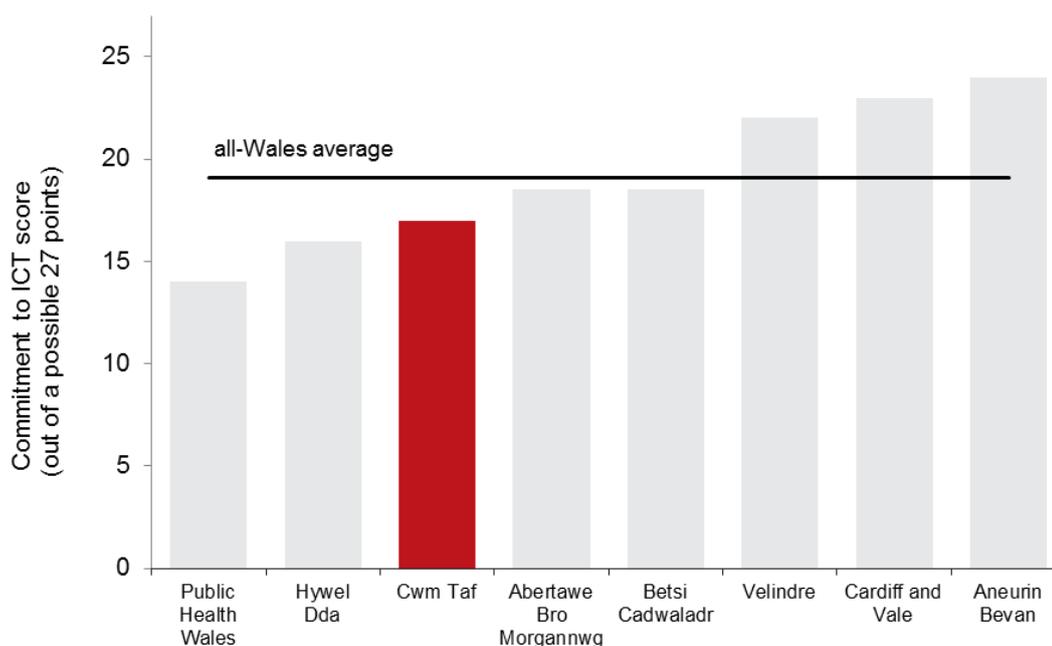
<sup>5</sup> A detailed breakdown of the scoring principle is included in [Appendix 2](#)

| Good practice area   | Health Board score <sup>6</sup> |
|--|---------------------------------|
| 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                               |
| <b>TOTAL SCORE (OUT OF A MAXIMUM OF 27)</b>                                | <b>17</b>                       |

Source: Wales Audit Office survey

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

Exhibit 9: Overall score for commitment to ICT



Source: Wales Audit Office survey, Stats Wales

<sup>6</sup> A detailed breakdown of the scoring principle is included in [Appendix 2](#)

24. The Health Board runs a single PAS 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. The Health Board has identified that, of the 10 clinical information systems reported to us, seven are linked to the main PAS ([Exhibit 10](#)), although six of those only have one-way links<sup>7</sup>. This level of integration with the main PAS is less favourable than the majority of other NHS organisations across Wales ([Exhibit 11](#)). The Health Board identified that pathology, pharmacy and mental health systems had no links with the PAS.

