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3. INTRODUCTION

Wales has the ambition to be one of the first countries to overcome the challenges and have a unique, national electronic healthcare record (EHR) (Fragidis & Chatzoglou, 2018). It has the advantage of being relatively small in surface and population size, which could facilitate a nation-wide implementation strategy of information technology (IT) in the healthcare setting. Under the motto *Once for Wales*, the aim is to provide access to structured electronic records based on common standards and interoperability.

Welsh Government (WG), through the National Health Service (NHS), has opted for a stepped approach towards delivering and implementing IT for health and social care. The *Informing Healthcare* (IHC) strategy and national implementation programme, aimed to create a single, integrated, and national EHR that allows ubiquitous, safe data sharing (Welsh Assembly Government, 2002). Building on the foundation laid by the IHC strategy, *Informed Health and Care – A Digital Health and Social Care Strategy for Wales* expanded the scope in 2015 (Welsh Government, 2015).

Digital Health and Care Wales (DHCW), a health authority since 2021, is at the centre of the WG strategy to digitalise healthcare. The Welsh Clinical Portal (WCP) is an in-house development, created by DHCW to be the point of entry of most healthcare information. However, the focus is mainly on outpatients and hospital wards remain paper-based, creating a dual environment in which data is still not effectively shared and available.

The proposed improvement is the creation of an 'Inpatient' section within the WCP. This proposal is to be a pilot in an adult ward at University Hospital of Wales (UHW), in Cardiff. UHW currently has 965 beds as shown in Figure 1 (StatsWales, 2021), and it is one of the two main University Hospitals that form part of Cardiff and Vale University Health Board (CaVUHB) (Cardiff and Vale University Health Board, n.d.) serving a population of 504,497 citizens (StatsWales, 2020).

At UHW, clinical notes for inpatients are mainly kept in a paper patient record. However, there are electronic systems in use that record parts of the medical attention. This poses several problems both for the clinicians and the patients. The main issue is the segmented record and the difficulty to have a complete view of the patient's care while in hospital. The access to information is complex which poses the risk of an incorrect decision due to the clinician being blind to relevant data. Moreover, paper records are easily misplaced, an inconvenient not as uncommon as expected.

By introducing the possibility to record patient data in a single digital system this proposal would provide all the benefits of meaningful use of an EHR. The proposal is in line with the *Digital Strategy for Wales* and its six missions (Welsh Government, 2021).

Year		2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Cardiff and Vale University Health Board		2,257.7	2,161.3	2,111.0	2,066.1	1,960.5	1,870.9	1,810.5	1,792.9	1,765.1	1,747.0	1,753.9	1,874.6	1,771.9
University Hospital Of Wales		1,079.9	994.9	1,010.8	987.2	945.4	954.3	963.4	935.3	937.7	941.3	954.0	1,001.5	965.1

Figure 1: taken from StatWales 2021. Number of beds in UHW through the last decade, and its relationship to the total number of beds in CaVUHB.

4. JUSTIFICATION

In the pursuit to digitalise the citizen's journey through the health and social care system, great advances have been made. However, there is major deficit in the secondary setting: inpatient's clinical notes are still recorded in paper.

UHW is not the exception to the rule: inpatient wards are paper based with doctors, physiotherapists (PTs), occupation therapists (OTs) and other specialities handwriting inpatient notes. Yet, there are systems currently in use that have been adopted by different specialities or treatment groups to fulfil – at least in part – their needs. For example, nurses are adopting the Welsh Nursing Care Record (WNCR) system; social workers and Integrated Discharge Services use Clinical WorkStation (CWS); pharmacists have different entry points depending on the task at hand. This myriad of systems only adds to the complex ecosystem in which clinicians navigate daily while treating patients.

The correct use of an EHR brings several advantages that would benefit both personnel and the patient. To begin with, the reduction in the amount of paper clears work areas and reduces fire hazards. Avoiding the use of paper also decreases the need for transport of records from different sites in the hospital.

As well, having a comprehensive EHR built on the basis of a data driven approach, holding the patient at the centre, makes pertinent data available to be retrieved in real time to authorised clinicians via a proper role-based access. An audit entry log enhances the security of the shared information and is an important tool for the public to trust that their information is kept safe.

The benefits mentioned above illustrate that the use of an EHR encompasses much more than just being a legible data storage of the patient's care. In a hospital environment, it also improves patient flow, and can provide decision support, in addition to permitting the user to access information for the correct patient from a single place (Menachemi & Collum, 2011).

The proposed improvement is the creation of an 'Inpatient' section within the WCP. The current view of the WCP is depicted in Figure 2. As alluded to before, this IT system is mainly used in the outpatient setting and holds components of the inpatient journey like the discharge advice letter (DAL). An e-form called "Inpatient Journal", supposed to be used to record the inpatient notes, has been developed. However, given the way it has been built and the context in which it is set (currently it sits with all the outpatient's notes) that form has never been deployed to live instance, as most clinicians deem it not fit for purpose.

