Bwrdd Iechyd Prifysgol Hywel Dda University Health Board

TÎM CYFARWYDDWYR
EXECUTIVE TEAM

DYDDIAD Y CYFARFOD: **DATE OF MEETING:**	05 August 2024
TEITL YR ADRODDIAD: **TITLE OF REPORT:**	Digital Cellular Pathology Business Justification Case Supporting Paper
CYFARWYDDWR ARWEINIOL: **LEAD DIRECTOR:**	Huw Thomas, Executive Director of Finance
SWYDDOG ADRODD: **REPORTING OFFICER:**	Craig Baker, Cellular Pathology & Mortuary Service Manager Dylan Jones, Head of Pathology

Pwrpas yr Adroddiad (dewiswch fel yn addas) **Purpose of the Report** (select as appropriate)
Ar Gyfer Penderfyniad/For Decision

ADRODDIAD SCAA
SBAR REPORT

Sefyllfa / Situation

The Cellular Pathology service in Wales is facing significant challenges, including difficulty in attracting and retaining skilled professionals, growing demand, and a backlog of activity due to the pandemic. There is a risk of falling behind the rest of the UK, where digitisation of Cellular Pathology services is already underway.

Within the Health Board these challenges are amplified. The inability to recruit has left the service in a critical and vulnerable situation. Without investment into the digital solution the ability to recruit will become almost impossible, which will inevitably lead to service collapse.

Digitisation of Cellular Pathology will be transformational to the way the service will be delivered in the future. It introduces a new era of efficiency and accuracy in diagnostic processes. With digital pathology, images can be easily shared and analysed, allowing for remote diagnostics and consultations.

The integration of artificial intelligence with digital pathology can further enhance the capabilities of pathologists by providing tools for image analysis and pattern recognition, which can support complex diagnostic decisions.

It’s a step towards a more resilient healthcare system that can adapt to future challenges and continue to provide high-quality patient care.

Cefndir / Background

Digitisation of Cellular Pathology services, including the adoption of AI and computational pathology, is the only realistic option for delivering a robust and sustainable diagnostic Cellular Pathology service.

There have been significant advancements in the field of Cellular Pathology, with digitisation at the heart of future resilience of the service across Wales. In particular, the ability to scan histological material for primary diagnosis would bring the ability to report remotely, and with it, collaborative solutions for addressing the demand and capacity issues.

Artificial Intelligence (AI) will improve the accuracy, reliability and quality of reports, which will support the workforce and alleviate some concerns around recruitment and retention.

Since 2016 the Cellular Pathology service at Hywel Dda has been unable to recruit into the 5/6 consultant pathologist vacancies leading us to have to utilise high-cost locums and overseas (CESR) doctors.

Currently we are budgeted for 8.26 WTE Consultant Pathologists however we only have 2 substantive consultants in post. We have 2 CESR doctors on locum consultant contracts and 1 high-cost locum consultant.

Our two substantive consultants are both of retirement age, one of which has recently retired and return in March 24.

Without the introduction of a comprehensive digital solution for Cell Pathology the ability to attract, train and develop new consultant staff required for reporting will be very difficult with clinicians in the future being largely trained on digital platforms.

The service has recently adopted digital scanning on a relatively small scale and has started to introduce AI to support Prostate Core Biopsy reporting. The benefits of digital in terms of performance can be demonstrated with improved turnaround time for Gynae, lymphoma and prostate cases, speeding up the time to diagnosis in these cases.

The introduction of digital in Wales and Hywel Dda has demonstrated the proof of concept, but there is a clear need for expansion of these capabilities both to mitigate the increasing demand on Cellular Pathology services and also ensure that Health Board is able to attract the clinicians of the future.

Asesiad / Assessment

Case for Change

Traditional Cellular Pathology services in Wales make a major contribution in many disease pathways, most significantly the early detection, diagnosis, staging and monitoring of cancer. Currently Cellular Pathology laboratories produce microscope slides from tissue samples sent for analysis from patients in surgical/outpatient settings. Consultant Cellular pathologists

subsequently make their diagnoses by evaluating microscope slide preparations using a light microscope.

Due to increasing complexity in diagnosis, sub-specialisation has become the norm. Increasing sub-specialisation within Cellular Pathology often requires an external second opinion to be obtained – this currently requires microscope slides to be physically sent for external review. The consequence of this is significant time delays (and costs) transporting slides by courier/post for expert review, and further time delays in receiving reviewed case reports.