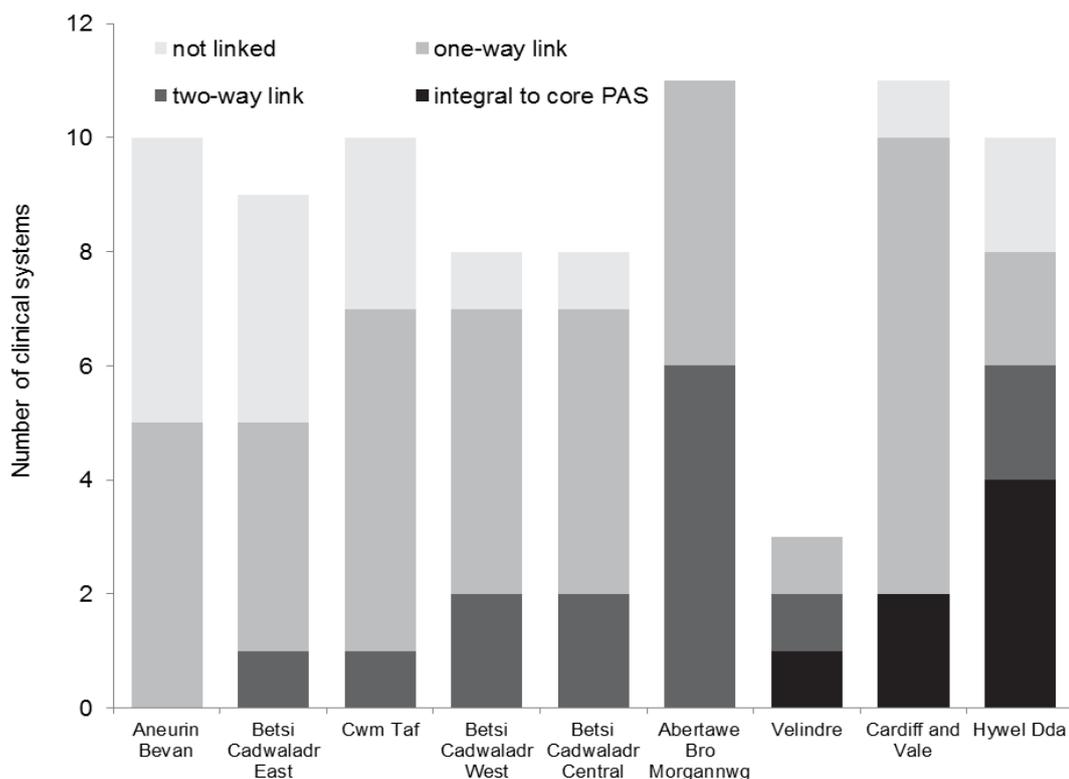
**Exhibit 10: Extent to which clinical information systems are integrated with the core Patient Administration System**

| 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        | One-way link         | 1  |
| Community system       | One-way link         | 1  |
| Maternity services     | One-way link         | 3  |
| Mental health          | Not linked           | 1  |
| Pathology              | Not linked           | 1  |
| Pharmacy               | Not linked           | -  |
| Radiology              | One-way link         | 2  |
| Theatres               | One-way link         | 3  |
| Therapies              | No system identified | 3  |

Source: Wales Audit Office survey

<sup>7</sup> 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 separately managed and report to different directors. This is different to all other health bodies across Wales. In addition, the Health Board spent £0.154 million on ICT staff outside the direct management of the main IM&T departments. This was 3.8 per cent of total ICT expenditure, which is below the all-Wales average of 9.9 per cent. Technical staff within other departments account for all of this spend.
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, 12 out of 45 (27 per cent) doctors responded positively, compared with an all-Wales average of 31 per cent. 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**

|   | <b>This Health Board</b> | <b>All-Wales</b> |
|---|--------------------------|------------------|
| This Health Board is currently making good use of the IT facilities it has.                           | 18.6                     | 24.2             |
| The development of IT systems in this Health Board has improved patient care.                         | 47.5                     | 46.8             |
| The IT in this Health Board is better than the IT in other health boards that I have personally seen. | 12.1                     | 20.7             |