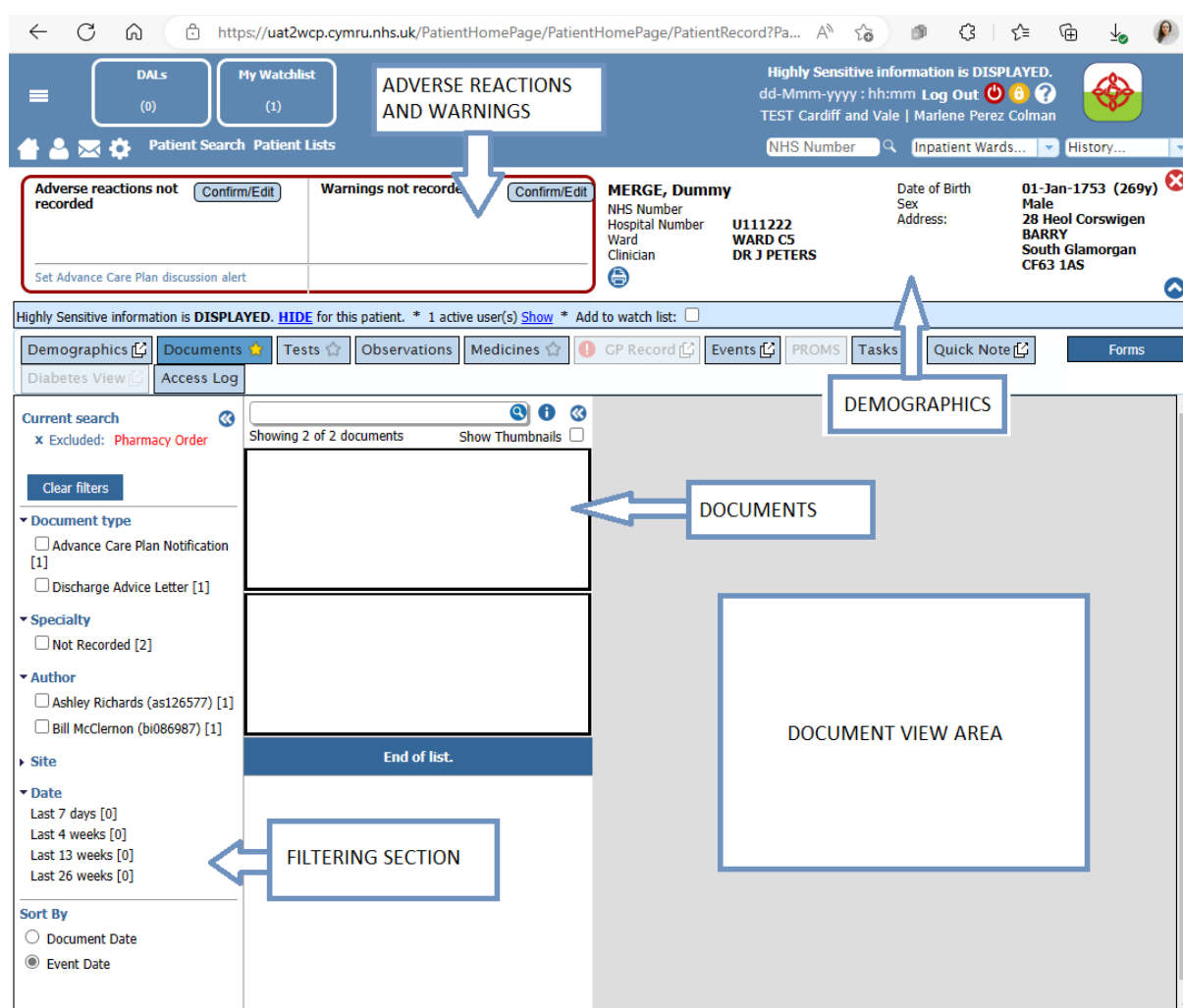


Figure 2: Current Welsh Clinical Portal (WCP) view. This is a test environment view with fake data populating it, like the surname of the patient being MERGE and the name Dummy. Labels have been added to show different sections of the view.

The scope of this proposal is a pilot of the creation of this section, including the functionality to record a daily review of the patient, the agreed decisions and the treatment provided in one document with several entries. As depicted in Figures 3 and 4, the tabs would be created to differentiate when accessing the *Inpatient* and *Outpatient* settings. If the solution is well received and adopted by the clinicians then, the scope could be extended to include other features. This stepped approach is planned to reduce the impact and the burden of a much more ambitious scheme like those deployed in England, and still be able to build incremental complexity (National Advisory Group on Health Information Technology, 2016).