Demand and Capacity

Pathology services in Wales processed more than 1 million slides in 2022/2023. It is anticipated that factors such as the Recovery Plans outlined in the NHS Planning Framework 2023-2026 will mean that activity continues to increase. Forecast activity analysis suggests that by 2025/26 the service will be processing approximately 1.5 million slides. The recent and forecast growth in demand is compounded by the increasing complexity of the workload including:

- The most urgent specimens making an increasing percentage of specimens in most Health Boards.
- The number of specimens per case is generally increasing and increasing number of tests are needed for many specimens.

This is impacting on the service's ability to achieve target turnaround times for specimens of 7 days for Urgent Suspected Cancer (USC), 14 days for urgent and 28 days for routine specimens. Target time breaches have increased across the board during 2022, with the percentage of USC and routine specimens processed within target time having decreased in recent years. Prioritising urgent specimens to meet cancer and screening targets has a significant impact on routine specimens.

Workforce

It is widely recognised that there is a shortage of diagnostics professionals across the UK, and this is particularly evident in the Pathology service in NHS Wales. The Royal College of Pathologists published 'Briefing: The pathology workforce in Wales' in June 2019 and the 'Royal College of Pathologists' Priorities for Wales' in March 2021. Both papers outlined the workforce challenges and highlighted the need to invest in the workforce for patients and to achieve the Welsh Government's commitment to earlier cancer diagnosis. NHS Wales Executive modelling in 2022 showed a capacity gap of 25% in West Wales for Cellular Pathology, with only 2 substantive Cellular Pathology consultants in HDUHB and a requirement for 9 to satisfy current levels of service.

Finance

Each Health Board is required to commit to the following non-recurring and recurring funding to enable procurement of the new digital solution.

Table 1 Indicative Revenue Costings

		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	
		2025/26 £'000	2026/27 £'000	2027/28 £'000	2028/29 £'000	2029/30 £'000	2030/31 £'000	2031/32 £'000	2032/33 £'000	2033/34 £'000	2034/35 £'000	Total £'000
Project Team (non-recurring)		101	101	50								251
DHCW Support (non recurring)		34	34	34								101
20% Contingency		27	27	17								71
Non-recurring revenue costs		**161**	**161**	**101**	-	-	-	-	-	-	-	**423**
Project Team (recurring - contract manager)		57	57	57	57	57	57	57	57	57	57	574
Solution Costs (recurring)		28	3,336	3,103	3,172	3,251	3,333	3,418	3,493	2,525	2,525	28,184
Health Board Additional Staff (recurring)		263	525	525	491	491	491	491	491	491	491	4,749
DHCW Support (recurring)		86	86	86	86	86	86	86	86	86	86	864
Recurring revenue costs		**434**	**4,005**	**3,772**	**3,807**	**3,886**	**3,967**	**4,053**	**4,127**	**3,160**	**3,160**	**34,371**
Total costs		**595**	**4,167**	**3,873**	**3,807**	**3,886**	**3,967**	**4,053**	**4,127**	**3,160**	**3,160**	**34,795**

		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	
	Apportionment	2025/26 £'000	2026/27 £'000	2027/28 £'000	2028/29 £'000	2029/30 £'000	2030/31 £'000	2031/32 £'000	2032/33 £'000	2033/34 £'000	2034/35 £'000	Total £'000
ABUHB	16.32%	72	656	618	623	636	650	664	676	518	518	5,631
BCUHB	17.18%	72	685	645	651	664	678	693	706	540	540	5,874
CTMUHB	11.42%	71	493	466	468	477	487	496	505	394	394	4,251
CVUHB	24.53%	75	930	873	884	903	923	944	963	725	725	7,945
HDUHB	12.96%	71	544	514	517	527	538	549	558	433	433	4,684
SBUHB	17.58%	73	698	657	663	677	692	707	720	550	550	5,986
Total Recurring Revenue Costs	**100.00%**	**434**	**4,005**	**3,772**	**3,807**	**3,886**	**3,967**	**4,053**	**4,127**	**3,160**	**3,160**	**34,371**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	
	2025/26 £'000	2026/27 £'000	2027/28 £'000	2028/29 £'000	2029/30 £'000	2030/31 £'000	2031/32 £'000	2032/33 £'000	2033/34 £'000	2034/35 £'000	Total £'000
ABUHB	27	27	17								71
BCUHB	27	27	17								71
CTMUHB	27	27	17								71
CVUHB	27	27	17								71
HDUHB	27	27	17								71
SBUHB	27	27	17								71
Total Non-Recurring Revenue Costs	**161**	**161**	**101**	-	-	-	-	-			**423**

Benefits of the National Programme

The investment will deliver a wide range of benefits, including the ability to keep pace with the rest of the UK, attract and retain highly skilled staff, and address growing capacity gaps. Productivity gains from a more streamlined workflow will save staff time and reduce the risk of increased activity needing to be outsourced or covered by expensive temporary staffing.