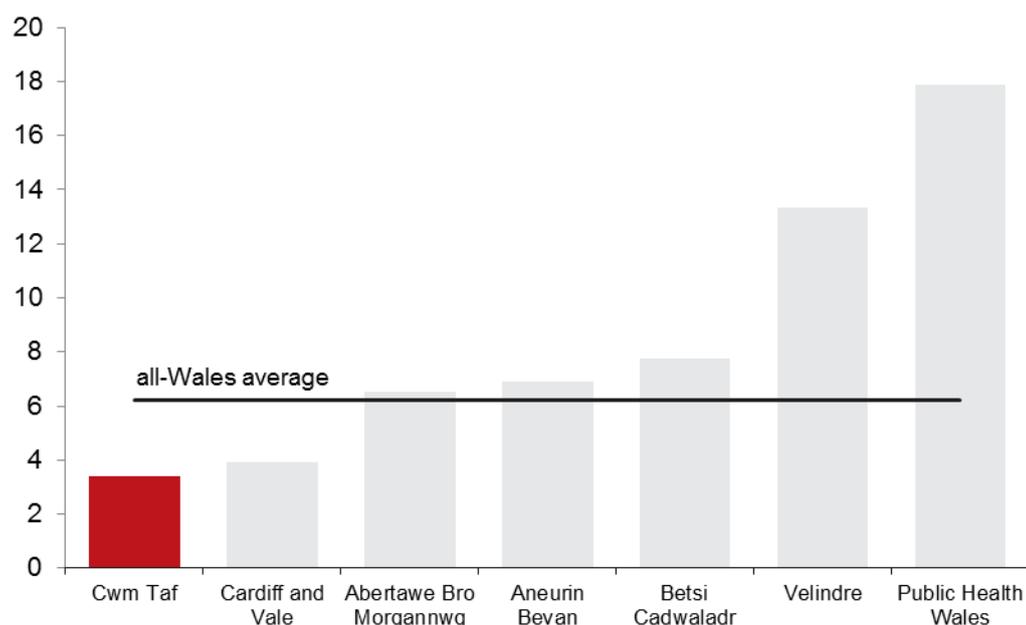
Source: Wales Audit Office survey

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## The Health Board has the lowest number of devices although accessing PCs is generally less problematic than the rest of Wales

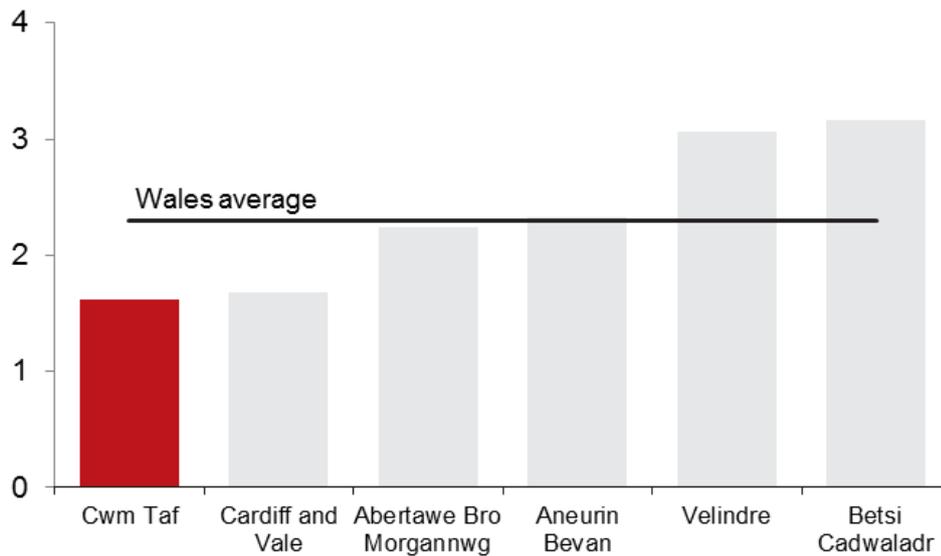
**29.** In order for staff to be able to access clinical information systems, it is important that there is a good level of devices (PCs, terminals etc) available in clinical areas. Across Wales, we reviewed the number of devices standardised per WTE doctor and WTE nurse ([Exhibits 13 and 14](#)). The Health Board has the fewest devices per staff member across Wales.

**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 less favourable than the all-Wales position for medical staff on the wards, although access to computers for medical staff in outpatient rooms and offices is better than the all-Wales position (Exhibit 15).

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

|                     | Medical staff     |           | Nursing staff     |           |
|---------------------|-------------------|-----------|-------------------|-----------|
|                     | This health board | All Wales | This health Board | All Wales |
| On the ward         | 61                | 57        | 41                | 48        |
| In outpatient rooms | 6                 | 20        |                   |           |
| In the office       | 16                | 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 21 per cent of staff did not have access to certain clinical information systems but felt it would be useful if they did. This compared more favourably than the profile across Wales, where the figure was 24 per cent of all nursing staff surveyed. One 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.** Systems that were identified as the most problematic included those serving pharmacy and social care. Twenty-two out of 62 (35 per cent) 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 condition of ICT equipment and the reliability of systems appears typical of Wales although records for managing downtime are incomplete

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 nine out of 43 (21 per cent) doctors and 24 out of 106 (23 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. Additionally, a smaller proportion of doctors at the Health Board reported experiencing computer downtime in outpatient clinics or in offices. This compares more favourably than 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         | 21                | 24        | 23                | 28        |
| In outpatient rooms | 11                | 20        |                   |           |
| In the office       | 10                | 19        |                   |           |