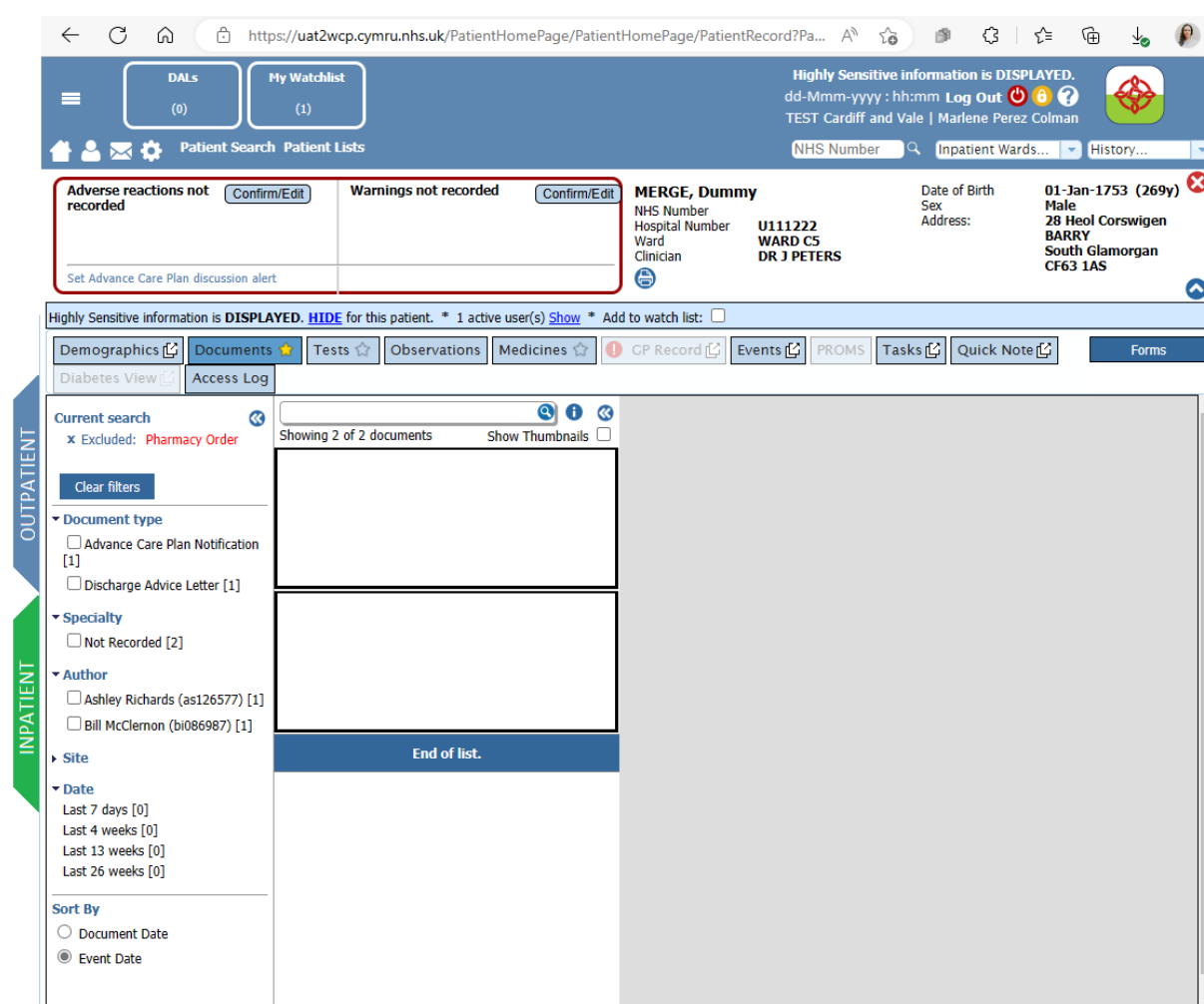


Figure 3: View of the patient record (same test patient) in the Welsh Clinical Portal (WCP) to which, on the left margin, two tabs have been added to the real view of the record to portray the proposed improvement.

Given that this implementation is planned as an extension of the existing WCP, a prominent advantage is that it will benefit of the existing features and interoperability in the WCP. This includes but is not limited to: use of same demographics service, accessing and inputting to the adverse

reactions and warnings features, utilising the electronic test requesting and viewing the test results through the existing interoperability with the laboratory (WLIMS) and radiology (RadIS) systems, and being able to access and read past medical history recorded in the *Outpatient* record.

