Bwrdd Iechyd Prifysgol Hywel Dda University Health Board

PWYLLGOR ADNODDAU CYNALIADWY
SUSTAINABLE RESOURCES COMMITTEE

DYDDIAD Y CYFARFOD: DATE OF MEETING:	29 August 2023
TEITL YR ADRODDIAD: TITLE OF REPORT:	Electronic Prescribing and Medicines Administration Pre-implementation Project (ePMA)
CYFARWYDDWR ARWEINIOL: LEAD DIRECTOR:	Huw Thoms, Executive Director of Finance
SWYDDOG ADRODD: REPORTING OFFICER:	Anthony Tracey, Digital Director

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

Hywel Dda University Health Board (HDdUHB) along with all the other health boards and trusts across Wales will be required to adopt and implement an Electronic Prescribing and Medicines Administration Solution (ePMA), which will replace the current paper-based systems. The Welsh Government (WG) requested that Digital Health and Care Wales (DHCW) undertake a national scoping exercise, in addition to developing an All-Wales Commercial Framework of suppliers who could supply such a solution, of which there are now three established suppliers on the framework.

HDdUHB are now required to undertake a procurement exercise to secure a supplier based upon the agreed framework and a locally agreed specification.

In summary:

- A Full Business Case (FBC) for implementation and adoption post procurement will be provided to the Sustainable Resource Committee (SRC) and the Board once supplier costs are known.
- The programme will utilise the All-Wales Commercial Framework and run a local Mini procurement Competition, publishing the HDdUHB specification requirements and to receive responses from the 3 suppliers on that framework should they wish to respond.
- Utilise the responses from the 3 suppliers to refine the FBC to present to HDdUHB governance structures and to WG for investment/funding.

Cefndir / Background

In September 2021, following an independent review, a Ministerial statement was published regarding e-prescribing in Wales. Subsequently, DHCW were mandated by the WG to establish a portfolio to deliver digital medicines transformation across NHS Wales.

The aim of this portfolio is to fully digitalise the electronic prescribing environment across all care settings in Wales, and associated processes to increase efficiency and safety, as described in the recommendations from the Strategic Review on The Future of Electronic Prescribing in Wales, 2021. The portfolio comprises of four elements:

1. Seamless primary care e-prescribing capability

   Establishing a seamless digital communication and sharing of prescription information between prescribing and dispensing systems from GPs and non-medical prescribers to a community pharmacy of choice, including the necessary business change to adopt new ways of working. This capability will be delivered via the Primary Care Electronic Prescription Service (EPS) programme.

2. Seamless secondary care e-prescribing capability

   Procuring and implementing hospital e-prescribing and medicines administration (ePMA) systems across all secondary settings in NHS Wales that build on a set of common open standards and principles that provide end-to-end e-prescribing secondary care capabilities together with interoperability with other care settings in Wales and the Shared Medicines Record. The capability to transfer Outpatient prescriptions electronically to community pharmacists is included. This capability will be delivered via the Secondary Care electronic Prescribing and Medicines Administration (ePMA) programme.

3. Patient Access development

   Provision of a patient application that allows data sharing from GP, community pharmacy and hospital systems to patients. This is to support patients to understand which medicines to take and when, to record their choices, record any problems they are experiencing with medicines, and how and when their medicines are supplied. This capability will be delivered via functionality within the NHS Wales App. The project is working closely with the Digital Services for Patients and the Public programme.

4. Shared Medicines Record

   Provision of a Shared Medicines Record, supported by a centralised medicines repository that allows access to the list of medicines a patient has previously or is currently taking, regardless of where these originated from or are managed, (e.g. GP, homecare, mental health services, over the counter or other source). This will enhance patient safety and streamline the delivery of care, particularly at the interface between primary and secondary care. This capability will be delivered via the Shared Medicines Record Project and where the project is working closely with the National Data Resource Programme.

The Secondary Care e-Prescribing and ePMA Programme, as part of the Digital Medicines Transformation Portfolio (DMTP), has being established to deliver the second element of the wider strategy.

The Welsh Hospital Electronic Prescribing Pharmacy and Medicines Administration (WHEPPMA) Project Board supported the formation of an All-Wales commercial framework for health boards and trusts to use to purchase an ‘approved’ e-prescribing solution. It was agreed at the July 2021 NHS Wales Leadership Board that Digital Health and Care Wales would manage the framework establishment process, whereby suppliers who meet the agreed clinical and technical threshold requirements and standards for an ePMA solution are made available on the framework for health boards and trusts to enter a contractual arrangement with. Suppliers must be able to meet the requirements in relation to the defined data and architecture standards to ensure interoperability. Health boards and trusts will be responsible for the contractual agreement with their preferred ePMA supplier.

When ready, after undertaking local scoping and development of the national software requirement specification to fit local needs health boards can call off services from the

framework (i.e., Mini Competition). Health boards have also had to sign up to a National Minimum Viable Product which meets national requirements.

To ensure the appropriate governance an ePMA Project has been established within the HDdUHB. The current funding for the project, (pre-implementation phase only) is funded through the Digital Priorities Investment Fund (DPIF). The DPIF has committed to fund **only** the resource requirements of local health boards to develop and implement an ePMA solution but will not fund the ongoing revenue and staff required to administrator the solution when in a Business-as-Usual state, this will be required to be covered by the health board.

The timeline dictated by the WG is very ambitious, requiring the scoping, software specification development, FBC, procurement and contracting processes completed by Quarter 4 2024. However, delays in the programme may see a revision to this date.

Asesiad / Assessment

As a result of the ePMA pre-implementation scoping undertaken by a Procurement Subgroup, a core team of Subject Matter Experts have been recruited to undertake the scoping, specification development, and evidence base for the Business Case. This has been overseen by a comprehensive Steering Group, led by a Clinical Lead/Senior Responsible Officer, with members that include senior representatives from Pharmacy, Nursing, and Digital. This programme is also reporting to the Operational Quality, Safety and Experience Sub Committee (OQSESC) for the purposes or assurance and oversight, which has thus far looked favourably on the development of the system and the progress of the programme to date.

A draft Outline Business Case (OBC) has been developed and is included within Appendix 1 for information. However, as ePMA has only been partly implemented in one other health board in Wales to date, the Business Case has been modelled on those lessons learned from this and from information gathered from those who have implemented ePMA in other parts of the UK. It should also be noted that DHCW has developed, as part of the National ePMA Board, a national benefits framework for the programme. The Benefits Framework will be required to be implemented locally and reported on nationally both to DHCW and the Welsh Government, in additional to any local benefits the health board wishes to identify and report.

The Strategic Case

The development and implementation of ePMA aligns with a number of national and local strategies and plans:

1. A Healthier Wales: Long term Plan for Health and Social Care
2. Pharmacy: Delivering a Healthier Wales
3. Welsh Government ePrescribing Review
4. All Wales Medicines Strategy Group (AWMSG) Five-year Strategy (2018-2023)
5. Statement on the ePrescribing Programme (2021)
6. Informed Health and Care – a Digital Health and Social Care Strategy for Wales
7. HDdUHB Clinical Strategy – A Healthier Mid and West Wales
8. Digital and Data Strategy for Health and Social Care

The key local drivers for change include:

1. Increasing patient safety
2. Improving patient centred care and associated outcomes
3. Staff experience and efficient use of resources
4. Maximising the use of digital tools and innovation
5. Access to health intelligence data

6. Having appropriate audit and governance process in place

These drivers were identified through the interviews conducted with stakeholders from across the organisation and analysis of existing documentation. Over 340 staff were engaged via 1-1 interviews, in-person drop-in engagement sessions, virtual group engagement sessions across clinical, operational, technical, and administrative staff across HDdUHB.

Investment in a health board wide integrated secondary care ePMA solution will enable HDdUHB to transform our prescribing and medicine administration processes. It will enable HDdUHB's hospital sites to work together more efficiently both within sites, and across community sites. It is anticipated that this will provide our patients with better access to medicines and care within the Health Board. Additionally, ePMA implementation will help realise HDdUHB's digital maturity ambitions.

Economic Case

The options, benefits, and risks were developed collaboratively through workshops and engagement with stakeholders from across the Health Board. As the national direction of travel and mandate was clear, HDdUHB did not revisit a longlist of options and instead undertook a shortlist appraisal locally. The shortlist options were appraised based on a strategic, risk and benefits appraisal. These appraisals considered the extent to which each option is likely to meet the secondary care ePMA Programme's objectives and the outcome is the identification of the preferred option for the secondary care ePMA.

Options considered:

- Option 0 - Do nothing: Existing paper-based systems are not replaced.
- Option 1 - ePMA implemented across acute hospital sites only, in priority specialties only. This has been defined to exclude Emergency Departments, Paediatrics, Outpatients, Maternity and Mental Health.
- Option 2 - ePMA across acute hospital sites only, in all in scope specialties.
- Option 3 - ePMA across all of secondary care in HDUHB, in all in scope specialties.

Appraisal of the options identified "Option 3 – ePMA across all of secondary care sites in HDdUHB, and those specialities in scope as the Preferred Option, in alignment with the national direction. It was also agreed that this addresses and prioritises the prescribing and medicines administration needs in secondary care in the health board.

The shortlisted options appraisal highlighted that Option 3 was not only the Preferred Option but the only viable option.

DHCW have been working on a set of benefits intended to be measured nationally. Work still continues on the benefits tracker nationally and the outline business case will be updated accordingly in developing the full business case.

The evidence that a Secondary Care ePMA system provides an important foundation for safe, effectively, timely, efficiency, patient-centred and equitable provision of care is well documented nationally. However, translating these quality benefits to cash-releasing savings is not straight forward.

Non-cash releasing savings and the longer-term cash releasing savings that can be achieved post implementation are, only beginning to emerge within other health boards and trusts around the UK.

Whilst the majority of benefits are likely to be quality and efficiency benefits, initial analysis has identified potential cash-releasing and avoidance benefits:

1. Reduction in drug spend as it is assumed that over time, the improved information available via the Secondary Care ePMA system will support review and the optimisation of prescribing and administration practice, for example by identifying where high-cost drugs are being used despite a lower-cost equivalent being available.

2. Reduction in medicines-related litigation costs as it is assumed that the introduction of a Secondary Care ePMA system could help mitigate future litigation costs related to medicines.

Further work will be undertaken to quantify local benefits, following completion of the national set of benefits.

Total Economic Cost
Preliminary cost estimates have been identified from external examples and supplier indications via the National ePMA Framework. Preliminary cost estimates vary widely from £7 to £13 million. These costs will only be known once a tender process has been completed and suppliers submit their full and final costs.

Commercial Case
Using the All-Wales Procurement Framework is a pre-requisite to releasing the national funding available from the WG and so HDdUHB will be required to undertake a mini competition to call off and award the secondary care ePMA contract off the All-Wales Framework.

The benefits associated with this approach is that a mini competition provides the potential to drive better value for money whilst retaining the benefits offered under the Framework agreement, enabling HDdUHB to secure the optimal secondary ePMA solution.

An indicative timeline for the procurement process is outlined in the table below:

Milestone	Estimated Timeline
Detailed specification document completed	August 2023
First Round OBC Draft Submission to SRC	August 2023
First Round OBC Draft Submission to Board	September 2023
Mini competition via framework: Prepare and Issue ITT, Evaluate Responses	October -December 2023
Preferred supplier selected	January 2024
Final Governance and Approvals (incl. FBC Sign Off) to SRC	February 2024
Final Governance and Approvals (incl. FBC Sign Off) to Board	March 2024
Submit the FBC to WG for approval	March/April 2024
Contract awarded	April 2024
Implementation Starts	April 2024

Financial Case
A financial appraisal based on a number of assumptions has been undertaken to illustrate the estimated affordability of the Preferred Option.

The costs presented in this case are preliminary estimates. The basis of ePMA solution costs is based on two pricing options:

1. Composite of relevant ePMA implementation case studies outside of HDdUHB.
2. Initial supplier costs submitted through the National ePMA Framework.

It is important to emphasise that there remains a wide potential range of programme costs before the preferred supplier is selected and therefore the estimates here are sensitive to change as the Preferred Option is developed further.

The estimated total life cost of the ePMA Secondary Care Programme (7 years) is c.£10.6m (using the mid-point of the estimates) of which c.£3.5m are capital costs and c£7.1m are revenue costs. The Health Board will require funding of c£5.5m, of which c.£2.2m to support capital costs and the remaining c.£3.3m for implementation revenue costs.

The remaining c.£5.5m will need to be funded using internal HDdUHB funding and cash releasing benefits.

As part of the FBC a full risk assessment will be undertaken to evaluate whether the benefits outlined will be realised.

The summary of proposed internal and external funding for capital and revenue costs aligned to the preferred option is shown in the table below.

Table: Capital Application of Funds

CAPITAL	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**2028/29**	**2029-32**	**Total**
	£m	**£m**	**£m**	**£m**	**£m**	**£m**	**£m**
Funding Source							
Welsh Government	2.2						2.2
System Capital Reserve (balancing figure)	1.3						1.3
Total	**3.5**						**3.5**
Application of Funding							
ePMA Supplier	(1.3)	-	-	-	-	-	(1.3)
Hardware and devices	(1.2)	-	-	-	-	-	(1.2)
Optimism Bias	(0.5)	-	-	-	-	-	(0.5)
Non-recoverable VAT on Capital Costs	(0.5)	-	-	-	-	-	(0.5)
Total	**(3.5)**	-	-	-	-	-	**(3.5)**
Source *less* Application	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Table: Revenue Application of Funds

REVENUE	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**2028/29**	**2029/32**	**Total**
	£m	**£m**	**£m**	**£m**	**£m**	**£m**	**£m**
Funding Source							
Welsh govt.	1.1	1.1	1.1	0.0	0.0	0.0	**3.3**
Cash releasing benefits	0.0	0.0	0.2	0.3	0.5	2.1	**3.1**

System Revenue Reserve (balancing figure)	0.0	0.2	0.0	0.3	0.2	(0.1)	**0.6**
Total	**1.1**	**1.4**	**1.3**	**0.6**	**0.7**	**1.9**	**7.0**
Application of Funding							
ePMA supplier Costs (ongoing)	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)	(0.5)	(1.3)
Resources	(0.9)	(1.1)	(1.0)	(0.5)	(0.5)	(1.5)	(5.2)
Risk/Contingency	(0.1)	(0.1)	(0.1)	0.0	0.0	0.0	(0.3)
Non-recoverable VAT on Revenue Costs	0.0	0.0	0.0	0.0	0.0	(0.1)	(0.3)
Total	**(1.1)**	**(1.3)**	**(1.2)**	**(0.7)**	**(0.7)**	**(2.1)**	**(7.1)**
Source *less* Application	-	-	-	-	-	-	-

The overall affordability is constrained, and the funding sources identified at this stage will not be able to fund this programme in isolation, it is therefore essential that:

- WG funding is secured to at least the levels of the initial indications.
- HDdUHB can identify and repurpose capital spending to deliver this Programme.
- HDdUHB can track and deliver the cash releasing savings identified in this business case.

All required hardware and devices will be looked at in a separate Health Board level programme. A decision will need to be taken around the contribution of the HDdUHB Secondary Care ePMA Programme to these costs.

Management Case

The delivery of this programme will be challenging. Whilst the case for change for a secondary care ePMA solution across HDdUHB is compelling, careful planning for the design and implementation phases will be required to deliver against HDdUHB's strategic ambitions. This will need to be supported with a robust resourcing plan and alignment with enabling programmes such as a HDdUHB Network Upgrade Programme to ensure that the underlying infrastructure is robust.

Implementation

Implementation will be conducted on a ward-by-ward, site-by-site basis and the implementation will be phased across the Health Board. The initial implementation plan will be a phased over a 24–36-month period, centred around a targeted 18-24 month roll out period. To ensure that there is transition to business as usual (BAU), we will also be applying a 6-month handover.

Change Management

The level of change associated with the secondary care ePMA programme in HDdUHB is high. It is recognised that effective change management, staff engagement and communications and visible clinical leadership will be critical to the success of this Programme.

Training

It is also recognised that a robust training plan and approach will need to be designed and approved in collaboration between HDdUHB (including representation from all relevant clinical and hospital staff user groups as well as digital and technology staff) and the chosen system implementation partner.

Digital, data and technology

As part of the preparation work for this programme, the ePMA Programme Team has been working with the Network Upgrade Programme to understand equipment and end user device needs. This is happening at Health Board level and the cost will be revised to agree what will be funded by the ePMA Programme versus by other programmes. Once the chosen vendor is awarded, the ePMA Programme Team will work in collaboration with the vendor to complete an in-depth an end-user technology review which will aim to highlight the type, number and requirements for end user devices needed by the staff and clinical teams.

Benefits realisation
As outlined in the Economic Case, DHCW have been working on a set of benefits intended to be measured nationally. At the time of writing this Business Case, the national benefits work is still underway. The HDdUHB Secondary Care ePMA Programme team with the support of the Benefits Realisation Manager, have identified and reviewed the provisional set of benefits, which will continue to evolve over time. It is important that the ePMA Programme Team applies a benefits management approach that enables benefits realisation to be monitored and benefits to be proactively managed across the organisation.

Programme evaluation
HDdUHB is committed to ensuring that a thorough and robust post-programme evaluation is undertaken at key stages in the process to ensure that lessons are learnt. The Health Board will need to continue to obtain and assess baseline data in the years prior to and post implementation. This will enable the Health Board to compare current processes with post-implementation processes and identify which benefits have been achieved and which have not.

Argymhelliad / Recommendation

The Ccommittee is requested to:

- **NOTE** that the Outline Business Case, and the requirement to complete the Financial Case, and refine the benefits tracker.
- **AGREE** to proceed to a Full Business Case, with the identification of a preferred supplier.
- **AGREE** that no commitment to a specific supplier will be made until a further review to confirm that the recommended investment decision is appropriate is conducted; before the contract is placed with a supplier or partner (or a work order placed with an existing supplier or other delivery partner) and **AGREE** due to the financial investment required this will need to be brought back to the Committee and then Board for final approval.

Amcanion: (rhaid cwblhau) Objectives: (must be completed)	
Committee ToR Reference: Cyfeirnod Cylch Gorchwyl y Pwyllgor:	3.8 Receive reports relating to the Health Board's Digital Programme to ensure benefits realisation from the investment made.
Cyfeirnod Cofrestr Risg Datix a Sgôr Cyfredol: Datix Risk Register Reference and Score:	Not Applicable
Galluogwyr Ansawdd: Enablers of Quality:	6. All Apply

Quality and Engagement Act (sharepoint.com)	
Parthau Ansawdd: Domains of Quality Quality and Engagement Act (sharepoint.com)	7. All apply
Amcanion Strategol y BIP: UHB Strategic Objectives:	All Strategic Objectives are applicable
Amcanion Cynllunio Planning Objectives	5c Digital Strategy 6c Continuous engagement 7b Integrated Localities 8c Financial Roadmap
Amcanion Llesiant BIP: UHB Well-being Objectives: Hyperlink to HDdUHB Well-being Objectives Annual Report 2021-2022	9. All HDdUHB Well-being Objectives apply

Gwybodaeth Ychwanegol: Further Information:	
Ar sail tystiolaeth: Evidence Base:	Included within the Outline Business Case (OBC)
Rhestr Termau: Glossary of Terms:	Included within the document
Partïon / Pwyllgorau â ymgynhorwyd ymlaen llaw y Pwyllgor Adnoddau Cynaliadwy: Parties / Committees consulted prior to Sustainable Resources Committee:	Not Applicable

Effaith: (rhaid cwblhau) Impact: (must be completed)	
Ariannol / Gwerth am Arian: Financial / Service:	The introduction of the ePMA system will have benefits not only the staff, patients, but will improve efficiencies of the wards and staff. Releasing more time for staff to treat patients.
Ansawdd / Gofal Claf: Quality / Patient Care:	The lack of an ePMA system presents a significant risk to patient safety and negatively impacts staff, who are working under extreme pressures. There is a clear need to improve efficiencies, particularly with regards to managing medicines management, and introducing technologies to support staff are a first important step in this journey
Gweithlu: Workforce:	The improvement in digital solutions will provide efficiencies for staff, who will be able to see the right information at the right time when treating the patient. The combination of

	approaches and system will also reduce the effort required to transcribe as system will be fully integrated.
Risg: **Risk:**	The patient safety risk from that lack of Automation of routine tasks. The provision of real-time data, which can help improve clinical decision-making and reduce the risk of harm.
Cyfreithiol: **Legal:**	The introduction of ePMA system could lead to a reduction in legal claims due to the reduction errors.
Enw Da: **Reputational:**	Having resilient and robust systems for the treatment of patients will enhance the reputation of the Health Board and will also improve opportunities to recruit.
Gyfrinachedd: **Privacy:**	Not applicable
Cydraddoldeb: **Equality:**	If the system is approved to progress a full equality approach will be adopted

Hywel Dda University Health Board

Electronic Prescribing and Medicines Administration (ePMA) Outline Business Case

August 2023 | Version 0.1

Contents

Glossary

Abbreviation	Description
FBC	Full Business Case
SOC	Strategic Outline Case
OBC	Outline Business Case
HIMSS	Healthcare Information and Management Systems Society
ePMA	Electronic Prescribing and Medicines Administration
SRO	Senior Responsible Owner
BAU	Business as Usual
ED	Emergency Department

1 Executive Summary

In line with the vision for healthcare services set out in A Healthier Wales and the pharmacy profession's vision for pharmacy in Wales, as set out in Pharmacy: Delivering a Healthier Wales, the Welsh Government undertook an independent review into ePrescribing in Wales. As summarised by the Minister of Health and Social Services[1], the review, which involved stakeholders from across all parts of NHS Wales and concluded in April 2021, considered the direction of travel for electronic prescribing across Wales. Since then, a decision was taken at the national level for each Health Board to procure separate commercial ePMA systems and officials have worked with NHS colleagues to develop a plan to introduce ePrescribing.