Source: Wales Audit Office survey

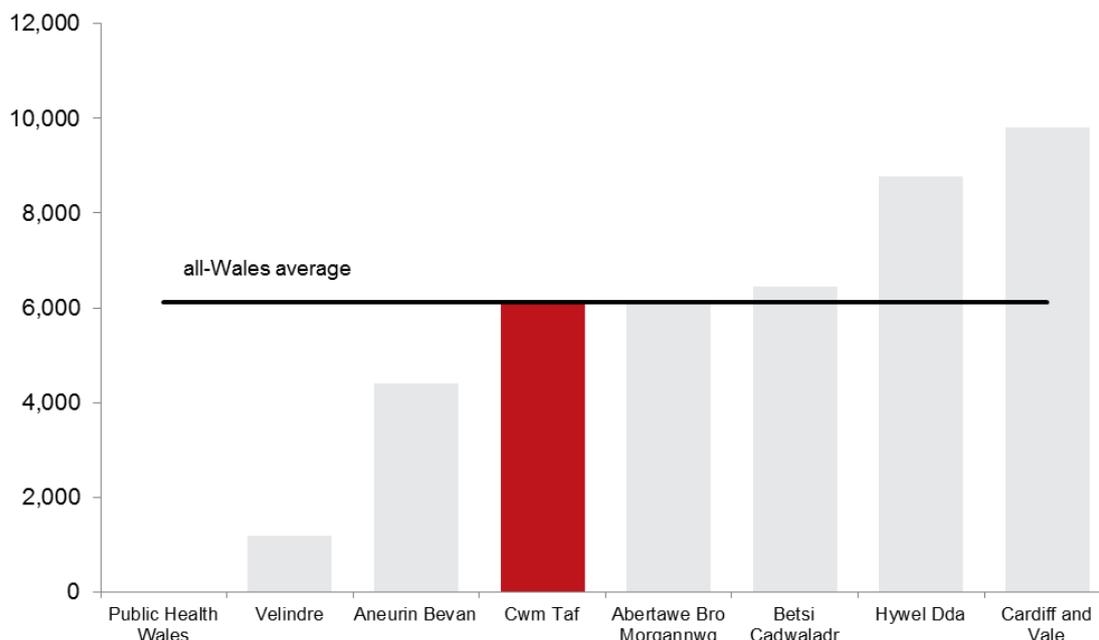
35. To monitor the extent to which the clinical information systems are not available for use, health boards and trusts should be maintaining a record of planned and unplanned downtime. The Health Board was able to confirm that there were records in relation to downtime due to:
- Software failure– complete records for the core PAS and clinical portal, and for A&E and Pathology systems. Partial records were also in place for pharmacy and radiology systems.
  - Network failure that would affect the running of clinical information systems – complete records for the clinical portal and pathology system. Partial records for core PAS, A&E, maternity, pharmacy and radiology systems.
  - Server failure that would affect the running of clinical information systems – complete records for the core PAS and clinical portal, A&E and Pathology systems. Partial records for pharmacy, radiology and maternity systems.

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- 36.** The Health Board reported having no software failure records for its maternity, cancer; theatres, community and mental health systems. Across its remaining systems, four occasions of planned downtime and seven occasions of unplanned downtime were recorded in 2013-14. (Any downtime of the clinical portal is excluded because the Health Board provided no information for this system). The amount of recorded unplanned downtime was a total of nine hours across pathology, A&E, and core PAS. We are unable to provide a comparison of unplanned downtime across Wales due to the incompleteness of downtime records at other health boards.
- 37.** The age of equipment can be a major contributory factor in relation to system failures and downtime. Where information was available, the Health Board reported that the average age of equipment ranges between four years for servers and 15 years for telecoms equipment. For all equipment types, the Health Board runs newer equipment than the average age at health boards across Wales.
- 38.** As part of our work, we have captured the extent to which existing ICT equipment is classed as 'out of life'<sup>8</sup>. 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 all-Wales average at £6.1 million ([Exhibit 17](#)).

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<sup>8</sup> 'Out-of life' is defined as being beyond its useful life and economic repair.