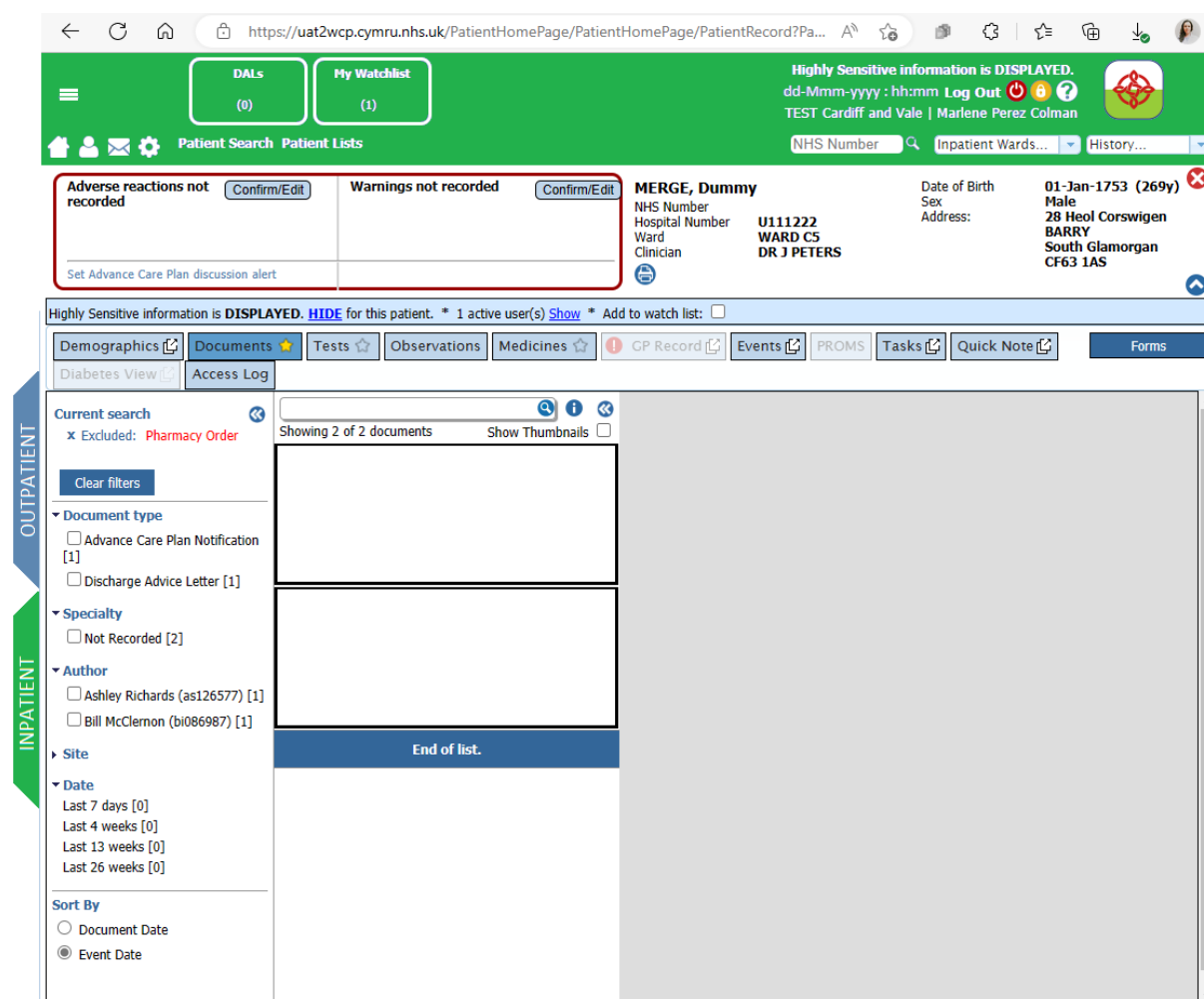


Figure 4: Proposed new tabs. The action, after clicking the 'Inpatient' tab will be to change the colour of patient banner (always visible) to clearly identify that a different scenario (Inpatient) has been accessed. The proposal funds itself on utilising the existing information that is transversal to the patient. The data will be pulled through includes demographics, adverse reactions, warnings, tests, among others.

In addition, several risks associated to the use of paper notes in combination with the previously mentioned variety of digital systems that are used to record notes from the various specialties involved in patient care could be tackled by this implementation. Avoiding the segmentation of the clinical record caused by a dual running environment would improve patient safety given that access to data will be easier, and it would provide the capability to have a continuous and timely view of the patient's care. This, in time, improves decision making by avoiding silos and missing or incomplete information

during clinical decision-making (Hersh, et al., 2015). To sum up, having the ability to record inpatient notes in a useful way in a correctly implemented EHR, is an essential tool for a more coordinated care.

This innovation has the potential to modernise the in-hospital delivery of clinical services. To support the user on the adoption of this improvement, having a known environment as is the case of the WCP with an expected behaviour and a known user interface, will aid in the understanding of the ways of working. This approach would promote safety in the adoption, efficiency in the service provided, and a possibility to continue improving the delivery of IT-based care (Welsh Government, 2015).

5. AIM & OBJECTIVES

The aim of this project is to deliver a new section in the WCP (an existing IT system) that will enable clinicians working in inpatient settings in secondary care (hospital wards) to be able to record patient notes digitally, in a structured and simple manner with access to relevant data. This project serves the six missions intended by the WG (Welsh Government, 2021).

5.1. Digitalisation of the inpatient healthcare record

Develop, deploy, and pilot an IT solution within the WCP that allows to record clinical notes electronically for inpatients in one adult general ward at UHW by December 2023, and utilises existing interoperability with other systems.

5.2. Staff training

Train the workforce who will be using the IT solution (mainly doctors, PTs and OTs) on how to use the solution, highlighting the benefits and future scope, expecting to have over 90% adoption of the solution from clinicians after 3 months of deployment.

5.3. Reduction of use of paper

Reduction of the amount of paper used in the ward by reducing the number of paper-notes written monthly in the pilot ward by 80% after 3 months of implementing the Inpatient section.

5.4. Structured Data and Note Quality Improvement

Improve the quality of clinical notes and utilise structured data to record relevant data in the inpatient notes, to be achieved via the use of SNOMED CT codes to comply with the 2015 Welsh Health

Circular. The quality of notes will be assessed via the QNOTE score prior to deployment, and 3, 6 and 12-months post implementation.

The percentage of notes recorded in paper will be used as a measure of adoption of the proposal and the amount of paper used. Indirectly, adoption of the solution will demonstrate an effective training.

6. LITERATURE REVIEW

6.1. Search Strategy and Results

The literature review was conducted using PubMed (<https://pubmed.ncbi.nlm.nih.gov/>) as the main search tool. The underlying principle for using PubMed is its direct link to one of the largest biomedical libraries as is MEDLINE, that holds indexed journals and books. This is a reliable and trusted source. Another instrument that this website provides is links to “Similar articles” and “Cited by” in relation to a selected paper. The key terms identified with this project are ‘electronic healthcare record’ (or ‘EHR’), ‘inpatient’, ‘hospital’, ‘information technology’, ‘benefit’, ‘portal’, ‘implementation’, ‘PRINCE2’ and ‘agile’. These were combined differently in the search, along with filtering through article type (case study, review, metanalysis) and publication date. Results are presented below.