This document sets out an Outline Business Case (OBC) for investment in an Electronic Prescribing and Medicines Administration (ePMA) system across secondary care in Hywel Dda University Health Board (HDUHB). As work has been conducted on the national level that has provided a strategic national response to electronic prescribing in Wales, this document should be read in parallel with the national work documented to date.

Strategic Case

The HDUHB secondary care ePMA programme builds heavily on the decision that was taken at the national level for each Health Board to procure separate commercial ePMA systems, and on existing work conducted by Digital Health and Care Wales (DHCW) in relation to the implementation of secondary care ePMA solutions across Wales. This programme aligns with a number of national and local strategies and plans:

1. A Healthier Wales: Long term Plan for Health and Social Care
2. Pharmacy: Delivering a Healthier Wales
3. Welsh Government ePrescribing Review
4. All Wales Medicines Strategy Group (AWMSG) Five-year Strategy (2018-2023)
5. Statement on the ePrescribing Programme (2021)
6. Informed Health and Care – a Digital Health and Social Care Strategy for Wales
7. HDUHB Clinical Strategy – A Healthier Mid and West Wales
8. HDUHB Digital Vision
9. HDUHB Digital Response
10. HDUHB Digital Operational Plan

Locally, the most pressing drivers for change have been identified through the interviews conducted with stakeholders from across the organisation and analysis of existing documentation. Over 340 staff were engaged via 1-1 interviews, in-person drop-in engagement sessions, virtual group engagement sessions across clinical, operational, technical and administrative teams across HDUHB.

The key drivers for change being:

1. Increasing patient safety
2. Improved patient centred care and associated outcomes
3. Staff experience and efficient use of resources
4. Maximising use of digital tools and innovation
5. Access to health intelligence data
6. Having appropriate audit and governance processes in place

Investing in a secondary care ePMA solution will tackle these drivers for change and help realise HDUHB's digital ambition of improving to become the most digitally integrated care organisation in NHS Wales which will enable the delivery of patient centred high quality, safe and sustainable care to our community.

[1] Written Statement: Statement on the ePrescribing Programme (20 September 2021) | GOV.WALES

Investment in a health board wide integrated secondary care ePMA solution will enable HDUHB to transform our prescribing and medicine administration processes across secondary care. It will enable HDUHB's hospital sites to work together more efficiently both within sites, and across sites. We anticipate that this will provide our patients with better access to medicines and care.

Economic Case

The options, benefits, and risks were developed collaboratively through workshops and engagement with stakeholders from across the Health Board. As the national direction of travel and mandate was clear, HDUHB did not revisit a longlist of options and instead undertook a shortlist appraisal locally. The shortlist of options were appraised based on a strategic, risk and benefits appraisal. These appraisals considered the extent to which each option is likely to meet the secondary care ePMA Programme's objectives and the outcome is the identification of the preferred option for the secondary care ePMA. The assessment of the options identifies Option 3 – ePMA across all secondary care sites in HDUHB, and in those specialities in scope as the preferred option.

Option Short-listing

Below are the options that were considered:

- **Option 0 -** *Do nothing*: Existing paper-based systems are not replaced.
- **Option 1 -** ePMA across acute hospital sites only, in priority specialties only. This has been defined to exclude ED, Paediatrics, Outpatients, Maternity and Mental Health.
- **Option 2** - ePMA across acute hospital sites only, in all in scope specialties.
- **Option 3** - ePMA across all of secondary care in HDUHB, in all in scope specialties.

Options Appraisal and Preferred Option

Appraisal of the options identified **"Option 3 – ePMA across all of secondary care in HDUHB, in all in scope specialties"** as the Preferred Option, in alignment with the national direction. It was also agreed that this addresses and prioritises the prescribing and medicines administration needs in secondary care in the Health Board. The overall appraisal is summarised in the table below.

	Option 0 **Do nothing**	**Option 1** **ePMA across acute hospital sites only, in priority specialties only**	**Option 2** **ePMA across acute hospital sites only, in all in scope specialties**	**Option 3** **ePMA across all of secondary care in HDUHB, in all in scope specialties**
Strategic appraisal	4th	3rd	2nd	1st
Risk appraisal	1st	2nd	3rd	4th
Benefits appraisal	4th	3rd	2nd	1st
Overall Rank	**4th**	**3rd**	**2nd**	**1st** **PREFERRED OPTION**

The shortlisted options appraisal highlighted that Option 3 was not only the Preferred Option but the only viable option. As such, the subsequent costs and benefits section only considers the Preferred Option.

Benefits

DHCW have been working on a set of benefits intended to be measured nationally. At the time of writing this Business Case, the national benefits work is still underway.

The evidence that a Secondary Care ePMA system provides an important foundation for safe, effectively, timely, efficiency, patient-centred and equitable provision of care is well documented nationally. However, translating these quality benefits to cash-releasing savings is not straight forward.

Non-cash releasing savings and the longer-term cash releasing savings that can be achieved post implementation are, only beginning to emerge within other Health Boards both in Wales and around the UK. As a result, the majority of the benefits outlined have not been included in the economic or financial appraisal elements of this business case.

This learning from other Health Boards and other health systems in the UK who have implemented similar ePMA solutions has been supplemented by local consideration of benefits.

Whilst the majority of benefits are likely to be quality and efficiency benefits, initial analysis has identified two potential cash-releasing benefits:

- Reduction in stationery costs from the reduced need for paper prescriptions and paper charts.
- Reduction in drug spend as it is assumed that over time, the improved information available via the Secondary Care ePMA system will support review and optimisation of prescribing and administration practice, for example by identify where high-cost drugs are being used despite a lower-cost equivalent being available.

A potential cost avoidance has also been identified:

- Reduction in medicines-related litigation costs as it is assumed that the introduction of a Secondary Care ePMA system could help mitigate future litigation risks related to medicines.

Further work will be undertaken to quantify these benefits, following completion of the national set of benefits.

Total Economic Cost

Preliminary cost estimates have been updated based on external examples and supplier indications via the National ePMA Framework. At this stage of assessment, the estimates are sensitive to change, therefore ranges based on ±10% sensitivity have also been shown in summary.

The Table below outlines the Net Present Cost (NPC) which is a calculation used to capture the total cost of the investment over its entire life period based upon today's costs.

Figures are in £m	**Low case (£325 per unit)**	**Base case**	**High case (£1200 per unit)**
	Discounted	**Discounted**	**Discounted**
Capital	2.76	2.40	7.03
Optimism Bias	0.62	0.48	2.30
Total Capital Cost plus Optimism Bias	**3.38**	**2.88**	**9.33**
Revenue	5.41	5.43	4.96
Risk	0.35	0.27	1.29
Total Risk-Adjusted Cost	**9.14**	**8.58**	**15.59**
Cash Releasing Benefits	2.62	2.62	2.62
Non-Cash Releasing Benefits			
Total Benefits	**2.62**	**2.62**	**2.62**
NPC	**(6.52)**	**(5.95)**	**(12.96)**

Commercial Case

Digital Health and Care Wales (DHCW) was tasked by the Welsh Government to create an NHS Wales multi-vendor Framework Agreement for Electronic Prescribing and Medicines Management (ePMA) Services.

Using this Framework is a pre-requisite to releasing the national funding available from the Welsh Government and so HDUHB took the decision to undertake a mini competition to call off and award the secondary care ePMA contract off the All-Wales Framework.

The benefits associated with this approach is that a mini competition provides the potential to drive better value for money whilst retaining the benefits offered under the Framework agreement, enabling HDHUHB to secure the optimal secondary ePMA solution.

An indicative timeline for the procurement process is outlined in the table below:

Milestone	Estimated Timeline
Detailed specification document completed	August 2023
First Round OBC Draft Submission to SRC	August 2023
First Round OBC Draft Submission to Board	September 2023
Mini competition via framework: Prepare and Issue ITT, Evaluate Responses	October -December 2023
Preferred supplier selected	January 2024
Final Governance and Approvals (incl. FBC Sign Off) to SRC	February 2024
Final Governance and Approvals (incl. FBC Sign Off) to Board	March 2024
Submit the Full Business Case to Welsh Government for approval	March/April 2024
Contract awarded	April 2024
Implementation Starts	April 2024

Financial Case

A financial appraisal based on a number of assumptions outlined in Section 6.2. has been undertaken to illustrate the estimated affordability of the Preferred Option.

The costs presented in this case are preliminary estimates. The basis of ePMA solution costs is based on two pricing options: 1. composite of relevant ePMA implementation case studies outside of HDUHB 2. supplier costs submitted through the National ePMA Framework. It is important to emphasise that there remains a wide potential range of programme costs before the preferred supplier is selected and therefore these estimates are sensitive to change. This chapter presents a sensitivity analysis to identify the range of possible outcomes as the Preferred Option is in further development.

The total life cost of the ePMA Secondary Care Programme is c.£10.5m of which c.£3.5m are capital costs and c£7.0m are revenue costs. The Health Board requires external funding of c£5.5m, of which c.£2.2m to support capital costs and the remaining c.£3.3m for implementation revenue costs. The remaining c.£5.0m will need to be funded using internal HDUHB funding envelopes and cash releasing benefits. Cash releasing benefits of c.£3.1m have been identified, leaving a c.£1.9m funding gap, of which c.£1.3m is capital costs and c.£0.6m is revenue costs. The c.£1.9m funding gap is for hardware and devices and BAU operations.

The summary of proposed internal and external funding for capital and revenue costs aligned to the preferred option is shown in the table below.

Table: Capital Application of Funds

CAPITAL	2024/25	2025/26	2026/27	2027/28	2028/29	2029-32	Total
	£m	£m	£m	£m	£m	£m	£m
Funding Source							
Welsh Government	2.2						2.2
System Capital Reserve (balancing figure)	1.3						1.3
Total	**3.5**						**3.5**
Application of Funding							
ePMA Supplier	(1.3)	-	-	-	-	-	(1.3)
Hardware and devices	(1.2)	-	-	-	-	-	(1.2)
Optimism Bias	(0.5)	-	-	-	-	-	(0.5)
Non-recoverable VAT on Capital Costs	(0.5)	-	-	-	-	-	(0.5)
Total	**(3.5)**	-	-	-	-	-	**(3.5)**
Source *less* Application	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Table: Revenue Application of Funds

REVENUE	2024/25	2025/26	2026/27	2027/28	2028/29	2029/32	Total
	£m	£m	£m	£m	£m	£m	£m
Funding Source							
Welsh govt.	1.1	1.1	1.1	0.0	0.0	0.0	**3.3**
Cash releasing benefits	0.0	0.0	0.2	0.3	0.5	2.1	**3.1**
System Revenue Reserve (balancing figure)	0.0	0.2	0.0	0.3	0.2	(0.1)	**0.6**
Total	**1.1**	**1.4**	**1.3**	**0.6**	**0.7**	**1.9**	**7.0**
Application of Funding							
ePMA supplier Costs (ongoing)	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)	(0.5)	(1.3)
Resources	(0.9)	(1.1)	(1.0)	(0.5)	(0.5)	(1.5)	(5.2)
Risk/Contingency	(0.1)	(0.1)	(0.1)	0.0	0.0	0.0	(0.3)
Non-recoverable VAT on Revenue Costs	0.0	0.0	0.0	0.0	0.0	(0.1)	(0.3)
Total	**(1.1)**	**(1.3)**	**(1.2)**	**(0.7)**	**(0.7)**	**(2.1)**	**(7.1)**
Source *less* Application	**-**	**-**	**-**	**-**	**-**	**-**	**-**

The overall affordability is constrained, and the funding sources identified at this stage will not be able to fund this programme in isolation, it is therefore essential that:

- Welsh Government funding is secured to at least the levels of the initial indications.
- HDUHB can identify and repurpose capital spending to deliver this Programme.
- The HDUHB can track and deliver the cash releasing savings identified in this business case.

All required hardware and devices will be looked at in a separate Health Board level programme. A decision will need to be taken around the contribution of the HDUHB Secondary Care ePMA Programme to these costs.

Management Case

Programme Management

The delivery of this programme will be challenging. Whilst the case for change for a secondary care ePMA solution across HDUHB is compelling, careful planning for the design and implementation phases will be required to deliver against HDUHB's strategic ambitions. This will need to be supported with a robust resourcing plan and alignment with enabling programmes such as the HDUHB Network Upgrade Programme.

The overall Programme will be managed by the HDUHB Secondary Care ePMA Programme Team. They will work closely with the Roll Out Teams and eventually some roles will transition into the BAU Ongoing Support Team. The expected roles are detailed in the main body of the OBC.

Implementation

Implementation will be conducted on a ward-by-ward, site-by-site basis and the implementation will be phased across the Health Board. A summary of key workstreams is included below. The full table can be found in the main body of the OBC.

Phase	Workstream	Key activity
Implementation A 24–36 month period to prepare for and implement the new ePMA solution, centred around a targeted 18-24 month roll out period.	Design (6 months)	This phase will include activity such as: • configuration of user roles; • drop-down options; • build order sets to support the national and HDUHB prescribing patterns; • alerts, notifications and warnings; • integration and interfacing dashboards and reports.
	Testing (throughout implementation phase)	Comprehensive user and technical testing of the solution from the start of the design period and throughout the implementation phase
	Implementation Readiness Preparation (6 months)	This phase will focus on the following key activity: • Develop roll out plan, including phasing and coordination of roll out and reviewing lessons learned from other Health Boards; • UAT plan; • User evaluation plan (meaningful tasks); • Clinical safety workshops and hazard log; • Change Management plan; • Training plan; • Readiness checklist;

		• Integration and configuration; • Supplier engagement; • Service management; • Hardware installation; • Data management plan.
	Implementation and Roll Out (18-24 months)	phase will focus on a phased roll out approach for the successful delivery of the secondary care ePMA solution roll-out across the hospitals in HDUHB, including change management and training.
Post-implementation phase Assumed to be a 6-month period to manage the transition to Business as Usual (BAU).	Washup (6 months)	Capture lessons learned and begin benefits realisation work, and provides contingency for any implementation delays.
	Transition to BAU	Transfer to business-as-usual following successful implementation. Key activities will include data capture and data visualisation, sharing lessons learnt; optimisation; and continuous improvement.

Change Management

The level of change associated with the secondary care ePMA programme in HDUHB is high. It is recognised that effective change management, staff engagement and communications and visible clinical leadership will be critical to the success of this Programme.

Training

It is also recognised that a robust training plan and approach will need to be designed and approved in collaboration between HDUHB (including representation from all relevant clinical and hospital staff user groups as well as digital and technology staff) and the chosen system implementation partner.

Digital, data and technology

As part of the preparation work for this programme, the ePMA Programme Team has been working with the Network Upgrade Programme to understand equipment and end user device needs. This is happening at Health Board level and the cost will be revised to agree what will be funded by the ePMA Programme versus by other programmes. Once the chosen vendor is awarded, the ePMA Programme Team will work in collaboration with the vendor to complete an in-depth an end-user technology review which will aim to highlight the type, number and requirements for end user devices needed by the staff and clinical teams.

Benefits realisation

As outlined in the Economic Case, DHCW have been working on a set of benefits intended to be measured nationally. At the time of writing this Business Case, the national benefits work is still underway. The HDUHB Secondary Care ePMA Programme Team have reviewed the provisional set of benefits and it is recognised that this set of benefits may change.

It is important that the ePMA Programme Team applies a benefits management approach that enables benefits realisation to be monitored and benefits to be proactively managed across the organisation.

Programme evaluation

HDUHB is committed to ensuring that a thorough and robust post-programme evaluation is undertaken at key stages in the process to ensure that lessons are learnt. The Health Board will need to continue to obtain and assess baseline data in the years prior to and post implementation. This will enable the Health Board to compare current processes with post-implementation processes and identify which benefits have been achieved and which have not.

2 Introduction

The aim of this document is set out of the investment case for national funding for the ePMA Programme, supplemented by local Health Board funding. It builds on existing work conducted in this area within NHS Wales and presents a picture of the benefits, costs and risks associated with ePMA. It has been prepared by the HDUHB secondary care ePMA Programme Team comprising of digital, technical and clinical colleagues with significant staff engagement across the Health Board across to include clinical, operational, technical and administrative roles.

This document has been prepared in accordance with HM Treasury Green Book guidance and is structured into six main sections as set out below:

- the **Strategic Case** defines the problem to be solved, summarises the national work conducted to date and considers the case for change locally at a health board level;

- the **Economic Case** sets out the options for the implementation of ePMA across secondary care in HDUHB and the preferred option, the economic cost of implementing the preferred option and the associated benefits and risks of the chosen option;

- the **Commercial Case** provides an overview of the procurement process to be undertaken and governance structure embedded as part of the programme. It will also describe the procurement process undertaken, the results of the procurement exercise to date and supplier prices;

- the **Financial Case** section outlines the funding implications of the secondary care ePMA programme for HDUHB;

- the **Management Case** describes the governance structure and management arrangements for the implementation and business as usual phases of the secondary care ePMA Programme as well as principles to support the benefits realisation process.

3 Strategic case

3.1 Introduction

Building on the decision that was taken at the national level for each Health Board to procure separate commercial ePMA systems, in this section the background to the HDUHB's secondary care ePMA programme is set out along with the strategic drivers for change summarised and the current system landscape described. It builds heavily on existing work conducted by Digital Health and Care Wales (DHCW) in relation to the implementation of secondary care ePMA solutions across Wales.

Medicines are the most frequent healthcare intervention. Treatment with medicines saves lives, controls and cures diseases and provides symptom control. However, the vast majority of medicines used in HDUHB hospitals are still prescribed and administered using a traditional paper-based chart system and safe and effective prescribing and administration of medicines remains challenging. Although the current paper-based system is part of a structured approach to prescribing and medicines administration, it is recognised there are a number of limitations, including:

- legibility challenges;
- multiple transcription/handover points;
- duplication of tasks;
- staff having to travel across sites to prescribe medicines;
- prescriptions and/or medicines sent by post;
- no electronic prescription transfer – charts need to be scanned and emailed to complete discharges in remote areas;
- lack of automated prescribing advice or decision support during the prescribing process;
- lack of real time medicines data needed to improve patient outcomes;
- no link with an increasing number of IT clinical systems; and
- limited ability to collate data on medicine usage and administration.

3.2 Programme objectives

The HDUHB ePMA Steering Group has developed ePMA Programme Objectives following engagement with stakeholders across the health board. These objectives define the goals for the programme, enabling decisions to be taken through the lifetime of the HDUHB secondary care ePMA Programme.

Strategic Objective	Description
Patient centred care, safety and outcomes	The HDUHB secondary care ePMA programme should improve patient safety and drive better patient outcomes within secondary care.
Staff, care pathways and operational efficiency	The HDUHB secondary care ePMA programme should drive the standardisation of care pathways and workflows, improving efficiency, effectiveness, release time to care, resulting in the timely provision of care. The Programme should also support improved medicines management across boundaries.
Health intelligence, governance and innovation	The HDUHB secondary care ePMA programme should improve standardisation, access, consistency, governance and audit of medicines data for business intelligence, leading to improvements in delivery of services.
Digital maturity and reduced reliance on paper	The HDUHB secondary care ePMA programme should reduce the use of paper-based processes in prescribing and medicines administration across HDUHB and support HDUHB digitisation objectives (HIMSS).

3.3 Key national strategic drivers

Implementation of the secondary care ePMA solution in HDUHB would be a major achievement towards improving the quality of health care in HDUHB, and more widely across Wales. It would be a key step towards meeting the HDUHB and NHS Wales ambitions and strategic drivers. This is particularly true in respect of preventing harm and providing the most appropriate treatment. Furthermore, digitalising hospital medication records would also greatly improve communication, allow us to improve decision making at point of care through instant access to information, deliver better patient outcomes by exploiting digital technologies, facilitate shared decision making, and align with HDUHB's current focus on driving greater efficiencies in all areas.

HDUHB is one of the largest Health Boards in Wales, with 4 acute hospitals and 5 community hospitals with approximately 1100 beds. It serves more than 385,000 people throughout Carmarthenshire, Ceredigion, Pembrokeshire and bordering counties. Around 15,000 HDUHB staff provide primary, community, in-hospital, mental health and learning disabilities services for a quarter of the landmass of Wales.

Introducing a secondary care ePMA solution in HDUHB would provide better access to information to support and enable safer and more cost-effective use of medicines for this large and geographically spread population; and would help realise the aims of several key Welsh Government, NHS Wales and HDUHB specific strategic drivers and policies. Key strategic and policy documents that HDUHB's secondary care ePMA programme aligns to and is anchored in are summarised below.

3.3.1 A Healthier Wales: Long term Plan for Health and Social Care

A Healthier Wales: Long Term Plan for Health and Social Care[2] sets out how health and social care can become more integrated as one system across regions. It sets out its goals of "making our health and care system fit for the future'. The plan sets out how digital technology and data can:

- be an enabler for change across the system;
- contribute towards improving patients' health;
- help deliver care seamlessly; and
- contribute to the Wales health system being a great place to work.