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



Source: NHS submissions to Welsh Government

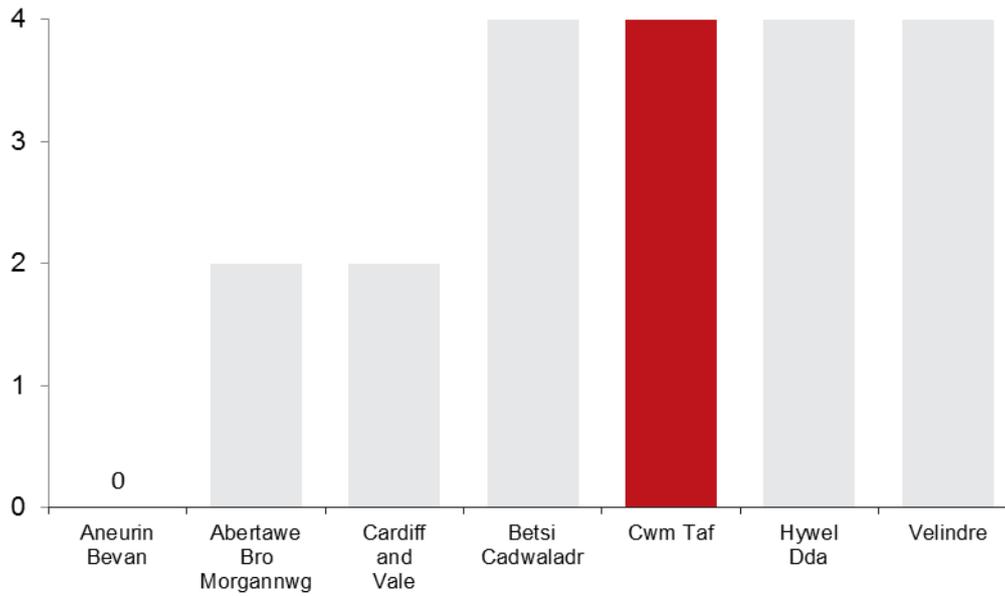
## There are good arrangements for training which support proficiency in the use of systems and the quality of the information contained on them

39. 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.
40. 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.
41. The nursing staff survey suggests that delays are perceived in the receipt of training at all health boards. At this Health Board, 46 out of 91 (51 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'. Across Wales, 60 per cent of nurses disagreed with the statement.

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42. The average length of training on the hospital's PAS is two hours, ranging between one hour for doctors and clinical directors to three hours for medical secretaries and ward clerks. The Health Board did not confirm training duration for scientific, therapeutic and technical staff. In Wales, the average duration of training across all three staff groups is just below four hours. Our medical staff survey identified that 33 out of 43 (77 per cent) doctors felt confident that they were proficient in using the Health Board IT systems that they needed to use. This was the second most positive response across Wales where the average was 70 per cent.
43. When asked, the Health Board reported that refresher training for data protection and Caldicott requirements was mandatory for all staff. Across Wales, data protection and Caldicott training is mandatory at all health boards except for one. The Health Board is the only one in Wales to provide mandatory data quality training. In our medical staff survey, 22 out of 42 (52 per cent) doctors said that they could rely on the information contained in the clinical systems, matching the average response across Wales. Eighteen out of 40 (45 per cent) doctors said that the information on the IT systems is accurate. This was just above the all-Wales average of 42 per cent.
44. 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](#)).