The initial search was on the project management methodology. When the only term searched was ‘PRINCE2’, the results obtained were three, out of which one was unrelated to PRINCE2 as a project management methodology. The other two results were not concerning implementing an IT system, so these were not included. In a similar way, when searching for ‘PMBok’ in PubMed, there were 6 results and none of these results were relevant to utilising PMBoK as a project management methodology to implement an inpatient EHR.

Due to the lack of results in PubMed for project management related literature, the search was completed using the University of Wales Trinity Saint David (UWTSD) library. The combination of terms ‘PRINCE2’ and ‘hospital’ yielded ten entries, out of the which two were deemed suitable for the present project and have been included. ‘PRINCE2’ in combination with ‘inpatient’ produced no results.

Contrary to this, when searching without including the project management methodology, the number of results were much higher, yielding several thousand entries, creating the need to refine the search. The first search that produced reasonable number of records was conducted using the terms ‘inpatient’ AND ‘EHR’ AND ‘implementation’; this produced 149 results from which a first selection was performed by reading the titles, followed by a review of the abstracts of the selected articles. 44 results

were obtained after searching 'EHR' AND 'benefit' AND 'inpatient'. The same filtering process was undertaken. Strict combinations like 'inpatient' AND 'EHR' AND 'implementation' AND 'strategy' produced 19 results, out of which five were considered for review after reading the abstracts – a much higher percentage of inclusion than those searches with less terms. After several combinations and checking for duplicate results, 23 publications were included.

Another search strategy has been using different hospital websites to identify their electronic systems in use and documentation regarding the implementation and strategy. Most hospitals in the United States of America (USA) are currently using third party vendor products. In relation to the UK countries, English hospitals in particular are also utilising commercial products. A different scenario occurs at Hospital Italiano de Buenos Aires (HIBA) in Argentina where the EHR is an in-house development called *Itáliaca* (Luna, et al., 2007) which has been selected by the United Nations as a success in the digitalisation of healthcare in Latin America (Hospital Italiano de Buenos Aires, n.d.).

6.2. Emerging Themes

Surprisingly, the project management methodology search proved unrewarding and intricate. There is a lack of register of which methodology was used during the implementation of IT solutions, and why it was selected, associated to the fact that access to Project Initiation Documents (PID) is very limited. On the contrary, the type of software delivery methodology, agile, is more frequently documented, and its benefits highlighted (Boustani, et al., 2018).

The searches performed using the term 'inpatient' in various combinations yielded findings in which a relatively frequent topic was the sharing of information. This was both with other systems and with the patients (Kelly, et al., 2018). Interoperability is identified as a key consideration for every system as in the results, the IT solutions that were described were smaller-scale implementations.

Another frequent topic were the benefits of these solution which included cost reduction, reducing length of stay, integrity, and timeliness. One metanalysis summarised the tips to implementing a successful EHR (Aguirre, et al., 2019). A different metanalysis from 2013 showed that the quality of data in articles related to information sharing was low (Health Quality Ontario, 2013); still, more up-to-date data is needed.

Most of the identified articles in PubMed were in relation to the implementation of solutions that were either disease-specific (ie: respiratory rehabilitation, diabetes, mental health) or pathway-specific (ie: managing stroke patients). No articles outlined the implementation of larger deployments like an inpatient system. Thus, the search was shifted to specific hospitals and better well known EHRs.

For example, Johns Hopkins Hospital uses a system called Epic®, and the reason to select this provider and the implementation process are partly described in their website (Johns Hopkins Medicine, n.d.).

The aim of our implementation is more closely aligned to that of the MD Anderson Cancer Center (MDACC) in Texas, that developed its own EHR called ClinicStation® (The University of Texas M. D. Anderson Cancer Center, 2009). However, in 2013 MDACC moved away from ClinicStation into Epic® and the rationale behind this decision is not clearly identified in their website. Regarding the homegrown EHR system at HIBA, the documentation demonstrates the evolution this problem-based-EHR throughout the years and how deployment has been done following an iterative approach, even though there is no mention of an agile process.

7. METHODS

This project is designed so that it is not overly ambitious, learning from the experience of the National Programme for Information Technology (NPfIT) in England (National Advisory Group on Health Information Technology, 2016) and the high failure rates reported in implementation of healthcare software (Dendere, et al., 2021). However, it is also though with the vision of laying the foundation to a future extended programme to digitalise other areas of inpatient care and enhance interoperability with other IT solutions.

As well, it is designed learning from in-house failures, like the existing form in the WCP called 'Inpatient Journal' which has not been adopted by any health board due to the fact that it is not user-friendly and complex to follow, making it not fit for purpose. This proposal, by understanding the challenges that the 'Inpatient Journal' had but with a like-minded aim of digitalising the clinician's notes for hospital related care, is seeking to contextualise those documents and notes generated for a patient's journey while in hospital.