Implementing the secondary care ePMA solution as a digital solution to enable electronic prescribing and medicines administration across HDUHB will further contribute to the digital and data efforts, in alignment to the long-term plan. In addition, by ensuring data sets are accurate, complete, up to date and interoperable with other systems, the secondary care ePMA solution in HDUHB will enable the long-term objectives of the plan.

3.3.2 Pharmacy: Delivering a Healthier Wales

Pharmacy: Delivering a Healthier Wales[3] is the 2030 vision and long-term ambitions for pharmacy in Wales. One of the 4 key themes found in this paper is "harnessing innovation and technology", with the following goal for 2030:

"Patients central electronic medical records are accessed and updated by practitioners involved in their care, including the pharmacy team. Supply of medicines is automated and supported by Artificial Intelligence".

The 2030 vision states routes to achieving this key goal, which are:

1. Electronic prescribing;
2. Electronic medicines administration; and
3. Central patient electronic health record.

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[2] https://www.gov.wales/sites/default/files/publications/2021-09/a-healthier-wales-our-plan-for-health-and-social-care.pdf
[3] https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Policy/Pharmacy%20Vision%20English.pdf?ver=2019-05-21-152234-477

The vision document states that “Electronic prescribing and medicines administration systems must be introduced into Welsh hospitals”. Hence, HDUHB’s secondary care ePMA programme is a non-negotiable if this strategy is to be implemented.

The implementation of a secondary care ePMA programme in HDUHB clearly aligns with the 2030 vision and goals.

In addition, the Pharmacy: Delivering a Healthier Wales 2025 Goals document[4] state “Implement electronic prescribing solutions across all pharmacy settings, including supporting patients to access pharmacy services through the NHS Wales app” as one of its goals.

3.3.3 Welsh Government ePrescribing Review

The Welsh Government ePrescribing Review[5] paper sets out the recommended direction of travel for pan sectoral electronic prescribing across Wales. It states a “need for electronic prescribing” as currently, hospitals in Wales use paper-based processes to capture most medicines information. The paper acknowledges the Welsh ePrescribing landscape is only partially digitised and has the vision for ePrescribing to be a fully digitalised e-prescribing environment across all care settings in Wales.

The **paper sets out four major areas for the managed implementation of digital capabilities, that help reach the full digitised environment. This includes:**

“Secondary Care E-prescribing Capabilities - Hospital ePMA systems across Wales that build on a set of common set of open standards and principles that provide end to end e-prescribing secondary care capabilities together with interoperability with other care settings in Wales.”

The implementation and delivery of the secondary care ePMA programme in HDUHB will help directly address the recommendations set out in the ePrescribing review.

The review highlights a list of requirements for national ePrescribing that the HDUHB secondary care ePMA programme should be aware of, for example:

- Digitally sharing information;
- Medicine management, supply and administration while as an inpatient;
- Supporting clinical decisions; and
- Supporting interoperability standards.

3.3.4 All Wales Medicines Strategy Group (AWMSG) Five-year Strategy (2018-2023)

The AWMSG Five-year Strategy supports “the introduction of ePrescribing in Wales over the next five years” and to work with relevant stakeholders, as it clearly sees ePrescribing as a contributor to achieving its strategy. In the document it also suggests digital and data use can have a positive impact on patient safety and the outcomes of care. The secondary care ePMA programme in HDUHB is a key enabler of this journey.

3.3.5 Statement on the ePrescribing Programme (2021)

In September 2021, the ePrescribing programme (now called the Digital Medicines Transformation Portfolio (DMTP)) was launched in Wales. Since then, progress has been made across four key areas: primary care, secondary care, patient functionality, and a national medicines repository. In secondary care, a procurement framework for electronic prescribing and medicines administration is being created, and health boards and trusts are establishing pre-implementation teams to capture local requirements. The Minister for Health and Social Services will be progressing the Portfolio, with full rollout of the DMTP is expected to take three to five years.

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[4] Welsh 2025 vision book.pdf (rpharms.com)
[5] https://dhcw.nhs.wales/files/eprescribing/welsh-government-eprescribing-review/

3.3.6 Informed Health and Care – a Digital Health and Social Care Strategy for Wales

In December 2015, the Digital Health and Social Care Strategy for Wales[6] outlined the way forward and plan to "improving access to information and introducing new ways of delivering care with digital technologies". Considered at the heart of service plans and vision for prudent healthcare in Wales, the strategy considered electronic medicines management, decision support and care-planning tools to support workflow and patient safety. It was outlined that electronic medicines management will be prioritised and a programme board established to lead on this work, beginning with the procurement of a hospital pharmacy and ePrescribing system for Wales.

3.4 Local strategic context

3.4.1 Population and demographics

HDUHB covers a large geographical, predominantly rural area, bringing about challenges which health boards in more urban areas would not be exposed to. HDUHB also faces challenges with deprivation particularly to the east and west of the Health Board. This exacerbates existing health inequalities which were further highlighted during the COVID-19 pandemic.

3.4.2 HDUHB Clinical Strategy – A Healthier Mid and West Wales

The key drivers to the HDUHB clinical strategic objectives are: Safe, Sustainable, Accessible and Kind.

The outcome of extensive staff and public engagement and consultation raised these themes which underpin our strategy. These four words have become our guiding principles, they keep us focused on how we meet the changing needs of our local population both now and in the future.

3.4.3 HDUHB Digital Vision

HDUHB's digital vision is to become the most digitally integrated care organisation in NHS Wales which will enable the delivery of patient centred high quality, safe and sustainable care to the community. To achieve this, HDUHB has set out its Digital Response strategy and Digital Operational plan.

3.4.4 HDUHB Digital Response

"As a Health Board, that is facing significant challenges including sustained pressure from unprecedented demand for clinical services over the coming years, it is crucial that we use every available tool, including technology, to improve the safety, quality of care and efficiency of providing our services."

e-Prescribing is key to the roadmap element of 'Digitise Patient Interaction' and is as a key driver for improved safety and care. It is also key to the 'Digital Community' roadmap element.

In addition, e-Prescribing is key to other programmes in the Digital Response, such as "Enabling the Workforce". One of the main outcomes of this the ePMA programme is to "enable staff to prescribe and manage medicines safely and digitally by delivering a Health Board-wide medicines administration solution".

3.4.5 HDUHB Digital Operational Plan

In the HDUHB Digital Operational Plan[7], Hywel Dda has set the vision to become the most digitally integrated care organisation in NHS Wales, enabling the delivery of patient centred, high quality, safe and sustainable care to the community.

The "Enable the Workforce" programme is key to achieving this vision. This programme aims to enable staff to prescribe and manage medicines safely and digitally, through the introducing Health Board-wide electronic prescribing. This will enable staff to communicate and collaborate more quickly, reliably and

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[6] https://www.gov.wales/sites/default/files/publications/2019-03/informed-health-and-care-a-digital-health-and-social-care-strategy-for-wales.pdf

[7] https://hduhb.nhs.wales/about-us/governance-arrangements/freedom-of-information/disclosure-log/disclosure-log-appendices/2-endoscopic-submucosal-dissection-esd-procedures-pdf-946kb/

securely, provide the necessary infrastructure to enable mobile working and support staff to work differently, utilising new digital innovations to address fundamental workforce challenges.

3.5 Staff Engagement

Thorough staff engagement with clinical, managerial, operational, administrative and technical stakeholders is critical to the successes of HDUHB's Secondary Care ePMA Programme. HDUHB has been engaging with stakeholders from across the health board to co-develop the Programme. In addition to this, the HDUHB Secondary Care ePMA Programme Team was formed to ensure appropriate clinical and technical representation from across the Health Board was in place. The Programme Team led the Secondary Care ePMA Programme and engage with a wide range of stakeholders to tackle and consider complex factors such as workforce pressures, geographical area, digital skills and digital capabilities.

HDUHB has undertaken the following activities outlined below. Details of the stakeholders' engagement can be found in Appendix A.

- **Stakeholder interviews** – Detailed interviews were conducted with a broad range of stakeholders from across the system to understand the key pain points within the Health Board and articulate HDUHB's local case for change. Interviews were also conducted to understand clinical and technical requirements of the ePMA solution and the baseline technology layer.
- **Group engagement sessions** – Group engagement sessions were conducted with clinical staff groups to further understand the local case for change and illicit requirements for a Secondary Care ePMA solution.
- **Patient stories –**Patient stories for different care pathways across the Health Board were developed to support stakeholders to illicit requirements. The Secondary Care ePMA Programme Team developed stories for four key pathways to ensure a broad range of services across the system were represented: Mental Health, Gastroenterology (outpatient to inpatient transfer), Cardiology (urgent to tertiary transfer) and Maternity.
- **In-person engagement –** A series of drop-in sessions were organised across each acute hospital site and community hospital site to allow opportunities for frontline staff to share ideas on requirements for a Secondary Care ePMA solution. This was supported by the use of the patient stories described above.
- **Secondary Care ePMA Programme Team and Steering Group Working Sessions and Workshops –** Working sessions and workshops have been conducted to support the development of the Secondary Care ePMA Programme and ascertain key details including programme and change management, communications and engagement plans, definition of benefits and benefits realisation, funding and affordability implications along with key infrastructure dependencies.

3.6 Case for change

The most pressing drivers for change locally have been identified through the interviews conducted with stakeholders from across the system and analysis of existing documentation. Over 340 staff were engaged via 1-1 interviews, in-person drop-in engagement sessions, virtual group engagement sessions across clinical, operational, technical and administrative staff across HDUHB. Further detail on staff engagement can be found in Appendix A.

The key themes of the drivers for change are:

1. Increasing patient safety
2. Improved patient centred care and associated outcomes
3. Staff experience and efficient use of resources
4. Maximising use of digital tools and innovation
5. Access to health intelligence data
6. Having appropriate audit and governance processes in place

Investing in a secondary care ePMA solution will tackle these drivers for change and help realise HDUHB's digital ambition of improving to become the most digitally integrated care organisation in NHS Wales which will enable the delivery of patient centred high quality, safe and sustainable care to our community.

Investment in a health board wide integrated secondary care ePMA solution will enable HDUHB to transform our prescribing and medicine administration processes across secondary care. It will enable HDUHB's hospital sites to work together more efficiently within sites, across sites and in the community. We anticipate that this will provide our patients with better access to medicines and care.

3.6.1 Patient safety

Clinicians reported issues with the legibility of unclear handwriting with the current paper-based system for prescribing and administration of medications. This creates the potential for errors and patient harm through confusion over drugs with similar names, unclear drug administration routes and unclear drug dosages, creating under or over dosage errors.

These concerns are further illustrated by data reported through the incident reporting system (Datix), shown below. It is worth noting that there may be medication prescribing errors identified by the pharmacist or nurse before administration which are not reported:

- Between April 1st 2022 and March 31st 2023; 'Administration to patient' was the highest reported medication error, accounting for 46% of medication errors reported across HDUHB (includes scheduled and unscheduled care, acute paediatrics and neonates, women and children, mental health and learning disabilities, community services, general practice and community pharmacy).
- Administration errors account for 51% of medication errors in scheduled and unscheduled care, with omitted medicines, incorrect strength/dose, delayed administration, incorrect medication/fluid and early administration being the top 5 reported errors within this category.
- Prescribing errors account for 13% of all reported medication errors in HDUHB, with incorrect dose and change to dose being the highest error within this category.
- 11% of reported errors in HDUHB are due to medication documentation.

In addition to this, when paper medication charts are full, clinicians have to transcribe all medications from the previous chart to a new chart. This introduces potential for transcribing errors when the medication data is transferred. Paper drug charts can also be lost/misplaced on the wards or around the hospital, requiring the prescriber to rewrite the drug chart from list of admission medications, notes which may be out of date, or a recollection from consultations. Additionally, when patients move between wards or care settings, paper drug charts must be transported between settings, with clinicians reporting examples of delays to receiving paper drug chart. All of these scenarios pose a risk to delaying patient care as well as drug errors.

An ePMA solution across secondary care in HDUHB could improve patient safety by:

- Improving medicines reconciliation at all patient handovers.
- Enabling the safe and effective recording and transfer of information on patients' medicines across and within all care settings.
- Reducing the number of transcriptions, prescribing and administration errors.
- Use of alerts, notifications and warnings to help keep better track of missed doses, high risk medicines and polypharmacy.
- Supporting greater consistency in clinical practice, reducing harmful variation and limiting overprescribing.
- Decision support – for example allergy checking against prescribed drugs, duplicate drug checking and potential drug-drug interactions.
- Integration with other clinical decision-making information, for example, blood results.

- Improving antimicrobial stewardship.

3.6.2 Patient outcomes and patient centred care

HDUHB's patients' experience has been reported to be substandard in areas, according to some clinicians, due to the need to physically transport prescriptions across care settings and post prescriptions to patients. In addition, clinicians reported incidents where patients need to travel to hospital sites to collect prescriptions. This is particularly an issue for patients who live far away from hospital sites or have limited means to travel, given the large rural geographical challenges that have already mentioned across HDUHB.

Given the lack of a digital system, patients in HDUHB also currently have limited data available to them via existing patient apps to empower them to self-manage their medications.

A secondary care ePMA solution could improve patient centred care and patient outcomes by:

- Providing medications data to existing patient apps to improve patient knowledge and empower patients to better self-management.
- Reducing the need for patient travel for prescriptions.
- Reducing patient waiting time for prescriptions.

3.6.3 Staff experience and effective use

HDUHB covers a large and rural geographical area, there are instances where staff have to travel large distances between sites to prescribe medicines, delaying patient care and making inefficient use of staff time. There are also a number of disparate solutions in HDUHB, requiring multiple logins to access.

As mentioned, the existing paper-based system requires the prescriber to rewrite the drug chart when all the administration boxes have been used or rewrite the drug chart when it has been misplaced or lost. Each inpatient chart lasts a maximum of 14 days which means that staff are frequently spending time on administrative tasks and there is significant duplication of work, taking time away from clinical care.

We have also heard from clinicians regarding the difficulty of obtaining previous medicines information, as patients move between various care settings and specialities, for example, a patient transferring back from Morriston following cardiac treatment, which creates a disconnect in medication information.

A secondary care ePMA solution could improve staff experience by:

- Contributing to the efficient transfer of accurate medicines information
- Removing the need for transcribing on admission and at discharge, allowing prescribers to concentrate on the professional review of medication as part of the medicine's reconciliation process.

3.6.4 Digital Maturity and reduced reliance on paper

National View

The current e-prescribing landscape is outlined in the Welsh Government ePrescribing Review. It highlights the digital capability of the various components within secondary care in Wales.

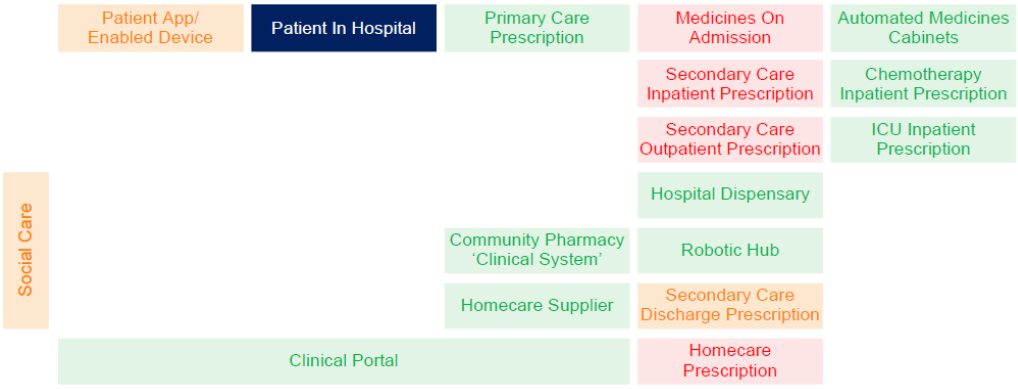

Figure 1: Digital capabilities in place in 'e-prescribing' in secondary care in Wales - Welsh Government ePrescribing Review

- Red – represents something that is entirely paper based.
- Amber – represents something that is partially digitalised – perhaps with paper hand offs or paper systems playing a major role.
- Green – represents something that is supported fully by digital systems.

As shown, the digital maturity of inpatient and outpatient in secondary care and homecare prescribing along with medicines on admission processes are all lagging behind the rest of the secondary care landscape. These are all in scope for the implementation of the secondary care ePMA in HDUHB.

Local view

HDUHB recognises the need for improved digital maturity across secondary care. HDUHB has an ambition to level-up its digital maturity to align with the national 'Blueprint for the future of e-prescribing in Wales'. Similar to the national view, the vast majority of medicines are reliant on paper to dispense medication under the secondary care setting in HDUHB. Currently scanning and transferring these papers is labour-intensive and the user experience is often poor due to scan quality. HDUHB is currently at Healthcare Information & Management Systems Society (HIMSS) Level 0 and e-prescribing is essential to achieving Level 1.

A secondary care ePMA solution in HDUHB could reduce the reliance on paper, support digital maturity by:

- Helping HDUHB achieve its HIMSS targets;
- Automating and digitising the paper-based tasks;
- Offering staff and clinicians the digital tools to perform their jobs; and
- Increasing medicines data sharing with other systems, allowing staff, clinicians and citizens to have greater visibility of their medicines data.

3.6.5 Health intelligence, governance and innovation

Currently data and business intelligence are not in real time due to the majority paper-based system. Reporting is mostly done manually, is labour intensive and is disjointed between different systems. It is likely that there is also under reporting in HDUHB of near misses and drug incidents and HDUHB recognise the opportunity that a secondary care ePMA would present.

As noted in Swansea Bay's ePMA implementation review, the initial post implementation period may suggest that the ePMA solution may have "had a negative impact on prescribing and administration practice". However, it is recognised that it is "plausible that the baseline data is not a complete reflection of practice rather than all prescribing and administration data are available following the implementation of ePMA".

A secondary care ePMA solution in HDUHB could improve health intelligence, governance and innovation by:

- Building on intelligence of patient response to therapy;
- Total visibility of clinical decisions and outcomes;
- Monitoring of prescribing patterns;
- Improving ability to manage medicine effectiveness and efficiencies;
- Monitoring and evaluating key performance indicators and audit trails;
- Improving clinical practice;
- Better support of clinical research and innovation

3.7 Scope

As documented in the National Programme Initiation Document (PID) for the Secondary Care Electronic Prescribing and Medicines Administration programme, the national intention is for the secondary care ePMA solution to be implemented across every speciality, in every hospital in secondary care. This includes:

- Emergency Department (ED) and admission units;
- Inpatients;
- Outpatients;
- Paediatrics;
- Maternity, obstetrics, and gynaecology;
- Oncology (excluding SACT prescribing);
- Medical wards;
- Surgical wards;
- Mental health and learning disabilities ward/hospitals/units, and
- Community hospital sites where medicines are administered and prescribed.

In alignment with the National ePMA programme PID, the following are considered out of scope for the HDUHB secondary care ePMA programme:

- Primary care e-prescribing: This is being managed as part of the Primary Care Electronic Prescriptions Service Programme within the Digital Medicines Transformation Portfolio (DMTP). It is anticipated that the HDUHB secondary care ePMA solution will integrate with these applications on a phased basis, however this is yet to be determined.
- Critical Care settings: There is an existing national project which plans to implement an all-Wales Critical Care Information System which includes e-prescribing capabilities.
- Chemotherapy: Chemotherapy prescribing is out of scope for this programme.
- Systemic Anticancer Therapies (SACT) prescribing: while currently considered as out of scope for this programme, further discussions and scoping are required at a national level to understand if SACT will, at a later stage, be included as in scope.
- Radiotherapy: Radiotherapy prescribing is out of scope for this programme.
- Ophthalmology: Ophthalmology prescribing is out of scope for this programme.
- Conformance of legacy applications to the medicines, allergies and intolerances interoperability standards is out of scope for this programme.

It is noted that the HDUHB secondary care ePMA programme will work with other programmes that include medicines prescribing to maximise alignment, adoption of standards and interoperability by those applications.

3.8 Strategic options

The HDUHB ePMA Steering Group identified the following strategic options to deliver the intended national objectives.

	Option 0 *Do nothing* *(Included as Base Case for comparison)*	Option 1 **ePMA across the four acute hospitals in HDUHB, in all in scope specialties**	Option 2 **ePMA across all of secondary care in HDUHB, in priority specialties only**	Option 3 **ePMA across all of secondary care in HDUHB, in all in scope specialties**
Description	Do Nothing – Continue with a largely paper-based prescribing and medication administration system.	Procure and implement the secondary care ePMA solution at the acute hospitals: Glangwili, Prince Phillip, Withybush and Bronglais, across all in-scope specialities as specified in Section 4.2	Procure and implement the secondary care ePMA solution at acute and community hospitals and only for identified priority specialities identified through further stakeholder engagement.	Procure and implement ePMA across all of secondary care in HDUHB across all in-scope specialities as specified in Section 4.2.

Table 1: Strategic Options

3.9 Constraints and dependencies

The relevant strategic risks and dependencies identified at this stage are detailed in the table below:

Area	Risk/ Dependency description	Impact & Implications
Funding	The Welsh Government has agreed to fund: - the secondary care ePMA solution, - the integration with established national systems, - the resources which make up the temporary organisation formed to prepare the Health Board for secondary care ePMA and to complete the implementation itself. However, the Welsh Government will not fund resources deemed necessary for the ongoing operation of the secondary care ePMA solution, except during the readiness period. For example, upskilling of resources that will be part of the ePMA operations and support team as post go-live.	HDUHB will need to fund any required infrastructure upgrades and integration with local systems as the Welsh government funding will not cover this. Once the secondary care ePMA solution is operationally live within HDUHB. Any operational and support resources that will be part of the operations and support team after transition to Business as Usual (post go-live) must also be funded by the Health Board.
Solution integration	There is a need to consider how the solution will integrate with other national and local solutions that are maintained, as well as other care settings' solutions.	The solution will need to be able to integrate with the national and local solutions to provide a seamless flow of clinical and non-clinical information.