The benefits of adopting digitised Cellular Pathology include:

- Sustainable, equitable, and future proofed Cellular Pathology services for Hywel Dda University Health Board and across NHS Wales
- Ability to report nationally across Health Board boundaries to realise the Programme ethos of any Consultant, reporting any case, from any location.
- National image sharing
- Improvement in attractiveness of service for recruitment and retaining of staff.
- AI and computational Pathology can be utilised to support the Pathologists and improve the quality and efficiency of clinical diagnosis.
- Supports delivery of Single Cancer Pathway targets as detailed in ‘A Cancer Improvement Plan for NHS Wales 2023-2026’.
- Improved quality and drive innovation through AI and computational Pathology
- The sharing of specialist clinical resource/expertise through improved digital networking of services in Wales progressing towards a proposed national network of Cellular Pathologists. Stopping the need for physically posting cases around the country.

- Greatly improved rapid access to different specialities as already demonstrated by referral of digitalised lymphoma cases between HDUHB and SBUHB and digitally supporting MDTs for national screening services such as cervical cytology from a remote site.
- Improve patient care through the use of a national digitalised network, facilitating quicker second opinions and facilitate cross boundary working.
- Improved MDT preparation by eliminating time spent collating cases for MDT review also saving laboratory staff time retrieving slides from file storage and re-filing following review.
- Enable Pathologists to interact easier with colleague's e.g. virtual multi- disciplinary team meetings and virtual review of cases online.
- Improvements in education, training (both in class and virtual) and for presenting at MDTs, tumour boards, audit etc.
- Aligned to international direction of travel for the service.
- Heat mapping and annotation of images will assist with identifying areas for molecular genetics improving precision medicine.

Reduce risks associated with HTA regulations on slide storage.

Benefits Specific to Hywel Dda University Health Board

<u>Workforce</u>

As mentioned above, Hywel Dda's Cellular Pathology consultant workforce is incredibly fragile with only 2 substantives, both of whom are of retirement age and 5/6 long standing vacancies. The result of this is a Cellular Pathology service that is at serious risk of collapse.

By implementing and expanding the use of digital technology it will allow us to recruit differently. Digitalisation of the Cellular Pathology service will allow us to significantly increase our potential pool of candidates to the rest of Wales, the UK, and even worldwide.

Traditionally we have recruited consultants who are local to the area or who are relocating back to Wales due to ties to the area. By utilising digital technology, it provides us the opportunity and possibility to recruit consultants without them having to relocate to Hywel Dda's locality. This recruitment model has been seen in England where NHS trusts have recruited consultants from countries such as Spain and the Netherlands, however these consultant's report digitally and remotely and therefore do not need to relocate from their countries of origin.

Having the opportunity to recruit differently through the use of digital technology will significantly improve and expand our recruitment possibilities and help address the significant risk of service collapse due to the vacancies and recruitment challenges we are experiencing.

Due to the subspecialisation of consultants within the discipline, this too means that consultants are opting to work remotely as they often work for numerous health boards and trusts reporting specific tissue/disease types e.g. Sarcoma. This has been seen within Welsh health boards where a consultant is employed by one health board e.g. Betsi Cadwaladr, however as they are subspecialised and report Sarcoma, they undertake reporting sessions for a neighbouring health board such as Swansea Bay.

This way of working allows for experts in their field the ability to report on complex diagnosis and therefore minimise and mitigate the need for second opinions and referrals. This means that patients can receive a faster diagnosis, a faster pathway to treatment, and ultimately improve the chance of a better patient outcome.

Digitalisation of the Cellular Pathology service will also help to facilitate the implementation and training of different skill mixed staff. With the national consultant pathologist shortages, the development and utilisation of Consultant Biomedical Scientists is growing rapidly. Having the ability to digitally scan all histology cases will aid in the development of a Consultant Biomedical Scientist workforce, reducing our reliance on a consultant pathologist workforce that is becoming smaller and smaller. It will also facilitate any newly qualified consultant pathologists that we are able to recruit as a lot of their training under the Royal Collage of Pathologists is now delivered differently and via digital rather than the traditional microscope.