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

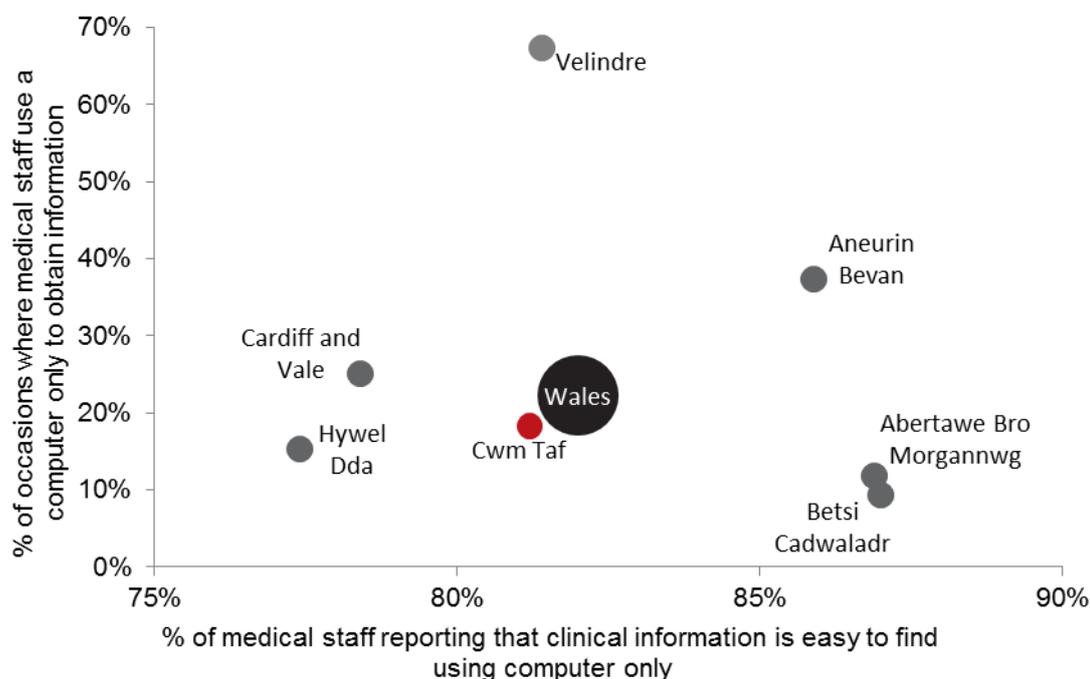


Source: Wales Audit Office survey

## The mainstream clinical ICT systems are not fully effective in supporting doctors to provide patient care

45. 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.
46. 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 just below the Wales average, with an average of eight out of 45 (18 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 just below the Wales average (Exhibit 19). Half of the doctors reported that they use paper only. This was the second-highest reported level of reliance on paper across Wales, where the average was 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

47. The sample of doctors who responded to our survey at the Health Board identified that they were more likely than their colleagues across Wales to use a computer for the review of diagnostic services (investigations requested, laboratory test results and radiology reports). The majority of information-gathering clinical tasks conducted by doctors at the Health Board showed a high level of sole reliance on paper compared to the rest of Wales ([Exhibit 20](#)).

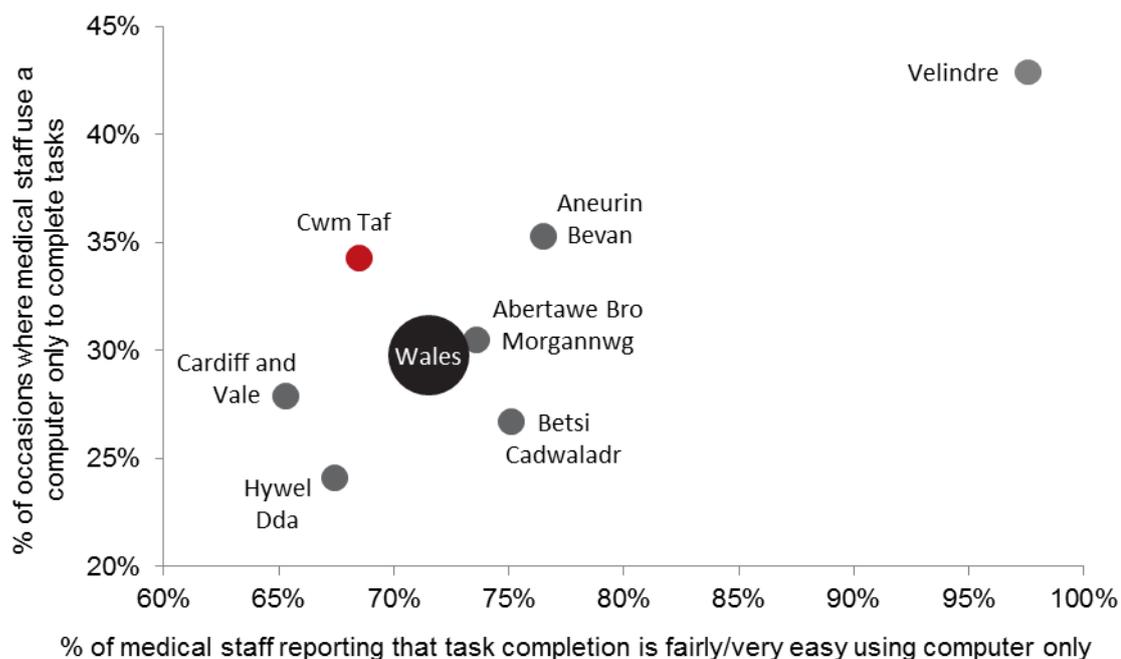
**Exhibit 20: Proportion of doctors using paper only and computer only to obtain clinical information**

|                          | Computer use only |           | Paper records only |           |
|--------------------------|-------------------|-----------|--------------------|-----------|
|                          | This Health Board | All Wales | This Health Board  | All Wales |
| GP referral              | 2.4               | 8.1       | 76.2               | 63.5      |
| Diagnosis                | 6.8               | 8.9       | 61.4               | 37.1      |
| A&E attendance           | 10.5              | 21.3      | 68.4               | 42.5      |
| Outpatient appointment   | 14.0              | 26.2      | 48.8               | 26.7      |
| Episode history          | 9.3               | 16.2      | 60.5               | 38.8      |
| Clinical history         | 4.7               | 7.9       | 67.4               | 46.2      |
| Investigations requested | 29.5              | 24.9      | 13.6               | 17.1      |
| Laboratory test results  | 48.8              | 46.7      | 2.3                | 2.4       |
| Radiology report         | 53.5              | 49.6      | 4.7                | 3.4       |
| Procedure                | 2.9               | 10.8      | 54.3               | 42.2      |
| Therapy referral         | 15.4              | 16.4      | 61.5               | 38.6      |
| Therapy session          | 7.9               | 13.7      | 68.4               | 49.1      |