As a result of what has been described in the previous paragraphs, the chosen methodology to manage this project is PRINCE2 (Matos & Lopes, 2013). The pilot is going to be built using an agile approach, working in sprints to build and deliver features of the solution on which the next features will be based. The deployment will be done once the core functionality iterations have been completed and tested. If successful this will turn in to a long-term programme of deliveries managed via Managing Successful Programmes (MSP) continuing with an agile and iterative software development methodology of the new projects within the programme, turning the pilot into the foundation on which the rest of the projects, part of the wider programme, will be based.

Hence, if the roll out of the pilot is well received, it will only then become the starting point iteration of an agile product delivery phase to an extended programme. User engagement will be sought since the beginning, and participation from all health boards will be encouraged to be able to identify gaps and to capture different ways of working. Through this, a nation-wide approved approach will be pursued.

Utilising the principles of PRINCE2 methodology (Pawar & Mahajan, 2017), the business case has been made in the Introduction and Justification sections which state the reasons to do the project, the reasons that justify the investment and the expected benefits, and, at the same time, knowing that if this business case does not come to light with the pilot, then the wider ambition would be halted.

PRINCE stands for Projects IN Controlled Environments and in the proposed scenario the target is to maximise the possibilities to accomplish adoption reducing to a level as low as reasonably possible the unknowns. By being cautious and delimiting the scope of this project to make it achievable, the expectation can be controlled as well as the use of resource. If the project is successful, it would be great addition to the clinician's toolbox and daily clinical activity as is, and any future projects that stem from it could be independent and at the same time add more value to this original project.

Another principle of PRINCE2 methodology that would be put to practice is that of 'Manage by exception'. This is because, given that this project will be based on the existing WCP platform, part of the team is already functional and knows the system so extending the functionality implies using existing standards, both technical and data standards. This will allow the project manager to be more trusting of the team and avoid micromanaging, so that she or he can concentrate on delivering the strategic objectives.

Risk analysis will be undertaken by the project manager (PM) and a hazard log and risk register will be produced. Contributions from different areas will be welcome in order to be able to have a proactive approach to risk handling. This risk register will defer from that produced by the patient safety team in which the risks to the patient associated to the implementation of this product will be recorded. To this aim, a clinical safety officer (CSO) will be employed who will conduct the assurance. This is further expanded on later.

The extent of this project, as a pilot, encompasses the creation of the inpatient section replicating the existing user interface and view used for outpatients in the WCP, and transferring the principle of sequential document entries used for outpatient notes, referrals, and other documents, to the inpatient's notes. The change relies on the framing of these to a particular setting that is meant

exclusively for in hospital care, to avoid the confusion of having these documents mixed with those from the outpatient setting as was the case of the original 'Inpatient Journal' of the WCP.

Amendments can be done to the software as required in the following iterations along with expanding the content and capability of the deployment. So, initially the clinicians will be able to type their notes in a simple manner, and utilise the existing features of the WCP, but in future iterations, the scope could be broadened to, for example, become interoperable with WNCR and being able to read to nursing notes, record observations in a single storage, prescribe electronically, and even include a tab of surgical procedures, amongst other solutions that could be requested as the system is in use.

The implementation process will begin with the design of the system, as those in charge of testing it and of delivering training will need to be involved in these discussions. There will be a 'Business Change' group in charge of analysing the needs that the ward will have in order to implement the software safely and on time. As WCP and other IT systems are being used, wards have most of the required hardware needed. In spite of this, a fresh assessment of the state and relevance of the hardware and analysis of broadband, storage, network and datacentres will be undertaken. This is a web-based application which, as provided by DHCW, will be part of the available suit of applications owned by the government, helping with licenses.

Training and testing along with patient safety assurance will be essential features of the implementation. As the patient is the core of our development, the aim is to create a solution that will attempt to reduce the risks associated to paper records and lack of interoperability, but at the same time mitigate against or reduce to a level that is reasonably safe, any new risks that may be introduced by this proposal. Hence, the employed CSO will be in charge of completing the tasks in order to comply with DCB0129 which is the safety standard for the manufacturing of IT solutions (NHS Digital, 2022).

Testing is a key feature in the project, to ensure not only that the system is functioning as it is supposed to, but as well to confirm that the provided functionality is the desired one and that is has been built in a way that satisfies the user needs. User acceptance testing (UAT) will be undertaken after the final approval from patient safety and the software development testing and validation have taken place. In this instance, future users will be encouraged to use the system as if it were a normal situation to confirm that we have reached the expectations and that no other software 'bugs' are detected.

The deployment is proposed to be done in Ward C5. This is an adult, long-stay general medicine ward, that comprises 38 beds (19 *south* and 19 *north* beds). Training will be provided to all users in

that ward in a stepped fashion. Usernames (NadEx accounts) will be given to those who do not have access to the WCP yet and initial training on how to use the application will follow. Videos explaining the new functionality are going to be created along with the development team. These videos will be sent to the users in advance to a practical session which will be conducted according to shifts (morning, afternoon, and night) and on days worked (weekdays, weekends, banks).

Once the system is live, feedback will be encouraged from all users by two means: one from the same application where the user can provide opinions on use and advice on errors or extra steps, and the other via surveys (anonymous and direct questioning). The users will also be trained on how to provide feedback through the app, and, at the same time, this section will be used to report incidents and near-miss events related to patient safety.