Productivity

With the minimal digitalisation of our current Cellular Pathology service, we have been able to deliver fantastic improvements in diagnostic turnaround times for tissue types such as Lymphoma, whilst also reducing turnaround times for regional MDT's such as Colposcopy and Gynae.

Below is a table that demonstrates the reduction in turnaround times achieved to date due to the implementation and use of digital technology.

	AWLP turnaround times (days)	CSW MDT time saved (days)	Gynae MDT time saved (days)
Original	11.9	5	2
Stage 1	10.1	<1	1
Stage 2	6.04		

However, with the implementation of a fully digital Cellular Pathology Service we would aim to deliver a reduction in turnaround times for all tissue types.

Utilising digital technology will also revolutionise second opinions. No longer will glass slides have to be packages up and sent via post, meaning long delays. With a fully digital Cellular Pathology service, second opinions can be sought from subject matter experts anywhere in the world with a click of a button and the ability to view digital images.

Cost Mitigation & Savings

The implementation of digital technology and a fully digital Cellular Pathology service will as described above change the way that we can recruit as a service. This will enable us to recruit into long standing vacancies and will mitigate the need for very expensive high-cost agency locums. By filling long standing vacancies it will also allow us to create a more resilient and

sustainable service that is not on the edge of total service collapse, mitigating the requirement to outsource work at the cost of millions of pounds.

Recruiting differently using digital technology will enable us to release the high-cost agency locum who currently costs in the region of £335,000 per annum and replace him with a substantive consultant pathologist at a significantly lower rate of approximately £150,000 per annum. This would save in the region of £185,000.

Due to the significant number of vacancies within the consultant pathologist workforce, we are having to insource excess workload demand (ILOL's) at a rate of approximately £327,000 (23/24). With the utilisation of digital technology, it will allow us to recruit into our long-standing vacancies, mitigating the requirement of ILOL sessions.

If we were able to recruit an additional substantive consultant, it would significantly lower the requirement of ILOL sessions and potentially have a saving value of approximately £177,000.

Potential Cost mitigation savings through the utilisation of digital technology to recruit consultant pathologists is demonstrated below.

	Current Expenditure (per annum)	**Future Expenditure with Digital Implementation**	**Potential Savings**	**Cost to outsource current ILOL sessions. (24/25 costings)**
High-Cost Agency Locum Consultant Pathologist	£335,000	£150,000	£185,000	
ILOL Sessions	£327,000	£150,000	£177,000	£1,285,960
Reduction in additional tests (IHC) and 2nd opinions due to efficiencies realised with further AI implementation (Breast, Gastric, General)			£140,000	
Total			**£502,000**	

Positives of Digital technology - Case study example

With the minimal implementation of digital technology within the current Cellular Pathology service, we have already had numerous cases where the utilisation of digital technology has significantly improved the care received by the patients.

An example of this is where a patient with prostate cancer had a biopsy taken and was waiting to be discussed at the regional MDT so that their diagnosis could be confirmed, treatment to be decided upon, and treatment to commence.

Traditionally the case would have had to be packaged up and sent via mail to the consultant pathologist in Swansea Bay who was participating in the MDT. Due to the time that this process takes, this would have resulted in the patient missing the MDT and having to be rolled over to the following week's MDT. This would have meant a delay in definitive diagnosis, delay in discussion at MDT, delay in treatment commencement and ultimately the potential of a poorer patient experience and outcome.

However, with the utilisation of digital technology, we were able to scan the patient's case and send it to the Consultant within Swansea Bay, who was then able to report the case, discuss the patient at MDT, and ultimately the patient was able to start treatment a whole week earlier than would have been possible without the utilisation of digital technology. The use of this technology can significantly improve both patient experience and outcome.

As demonstrated above there is a significant benefit to patients that cannot have a numerical value assigned to it. By implementing digital technology, it will improve patient experience and outcome as supported above in the case study example.

The utilisation of digital technology and AI will also provide a productivity benefit. With the utilisation of AI for the reporting or Prostate core cases, we have seen as reduced requirement for additional tests such as the use of Immunohistochemistry (IHC) in order to make a definitive diagnosis. This speeds up the diagnostic process, allowing the patients to start treatment earlier and therefore improves the potential patient outcome. It also provides a further productivity benefit as it reduces the requirement of second opinions and referrals to other health boards or specialist centres which can be costly.

Risks of not pursing Digital Cellular Pathology

Workforce

Without the implementation of digital technology, Cellular Pathology will continue to have numerous long-standing vacancies, will continue to be unable to recruit, and will continue to be at serious risk of complete service collapse.