Source: Wales Audit Office survey

48. In contrast to information tasks, 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 exceeds the all-Wales average. 15 out of 45 (34 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 relatively low ([Exhibit 21](#)). 22 out of 45 (49 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

49. 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 and 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 | 13.2              | 11.6      | 65.8               | 60.1      |
| Clerk the patient on admission               | 19.4              | 5.5       | 58.3               | 75.3      |
| Order laboratory tests                       | 30.8              | 6.7       | 28.2               | 74.5      |
| Order a radiology investigation              | 5.0               | 2.9       | 85.0               | 86        |
| Write a prescription                         | None              | 0.2       | 95.0               | 92.9      |
| Write an operation note                      | 44.4              | 21.9      | 44.4               | 58.3      |
| Refer a patient to another consultant's team | 2.6               | 2.5       | 79.5               | 71.4      |
| Refer a patient to a non-medical clinician   | None              | 2.4       | 71.1               | 67.2      |
| Prepare a discharge letter                   | 13.5              | 25        | 45.9               | 36        |
| Check a hospital clinical guideline          | 78.6              | 72.6      | None               | 3.4       |
| Access evidence based literature             | 88.6              | 88.3      | None               | 0.7       |
| Access public health information             | 86.0              | 87.3      | None               | 0.8       |

Source: Wales Audit Office survey

50. Our medical staff survey also identified that 14 out of 45 (31 per cent) doctors reported using applications developed personally in-house to meet needs such as NCEPOD or royal college logbooks. This is below the all-Wales average of 43 per cent and the lowest in Wales. Of the 14 doctors using these applications, four (29 per cent) reported using the applications on a daily or weekly basis.

# Appendix 1

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## 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 the Health Board was submitted on 18 September 2014 and revised on 24 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 the Health Board this included Prince Charles Hospital and Royal Glamorgan Hospital. The survey was issued electronically on 25 September 2014. A reminder was issued on 3 November 2014. Responses were received from 45 medical staff in the 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 the Health Board this included Prince Charles Hospital and Royal Glamorgan Hospital. The survey was issued electronically on 29 September 2014. A reminder was issued on 25 November 2014. Responses were received from 112 nursing staff in the 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?<br>A: There is a strategy and evidence that it is supported by staff<br>B: There is a strategy, but no evidence that it is supported by staff<br>C: There is a strategy, but it is out of date<br>D: There is evidence a strategy is being developed<br>E: There is no strategy written/produced post April 2011 | 2<br>1.5<br>1<br>0.5<br>0 |
| Has the ICT strategy or new ICT developments been discussed at Board level meetings during the last 12 months?<br>A: Yes<br>B: No   | 2<br>0                    |
| Does the Health Board/Trust have an ICT steering group with a Board member?<br>A: Yes<br>B: No<br>C: No ICT steering group  | 1<br>0<br>0               |
| Does the Health Board/Trust's ICT steering group have clinical members?<br>A: Yes<br>B: No<br>C: No ICT steering group  | 1<br>0<br>0               |
| Has the ICT strategy or new ICT developments been on the agenda of executive level meetings during the last 12 months?<br>A: Yes<br>B: No   | 2<br>0                    |
| Is the ICT lead a member of the Executive Management team (i.e. the team that reports directly to the Chief Executive)?<br>A: Yes<br>B: No, but the ICT lead reports directly to someone on the management team<br>C: No and the ICT lead does not report to someone on the management team   | 3<br>1<br>0               |
| How co-ordinated are IT and Information?<br>A: They are in the same department<br>B: They are managed separately but report to the same director<br>C: They are managed separately and report to different directors  | 2<br>1<br>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?<br>A: Clinical champions have been identified and lead the change<br>B: Active clinical support eg representation on working groups<br>C: Minimal involvement eg some attendance at meetings<br>D: Planned clinical involvement<br>E: None | 3<br>2<br>1<br>1<br>0 |
| Does the Health Board/Trust have an inventory of its technical infrastructure?<br>A: Yes<br>B: No, but one is currently being collated<br>C: No   | 1<br>0.5<br>0         |
| Does the Health Board/Trust have a documented ICT benefits management programme?<br>A: Yes, currently in use<br>B: Yes, at earlier stage in the development of the Health Board's systems<br>C: No, but one is currently being developed<br>D: No   | 3<br>2<br>1<br>0      |
| To what extent is the ICT lead involved in Clinical Governance?<br>A: Works jointly on some projects<br>B: Regularly supplies the Clinical Governance department with information<br>C: Attends relevant meetings<br>D: Not involved  | 3<br>2<br>1<br>0      |
| Does the trust have a clinical ICT user group?<br>A: Yes<br>B: No   | 2<br>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?<br>A: Yes<br>B: No   | 2<br>0                |