The methodology selected to evaluate the impact is PDSA (Plan, Do, Study, Act). This methodology will be implemented given the expectation that this implementation can become the first iteration of a much bigger programme. The key performance indicators (KPI) selected initially to measure the success are in relation to the initial objectives. The first is the amount of paper used in the ward measured in reams of paper requested monthly (Zlabek, et al., 2011). The second is the quality of notes utilising the QNOTE score (Burke, et al., 2014). Length of stay will also be measured to corroborate findings from other studies (Liu & Edye, 2020). The KPIs will be measured and monitored regularly from 6 months prior to expected deployment day to use as the benchmark to compare results during deployment, onwards with comparisons to be made at one, three, six and twelve months after deployment.

8. DISCUSSION

Hospitals across Wales use a combination of mainly paper based records associated with an ecosystem of IT solutions that have digitalised specific sections of patient care. This dual running environment coupled with the array of systems aimed at channelling the benefits of technology has created a complex scenario in which the main advantages of technology are not fully exploited. On the contrary, the lack of interoperability that exists within systems creates silos of information in prejudice of the patient's safety.

Healthcare is a very data rich environment but when that data is held in paper or in a multitude of systems that do not have the same standards, as is the case for in-hospital care through Wales, the risks to the patient remain as that data cannot be shared appropriately, when relevant (Hersh, et al., 2015). As a result, for instance, the clinician does not have the full patient history and must rely on

dedicating sufficient time to interrogating the patient, and on the patient remembering details, and what the patient considers relevant.

With the aim of harnessing the benefits of a comprehensive and meaningful IT solution, that has the patients at the core, this proposal is an enhancement to an existing application, and is intended to strengthen the place of the WCP. The rationale for choosing WCP is also given to the fact that it is a national in-house development created by DHCW that is already live in all the health boards – even though it is used to varying degrees amongst them. As a result of its widespread, it is a solution that most clinicians are familiar with, so the initial training and look-and-feel is known by the prospective users. This will also benefit DHCW's reputation and help consolidate it throughout Wales.

One of the main advantages of this proposal is that it driven by a data-centred approach which is dual. Not only does it benefit from storing new information in an existing platform making it available in real time to be shared, but it also has all the information that is already contained within the WCP or in the active interoperabilities that the WCP has. This will help avoid silos of relevant patient related knowledge, at the same time prioritising its integrity and ethical use (Department of health and social care, 2021).

Standards are a crucial component to build an IT solution that can be connected to other systems and allow a seamless flow of information. This permits information to be collected from multiple sources and reused, which has the benefit of reducing duplicate work, errors by omission of relevant information, and enhances patient safety (Aspden, et al., 2004). This is why, standardisation is one of our goals.

By making the recording and accessing of the patient record simple, intuitive, and secure we hope to have a wider adoption of the solution in secondary care. It is expected that this will help prevent duplication of work for clinicians who will enter the information in a single system. Consequently, the clinician will have more time to be able to perform tasks that are unique to the human-to-human interaction that is the clinician-patient relationship (Welsh Assembly Government, 2002).

By ensuring user engagement from the design stages, we desire to achieve an All-Wales format that adapts to the different local processes, boosts clinician adoption, and strengthens the solution. The fact that it is an in-house development will allow it to grow organically from feedback provided by users through the different mentioned routes. Having clinician engagement also helps confirm that the user interface (UI) that is in place enriches the user experience (UX), and adaptations can be done when appropriate.

The expectation is that by creating this new section and avoiding overcrowding the outpatient section with inpatient notes, the flow of information will be more easily identified. At the same time, the clinician will be benefited by being presented the relevant data according to the setting, and at the same time having the capability to search and browse the information from other clinical settings without the need to read paper notes or log-in to a different system, expecting to create a positive impact (Joukes, et al., 2019).

In line with the recommendations of failed projects and in particular large-scale projects, this proposal includes from its conception the concept of assessing how the project is received by the users, gathering feedback, and only then trying to expand the scope to avoid the failure of a massive deployment that may not be welcome as expected (National Advisory Group on Health Information Technology, 2016). Continuous improvement will be easily accommodated to an agile approach of software delivery and through the PDSA strategy.

An essential aspect that concerns this project is the varying degrees of IT skills that the workforce has. To be able to include everyone and cope with the demand, training sessions will be planned from the beginning by assessing the level of IT knowledge. Ensuring that the workforce is equipped not only with the appropriate hardware and connectivity – which are essential as well – but also with the certainty on how to use and benefit from the application will aid in accomplishing the objective of adopting the solution.

If the plan of building on an existing solution to harness all the benefits that have been pointed out proves successful, this proposal could be extended to other domains, as introduced earlier. One major area to be included would be the emergency department (ED). This is directly linked to admissions and hospital stay, and at the same time, from the outpatient setting, patients are sometimes directed to attend the ED. In a similar manner, another tab could be created to hold the documents produced during an ED stay as depicted in Figure 5, and following the same principles applied to the *Inpatient* setting.

Any other setting that is deemed necessary could then be included as a separate tab/section, to boost the sharing of relevant data, manage the ethical use of the system and patient's information, reduce the amount of interoperability required with the array of portals, and most of all improve patient safety. If clinicians from all areas can see the benefits from this deployment, we hope that the requirements will come from them to include areas like *Day Care*, or even primary care as GPs and dentists. A challenge to this approach will be information governance, but with the hope that having to analyse one portal as opposed to the multitude that now exist and having the capacity to control

through log-in and role-based access that can be tailored to local variabilities would make the task easier.