Area	Risk/ Dependency description	Impact & Implications
Infrastructure	The current infrastructure provision in HDUHB is insufficient to support the various electronic clinical systems that exist. There is a dependency on this enabling programme to ensure the new secondary care ePMA solution in HDUHB is adequately supported.	There is an ongoing Network Upgrade Programme to improve the network and increase the availability of devices.
Health Board wide in-flight and future programmes	There is a need to consider the impact of any major programmes in the Health Board and vice versa. There are two elements to this dependency: 1) Technical and architectural implications of potential future solutions 2) Organisational capability, capacity to support multiple large-scale programmes happening at the same time as well as the impact of staff and change fatigue. There are a range of capabilities required to deliver the secondary care ePMA solution in HDUHB, including leadership, change management, Programme Management, Technical Architecture and procurement.	Future considerations will need to be taken around any new digital solutions in the Health Board. The programme will be fully resourced to provide sufficient change management and training, and strong executive sponsorship will be required to drive benefits. This will be considered in further detail in the Management Case.
Standardisation of process	There is a dependency to standardise processes prior to the ePMA solution implementation. There is a risk of inconsistent processes might lead to having inconsistent data on multiple systems, leading to inconsistent data provided to the secondary care ePMA solution.	There is a need to consider how processes existing in the secondary care ePMA solution's ecosystem will be standardised. This will help with ensuring that the data coming into the secondary care ePMA solution is accurate and consistent.

Table 2: Strategic Risks and Dependencies

4 Economic Case

4.1 Introduction

This Economic Case identifies and appraises the options to achieve the national mandate to deliver a secondary care ePMA solution across all of secondary care in the Health Board, in all in scope specialties.

As the national direction of travel and mandate was clear, HDUHB did not revisit a longlist of options and instead undertook a shortlist appraisal locally. The shortlist of options were appraised based on a strategic, risk and benefits appraisal. These appraisals considered the extent to which each option is likely to meet the secondary care ePMA Programme's objectives and the outcome is the identification of the preferred option for the secondary care ePMA. The assessment of the options identifies Option 3 – ePMA across all of secondary care in HDUHB, in all in scope specialties as the preferred option.

4.2 Shortlist Options Definition

The HDUHB secondary care ePMA programme team identified four shortlist options through engagement with the HDUHB ePMA Programme Steering Group. The subject matter experts were consulted to determine the organisational scope of the secondary care ePMA solution. The four options considered are detailed in the table below

	Option 0 **Do nothing** **(Included as Base Case for comparison)**	**Option 1** **ePMA across acute hospital sites only, in priority specialties only**	**Option 2** **ePMA across acute hospital sites only, in all in scope specialties**	**Option 3** **ePMA across all of secondary care in HDUHB, in all in scope specialties**
Description	Do Nothing – Continue with a largely paper-based prescribing and medication administration system.	Procure and implement the secondary care ePMA solution at the acute hospital sites only (community hospital sites not included), across priority specialities. This has been defined to exclude ED, Paediatrics, Outpatients, Maternity and Mental Health.	Procure and implement the secondary care ePMA solution at the acute hospital sites only (community hospital sites not included), across all in-scope specialities as specified in Section 3.7.	Procure and implement ePMA across all of secondary care in HDUHB (acute hospitals and community hospitals where secondary care services are provided) across all in-scope specialities as specified in Section 3.7.

Table 3: Shortlist Options

4.3 Shortlist Options Appraisal

The shortlisted options were appraised by the HDUHB Secondary Care ePMA Programme Team with consultation with the HDUHB Secondary Care ePMA Steering Group.

Strategic Appraisal

For the strategic ('non-monetary') appraisal, five strategic assessment criteria were defined based on the HDUHB secondary care ePMA Programme Objectives. Through a series of workshops, the ePMA Programme Team assessed the ability of each option to support the Programme's strategic objectives. Each option was assigned a rating of one to three, with three reflecting a high degree of that option being able to support and align with the strategic objective. The options were then ranked based on total scores.

The appraisal criteria and definitions are set out in the following table.

Appraisal Criteria	Description
Patient centred care, safety and outcomes	Improve patient safety and drive better patient outcomes within secondary care.
Staff, care pathways and operational efficiency	Drive the standardisation of care pathways and workflows, improving efficiency, effectiveness, release time to care, resulting in the timely provision of care.
Health intelligence, governance and innovation	Improve standardisation, access, consistency, governance and audit of medicines data for business intelligence, leading to improvements in delivery of services.
Digital maturity and reduced reliance on paper	Reduce the use of paper-based processes in prescribing and medicines administration across HDUHB and support HDUHB digitisation objectives (HIMSS).

Table 4: Strategic Appraisal Criteria

The ratings assigned to each strategic criterion have been defined as below:

- A score of 3 - strong alignment of that option to the strategic criteria
- A score of 2 – moderate alignment of that option to the strategic criteria
- A score of 1 – weak alignment of that option to the strategic criteria

	Option 0 Do nothing	Option 1 ePMA across acute hospital sites only, in priority specialties only	Option 2 ePMA across acute hospital sites only, in all in scope specialties	Option 3 ePMA across all of secondary care in HDUHB, in all in scope specialties
Patient centred care, safety and outcomes	1	1	2	3
Staff, care pathways and operational efficiency	1	1	2	3
Health intelligence, governance and innovation	1	2	2	3
Digital maturity and reduced reliance on paper	1	2	2	3
Total Score ***(Maximum 12)***	**4**	**6**	**8**	**12**
Rank	**4th**	**3rd**	**2nd**	**1st**

Table 5: Strategic Appraisal Scoring

Option 3 – ePMA across all of secondary care in HDUHB, in all in scope specialities was assessed to have the highest level of alignment with the Programme's strategic objectives. The rationale for the scores against each criterion are summarised below.

- **Patient centred care, safety and outcomes** – Option 3 will enable the end-to-end prescribing and medicines administration process in secondary care to be digitalised inline within a patient's journey, minimising the use of the current paper-based system. This will therefore mitigate the risks associated with paper systems as described in the case for change, such as transcribing errors and handwriting legibility issues. Additionally, Option 3 will provide full visibility of a patient's acute care medicines record, reducing the number of patient data blind spots as well as maximise the potential for the use of decision support and safety alerts across a patient's journey. Due to the smaller scope, Options 1 and 2 will still require the use of the current paper system. Not only will Option 1 and 2 result in less reduction in the risks associated with using paper-based systems, both options will introduce digital-to-paper transfer points across the journey. This exposes patients

to greater transcription risks and thereby posing a significant clinical risk, with this risk being greater with Option 1 due to a smaller ePMA scope. Option 0 does not improve on HDUHB's current patient safety position.

- **Staff, care pathways and operational efficiency –** Option 3 will enable remote prescribing across all of secondary care, reducing the need for staff to travel long distances across sites to prescribe medicines and enabling better use of clinical time. This Option will also enable improved medicines management across boundaries due to more efficient data sharing. Due to a smaller scope, Options 1 and 2 will achieve this strategic objective to lesser extents. Option 0 does not improve HDUHB's efficiency.
- **Health intelligence, governance and innovation –** Option 3 will enable a greater repository of medicines data for analysis and health intelligence insights as well as improve real time reporting on medicines data. Options 1 and 2 will improve HDUHB's current health intelligence position but to a lesser extent due to a smaller scope. Option 0 does not improve HDUHB's health intelligence position and will continue to rely on labour intensive processes for reporting.
- **Digital maturity and reduced reliance on paper -** Option 3 will reduce HDUHB's reliance on paper across all of secondary care. Due to a smaller scope, Options 1 and 2 will reduce reliance on paper to a lesser extent.

Risk Appraisal

The risk appraisal identifies and analyses the **risk profile for the delivery of the ePMA under each option**. Based on a set of key risks related to achieving the Programme's objectives, the risk appraisal considers the level of impact of each risk occurring, along with a rationale for scoring. The ePMA Programme Team, with the ePMA Steering Group, assigned ratings zero to three, with three representing the highest risk and zero representing the lowest risk. The options have been ranked based on total scores.

Risk Criteria	Description
Impact on clinical services during and post deployment	Clinical operations are disrupted during deployment and impaired by early use of the solution.
Technology infrastructure compatibility	Selected solution is not compatible with, and requires upgrades to, the Health Board's current technology infrastructure and environment.
Solution integration	Selected solution is not compatible with some local solutions and workarounds are required.
Delay	The programme does not deliver to its planned timeframe and milestones and by the contract expiration dates.
Capacity and capability	The Health Board does not have the capacity and capabilities required to deliver the programme in-house and is unable to meet these through recruitment efforts.
Funding gaps	Insufficient funds to deliver the programme.
Realisation of benefits	Expected benefits are not realised through the selected solution.

Table 6: Risk Appraisal Criteria

The ratings assigned to each risk criterion have been defined as below:

3 – The delivery of this Option has a high level of risk against that risk domain

2 – The delivery of this Option has a medium level of risk against that risk domain

1 – The delivery of this Option has a low level of risk against that risk domain

0 – The delivery of this Option has no risk against that risk domain

A higher total score reflects a greater level of risk.

Risk criteria	**Option 0** **Do nothing**		**Option 1** **ePMA across acute hospital sites only, in priority specialties only**		**Option 2** **ePMA across acute hospital sites only, in all in scope specialties**		**Option 3** **ePMA across all of secondary care in HDUHB, in all in scope specialties**	
	Rating	Rationale	Rating	Rationale	Rating	Rationale	Rating	Rationale
Impact on clinical services during and post deployment	0	No configuration and Go-Live activity so no associated risk.	3	Go-Live will impact all Acute hospital operations. Whilst configuration activity will not impact out of scope specialties, the introduction of digital-to-paper transfer points will impact operations across all specialities which will not be mitigated by vendor training plans.	3	Configuration and Go-Live will impact all Acute hospital operations. Whilst configuration activity will not impact out of scope sites, the introduction of digital-to-paper transfer points will impact operations across all sites will not be mitigated by vendor training plans.	2	Configuration and Go-Live will impact all secondary care operations. Some risk mitigated by vendor training plans.
Technology infrastructure compatibility	0	No requirements on the existing technology infrastructure.	2	Technology upgrades required to meet warranted environment specification of the ePMA solution across acute sites only.	2	Technology upgrades required to meet warranted environment specification of the ePMA solution across acute sites only.	3	Significant technology upgrades required to meet warranted environment specification of the ePMA solution across all secondary care sites.
Solution integration	0	No integration requirements.	1	Fewest existing solutions to integrate with due to assumption that out of scope sites and specialties will continue with paper based prescribing and medicines administration system. The ePMA solution will only need to integrate with any existing solutions	2	Fewer existing solutions to integrate with due to assumption that out of scope sites will continue with paper based prescribing and medicines administration system. The ePMA solution will only need to integrate with any existing solutions in the in scope sites.	3	ePMA solution will need to integrate with any existing electronic systems across all of secondary care.

Risk criteria	Option 0 Do nothing		Option 1 ePMA across acute hospital sites only, in priority specialties only		Option 2 ePMA across acute hospital sites only, in all in scope specialties		Option 3 ePMA across all of secondary care in HDUHB, in all in scope specialties	
				in the in scope specialties.				
Delay	0	No delivery requirements so no associated risk.	1	Some development required but lower complexity as fewer specialties in scope.	2	Complex scale of change but fewer sites. Some risk mitigated by support by vendor standard delivery plans.	2	Complex scale of change across all sites but some risk mitigated by support by vendor standard delivery plans.
Capacity and capability	0	No additional resourcing requirements.	1	Resources required to lead implementation of the ePMA solution but fewer staff training requirements due to out of scope sites and specialties.	2	Large number of resources required to lead implementation of ePMA solution. Fewer staff training requirements due to out of scope specialties.	3	Significant programme resources required to lead implementation. The building and configuration of the ePMA solution will require a wide range of clinical and operational resources. Training and support activities required for staff.
Funding gaps	0	No additional funding requirements.	1	Smallest risk of funding gaps due to smaller scope.	2	Smaller risk of funding gaps due to smaller scope.	3	Option that will cost the most with significant upfront investment required.
Realisation of benefits	3	No expected benefits to be realised.	3	Smaller scope so reduced potential for realisation of benefits. High risk of introduction of disbenefits.	3	Smaller scope so reduced potential for realisation of benefits. High risk of introduction of disbenefits.	1	Low risk of benefits not being realised due to largest scope.
Total Score (Maximum 21; high score = high risk)	3		12		16		17	
Rank	**1st**		**2nd**		**3rd**		**4th**	

Table 7: Risk Appraisal Scoring

As Option 0 will mean that current workflows continue, it has the lowest risk profile. However, it should be noted that continuing with current processes would present the highest level of risk to the HDUHB Secondary Care ePMA programme not realising any benefits.

Benefits Appraisal

DHCW have been working on a set of benefits intended to be measured nationally. At the time of writing this Business Case, the national benefits work is still underway and is planned to be completed by end of October 2023. The HDUHB Secondary Care ePMA Programme Team used the provisional set of benefits to appraise the shortlisted options. HDUHB recognises that this set of benefits are draft and may change. Any changes to the national set of benefits will not be reflected in the shortlisted options appraisal as the

Programme Team felt that the provisional set of benefits were sufficient for an appropriate appraisal of the shortlisted options against potential benefits. However, any updates to the national benefits will be reflected in the Section 3.5 Costs and Benefits as well as in any benefits realisation plans.

The wording of the benefits and their descriptions have been taken from the national work and has not been amended to ensure alignment with the national set of benefits, the national Benefits are subject to change.

Benefit	Description
Improved antimicrobial stewardship	By including functionality that allows this to take place and provide monitoring. Mandating indications and stop/review dates for antibiotics. "the optimal selection, dosage, and duration of antimicrobial treatment that results in the best clinical outcome for the treatment or prevention of infection, with minimal toxicity to the patient and minimal impact on subsequent resistance.
Improved mandatory thromboprophylaxis screening and treatment	By including mandatory assessment, prescribing and monitoring functionality for venous thromboembolic prophylaxis (VTE) screening and treatment. Improving compliance with prescribing standards and policies at the point of prescribing to improve patient outcomes. (Recording the documentation of VTE Risk assessment on medication charts).
Eliminate blank administration record	Improved recording of a medicines administration status documentation when medicines have been administered or not, ensuring drug charts are complete.
Improved allergy recording and status checking	Improved allergy recording and status documentation. ePMA systems include functionality to document allergy status and to make this mandatory and remind users to complete the status. This will improve patient safety by ensuring that prescribers have the most to up to date information or are clearly aware when an allergy status is not known to make clinical decisions appropriately.
Time saved accessing secondary care prescription charts	Digital access to create, view and amend secondary care medicines prescribing and administration information in real time, means that time no longer needed to "find" or be in the same place as a single physical paper drug chart and clarification for illegible handwriting is no longer required. Applies to e.g. Medicines Prescribing, Re-writing drug charts, Ward rounds, Pharmacy Review, Medication Ordering, Medicines Administration, Lost charts/Charts gone astray and Clinical Time Saved due to Improved Legibility.
Reduction in administration errors	Administration errors, a category of medication error and patient safety incident - include - unintended omissions, giving the wrong medication, giving the wrong strength or concentration, giving something the patient is allergic to, etc.
Reduction in prescribing errors	By being able to import medicines history in a digital format and use digitised records from previous entries - transcribing is reduced because you can copy across or utilise existing digitised information without having to read from somewhere else and write to somewhere new - a process which can lead to juxtaposition misreads and miswrites, misinterpretation. All prescriptions will be Legal and complete and adhere to all Controlled Drug requirements.
Improved adherence to drug formulary	Reduced drug expenditure costs, due to better adherence to formulary, aided by the ePMA system. ePMA systems help to focus medication selection, when prescribing, to those that are available in NHS Wales Health Board formularies, which are evidence based and cost effective.
No need to purchase and file paper prescriptions charts	The introduction of EPMA removes the need for ordering of paper medication charts.

Table 8: Benefits

Each of the Options were appraised against the extent to which its delivery could realise the benefit. The ratings assigned to each benefit have been defined as below:

3 – High degree of benefit realisation with the delivery of this Option

2 – Medium degree of benefit realisation with the delivery of this Option

1 – Low degree of benefit realisation with the delivery of this Option

0 – The delivery of this Option would not realise this benefit.

A higher total score reflects a higher degree of benefits realisation.

#	Benefit	Option 0 Do nothing	Option 1 ePMA across acute hospital sites only, in priority specialties only	Option 2 ePMA across acute hospital sites only, in all in scope specialties	Option 3 ePMA across all of secondary care in HDUHB, in all in scope specialties
1	**Improved antimicrobial stewardship**	0	1	2	3
2	**Improved mandatory thromboprophylaxis screening and treatment**	0	1	2	3
3	**Eliminate blank administration record**	0	1	2	3
4	**Improved allergy recording and status checking**	0	1	1	3
5	**Improved medicines reconciliation**	0	1	1	3
6	**Time saved accessing secondary care prescription charts**	0	1	1	3
7	**Clinical saving due to improved legibility**	0	1	1	3
8	**Reduction in administration errors**	0	1	1	3
9	**Reduction in prescribing errors**	0	1	1	3
10	**Improved adherence to drug formulary**	0	1	2	3
11	**No need to purchase and file paper prescriptions charts**	0	1	2	3
	Total score	**0**	**11**	**16**	**33**
	Rank	**4th**	**3rd**	**2nd**	**1st**

Table 9: Benefits Appraisal Scoring

It is assumed that as the scope increases, the selected Option will allow the Programme to realise a given benefit to a greater extent. However, in the case of benefits 4 to 9 above, Option 2 has been rated equally to Option 1. Whilst Option 2 presents a larger scope of the ePMA solution, the introduction of digital-to-paper transfer points that this Option would bring about reduces the extent to which these benefits can be realised as well as potentially introducing disbenefits if this Option was selected.

4.4 Summary of Shortlisted Options Appraisal and Preferred Option

Appraisal of the options identified **"Option 3 – ePMA across all of secondary care in HDUHB, in all in scope specialties"** as the Preferred Option, in alignment with the national direction. It was also agreed that this addresses and prioritises the prescribing and medicines administration needs in secondary care in the Health Board. The overall appraisal is summarised in the table below.

	Option 0 Do nothing	Option 1 ePMA across acute hospital sites only, in priority specialties only	Option 2 ePMA across acute hospital sites only, in all in scope specialties	Option 3 ePMA across all of secondary care in HDUHB, in all in scope specialties
Strategic appraisal	4th	3rd	2nd	1st
Risk appraisal	1st	2nd	3rd	4th
Benefits appraisal	4th	3rd	2nd	1st
Overall Rank	**4th**	**3rd**	**2nd**	**1st** **PREFERRED OPTION**

Table 10: Summary Options Appraisal

4.5 Costs and Benefits

The shortlisted options appraisal highlighted that Option 3 was not only the Preferred Option but the only viable option. As such, the following costs and benefits section only considers the Preferred Option.

The following assumptions and estimates have been used to identify the costs and benefits of the preferred option and to assess the economic impact of the Preferred Option.

General Assumptions

- Programme activity and costs are based on a 7-year analysis period, consisting of 3 years of implementation within the 7-year ePMA contract;
- The preferred option includes a range of cost categories: ePMA supplier costs, resources for implementation and operation, integration, technology infrastructure hardware and devices, data migration, and upskilling staff;
- The basis of ePMA solution costs is based on two pricing options: 1. composite of relevant ePMA implementation case studies outside of HDUHB 2. supplier costs submitted through the National ePMA Framework;
- The number of licences required for concurrent users is based on a proportion of the total number of clinical staff in secondary care in HDUHB at 10,242;
- The number of devices is based on the total number of wards in the Health Board, currently at 94, and an additional 10 departments that may also require devices, bringing the total number to 104;
- The precise requirements of technology upgrades will be informed by the legacy technology position across the Health Board; therefore, the cost estimates are subject to granular assessment;
- The estimated costs do not consider any changes in staff numbers throughout the years provided in this business case;
- Implementation costs are treated as either capital costs for solution configuration and resource support, and revenue costs for ongoing programme management;
- Capital spend related to deployment of the core ePMA solution assumes a straight-line depreciation, with an estimated useful life over the contract period of 7 years. Capital spend related to enabling activities, including hardware, devices and data migration, assumes a straight-line depreciation over a 5 year period;
- A discount factor of 3.5% has been used in accordance with the HMT Green Book.

- The estimated cost includes Optimism Bias (an additional 20% on estimated capital costs) and contingency to address risks (10% on revenue costs) during the implementation phase, which given the early stage of assessment has been through to the financial analysis.

4.5.1 Benefits

DHCW have been working on a set of benefits intended to be measured nationally. At the time of writing this Business Case, the national benefits work is still underway.

The evidence that a Secondary Care ePMA system provides an important foundation for safe, effectively, timely, efficiency, patient-centred and equitable provision of care is well documented nationally. However, translating these quality benefits to cash-releasing savings is not straight forward.

Non-cash releasing savings and the longer-term cash releasing savings that can be achieved post implementation are, only beginning to emerge within other Health Boards both in Wales and around the UK. As a result, the majority of the benefits outlined have not been included in the economic or financial appraisal elements of this business case.