If the service were to collapse, then to outsource the current service provided by consultant pathologists would cost up to approx. **£4.45 million** based on average outsourcing costs and workload data for 24/25.

Outsourcing Requirement	Outsourcing Costs
Outsourcing Microscopic Reporting	£2,810,600
Outsourcing Microscopic Reporting and Consultant grade Macroscopic Dissection	£4,444,400

Without the implementation of digital technology, we will be unable to train Consultant Biomedical Scientists and will be unable to facilitate newly qualified digitally trained consultant pathologists.

Without the digitalisation of Hywel Dda's Cellular Pathology service we will fall behind other health boards in Wales, some of whom have already approved the National Digital Business Justification Case for Cellular Pathology.

We will also fall behind other Cellular Pathology services in NHS England and rest of UK who have already begun to implement digital technology as a key component of their Cellular Pathology Services and are already experiencing the benefits and positives that it delivers.

Argymhelliad / Recommendation

Approval is sought to undertake full procurement of the new digital solution and commitment to provide funding of approx. £500,000 per annum. This cost will be offset by savings achieved through productivity and efficiency increases realised through the systems implementation, therefore making this solution cost neutral to the health board (£0).

Amcanion: (rhaid cwblhau) **Objectives: (must be completed)**	
Committee ToR Reference: Cyfeirnod Cylch Gorchwyl y Pwyllgor:	
Cyfeirnod Cofrestr Risg Datix a Sgôr Cyfredol: Datix Risk Register Reference and Score:	
Parthau Ansawdd: Domains of Quality Quality and Engagement Act (sharepoint.com)	Choose an item. Choose an item. Choose an item. Choose an item.
Galluogwyr Ansawdd: Enablers of Quality: Quality and Engagement Act (sharepoint.com)	Choose an item. Choose an item. Choose an item. Choose an item.

Amcanion Strategol y BIP: UHB Strategic Objectives:	Choose an item. Choose an item. Choose an item. Choose an item.
Amcanion Cynllunio Planning Objectives	Choose an item. Choose an item. Choose an item. Choose an item.
Amcanion Llesiant BIP: UHB Well-being Objectives: Hyperlink to HDdUHB Well-being Objectives Annual Report 2021-2022	Choose an item. Choose an item. Choose an item. Choose an item.

Gwybodaeth Ychwanegol: Further Information:	
Ar sail tystiolaeth: Evidence Base:	
Rhestr Termau: Glossary of Terms:	
Partïon / Pwyllgorau â ymgynhorwyd ymlaen llaw y Tîm Cyfarwyddwyr Parties / Committees consulted prior to Executive Team:	

Effaith: (rhaid cwblhau) Impact: (must be completed)	
Ariannol / Gwerth am Arian: Financial / Service:	e.g. financial impact or capital requirements: (if yes, please complete relevant section of the Integrated Impact Assessment Template available via the link below) Integrated Impact Assessment Template
Ansawdd / Gofal Claf: Quality / Patient Care:	e.g. adverse quality and/or patient care outcomes/impacts: (if yes, please complete relevant section of the Integrated Impact Assessment Template available via the link below) Integrated Impact Assessment Template
Gweithlu: Workforce:	e.g. adverse existing or future staffing impacts: (if yes, please complete relevant section of the Integrated Impact Assessment Template available via the link below) Integrated Impact Assessment Template
Risg: Risk:	e.g. risks identified and plans to mitigate risks: (if yes, please complete relevant section of the Integrated Impact Assessment Template available via the link below) Integrated Impact Assessment Template

Cyfreithiol: **Legal:**	e.g. legal impacts or likelihood of legal challenge: (if yes, please complete relevant section of the Integrated Impact Assessment Template available via the link below) Integrated Impact Assessment Template
Enw Da: **Reputational:**	e.g. potential for political or media interest or public opposition: (if yes, please complete relevant section of the Integrated Impact Assessment Template available via the link below) Integrated Impact Assessment Template
Gyfrinachedd: **Privacy:**	e.g. potential impact on individual's privacy rights or confidentiality and/or the potential for an information security risk due to the way in which information is being used/shared, etc: (if yes, please complete relevant section of the Integrated Impact Assessment Template available via the link below) Integrated Impact Assessment Template
Cydraddoldeb: **Equality:**	e.g. potential negative/positive impacts identified in the Equality Impact Assessment (EqIA) documentation – follow link below • Has EqIA screening been undertaken? Yes/No (if yes, please supply copy, if no please state reason) • Has a full EqIA been undertaken? Yes/No (if yes please supply copy, if no please state reason) Equality Impact Assessment