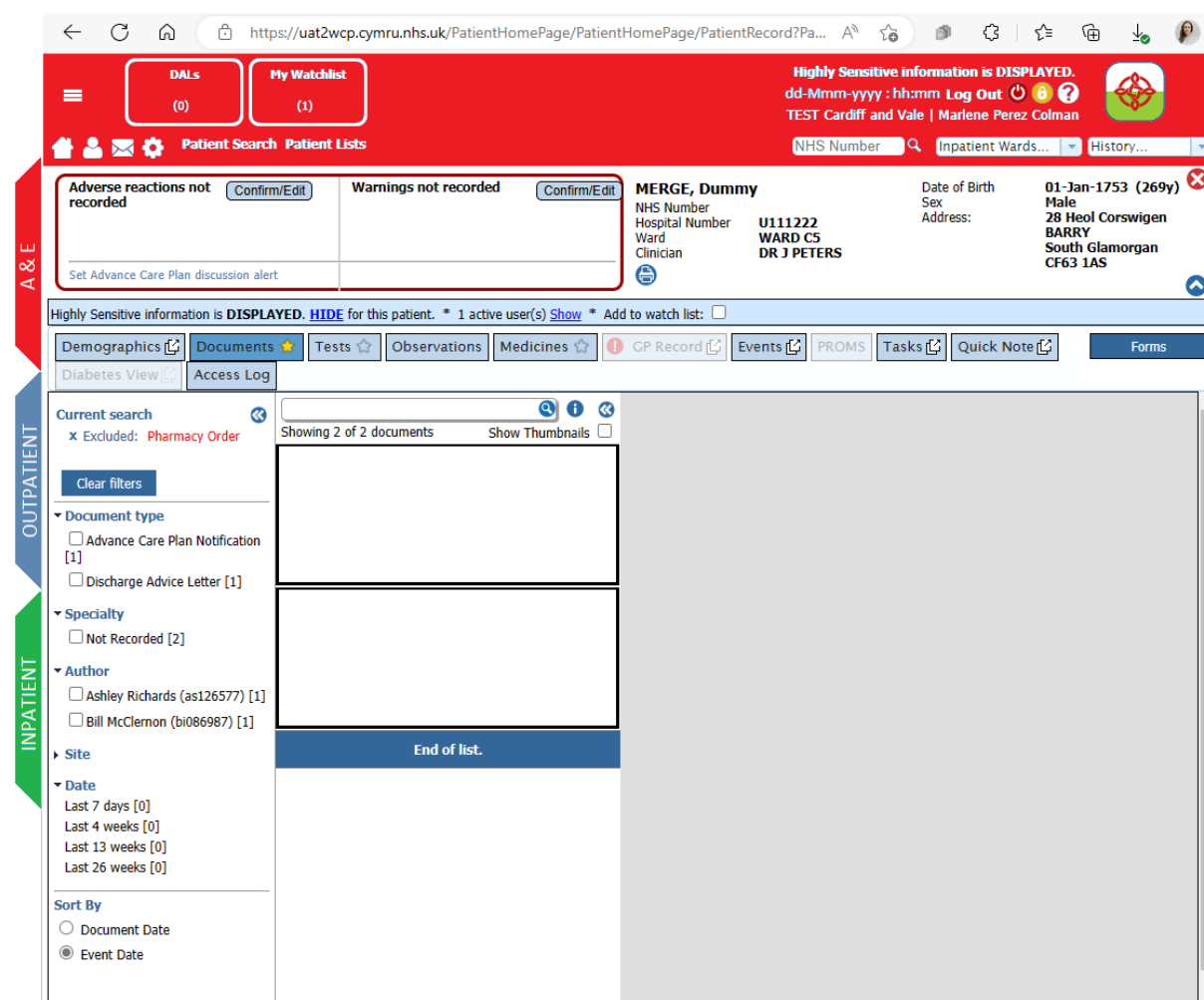


Figure 5: Future possible iteration in which the Emergency Department is included as a separate tab.

To conclude, this innovation is envisioned as a massive change. However, following the premise of implementing IT with an incremental approach, to the user, the planned strategy will only become apparent once it is concluded, so that the prospect of these many tabs or sections does not overwhelm the inexperienced workforce. The vision is to have the possibility to guide and teach the user on these new functionalities that will make their day-to-day activities simpler and enhancing the patient's experience and safety in their journey through the healthcare system.

9. REFERENCES

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10. ABBREVIATIONS

Abbreviation	Meaning
CSO	Clinical Safety Officer
DAL	Discharge Advice Letter
DHCW	Digital Health and Care Wales
EHR	Electronic Healthcare Record
HIBA	Hospital Italiano de Buenos Aires
IHC	Informing Healthcare Strategy
IT	Information Technology
KPI	Key Performance Indicator
MDACC	MD Anderson Cancer Center
NHS	National Health Service
PDSA	Plan, Do, Study, Act
PMBok	Project Management Body of Knowledge
PRINCE2	Projects IN Controlled Environment
RadIS	Radiology Information System
UAT	User Acceptance Testing
UI	User Interface
UWTSD	University of Wales Trinity Saint David
UX	User Experience
WCP	Welsh Clinical Portal
WG	Welsh Government
WLIMS	Welsh Laboratory Information Management System
WNCR	Welsh Nursing Care Record