This learning from other Health Boards and other health systems in the UK who have implemented similar ePMA solutions has been supplemented by local consideration of benefits.

Whilst the majority of benefits are likely to be quality and efficiency benefits, initial analysis has identified two potential cash-releasing benefits:

- Reduction in stationery costs from the reduced need for paper prescriptions and paper charts.
- Reduction in drug spend as it is assumed that over time, the improved information available via the Secondary Care ePMA system will support review and optimisation of prescribing and administration practice, for example by identify where high-cost drugs are being used despite a lower-cost equivalent being available.

A potential cost avoidance has also been identified:

- Reduction in medicines-related litigation costs as it is assumed that the introduction of a Secondary Care ePMA system could help mitigate future litigation risks related to medicines.

Further work will be undertaken to quantify these benefits, following completion of the national set of benefits.

4.5.2 Costs

Preliminary cost estimates have been updated based on external examples and supplier indications via the National ePMA Framework. At this stage of assessment, the estimates are sensitive to change, therefore ranges based on ±10% sensitivity have also been shown in summary.

The Table below outlines the Net Present Cost (NPC) which is a calculation used to capture the total cost of the investment over its entire life period based upon today's costs.

Figures are in £m	Low case (£325 per unit)	Base case	High case (£1200 per unit)
	Discounted	Discounted	Discounted
Capital	2.76	2.40	7.03
Optimism Bias	0.62	0.48	2.30
Total Capital Cost plus Optimism Bias	**3.38**	**2.88**	**9.33**
Revenue	5.41	5.43	4.96
Risk	0.35	0.27	1.29
Total Risk-Adjusted Cost	**9.14**	**8.58**	**15.59**
Cash Releasing Benefits	2.62	2.62	2.62
Non-Cash Releasing Benefits			
Total Benefits	**2.62**	**2.62**	**2.62**
NPC	**(6.52)**	**(5.95)**	**(12.96)**

5 Commercial Case

5.1 Introduction

The Commercial Case focuses on the considerations, risks and strategy to support the procurement of, and commercial agreement for the Hywel Dda University Health Board (HDUHB) secondary care Electronic Prescribing and Medicines Management (ePMA) solution.

It sets out an overview of the All-Wales Framework procurement process that has been undertaken and describes the next steps HDUHB would need to take to select a preferred supplier and call off from the framework.

5.2 All Wales Multi-Vendor Framework

5.2.1 Governance

Digital Health and Care Wales (DHCW) was tasked by the Welsh Government to create an NHS Wales multi-vendor Framework Agreement for Electronic Prescribing and Medicines Management (ePMA) Services.

DHCW is the Framework Operator and has established a new multi-vendor Framework Agreement to enable NHS Wales organisations to call off their requirements on a local basis via a mini-competition process.

5.2.2 Contract structure

The key framework objectives were to:

- Enable Health Boards to progress at pace when ready to do so;
- Provide a common governance model with a local operating model;
- Enable interoperability through the use of standards;
- Allow local control of decision making and implementation;
- Allow NHS Wales to specify commercial requirements once (including terms and conditions and a ceiling price); and
- Create an attractive market for innovation and enable new entrants.

The scope of the Framework Agreement was for the provision of ePMA solutions, including the ongoing development, upgrade and maintenance of said solutions. Solutions available to NHS Wales users under this Framework Agreement had to satisfy the following objectives:

- Provide auditable prescribing decision-making support.
- Record and monitor the issuance and administration of pharmaceuticals.
- Interface with local and national systems, including the Welsh Patient Administration System (WPAS), the Welsh Clinical Portal (WCP) and Pharmacy Stock Control.

Suppliers were appointed on a “Pass the Threshold” basis. At Framework level, only the ability of suppliers to deliver services was evaluated. Suppliers detailed solutions were not tested and will be tested at Health Board level via the mini competition process:

- Baseline technical requirements were considered at Framework level. Interoperability was key for the appointment of providers onto the Framework Agreement to ensure key medicine information can be readily available and easily accessed via systems within other care settings across Wales as part of the e-prescribing strategy for Wales.

- The All-Wales Framework did not consider clinical/functional aspects of the solutions in detail or detailed technical requirements. These are to be explored by the Health Boards as part of the mini competition and call of process where user requirements will be considered.

The Framework includes a ceiling price for each supplier, set through a maximum price per concurrent user set, although it may be possible to achieve further discounts through the running of the mini competition.

Supplier performance is not managed at the Framework level. Health Boards are responsible for supplier selection and ensuring that the commitments made in the call off process are delivered.

Three vendors were awarded onto the Framework:

- Better UK
- System C
- Nervecentre

5.3 HDUHB's procurement approach

HDUHB has taken the decision to undertake a mini competition to call off and award the secondary care ePMA contract off the All-Wales Framework. Using this Framework is a pre-requisite to releasing the national funding available from the Welsh Government.

A mini competition is a process carried out to place a call-off contract under a framework agreement where the best value supplier has not been specified. It allows contracting authorities to further refine requirement while retaining the benefits offered under the collaborative agreement.

The benefits associated with this approach is that a mini competition provides the potential to drive better value for money whilst retaining the benefits offered under the Framework agreement, enabling HDHUHB to secure the optimal secondary ePMA solution.

The mini-competition process is comprised of the four key stages detailed below.

5.3.1 Requirements development and the preparation of the Invitation To Tender (ITT)

Although the basic terms or scope of the agreement cannot substantially change, HDUHB can refine the requirements for secondary care ePMA implementation.

Through extensive stakeholder engagement with clinical, operational, managerial, administrative, digital and technical staff, HDUHB have developed an output-based specification document that sets-out what suppliers and the product needs to achieve (rather than how to achieve it). Patient journeys were developed and used to understand user needs and illicit requirements. Over 340 clinicians and staff across all hospitals in HDUHB were engaged via 1-1 interviews, in-person drop-in engagement sessions and virtual group engagement sessions to review both the clinical and technical requirements. Further detail on staff engagement can be found in Appendix A.

5.3.2 Issuing the ITT

The ITT documentation will be issued to suppliers on the All-Wales Framework. The documentation will include clear instructions on how suppliers are expected to respond to the ITT and how they will be evaluated.

5.3.3 Evaluation of responses and selection of preferred supplier

HDUHB is in the process of agreeing the award criteria. The Framework agreement specifies that call offs must be awarded in accordance with the set criteria outlined below. The Framework does not mandate a specific approach to scoring, only weightings. Selection criteria already evaluated during the Framework procurement (such as supplier experience & technical capability etc.) cannot be included again at this stage in line with procurement regulations.

Criteria	Description	Weighting
1. Price	Detailed metrics (users, concurrency etc) to allow bidders to provide a binding Financial Model	20 – 80%
2. Quality	Divided by the sub-criteria below	20 – 80% (quality sub criteria must up to 100%)
2a. Functional, clinical, and technical	How the solution meets users' needs	50 – 80%
2b. Risk transfer	The level of remedies available to the contracting authority for delays	5 – 20%
2c. Service management	Service management and performance metrics setting out resolution times and service credits	5 – 20%
2d. Social value	How the bidder will contribute to the foundational economy	10%

Table 11: Evaluation of Options Criteria

Price scoring

- The Framework agreement has established a maximum price for services within the price matrix.
- The maximum price within the Framework agreement sets the cost per concurrent user. HDUHB will be required to express its number of concurrent users within its tender documents.
- Bidders may not cost in excess of the maximum price determined by the price matrix and number of concurrent users.
- Bidders may, at mini competition, set out any additional fees for implementation which will be payable 30 days after Go Live. This will be based on a day rate or package of work as set out in the mini competition/
- Health Boards may score price using any pre-defined mechanism it wishes. The Framework does not specify an approach, only the maximum weighting.

Quality scoring

- **Functional, clinical and technical:** Bidders will be required to provide a detailed response to the specification set out in Schedule 2A (To Be Attached) of the call off service agreement.
- **Risk transfer:** Clauses 34.3, 34.4.1, 34.4.4 and 34.6 of the call off service agreement and paragraph 8.2 of Schedule 6 (charging and invoicing) can be amended by bidders. HDUHB has not amended/ amended to XXXXXX (To Be Confirmed).
- **Service management:** The Service Management response times and credits are set out in Table 3 of Schedule 2B (service levels) and paragraph 6.2 of Schedule 6 (charges and invoicing). HDUHB has not amended/ amended to XXXXXX (To Be Confirmed).
- **Social value:** Contracting authorities are able to set out their requirements or questions in respect to social value. HDUHB has developed and agreed on the weighting for qualitative social value questions covering 3 mains areas:
    - Foundational Economy
    - Wellbeing and Future Generations Act (2015),
    - and Sustainability.

5.3.4 Contract award

Once the evaluation is complete, the contract can be awarded following a standstill period. Post authorisation and approved through HDUHB Sustainable Resources Committee and HDUHB Board, Award of the contract will be presented to the supplier which provides the closest match to HDUHB's specification and suppliers on the Framework will be notified of the award decision.

5.4 Commercial Risks

The table below captures the commercial risks and mitigations identified as part of the business case process of the secondary care ePMA programme in HDUHB.

Risk	Mitigations
Lack of clarity of requirements	• Functional and non-functional requirements gathering conducted using Patient Journeys depicting the agreed priority pathways. • Requirements gathering included site visits to all the hospital in scope, offering drop-in sessions for all staff, nurses, AHP and clinicians. Requirements were also gathered through surveys, targeted 1-1 workshops as well as virtual group workshops.
Influence of emerging and new priorities at a national and local level.	• The capacity of HDUHB staff to support the secondary care ePMA solution implementation will be a key factor when assessing suppliers' implementation proposals and their requirements of the Health Board. • HDUHB will work on the development of the commercial strategy, including procurement route and contracting strategy.
Funding constraints make the commercial strategy undeliverable	• Programme funding intentions will be confirmed with the HDUHB finance community, relating to the total expected values and drawdown profile. • The tender requirements will emphasise value for money and pricing mechanisms required to work within funding constraints, including a model of variation which asks suppliers to model alternative scopes and phasing to work within a stated financial envelope.
Supplier capacity to support implementations in line with the anticipated HDUHB timescales, aligned to availability of resources	• Capacity to meet timescales and resource constraints will be identified as a key requirement for evaluation during procurement.
Variability in functional scope between suppliers	• When procuring a complex solution such as the secondary care ePMA, there will inevitably be differences in the capabilities and solutions offered by different suppliers. It is unlikely that any one supplier will meet every requirement in the manner preferred by HDUHB. The selection will, therefore, be a compromise between competing imperfect solutions. • To enable the correct balance to be made in the final selection, the competition will allow narrative responses for critical functional areas, rather than simple 'compliant/non-compliant' responses, so that suppliers can propose how they will meet the need and in particular how they will mitigate shortfalls in current capability and include evaluation of functionality in demonstrations, so that clinical and operational staff can assess whether the proposed solution will practically meet their needs.

Table 12: Commercial Risks

5.5 Approach to Risk Transfer

The governing principle is that risks should be allocated to the party best able to manage it, subject to the relative cost.

The following risk transfer matrix details how the types of risk are to be apportioned between the contracting authority and the supplier. This apportionment will be reflected through provision in the contract proposed as part of the procurement. This will then be reviewed and revisited as part of procurement evaluation and final contract.

Risk Transfer Matrix

Risk domain	Contracting authority	Supplier	Shared
1. Design risk			•
2. Construction and development risk		•	
3. Transition and implementation risk		•	
4. Availability and performance risk		•	
5. Operating risk			•
6. Variability of revenue risks	•		
7. Termination risks		•	
8. Technology and obsolescence risks			•
9. Control risks	•		
10. Residual value risks		•	
11. Financing risks	•		
12. Legislative risks			•

Table 13: Risk Transfer Matrix

6 Financial Case

6.1 Introduction

The objective of this section is to examine the financial impact of the preferred option as identified in the Economic Case. This section provides an overview of the financial assumptions that underpin the costs and benefits of the preferred option, funding requirements, the affordability position, and the projected impact on the Health Board's financial position.

The costs presented in this case are preliminary estimates of the preferred option. It is important to emphasise that there remains a wide potential range of programme costs before the preferred supplier is selected and therefore these estimates are sensitive to change. This chapter presents a sensitivity analysis to identify the range of possible outcomes as the preferred option is in further development.

6.2 Assumptions

The estimated costs of the ePMA solution are based on external examples, stakeholder input across the Health Board and built according to the assumptions detailed below:

General Assumptions

- Programme activity and costs are based on a 7-year analysis period, consisting of 3 years of implementation within the 7-year ePMA contract;
- The preferred option includes a range of cost categories: ePMA supplier costs, resources for implementation and operation, integration, technology infrastructure hardware and devices, data migration, and upskilling staff;
- The basis of ePMA solution costs is based on two pricing options:
    1. composite of relevant ePMA implementation case studies outside of HDUHB;
    2. supplier costs submitted through the National ePMA Framework;
- The number of licences required for concurrent users is based on a proportion of the total number of clinical staff in secondary care in HDUHB at 10242;
- The number of devices is based on the total number of wards in the Health Board, currently at 94, and an additional 10 departments that may also require devices, bringing the total number to 104;
- The precise requirements of technology upgrades will be informed by the legacy technology position across the Health Board; therefore, the cost estimates are subject to granular assessment;
- The estimated costs do not consider any changes in staff numbers throughout the years provided in this business case;
- Implementation costs are treated as either capital costs for solution configuration and resource support, and revenue costs for ongoing programme management;
- The business case has considered inflation based on OBR CPI forecasts, as recommended by NSHE for FY24 – 28[8] and then an average 2.3% for FY29-32;
- Capital spend related to deployment of the core ePMA solution assumes a straight-line depreciation, with an estimated useful life over the contract period of 7 years. Capital spend related to enabling activities, including hardware and devices assumes a straight-line depreciation over a 5 year period;

[8] Forecasts for the UK economy: a comparison of independent forecasts. 2023 HM Treasury, p.18. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1157160/_Independent_Forecasts_for_the_UK_Economy__May_2023.pdf

- The Financial case assumes no capital charge against the average asset value every year for capital items funded externally from the Welsh Government Digital Priorities Investment Fund (DPIF);
- A discount factor of 3.5% has been used in accordance with the HMT Green Book. A baseline cost growth assumption of 2.5% from FY26/27 has been included to account for an increase in clinical activity;
- The estimated cost includes Optimism Bias (an additional 20% on estimated capital costs) and contingency to address risks (10% on revenue costs) during the implementation phase, which given the early stage of assessment has been through to the financial analysis; and

Current Baseline Position

- The baseline position, which can be used to understand the implications of a 'Do Nothing' scenario, is based on Health Board financial information and assumptions on capital refreshes and team costs, which has been validated with the Health Board finance teams; and
- The current baseline position includes the current paper-based solution.

Cost Profile

- Preparation and Implementation/deployment activities will run from Q1 FY24/25 up until the final go-live date of the last hospital site for the ePMA solution in Q3 FY26/27 during which the following key activities have been assumed:
  - Purchases of hardware, devices and upgrades
  - Integration and data quality and migration
  - Design, configuration and testing of the ePMA solution
  - Training, adoption, process and workflow redesign
  - Programme and roll-out team resource
- Ongoing Health Board resources during the implementation phase of the new ePMA product until go-live and thereafter will provide ongoing support for ePMA operation, maintenance, and data reporting.

VAT Treatment

- VAT recovery typically requires an assessment of a case to HMRC based on argument relating to the bespoke nature of an asset or service which supports all or partial VAT incurred. The Programme team will initiate a request for formal VAT advice at the FBC stage and has adopted VAT recovery assumptions that align with those used recently by other Health Boards engaging in equivalent programmes.
- It is assumed that VAT on 'asset purchases' (hardware and software licence) and non-pay items is not recoverable.
- Costs provided in the baseline position includes VAT

6.3 Estimated Programme Costs

As set out in the Economic Case, preliminary estimates have been made for costs relating to the preferred way forward. It is important to emphasise that at this stage of assessment, the estimates are sensitive to change, therefore ranges based on ±10% sensitivity have also been shown.

Financial costs are taken from the Economic Case estimate, adjusted for non-recoverable VAT, inflation, depreciation, and capital charges. The breakdown of costs has been summarised in the table below.

Preferred Option, 3-year implementation over the 7-years	**ePMA across all of Secondary Care in HDUHB in all in scope specialties**			**Comments**
Costs	**Capital £m**	**Revenue £m**	**Total £m**	
ePMA Solution	(1.3)	(1.3)	(2.6)	
Health Board Resources		(5.2)	(5.2)	
Non-recoverable VAT	(0.5)	(0.3)	(0.8)	
Hardware and devices	(1.2)		(1.2)	
Optimism Bias and Contingency	(0.5)	(0.3)	(0.8)	
Total Cost	(3.5)	(7.1)	(10.6)	
Finance Cost Range	**(3.1) – (3.8)**	**(6.2) – (7.7)**	**(9.3) – (11.5)**	
Depreciation		(3.5)	(3.5)	
Total Financial Cost (before benefits/funding)	(3.5)	(10.5)	(14.0)	**Total finance cost before cash releasing benefits and funding sources**

Table 14: Estimated Programme Costs

The table below sets out both the whole life capital and revenue costs for the preferred option after adjustments for expected inflation and non-recoverable VAT:

Whole-life costs	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**2028/29**	**2029-32**	**Total**
	£m	£m	£m	£m	£m	£m	£m
ePMA supplier	(1.3)	-	-	-	-	-	(1.3)
Hardware and devices	(1.2)	-	-	-	-	-	(1.2)
Optimism Bias	(0.5)	-	-	-	-	-	(0.5)
Non-recoverable VAT on Capital Costs	(0.5)	-	-	-	-	-	(0.5)
Total capital cost	(3.5)	0.0	0.0	0.0	0.0	0.0	(3.5)
ePMA supplier Costs (ongoing)	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)	(0.5)	(1.3)
Resources	(0.9)	(1.0)	(1.0)	(0.5)	(0.5)	(1.4)	(5.2)
Risk/Contingency	(0.1)	(0.1)	(0.1)	(0.0)	(0.0)	(0.0)	(0.3)
Non-recoverable VAT on Revenue Costs	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.1)	(0.3)
Total revenue cost	(1.1)	(1.3)	(1.2)	(0.7)	(0.7)	(2.1)	(7.1)
Total whole life cost	(4.6)	(1.3)	(1.2)	(0.7)	(0.7)	(2.1)	(10.6)

Table 15: Whole life costs for the preferred option

The incremental whole life cost is further adjusted with cash releasing/income benefits and cost of capital charges, the outcome of which is presented in the table below.

Cost reconciliation	Capital	Revenue	Total
	£m	£m	£m
Incremental Whole life costs (exc. VAT)	(3.0)	(6.8)	(9.8)
Plus: Irrecoverable VAT	(0.5)	(0.3)	(0.8)
Whole life costs	**(3.5)**	**(7.1)**	**(10.6)**
Less: Cash-releasing benefits		3.1	3.1
Plus: Depreciation		(3.5)	(3.5)
Total financial costs	**(3.5)**	**(7.5)**	**(10.9)**

Table 16: Whole life costs reconciliation

6.4 Impact on Forecast Financial Statements

This section shows how the preferred option affects the combined financial trajectory of the system overall. The statements are provided solely for the purposes of ePMA business case development, and specifically for providing a baseline assessment against which ePMA impact can be assessed. The ePMA impacts commence in 2024/25 ('Year 0').

6.4.1 Impact on Income & Expenditure

The indicative impact of the Programme, based on the current preferred option, is shown in the table below. The annual operating cost of an ePMA solution is expected to cost c.£6.9m after inflation and VAT adjustments. Potential cash releasing benefits include reduction in stationery costs and reduction in drug spend and potential cost avoidance benefits include reduction in medicines-related litigation costs which are currently estimated at c.£3.1m however will be further assessed and determined in the FBC.

Based on current estimates, the core financial flows of the Programme are expected to deliver an adverse I&E impact over the 7 years of c.£3.8m and is further impacted after considering depreciation which creates a financial risk for HDUHB.

Preferred Option, 3-year implementation and 4-year operation	Yr0 2024/25 £m	Yr1 2025/26 £m	Yr2 2026/27 £m	Yr3 2027/28 £m	Yr4 2028/29 £m	Yr5 2029/30 £m	Yr6 2030/31 £m	Yr7 2031/32 £m	Total £m
ePMA Programme Impact									
Incremental Revenue costs	(1.1)	(1.3)	(1.2)	(0.7)	(0.7)	(0.7)	(0.7)	(0.7)	(7.1)
Cash-releasing benefits	0.0	0.0	0.2	0.3	0.5	0.7	0.7	0.7	3.1
Net (cost)/saving	**(1.1)**	**(1.3)**	**(1.1)**	**(0.3)**	**(0.2)**	**0.0**	**0.0**	**0.0**	**(3.9)**
Depreciation	0.0	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.3)	(0.3)	(3.5)
Net I&E impact	**(1.1)**	**(1.8)**	**(1.6)**	**(0.9)**	**(0.7)**	**(0.6)**	**(0.3)**	**(0.3)**	**(7.4)**

6.4.2 Impact on Statement of Financial Position

At this stage of analysis, it is assumed that an asset will be recognised and assigned to the Health Board Statement of Financial Position aligned to the capital investment made. Depreciation charges will reduce the asset balance over the life of the contract.