## Appendix 3

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### 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.

Blood requests on WCP has too many screens to go through when printing the blood forms. Printers can be unreliable and slow. The log out time from WCP in clinic is too short.

Citrix frequently crashes and very slow.

Clinical portal is too slow and cumbersome - it takes far longer to request laboratory tests on there than it does to write the forms. Microbiology results are only put on there when they are complete, so we have no way of accessing microscopy for example until cultures/sensitivities are done. Lots of other test results are not available on there and have to be chased if they are not in the nopes - such as echo/exercise ECG, lung function tests, endoscopy reports.

Computers often break and IT support to come and fix them is very slow. IT phone help number is pointless as they just tell you to log a job online.

Electronic discharge needed. ECHO reports should be available to all clinical personnel

I have an IGEL computer which does not allow me to access information on a USB I have tried to resolve the issue of access to software programmes for clinical practice but I am still unable to access the programme which has been a hindrance.

In Psychiatry, we are using FACE and SWIFT, so there is no single electronic record for each patient. This is not the case with other health boards. This is extremely concerning and has been highlighted numerous times as resulting in loss of continuity and increasing patient risk.

Internet and line speed remains poor. Systems should facilitate an enhanced experience for patient and doctor not interfere with consultation. Paper test requesting is 3-4 times faster than electronic and will reduce efficiency and potentially capacity of clinic. Computers should not have default of being "locked out" when someone forgets to log out. Remote IT helpdesk not as helpful as previous telephone support. IT support to become less visible and accessible.

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IT is vastly under developed. RADIS is under resourced and no longer fit for purpose. It is poorly integrated across the Health Board and does not have remote order entry, something I had as a medical student in the 1970's. It should have decision support at the point of requesting. G2 the speech engine we use is poor and does not learn and is far short of the market leading systems. Its inaccuracy leads to inefficiency and error. The remote services - teleradiology are flaky and often fail. Remote laptops require in house synchronisation which runs out very quickly. Remote synchronisation should be developed. We still print masses of paper reports for distribution in an era when the standard should be universally electronic. We do not have an alert notification system which is really required in order to comply with NPSA safety notice regarding communication of critical, urgent and unexpected findings. From the point of view of educational and reference resource, key radiology sites are blocked (timewasting; shopping). There is a big opportunity to move forwards with efficiency and modernisation of working practice in radiology with development of IT systems.

Just started to use the e expense form. so struggling a bit as there is very less time to update my miles history. may be will get used to it soon.

My work involves checking several web sites at the same time, and also writing pathology reports. My PC is 11 years old and frequently crashes and is slow. I am only offered an igel as a replacement but my nature of work needs me to take photos for mds and discussions with clinicians.: cancer resection margins etc Igel's are not compatible with the camera system that we have. This applies to 6 consultants in the department.

Poor compared to other health boards. I'm unaware if there is a clinical lead for developing IT systems in this health board / or a clinical representative to cover this area.

Publicising number to call if there are IT problems would help solve issues quickly. Logging in through a computer slows work down too much and so often people don't do it and things are never sorted out.

The intranet page is incredibly difficult to navigate and a lot of the important documents are hidden/not organised in any sort of logical order. In ABMU there is a part of the website which is called 'COIN' (clinical online information network) which has very useful clinical guidelines for managing patients. It would be good if the Cwm Taf Cwm Taf site was organised and had a similar area. The frustration and delay that the disorganisation of the site causes is immense.

Very poor support when there is a problem. Hugely out of date IT equipment that is never updated. little engagement with clinicians from IT when trying to develop services.

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