The current indicative impact on the Health Board's Statement of Financial Position is shown in the table below.

Base case	**Yr0**	**Yr1**	**Yr2**	**Yr3**	**Yr4**	**Yr5**	**Yr6**	**Yr7**	**Total**
	2024/25	**2025/26**	**2026/27**	**2027/28**	**2028/29**	**2029/30**	**2030/31**	**2031/32**	
	£m	**£m**	**£m**	**£m**	**£m**	**£m**	**£m**	**£m**	
B/f Asset Value	-	3.5	2.9	2.3	1.8	1.2	0.6	0.3	
Asset Additions	3.5	-	-	-	-	-	-	-	3.5
Depreciation	-	(0.6)	(0.6)	(0.6)	(0.6)	(0.6)	(0.3)	(0.3)	(3.5)
C/F Asset Value	**3.5**	**2.9**	**2.3**	**1.8**	**1.2**	**0.6**	**0.3**	**0.0**	
Average Asset Value	1.7	3.2	2.6	2.0	1.5	0.9	0.5	0.2	

6.4.3 Impact on Cash Flow

The cash flow identifies the impact of the Programme on the Health Board's cash position.

The table below shows the indicative annual total cash flow based on the preferred option. This shows a net cash shortfall of c.£1.9m. A series of actions have been identified to address programme affordability, the cumulative impact of which will be assessed, selected, and prioritised to deliver a cash neutral position.

Preferred Option, 3-year implementation and 4-year operation	**Yr0**	**Yr1**	**Yr2**	**Yr3**	**Yr4**	**Yr5**	**Yr6**	**Yr7**	**Total**
	2024/25	**2025/26**	**2026/27**	**2027/28**	**2028/29**	**2029/30**	**2030/31**	**2031/32**	
	£m	**£m**	**£m**	**£m**	**£m**	**£m**	**£m**	**£m**	**£m**
Capital Outflow	(3.5)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(3.5)
Incremental Revenue Outflow	(1.1)	(1.4)	(1.3)	(0.6)	(0.7)	(0.7)	(0.7)	(0.7)	(7.1)
Total Incremental Outflow	**(4.6)**	**(1.4)**	**(1.3)**	**(0.6)**	**(0.7)**	**(0.7)**	**(0.7)**	**(0.7)**	**(10.6)**
Cash-releasing Benefits	0.0	0.0	0.2	0.3	0.5	0.7	0.7	0.7	3.1
External Funding	3.4	1.2	1.2	0.0	0.0	0.0	0.0	0.0	5.6
Total Inflow	3.4	1.2	1.3	0.3	0.5	0.7	0.7	0.7	8.7
Net Cash Flow Inflow/(Outflow)	**(1.2)**	**(0.2)**	**(0.0)**	**(0.3)**	**(0.2)**	**0.0**	**0.0**	**0.0**	**(1.9)**

6.5 Funding

This section will provide an overview of the funding approach and options that support the delivery of the HDUHB Secondary Care ePMA Programme. The funding options provided in this section have been identified in principle with Finance Leads, however, require further development and clarification at the FBC stage.

6.5.1 Funding Approach

The assessment of affordability demonstrates that HDUHB will deliver the Programme initially through funding from the Welsh Government and additional capital funding from the Health Board.

As set out in the DMTP ePMA Implementation Funding paper, the Welsh Government, through the Digital Priorities Investment Funding (DPIF) will fund:

- **Resources that will make up the temporary organisation formed to prepare for ePMA** – this will typically include resources who cover project management, business analysis, design, testers, business change agents/application trainers, clinical specialists, communications.
- **Resources to complete the implementation itself.**
- **Project support periods to support ward preparation and readiness.**
- **Pre-implementation teams to assess readiness for procurement costs –** this includes one-off costs from the supplier to the Health Board for the "purchase" of the solution and for implementation resources.
- A short-period of post go-live before a **ward is handed over to the operational support team**
- **Integration for the solution with national platforms.**

The Welsh Government funding will not cover:

- Extended periods of post go live support for wards and will not fund resources deemed necessary for the ongoing operation of ePMA solutions (except during the readiness period – for example, upskilling of resources that will become BAU).
- Integrations with local applications unless otherwise agreed in writing by the Welsh Government.
- Hardware and devices.

As the Programme transitions from implementation to ongoing support and maintenance, the Health Board will need to continue funding the Programme through allocation of operating budgets and savings made through cash releasing benefits.

The total life cost of the ePMA Secondary Care Programme is c.£10.5m of which c.£3.5m are capital costs and c£7.0m are revenue costs. The Health Board requires external funding of c£5.5m, of which c.£2.2m to support capital costs and the remaining c.£3.3m for implementation revenue costs. The remaining c.£5.0m will need to be funded using internal HDUHB funding envelopes and cash releasing benefits. Cash releasing benefits of c.£3.1m have been identified, leaving a c.£1.9m funding gap, of which c.£1.3m is capital costs and c.£0.6m is revenue costs. The c.£1.9m funding gap is for hardware and devices and BAU operations.

The summary of proposed internal and external funding for capital and revenue costs aligned to the preferred option is shown in the table below.

CAPITAL	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**2028/29**	**2029-32**	**Total**
	£m	**£m**	**£m**	**£m**	**£m**	**£m**	**£m**
Funding Source							
Welsh Government	2.2						2.2
System Capital Reserve (balancing figure)	1.3						1.3
Total	**3.5**						**3.5**

CAPITAL	2024/25	2025/26	2026/27	2027/28	2028/29	2029-32	Total
Application of Funding							
ePMA Supplier	(1.3)	-	-	-	-	-	(1.3)
Hardware and devices	(1.2)	-	-	-	-	-	(1.2)
Optimism Bias	(0.5)	-	-	-	-	-	(0.5)
Non-recoverable VAT on Capital Costs	(0.5)	-	-	-	-	-	(0.5)
Total	**(3.5)**	-	-	-	-	-	**(3.5)**
Source *less* Application	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Table 17: Capital Application of Funds

REVENUE	2024/25	2025/26	2026/27	2027/28	2028/29	2029/32	Total
	£m	**£m**	**£m**	**£m**	**£m**	**£m**	**£m**
Funding Source							
Welsh govt.	1.1	1.1	1.1	0.0	0.0	0.0	**3.3**
Cash releasing benefits	0.0	0.0	0.2	0.3	0.5	2.1	**3.1**
System Revenue Reserve (balancing figure)	0.0	0.2	0.0	0.3	0.2	(0.1)	**0.6**
Total	**1.1**	**1.4**	**1.3**	**0.6**	**0.7**	**1.9**	**7.0**
Application of Funding							
ePMA supplier Costs (ongoing)	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)	(0.5)	(1.3)
Resources	(0.9)	(1.1)	(1.0)	(0.5)	(0.5)	(1.5)	(5.2)
Risk/Contingency	(0.1)	(0.1)	(0.1)	0.0	0.0	0.0	(0.3)
Non-recoverable VAT on Revenue Costs	0.0	0.0	0.0	0.0	0.0	(0.1)	(0.3)
Total	**(1.1)**	**(1.3)**	**(1.2)**	**(0.7)**	**(0.7)**	**(2.1)**	**(7.1)**
Source *less* Application	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Table 19: Revenue Application of Funds

The overall affordability is constrained, and the funding sources identified at this stage will not be able to fund this programme in isolation, it is therefore essential that:

- Welsh Government funding is secured to at least the levels of the initial indications;
- HDUHB can identify and repurpose capital spending to deliver this Programme; and
- The HDUHB can track and deliver the cash releasing savings identified in this business case.

6.6 Assessment of Affordability

This section analyses the affordability of the preferred option through the capital and revenue funding envelopes, which will be further assessed and confirmed in the FBC.

6.6.1 Capital Affordability

The Preferred Option projects an estimated capital cost of c.£3.5m, of which the Health Board will need to consider funding alongside the Welsh Government contribution c.£2.2m. The Preferred Option would therefore be presented as affordable in principle but with funding risks and uncertainties, subject to ongoing prioritisation and assessment.

The estimated capital cost will be funded partly through Welsh Government DPIF funding and additional capital funding from the Health Board, which has been identified in principle working with finance. The commitment status for the HDUHB funding contribution is not certain and require further development. The Health Board will conduct further investigations into these areas, including potential repurposing and reprofiling of capital programmes. The table below provides a breakdown of the estimated capital cost and funding envelope as well as considerations/actions required to confirm the affordability position.

The table below provides a summary of the capital & funding envelope estimated for the preferred option.

Figures are in £m

Capital Cost & Funding Envelope	*Note*	Total
Supplier	*1-2*	(1.5)
Health Board (implementation and deployment)		(1.0)
Non-recoverable VAT on assumed purchases		(0.5)
Optimism Bias		(0.5)
Total Capital Costs		**(3.5)**
Welsh Government DPIF funding	3	2.2
Internal Indicative Capital Contribution	4	TBC
Revised Funding Envelope		**2.2**
Funding Gap		**(1.2)**

Table 20: Capital Affordability

The below considerations and actions have been identified in response to the funding risks and uncertainties which will be further assessed in the FBC.

Table 18: Considerations identified in response to funding risks

Capital Costs	
Notes	**Considerations / Action**
1	Undertake tender process to market test ePMA supplier costs, building on these estimates.
2	Include tender requirement for suppliers to spread implementation and capital cost, if there is a true funding shortfall.
Funding Envelope	
Notes	**Considerations / Action**
3	Reconfirm Welsh Government DPIF funding allocation, considering the system wide context and the national direction on electronic prescribing.
4	Re-assess HDUHB contribution against current capital programme and other prioritisation constraints.

6.6.2 Revenue Affordability

The preferred option estimated a revenue cost of c.£6.9m, before adjusting for cost of capital. The operating costs will be funded through external funding streams of c.£3.6m and potential cash releasing benefits of c.£3.1m.

The table below provides a summary of the revenue costs estimated against the system revenue budget and cash releasing benefits forecasted for the preferred option

Figures are in £m

Revenue Cost & Funding Options	Note	Total
Supplier		(1.4)
Health Board		(5.1)
Contingency		(0.3)
Non-recoverable VAT on Revenue Costs		(0.3)
Total Revenue Costs		**(7.1)**
Welsh Government DPIF funding		3.3
Cash Releasing Benefits (CRB)		3.1
Total CRB and System Budget		**6.4**
Incremental Impact on I&E (before cost of capital)		**(0.6)**
Cost of Capital		
Depreciation		(3.5)
Incremental Impact on I&E		**(4.1)**

Table 22: Revenue Affordability

6.7 Financial Risks

The table below articulates the financial risks associated with the Programme.

Table 23: Financial Risks and Mitigations

Risks	Mitigations
Variability of programme cost estimates further affects affordability.	• Prudent assessment based on potential high-end range of Programme costs related to Preferred Option.
Variability in programme benefits affects the HDUHB programme contribution and affordability.	• Further validation of forecasted benefits to be established in the FBC. • Develop a 'high level' benefit realisation strategy and plan that demonstrate the partners ability to track and deliver the cash releasing savings
External and internal funding sources are identified but not secured, impacting ability to progress development and secure the vendor contract and delivery resources.	• Reconfirm funds and funding profile identified through the Welsh Government Digital Priorities Investment Funding, • Indicative operational budgets and capital programme contributions agreed with Health Board finance team.

7 Management Case

7.1.1 Introduction

The delivery of this programme will be challenging. Whilst the case for change for a secondary care ePMA solution across HDUHB is compelling, careful planning for the design and implementation phases will be required to deliver against HDUHB's strategic ambitions. This will need to be supported with a robust resourcing plan and alignment with enabling programmes such as the HDUHB Network Upgrade Programme.

This chapter sets out the approach that HDUHB will take to implement and deliver the secondary care ePMA Programme, the programme governance, management and assurance arrangements to ensure robust oversight and scrutiny, the change management plan, the plan for infrastructure, integration and data migration, the benefits realisation strategy and approach to risk management to maximise adoption of the new solution.

To inform the implementation approach outlined in this case, the Centre for Digital in Public Services (CDPS) conducted a User Research exercise on the 26th and 27th October 2022, across Wales to define the medicines prescribing and administration process, and understand the systems, constraints, barriers, and opportunities. As a result of this exercise, the CDPS recommended that a ward-by-ward phased approach would be favourable for the implementation of the secondary care ePMA solution in HDUHB. This approach recommends starting with the simple and stable wards (i.e. with low turnover) before moving onto more complex contexts after taking onboard the lessons learnt. Such approach allows the team to reducing potential risks and to review and refine the approach based on lessons learnt.

7.2 Programme management and governance

7.2.1 HDUHB Secondary Care ePMA Programme Team

Structure

The HDUHB Secondary Care ePMA Pre-implementation Programme Team has been established and is in operation delivering the Pre-implementation Activity. It reports into the HDUHB Secondary Care ePMA Steering Group, and the table below outlines the key roles in the team. The HDUHB Secondary Care ePMA Programme is a joint clinical and digital transformation programme, enabled by an IT solution. As such, the team structure was developed to ensure appropriate clinical and operational representation. It is based on lessons learnt from Trusts and Health Boards that have recently implemented ePMA solutions to include the key roles required for the successful implementation of the secondary care ePMA in HDUHB.

HDHUHB Secondary Care ePMA Programme Team
Clinical Lead (and Senior Responsible Officer)
Programme Management - Programme Manager
Programme Management - Project Manager
Project Support Officer
Digital Prescriber Pharmacist
Nurse – Senior Informatics Nurse
ePMA Nurse
Technical Implementation Lead
Application Support Specialist and Trainer
Procurement (not a dedicated role in the team, will be from the central Health Board resource)

It is expected that once the pre-Implementation activity is concluded and the programme moves to the implementation Phase, the ePMA Secondary Care Programme Team will need to grow to enable it to undertake the requirements for implementation (as described later on in this point) and will include additional roles as depicted in the table below.

HDHUHB Secondary Care ePMA Programme Team Additional Team Members
Pharmacy Technician
Doctor
Contract Management (may not be a dedicated role in the team and could be shared resource from other teams but some provision of contract management responsibility will be required)
Business Change Manager (Change Management)
Designer/Digital content (not a full-time role, will be responsible for creating a digital suite of training and engagement material)

Roles and responsibilities
The Programme Team is responsible for the day to day leadership, management and monitoring of the HDUHB Secondary Care ePMA Programme.

Throughout the Programme, the ongoing management will be driven by the following documents:

- Programme Initiation Document (PID)
- Programme plan
- Highlight/Exception reports
- Risk register
- Issue register
- Change Log (Steering Group level)
- Decision Log (Programme Team and Steering Group)
- Lessons Learnt Log
- Communication Plan
- Programme meeting minutes
- Solution Architecture Design
- Terms of Reference
- Business Analysis documents
- Test Plan and Test Certificates
- Benefits and quality documents
- Training strategy & plan (to support interaction with national systems)
- Any other documents relevant to programme

During the pre-implementation period, the Programme Team is responsible for activities required for the successful implementation of the secondary care ePMA solution in HDUHB, from preparation through to contract award. This includes the development of the requirements specification and identification of opportunities to improve the local functionality and application of the Minimum Viable Product agreed nationally with successful Framework suppliers.

During the implementation period, the Programme Team will be responsible for the end-to-end roll-out of the secondary care ePMA solution. The team includes representation from the IT and Digital departments to co-ordinate and provide consistent technical IT input. There is also clinical representation on the team to ensure the solution is set-up and configured correctly from a clinical perspective.

The HDUHB secondary care ePMA Programme Team will also be responsible for management of the roll-out teams required at each hospital site during the implementation period. The implementation roll-out teams are discussed in Section 7.4.2 later in the Management Case.

Following the contract award, the Programme Team will provide oversight throughout the programme lifecycle. This team will:

- Act as the Champions for the Programme, linking the Programme to the different stakeholder groups (e.g. clinical, operational, digital, and others);
- Have operational management of the end to end Programme, including the change control and management processes;
- Provide guidance on operational issues that are identified;
- Maintain, govern and manage the rollout of the secondary ePMA group in HDUHB, with the implementation teams reporting into this group. These groups will progress the implementation and would then establish their own governance arrangements including a balanced range of local stakeholders covering pharmacy, nursing, clinical, digital and technology roles; and
- Hold the stakeholders accountable for achieving the programme milestones within budget and per the agreed timelines.

7.2.2 HDUHB Secondary Care ePMA steering group

Structure
The HDUHB Secondary Care ePMA Programme Team will report into the HDUHB Secondary Care ePMA Steering Group which has been established as part of the HDUHB Digital Pre-Implementation and Procurement Programme. The key roles in the membership of the Steering Group are outlined below:

- Clinical Lead (and chair)
- Digital & Innovation
- Transformation
- Patient Services
- Nursing
- Pharmacy and Medicines Management
- Informatics
- Infrastructure
- Integration
- Information Services
- Software Development and Application Support Specialists
- Finance
- Benefits Realisation
- Procurement
- Project Support
- Quality Improvement
- GP Lead – as required, to provide link into the Primary Care ePrescribing Programme
- Representation from National Team – as and when required
- Representation from the Supplier – as and when required

Roles and responsibilities

The Steering Group meet on a monthly basis and provide oversight and scrutiny of the delivery of the HDUHB Secondary Care ePMA Programme, including benefits planning, delivery and programme assurance. Progress will also be reported through the Steering Group.

As the HDUHB Secondary Care Programme progresses, further consideration will need to be given to the assurance and approval process for necessary clinical pathway and process standardisation and changes.

During the pre-implementation stage, the Steering Group is responsible for governance of the pre–implementation and procurement phase activities. The Steering Group will oversee the development of the

requirements specification carried out by the Programme Team. During implementation, the Steering Group will oversee and govern the overall rollout of ePMA in HDUHB. The Steering Group will also be responsible for overseeing the realisation of benefits and evaluation of the Programme.

The Steering Group will report into the Digital Senior Team. The upwards governance route through to the Executive Board is outlined in the diagram below.

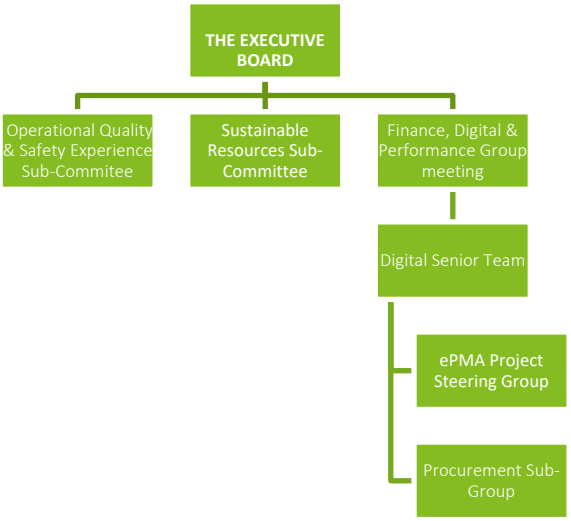

Figure 2 Internal HDUHB Governance Structure

The Steering Group will also work collaboratively with the National Team (DHCW) throughout to ensure alignment and representatives from the National Team will attend the Steering Group as appropriate. During the pre-implementation stage, examples of such activity will include ensuring that local requirements are being developed in line with the requirements of the Welsh Government and meets the definition of the National Minimum Viable Product. During the implementation stage, it is expected that a number of central activities may still be require, such as a national approach to benefits realisation.

The HDUHB secondary care ePMA programme governance will align to the National ePMA Programme Governance Structure defined in the National Secondary Care ePMA Programme Initiation Document. The HDUHB ePMA Steering Group and will coordinate and report into the national Secondary Care ePMA Programme Board as well as the national Secondary Care ePMA Team Meetings and Communities of Practice.

The national ePMA programme governance structure is illustrated in the diagram below.

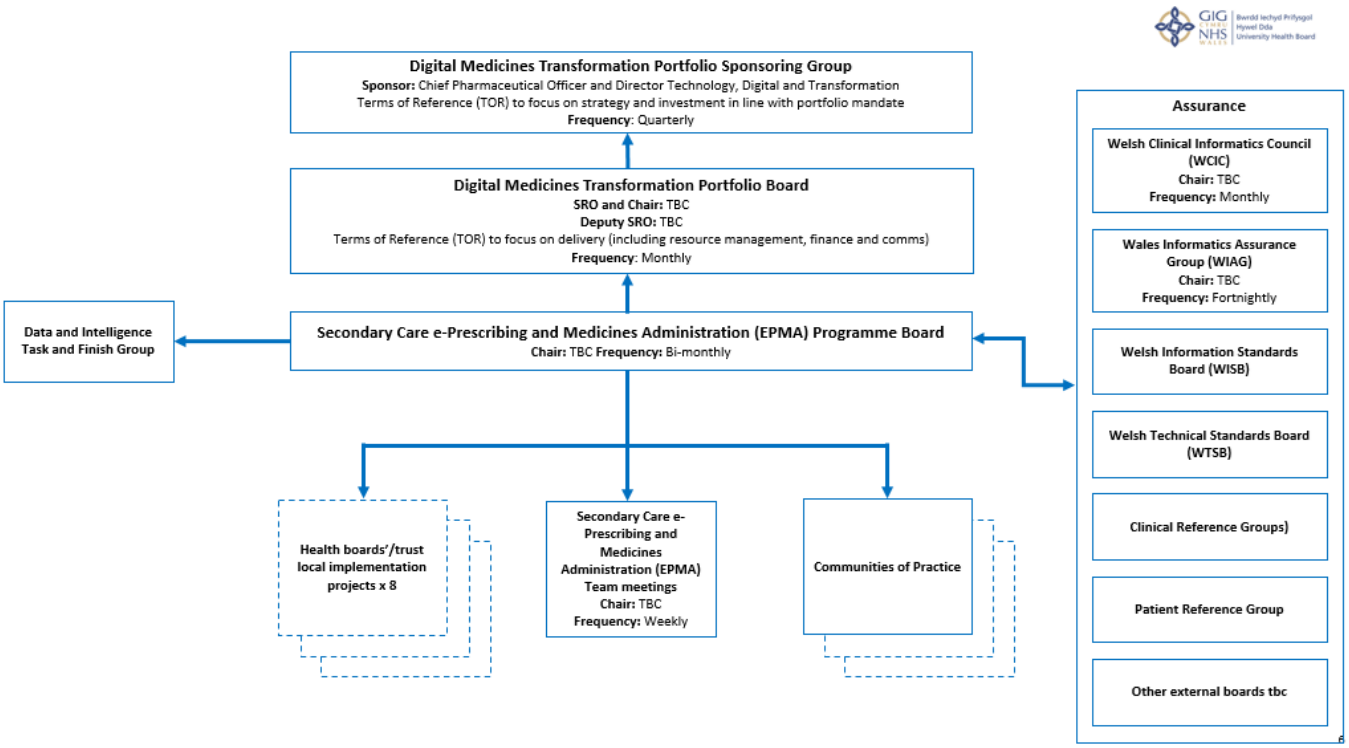

Figure 3: National ePMA programme governance structure

7.2.3 Shared learning

The phasing of the national rollout, as defined in the National ePMA PID provides an opportunity for Health Boards to collaborate on shared learning for implementation, driving further safety benefits, potential savings in the implementation costs.

A strategic approach to shared learning in relation to implementation and resource will be considered by the Steering Group. The HDUHB ePMA Steering Group is leading on an intentional facilitation and coordination effort with other Health Boards in Wales to understand lessons learnt from those implementing or who have already implemented, and to share lessons learned with other Health Board in Wales that are following behind HDUHB in the process of implementation.

7.3 Programme assurance

The Programme Team will manage the Programme Plan, the risks, issues and all programme documentation according to established good practice, using guiding principles drawn from Managing Successful Programmes and PRINCE2 Agile. As permanent programme governance is developed, it is expected that the ePMA Steering Group would be accountable for the Programme Plan but the responsibilities around management of this plan would remain with the Programme Team.

A standard suite of reports will be produced to ensure effective visibility of timely and accurate management information at the appropriate level to maintain momentum of the Programme. This will include fortnightly workstream progress reports, monthly Steering Group reports and regular reporting for the Steering Group and other local and national governance boards as required.

In addition to regular reporting, the Programme will establish a cycle of assurance reviews during the implementation lifecycle. These “Gateway” reviews, or decision points, will provide greater visibility and improved management of risk at each stage of the implementation, improve stakeholder confidence in Programme delivery, provide early warning of risks and secure expert insights for the Programme. The expected gateways are summarised below:

- Readiness – covering strategy and programme planning;

- Workflow and configuration – workflow design, operational policies & procedures, configuration and plans for technology, testing and training;
- User and system readiness – testing progress, training strategy and cutover strategy;
- End user training and cutover – training delivery and progress, detailed cutover plan and arrangements for go-live; and
- Closure – post-implementation review and benefit realisation monitoring and evaluation.

In addition, the HDUHB secondary care ePMA programme assurance framework will align and be subject to the national assurance processes around technical and clinical design:

- Welsh Clinical Informatics Council (WCIC)
- Welsh Information Development Group (WIDG)
- Welsh Informatics Assurance Group (WIAG)
- Welsh Information Governance Board (WIGB)
- Welsh Technical Standards Board (WTSB)
- Welsh Information Standards Board (WISB)
- Application and Architecture Assurance Group (AAAG)

7.4 Programme Plan

7.4.1 Implementation approach

The secondary care ePMA solution will be rolled out across HDUHB in secondary care sites on a “ward-by-ward, start simple” model, in alignment with the recommendations set out in the User Research Feedback study funded by DHCW and conducted in collaboration with the CDPS. In consultation with subject matter experts from the HDUHB Steering Group, it has been agreed that whilst the “ward-by-ward, start simple” model” will be used, it should not be too simple, and a moderate degree of complexity should be introduced early on to allow for lessons learned to be gathered from the very start. Wards can also be grouped as appropriate to increase pace, but it should be noted that it is recognised that sizeable effort is required to transcribe drug charts ready for go-live. As such, ward groupings need to be appropriately sized.

The table below, detailed in the User Research Feedback, compares the roll-out models that were taken into consideration, and based on which HDUHB have decided to adopt the “ward-by-ward, start simple” model. Other roll-out models were taken into consideration but discounted as not applicable for HDUHB. While the “Big-Bang” model is favoured by system implementers due to its speed and momentum, it will not apply in the HDUHB context, as the secondary care ePMA programme in HDUHB is digitalising a paper process, rather than replacing an existing digital solution. The “by speciality pathway” option was not in the CDPS research but considered locally by HDUHB. It was discounted due to the risk of opportunities for things to go wrong, particularly given the Programme’s dependency on the Network Upgrade Programme.

Considerations	Big Bang	Ward by ward, start simple	Ward by ward, start complex	By speciality pathway
Digital-paper transfer points	Minimised	Low	Variable	Low
Speed/rate of change	High	Low	Low	Low
Opportunities for things to go wrong	High	Low	Medium	High
Impact if things go wrong	High	Low	Variable	Variable
Opportunity to test, learn & adjust	Low	Medium	High	High
Implementation & support team size	High	Small	Small	Medium

Table 19: Implementation Approach Considerations

It is recognised that the roll-out will need to also consider key pressures in the health system such as winter pressures. The roll-out plan will also need to be refined in consultation with medical workforce teams to consider events such as junior doctor change over times.

7.4.2 Roll-out teams

The implementation activity will be driven by a roll-out team, or roll-out teams dependent on the hospital, that has responsibility for on the ground support for all users and stakeholders immediately prior to and for 7 days after implementation in a ward. HDUHB will adjust the “on the ground” support period based on the complexity of the roll out on each site. This team will be led by pharmacy, nursing informatics team and the senior change staff from the core team. IT will provide dedicated desktop and floorwalker support for users as part of this team, and dedicated training resource has been assumed to manage the significant training overhead for staff. Although it is recognised that eLearning and digital training modules will have been developed and used within HDUHB, it is assumed that face-to-face training will provided in addition, to provide the flexibility required by clinical staff.

HDHUHB Secondary Care ePMA Roll Out Team (intricately linked with Programme Team)
Digital pharmacy prescriber
Pharmacy technician
ePMA Nurse x2
Technical implementation manager
Data analyst

Table 20: Roll-out Team

It is expected that the headcount and associated roles may vary significantly by hospital site given the differences in scale. The roll-out team will work closely with the HDUHB Secondary Care ePMA Programme Team. Drawing from lessons learned from other ePMA implementations across Wales and the rest of the UK, the Roll Out Team will include:

- A digital pharmacy prescriber – this is a second prescriber in addition to the digital pharmacy prescriber in the HDUHB Secondary Care ePMA Programme Team. It is necessary to have this second prescriber as ensure adequate resource with autonomy to make live clinical changes to the ePMA configuration as issues are discovered is critical to a successful roll out.
- a team of nurses and pharmacy technicians - this level of coverage is required to cover multiple shifts and facilitate face to face support during roll out when administering medicines.
- a data analyst whose role is to produce local business and clinical intelligence reports. These reports will support and direct the clinical priorities for clinicians and technicians. This is necessary to enable the business change and service redesign, so that data harnessed at the point of care is presented in real time.

The day-to-day leadership, management and monitoring of the organisation’s readiness to deploy the ePMA solution will rest within the Clinical, Operational, Pharmacy, Digital and Technology teams.

7.4.3 IT support

It is recognised that the implementation of an ePMA system across hospitals in HDUHB carries the same or greater technical challenge as any key clinical IT system. This is reflected in a dedicated IT preparatory team that will undertake the required system build, configuration and testing prior to go-live. As a critical clinical system, it is recognised that robust 24*7*365 support is required as a business-as-usual activity following the immediate support provided by the roll-out teams. Although it is assumed that a level of out-of-hours IT support will be included in existing arrangements, it is recognised that a dedicated support

team including Pharmacy and Application resource is required. As with all frontline clinical systems, dedicated user provisioning will need to be available to solve minor access issues and a Service Desk support overhead is included.

7.4.4 Implementation plan

Following approval of the business case, there are a number of additional steps that HDUHB would have to undertake to facilitate the implementation of the secondary care ePMA solution.

HDUHB's secondary care ePMA programme is a joint initiative between the Clinical, Operational, Technology and Digital teams, facilitated by the Digital team. Collaboration and close working relationships between these teams are essential to the successful delivery of this programme:

- Digital and Technology teams, in collaboration with DHCW, will manage the configuration and integration of the ePMA solution with other local and national systems.
- The Digital team will work closely with Clinical and Operational teams to facilitate ownership of the transformation at a local level, ensuring adoption of the new solution and helping with the transition to the new ways of working.
- The Digital team will also support Clinical, Technical and Operational teams with guidance and will develop formal communications, training, user readiness, and benefits realisation strategies.

The CDPS user research highlighted key considerations crucial to successful implementation which will need to be incorporated into the implementation plan. These include:

- Defining success
- Preparing the technical/IT infrastructure
- Mapping the digital landscape
- Preparing for change
- Focusing on usability
- Organisational Culture
- Preparing Business continuity
- Adopting user centred approaches
- Staff readiness/digital inclusion/training
- Defining the business intelligence
- Continuous improvement

The ePMA Programme Team will work in collaboration with the stakeholders to develop and manage a set of detailed integrated plans that underpin these collaborative working relationships, ensuring shared milestones, deliverables, understanding of the ask and consistency.

The National PID included a profile of when each health board was to complete key activity such as procurement specification development, awarding a contract and submitting a funding proposal for the implementation period for the secondary care ePMA solution. However, the profile stated in the National PID no longer reflects the current landscape as some Health Boards are slipped in their stated implementation timeframe. HDUHB has undertaken a local exercise to indicate when it could be ready to complete the procurement documentation, award the contract and move into the design and configure stage. These key dates are outlined in the key milestones table below.

We defined our high-level plan in alignment with the guidance provided in the national Secondary Care ePMA Programme Initiation Document, to enable the successful delivery of the key outcomes required to secure the funding from Welsh Government throughout HDUHB's secondary care ePMA programme's implementation stages.

The implementation plan is centred around a targeted 18-24 month roll out period, starting in June 2024 following the pre-implementation phase and implementation readiness work. This is based on the following rationale:

- It is difficult to keep momentum high in a more protracted rollout.
- The risk of dual-running paper and electronic is higher with a slower rollout.
- The political and economic environment may change significantly in future years.

- ePMA is a key clinical priority for NHS Wales and the Welsh Government; earlier implementation would deliver ePMA across the whole of the Mid and West of Wales region, progressing the national strategic direction of travel.

The high-level implementation plan below has been based on the experiences of other NHS Wales Health Board and NHS Trusts implementing ePMA in similar care settings. A high-level implementation plan has been provided below with further description of the key activity in the table below. The Programme Team will work with key stakeholders across the Health Board to develop a detailed plan.

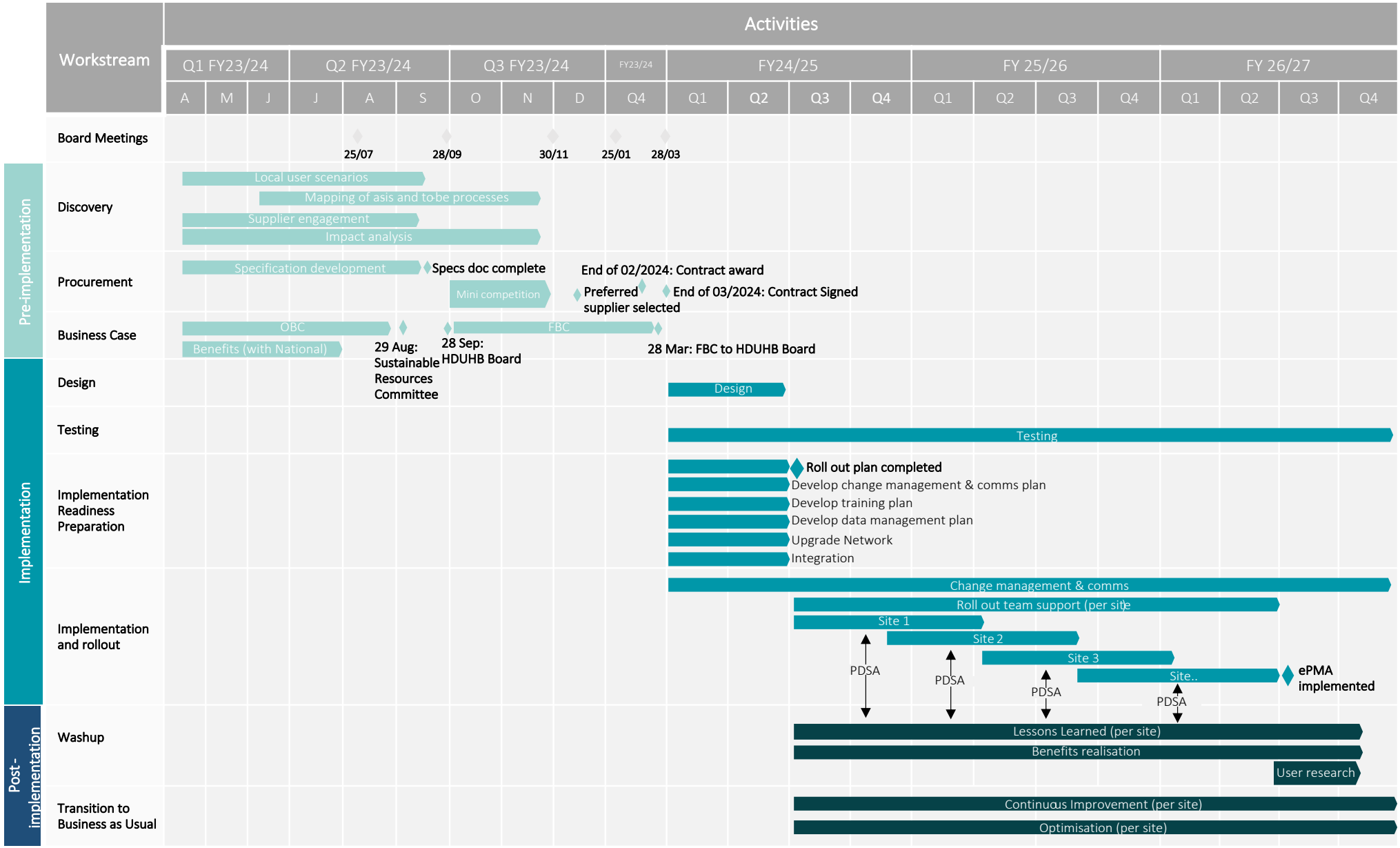

Figure 4: Programme Plan

Phase and description	Workstream	Description of key activity
Pre-implementation phase An 11 month pre-implementation, discovery and procurement phase is currently in progress.	**Discovery**	• Mapping of the as-is and to-be process maps; • Local user scenarios; • Impact analysis; • Stakeholder analysis and management; • Supplier engagement
	Procurement	• **Specification development**: Complete HDUHB procurement specification and procurement documentation for the secondary care procurement by 30th September 2023. • **Mini competition**: Run a mini-competition amongst the suppliers on the All-Wales secondary care ePMA Framework from October 2023 – December 2023 to select the preferred supplier and confirm supplier costs and activities in relation to the proposed implementation support. • **Contract award**: Complete the awarding of a contract under the secondary care framework (established by the National Portfolio team) for HDUHB by beginning of April 2024. (This will need to happen after approval of the Business Case targeted for submission by the end of March 2024, outlined below). • **Contract sign off**: Sign off the contract after any required negotiation by the end of March 2024.
	Full Business Case	• **Business case development**: Progressing in parallel with procurement activity above, Outline Business Case for approval at the Sustainable Resource Committee (SRC) 29th of August 2023 and to HDUHB Board on the 28th of September 2023. Full business Case to be approved at SRC 27th of February 2024 and HDUHB on the 28th of March 2024. • **Benefits:** continue development of benefits case in line with national work.
Implementation A 24-36 month period to prepare for and implement the new ePMA solution, centred around a targeted 18-24 month roll out period.	**Design**	A 6-month design period working with the awarded vendor and will require significant co-design and engagement with clinical, operational, technical and administrative staff. This phase will include activity such as: • configuration of user roles, • drop-down options, • build order sets to support the national and HDUHB prescribing patterns • alerts, notifications and warnings, • integration and interfacing • dashboards and reports.

Phase and description	Workstream	Description of key activity
	Testing	• Comprehensive user and technical testing of the solution from the start of the design period and throughout the implementation phase.
	Implementation Readiness Preparation	A 6-month implementation readiness phase is planned to prepare the successful roll-out of the secondary care ePMA solution in HDUHB This phase will focus on the following key activity: • Develop roll out plan, including phasing and coordination of roll out and reviewing lessons learned from other Health Boards; • UAT plan; • User evaluation plan (meaningful tasks); • Clinical safety workshops and hazard log; • Change Management plan; • Training plan; • Readiness checklist; • Integration and configuration; • Supplier engagement; • Service management; and • Hardware installation; • Data management plan. *This phase will conclude with the completion of a readiness assessment where the secondary care ePMA Steering Group will be provided a clear view of how ready individual sites are to take forward the secondary care ePMA implementation.*
	Implementation and roll out	An 18-24 month implementation is targeted. This phase will focus on a phased roll out approach for the successful delivery of the secondary care ePMA solution roll-out across the hospitals in HDUHB, including change management and training.
Post-implementation phase Assumed to be a 6-month period to manage the transition to Business as Usual (BAU).	**Washup**	A 6-month washup period per hospital site to capture lessons learned and begin benefits realisation work, and also provides contingency for any implementation delays. Within this period, a 2-3 month post-implementation user research phase is also proposed. *Pre- and post-implementation user research is to be conducted by CDPS. Pre-implementation User Research was completed in collaboration with CDPS in October 2022.*
	Transition to Business as Usual	Transfer to business-as-usual following successful implementation. Key activities will include data

Phase and description	Workstream	Description of key activity
		capture and data visualisation, sharing lessons learnt; optimisation; and continuous improvement.

Table 21: Implementation phases and key activities

7.5 Resource Plan

The breadth of capabilities and disciplines required to deliver the Secondary Care ePMA Programme will require significant resources from the Health Board, close working with the suppliers and recruitment of additional capacity and capability. The funding for this has been included in the financial case.

The proposed grades and FTEs of the HDUHB Secondary Care ePMA Programme Team and HDUHB Secondary Care ePMA Roll Out Team described earlier in the Management Case are outlined below. In addition to this, the proposed ongoing BAU support team has also been outlined below.

HDUHB Secondary Care ePMA Programme Team					
Phase		Implementation		Post-implementation	
Role	Workstream Grade	Design, Testing & Implementation Readiness Preparation	Implementation & Rollout	Washup	BAU
Clinical Lead (and Senior Responsible Officer)	9	0.2	0.2	0.2	0
Programme Management - Programme Manager and Oversight	8a	1	1	1	0
Programme Management - Project Manager	7	1	1	1	0
Project Support Officer	5	1	1	1	0
Digital Prescriber Pharmacist 1	8b	1	1	1	0.5
Pharmacy Technician	6	1	1	1	1
Nurse- Senior Informatics Nurse Oversight	8a	0.4	0.4	0.4	0
ePMA nurse	7	1	1	1	0
Procurement	8c	0	0	0	0
Contract Management (likely shared resource from central team)	8a	0.5	0.5	0.5	0.25
Technical implementation lead	7	1	1	1	1
Application support specialist and trainer	5	1	1	1	1
Business Change Manager 1 (Change Management)	7	1	1	1	0
Doctor 1	CT3 / ST3	1	1	1	0
Designer/Digital content	7	0.5	0.5	0.5	0

HDUHB Secondary Care ePMA Roll Out Team					
Phase		Implementation		Post-implementation	
Role	Workstream Grade	Design, Testing & Implementation Readiness Preparation	Implementation & Rollout	Washup	BAU
Digital Prescriber Pharmacist 2	7	1	1	0.5	0
Pharmacy Technician 1	5	0	2	0.5	0
ePMA Nurse 2	6	2	2	2	0
Technical Implementation Manager 1	6	0	1	1	0
Data Analyst	5	0	1	1	0

BAU Ongoing Support Team (some roles from ePMA Programme Team remain)					
Phase		Implementation		Post-implementation	
Role	Workstream Grade	Design, Testing & Implementation Readiness Preparation	Implementation & Rollout	Washup	BAU
Pharmacy Technician 2	5	0	0.5	0.5	2
Pharmacist	7	0	0.5	0.5	1
ePMA Nurse 3	6	0	0.4	0.4	0.4
Data analyst	5	0	0	0	0.5
There are roles from Programme Team that will continue through to BAU. They have been noted in the HDUHB Secondary Care ePMA Programme Team but have also been added below for reference to demonstrate what the BAU Ongoing Support Team will look like in totality. The FTEs will not be double counted.					
Digital Prescriber Pharmacist 1	8b	-	-	-	1
Pharmacy Technician	6	-	-	-	1
Contract Management (likely shared resource from central team)	8c	-	-	-	0.25
Technical implementation lead	7	-	-	-	1
Application support specialist and trainer	5	-	-	-	1

7.6 Change Management

7.6.1 Change management principles

The level of change associated with the secondary care ePMA programme in HDUHB is high. Effective change management and visible clinical leadership will be critical to the success of this programme in order to:

- Achieve buy-in across stakeholder groups;
- Gain commitment from users to the aims of the programme, recognising potential disruption to services and additional effort required of staff during the implementation period;
- Support the changes in working practices that the new arrangements will require; and
- Realise the benefits of the rollout of secondary care ePMA in HDUHB.

The critical importance of change management is recognised, and the owner of this function will be the programme Steering Group. However, it is envisaged that the key outputs to be developed on approval of this Business Case will include:

- **Change Management Strategy and Plan**: will include an assessment of the potential impact of the proposed change on the culture, systems, processes and people and a plan will be defined. Change Champions will also be identified as part of the strategy. Change roles will require a level

of seniority to help influence change and adoption of the new solution and transition from paper-based process to the new ways of working. The underpinning communication strategy will also be defined;
- **Change Management Framework**: will set out the organisational structure and personnel required to direct, manage, implement and evaluate the change, along with details of roles and responsibilities, and to support staff through the change.

It is recognised that continuous change management support will be required throughout, and consideration will need to be taken to adapt change management plans to each hospital site as required as the implementation progresses and as lessons are learned.

As noted previously, as the HDUHB Secondary Care ePMA Programme progresses, further consideration will need to be given to the necessary clinical pathway and process standardisation and changes. The change management strategy and plans above will need to consider changes associated with the clinical pathway standardisation work. Initial planning has indicated that clinical changes will need to be signed off through the HDUHB Medicines Management Group, as per current HDUHB clinical change processes. However, to ensure adequate pace of sign off is achieved, a sub-committee of the Medicines Management Group may need to be created.

7.6.2 Staff engagement and communications

To optimise the implementation, adoption and subsequent benefits of the new secondary care ePMA solution, HDUHB will ensure a comprehensive communications and engagement plan which runs in parallel to the change management workstream. Further work will need to be undertaken to develop the communications and engagement approach. Reflecting on lessons learned from previous clinical technology deployments in the Health Board, such as the recent Welsh Nursing Care Record (WNCR), the following areas will be explored in further detail:

- Approach to ensure user engagement throughout, including in the design of the new secondary care ePMA solution and redesign and alignment of processes;
- Supporting adoption through close, dedicated programme leadership, and leverage a network of “digital champions” to provide frontline support to colleagues;
- Approach to ensure that sufficient training (and time to train) is available to staff, including a training gap analysis to inform training plans;
- Approach to ensure the benefits of digitally enabled transformation for various staff roles are clearly articulated and well communicated to bring everyone through the change journey.

7.6.3 In-flight programmes

There are several significant in-flight and planned digital programmes taking place in HDUHB such as the eObservations and Patient Flow programmes. There are also a number of programmes taking place within the Digital Medicines Transformation Portfolio, of which this programme is part of. These include the Shared Medicines Record project, the Patient Access Project and the Primary Care Electronic Prescription Service programme. In addition, a number of national digital programmes are also taking place or planned, such as the all-Wales Electronic Maternity Record (WEMR), the Wales Intensive Care Information System (WICIS), Radiology Information System (RIS) and Picture Archiving and Communication System (PACS).

These programmes will take up significant capacity in resources and also have direct impacts on elements of the ePMA programme. There will need to be consideration for the dependencies between these programmes, such as integrations required, as well as considerations for the change capacity of the organisations’ staff members and teams involved.

7.7 Training

As previously noted, the level of change associated with the ePMA programme in HDUHB is high. As such, a robust training plan and approach will be designed and approved in collaboration between HDUHB (including representation from all relevant clinical and hospital staff user groups as well as digital and technology staff) and the chosen system implementation partner.

The following assumptions and requirement are specified and will drive the definition of the training approach, plan and requirements to allow a safe use of the system:

Training approach: It is envisaged that a blended training and learning approach will be taken and tailored to the relevant clinical and hospital staff as well as digital and technology staff. Where relevant, the training will be linked to the individuals' prescribing, medicines management and/or medicines administration competencies, and will describe the scenarios needed to demonstrate the skills required to safely, effectively and efficiently operate the ePMA solution.

Training and learning content delivery: HDUHB is considering that the training is provided, as a minimum, through:

- Classroom based training taking place in hospitals which will include 10 to 15 attendees per class, to ensure efficiency;
- Virtual training to reach a wider audience considering the large geographical area;
- Access to sandbox/test environment to allow the users to access the system in an environment separate to the live solution;
- Self-study virtual content, e-learning;
- A portal with exams to take with a verification number needed;
- Short instruction videos, rather than a manual; and
- Once training has been completed, ePMA profiles are provided.

Mandatory training: Access to the live version of the ePMA solution will only be provided to those who successfully completed the training and the relevant competence tests.

Competence tests: To ensure the safe use of the system, competence tests to confirm the users' ability to navigate and use the system will be put in place and mandated. These tests will be developed by the Digital and Technology teams, in collaboration with clinicians, pharmacists, nurses and AHPs.

Retraining: When there are significant upgrades to the ePMA solution, users will be required to undertake training on the new features. Users will not be required to complete retraining on the entire solution but just the changes.

7.8 Digital, data and technology

7.8.1 Equipment and end user devices

As part of the preparation work for this programme, the ePMA Programme Team has been working with the Network Upgrade Programme to understand equipment and end user device needs. This is happening at Health Board level and the cost will be revised to agree what will be funded by the ePMA Programme versus by other programmes. Once the chosen vendor is awarded, the ePMA Programme Team will work in collaboration with the vendor to complete an in-depth an end-user technology review which will aim to highlight the type, number and requirements for end user devices needed by the staff and clinical teams. The analysis will also include the provision of additional devices as back up and cover in case of breakages, loss and battery charging.

End user devices and equipment to support the rollout of the secondary ePMA solution in HDUHB will be provisioned and funded through the Network Upgrade Programme.

7.8.2 Technology infrastructure requirements

The successful rollout of the secondary care ePMA solution in HDUHB is critically dependent on the definition, procurement and deployment of a technical infrastructure that will facilitate the use of the solution in all HDUHB hospitals. This includes but is not limited to wireless communication network.

A high-level gap analysis of the baseline technology layer is currently being conducted at all hospital sites in HDUHB. Based on this, it is clear that work will need to be undertaken at the hospital sites to make the necessary upgrades to the technology layer to support the new ePMA solution.

It is assumed that the new solution will be cloud hosted. However, further detailed analysis will be undertaken to clearly identify the technology requirements of each hospital to support the selected ePMA solution and the scope of the upgrades.

7.8.3 Integration and interfacing

HDUHB is considering a Health Board wide approach to an integration engine. Further consideration and analysis will be required to determine how HDUHB will deliver the integration engine. This analysis, along with the funding requirements, will be covered in a separate Health Board wide programme, separate to the Secondary Care ePMA Programme.

The integration and interfacing requirements are a part of the secondary care ePMA requirements specification document that has been developed by HDUHB. These requirements list the national and local interfaces, systems and devices that the secondary care ePMA solution will integrate with. In addition, it will list the messaging and terminology standards that the vendors will need to cater for.

As part of the Implementation Readiness Preparation phase, the below steps will be taken to ensure the detailed integration and interfacing requirements and design are defined:

- Conduct a thorough assessment of HDUHB's existing systems and data sources (as-is analysis), identifying key integration points and potential challenges to be addressed during the integration process.
- Outline the development of robust interfaces and APIs that enable seamless data exchange and integration between the ePMA solution and existing national as well as local systems, ensuring interoperability and smooth information flow.
- Define the methodologies and tools used to map data structures, formats, and terminologies between the ePMA solution and existing systems, ensuring data consistency and compatibility.
- Built a target state model for the ePMA solution and how it will integrate with local and national systems, the communication protocols, and data standards used.

7.8.4 Data management

Given this is a large-scale transformation programme with complex and significant impact, it is important to understand and address data management issues. A structured and comprehensive approach to data management will enable the successful delivery of this programme. The following are the considerations to be developed further as the programme evolves:

- Define which application components in the landscape will serve as the system of record or reference for enterprise master data;
- Understand how the data entities will be utilised by the business capabilities, business functions, processes, and business and application services;
- Understand how and where the data entities will be created, stored, transported, and reported;
- Define the level and complexity of any data transformations required to support the information exchange needs between the solutions; and
- Identify the requirements for software in supporting data migration and integration (e.g., use of Extract, Transform, Load (ETL) tools and data profiling tools).

Digitising the paper-based prescribing and medicines administration processes in HDUHB presents an opportunity to define a robust approach to integration and storage of various data sources while ensuring data quality, privacy, and security measures are in place. As part of the current pre-implementation, discovery and procurement phase, the Programme Team will aim to:

- Identify the various sources of data in the ePMA solution's ecosystem, such as patient records, prescription data, laboratory results, and other relevant data types.
- Describe the processes and technologies that will be used to integrate data from different sources and ensure data consistency and integrity.
- Outline the proposed infrastructure for data storage, including considerations for scalability, security, and compliance with data protection regulations.

- Highlight the strategies and tools that will be implemented to ensure data quality, accuracy, and completeness, including data validation, data cleansing, and data enrichment techniques.
- Emphasise the measures that will be implemented to protect sensitive patient data from unauthorised access, including encryption, access controls, temporary locked viewing, and audit trails.
- Discuss the plans and mechanisms for regular data backups, as well as disaster recovery procedures to ensure minimal data loss and downtime in case of unforeseen events. A data analyst will support with this.

7.8.5 Data digitisation

As part of the current pre-implementation, discovery and procurement phase, the Programme Team has planned to work on defining an appropriate data digitisation approach to identify the requirements for scanning, storing and archiving paper prescriptions and other relevant paper data required for the provision of care. This will be developed further to incorporate into the planning process and digitisation landscape.

7.8.6 Data governance

Robust data governance is paramount to establish a framework of accountability, compliance, and data management practices, enabling the organisation to maintain data integrity, protect patient privacy, and meet regulatory requirements within the new medical system. There will be data governance considerations to ensure that the programme has the necessary dimensions in place to enable the transformation:

- Define the roles and responsibilities of individuals or teams who will be accountable for the quality, privacy, and security of data within ePMA.
- Establish specific data governance policies, standards, and procedures that will be implemented to ensure consistent data management practices, including data classification, data retention, and data access controls for ePMA. This would be done in-line with existing data governance processes at HDUHB and integrates with it.
- Explain how data auditing and monitoring mechanisms will be implemented to track data usage (especially Patient Level data), identify any anomalies or breaches, and ensure adherence to data governance policies.
- Include data training programs to educate potential users on data governance principles, security practices, and data handling procedures as part of the main training programme.

7.9 Benefits realisation and management

As outlined in the Economic Case, DHCW have been working on a set of benefits intended to be measured nationally. At the time of writing this Business Case, the national benefits work is still underway. The HDUHB Secondary Care ePMA Programme Team have reviewed the provisional set of benefits and it is recognised that this set of benefits may change.

It is important that the ePMA Programme Team applies a benefits management approach that enables benefits realisation to be monitored and benefits to be proactively managed across the organisation.

Prior to implementation, HDUHB intends to carry out further analysis of current practice in order to develop detailed baseline measures against which to monitor and assess ePMA benefits. The approach includes the following elements, as shown in the below figure.

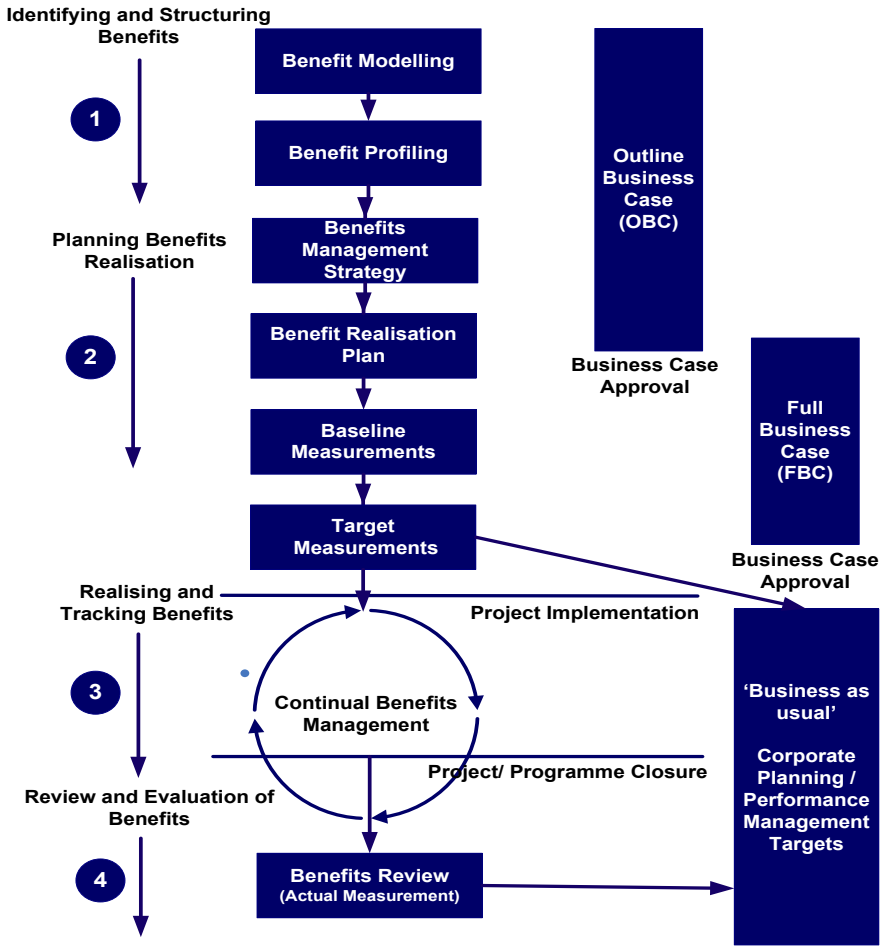

Figure 5: Benefits Realisation Process

A number of key metrics will be developed to track the delivery of benefits post implementation. It is recognised that post implementation benefit realisation activities are difficult to resource; however, it will be important to drive value out of the secondary care ePMA solution and have specified metrics. These should focus on key benefit areas and provide a realistic basis on which to monitor and assess benefits realisation.

7.10 Programme evaluation

The purpose of post programme evaluation is to improve delivery through lessons learned during the programme delivery phase and to appraise whether the programme has delivered its anticipated outcomes and benefits. It will further support achieving better value from future procurements.

HDUHB is committed to ensuring that a thorough and robust post-programme evaluation is undertaken at key stages in the process to ensure that lessons are learnt. The Health Board will need to continue to obtain and assess baseline data in the years prior to and post implementation. This will enable the Health Board to compare current processes with post-implementation processes and identify which benefits have been achieved and which have not.

The evaluation will be carried out in line with best practice and will measure the programme against the following factors:

- The extent to which the programme objectives have been met;
- Measurement against the Benefits Realisation Plan;
- The cost of the programme and the extent to which it can demonstrate value for money;
- The programme outcome compared with the Business as Usual or 'Do Nothing' scenarios;

- The economic viability of the programme in comparison with BAU;
- Risk Allocation and an assessment of risks presenting during the programme;
- Suitability of the timetable;
- Functional Suitability – how the new approach compares to the ePMA requirements set out during the commercial;
- User satisfaction; and,
- Procurement route.

7.11 Programme Risks

Description	Risk Owner (roles/workstreams)	Mitigation
Due to the complexity of the Programme, current timelines for implementation may be over ambitious or unrealistic, resulting in unavoidable delays against baseline and increase in projected costs of delivering the Programme compared to plans.	• PMO	The ePMA Programme Team will undertake a detailed planning exercise to identify key dependencies and critical path activities.
There may be requirements that are not possible to deliver**,** or requirements may not reflect local needs, translating into poor adoption.	• Design	Detailed requirements have been gathered through patient story requirements gathering sessions and interviews engaging a wide range of staff from across the Health Board as well as subject matter expertise working sessions. Further workshops and engagement exercises are planned to understand configuration requirements.
There is a need to standardise processes and workflows as part of the Secondary Care ePMA Programme. There is a risk that there is misalignment due to different local service models, workforce models or clinical models.	• Change management • Training	Key principles will be established building on existing governance arrangements and taking lessons learned from prior system-wide implementations.
Risk of disruption to clinical service delivery during the implementation of large scale clinical systems.	• Implementation and roll out • Roll out team support	Robust change management, communication and engagement plans to be developed within respective workstreams to ensure sufficient resources are deployed to enact and embed change.
Capacity of staff in the Health Board to engage in change. There is a risk of change fatigue and confusion with implementing a programme of this scale, alongside several in flight programmes in the Health Board.	• Change management • Training	This will be supported by careful planning of the change manage and communications and engagement workstreams to ensure staff are meaningfully engaged and adequately supported through the change.
Capability of hospital site resources to plan for and support implementation.	• PMO	Roll out teams have been defined to identify the specialist skills required. Additional support is being sought to support ongoing activities and to plan for future resource needs
There is a risk that HDUHB is unable to recruit for the required capacity and capabilities.	• PMO	Roll out teams and Programme Team roles have been defined to identify the resource required. Dedicated resource to plan and manage recruitment will be agreed as well as a recruitment plan.
Expectations on programme costs are based on indicative estimates, which are subject to market testing and therefore are sensitive to change.	• Procurement	Estimates used in the business cases contain prudent measures including optimism bias, risk adjustments and inflation assumptions linked to the CPI index. Costs will be reviewed and revised in detail as a part of the procurement and FBC process.
Variability in programme benefits affects the measurement of delivery to objectives and long-term revenue affordability.	• Business Case	Benefit estimates will need to be refined and validated in the FBC, informed by procurement.

Description	Risk Owner (roles/workstreams)	Mitigation
		Workflow and process improvements are a key feature of the preferred option; these improvements will form the basis of credible benefit realisation plans.
External and internal funding sources are identified but not secured, which may impact the ability to progress the Programme based on preferred supplier costs and updated estimates.	• Procurement	Indicative operational budgets and capital programme contributions agreed with the HDUHB financial community.
There is a dependency on the HDUHB wide Network Upgrade Programme. This is critical to provide the necessary upgrades to the infrastructure to support the new ePMA solution.	• PMO	The ePMA Programme Team will work closely with the Digital Team to ensure alignment on timeframes when considering the roll out plan.

Table 22: Programme Risks

8 Appendix A: Staff engagement

8.1 Stakeholder Interviews

Role	Date
Clinical Lead for Acute Medicine	Monday 24th April
E-Prescribing Nurse Facilitator	Thursday 27th April
Senior Informatics Clinical Nurse Specialist	Thursday 27th April
Lead Pharmacist Clinical Services	Thursday 1st May
Application Support Manager	Tuesday 2nd May
Application Support Specialist	Tuesday 2nd May
Doctor	Tuesday 2nd May
Deputy Digital Director	Wednesday 3rd May
Head of Information Services	Thursday 4th May
A&E and admissions technician	Thursday 4th May
Trauma and orthopaedics	Thursday 4th May
AMD Transformation and VBHC and Clinical Lead MIU	Friday 5th May
Software Developer	Friday 5th May
GP lead	Friday 5th May
Sister	Friday 5th May
Lead Pharmacist - Women and children	Tuesday 9th May
Paediatric Nurse	Tuesday 9th May
Nurse consultant	Tuesday 9th May
Lead Software Developer	Wednesday 10th May
Paediatrics	Wednesday 10th May
Cyber Security Manager	Wednesday 10th May
Data Centre Operations Manager	Thursday 11th May
Head of Data Science	Thursday 11th May
Informatics Nurse and Staff Nurse - Acute Assessment	Thursday 11th May
Senior Nurse -Emergency units	Thursday 11th May
Advanced Physiotherapy Practitioner	Friday 12th May
Head of Information Governance	Friday 12th May
Service Lead Podiatry and Orthotics	Thursday 25th May
Lead Mental Health Pharmacist	Friday 26th May
Antimicrobial primary and secondary care	Thursday 1st June
Head of Digital Programmes	Monday 15th May
Clinical Director of Pharmacy & Medicines Management	Tuesday 2nd May

8.2 In-Person Engagement

Date	Location	Attendance (204)
Monday 15th May	Glangwili Hospital	62
Tuesday 16th May	Tregaron Community Hospital	7
	Bronglais Hospital	10
Wednesday 17th May	South Pembrokeshire Community Hospital	14
	Withybush Hospital	30
Thursday 18th May	Amman Valley Hospital	6
Friday 19th May	Prince Philip Hospital	75

8.3 Group Engagement

Forum	Attendance (95)
Grand Round	63
Nursing Staff Engagement Sessions (x4)	32

8.4 SME Workshops

Date	Agenda	Attendance
Tuesday 9th May	Strategic Case	HDUHB Steering Group
Tuesday 23rd May	Strategic Case Workshop 2	HDUHB Steering Group
Tuesday 13th June	Economic Case	HDUHB Steering Group
Wednesday 14th June	Management Case	HDUHB Steering Group
Thursday 18th May Thursday 15th June Wednesday 28th June Thursday 29th June Friday 30th June Monday 3rd July	Clinical Requirements Review	Helena Dunne, Gemma Brown, Helen Thomas

8.5 Junior Doctors' Survey - 24 individuals responded.