An Electronic Health & Care Record for Northern Ireland

Strategic Outline Case

December 2015
Version 0.4
Purpose of Document
This Strategic Outline Case (SOC) considers the case for a fully integrated Regional Electronic Health and Care Record (EHCR) for Northern Ireland and other options relating to the scale and scope of integration. An integrated EHCR can, it is believed, make a significant contribution to the delivery of regional reform and service delivery objectives. If approved, a more detailed Outline Business Case (OBC) will be prepared.

Project Title: An Electronic Health & Care Record for Northern Ireland (EHCR)

Sponsoring Department/Agency: DHSSPS

Senior Responsible Officer: Sean Donaghy, Director eHealth & External Collaboration, HSCB

Signed: Date:

Section 1: Project Overview
An EHCR can be understood as a single cradle to grave digital record for each person, which eliminates multiple registrations and data entry and enables appropriate information sharing, capture and real-time analytics in support of consistent, safe, high quality care. Staff, patients and carers are facilitated to move to new, more effective ways of working: adopting paperless processes, centred on the patient rather than the hospital or specialty, with increased involvement of patients, clients and carers, using modern means of communicating and interacting with services and advice.

The challenges facing Health & Social Care Northern Ireland (HSCNI) are familiar: an increasing and aging population, a rise in people living with chronic conditions, new medical technologies and drugs. These create rising demand and sustained pressures in the face of increasingly constrained resources.

However, there is recognised potential for Northern Ireland to have a world-class health and social care service, providing the best possible, more equitable, outcomes for our population\(^1\) whilst ensuring the greatest value from every pound spent. Numerous examples of isolated improvements exist that show this potential when we enable front line care teams to make the changes needed to improve services, in partnership with their patients and clients.

Looking beyond Northern Ireland, other top performing health and care systems have succeeded in delivering large scale, system-wide reform and ensuring the highest quality and safety of care when the efforts and innovations of their care professionals are supported by the power of a fully integrated information system, such as an Electronic Health and Care Record (EHCR).

Since June 2015, an HSC research group has been exploring how electronic health records are being used elsewhere in the world to support improvements in the quality and value of services. In parallel, eHealth projects have been considering the options for a number of crucial IT systems coming to the end of their life (including the 8 Administration Systems) and additional requirements for new digital solutions to improve quality, safety and efficiency, such as electronic prescribing in hospitals. The recommendations from this work support in principle the goal of an EHCR for HSCNI, subject to full consideration of costs, benefits and risks as part of the business case.

The degree of clinical leadership, service transformation effort and up-front investment required to deliver a N. Ireland EHCR as part of a regional transformation programme is considerable. There are a range of options available, varying in scope, scale, pace and the degree of technical integration. It is

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\(^1\) Right Time, Right Place, Donaldson, 2014
clear that if we continue on the path of system-by-system replacement, the benefits achievable will be constrained. A broad consensus has emerged that maintaining separate ‘workflow’ systems for groups of care processes, such as Diabetes, Emergency Departments, community or primary care will place a limit on the capacity to safely share and use information to support better care delivery and outcomes. Higher end benefits can only be gained from a single data platform and data model enabling a single, always up to date, integrated record, sophisticated clinical decision support and putting data analysis to work to support improvement of the health and wellbeing of the people of Northern Ireland.

This consideration of an EHCR solution comes at a point in time when other reviews\textsuperscript{1,2,3,4} are being implemented with convergent aims of delivering health and care improvements, ensuring safe and high quality services and rising to the productivity challenge we have in common with health care systems everywhere – how to sustainably meet increasing demand and uphold the founding principles of the health and care service. The ‘take home’ message from the EHCR research group was the major opportunity that an EHCR programme gives for improving quality. Advantage should be taken of this opportunity to consider if we can better drive the change needed through joining up these efforts in a single change programme across Northern Ireland, rather than piecemeal, incremental investments.

Section 2: Aims, Needs, Objectives & Constraints
The aim of the EHCR project is to support the HSC in the delivery of the best possible health and wellbeing outcomes for the people of Northern Ireland by ensuring that it is supported by digital solutions that enable it to operate as efficiently and effectively as possible in order to maximise value for money.

The project considers the case for an integrated record solution to support integrated care delivery: one person, one record, one HSCNI.

Rationale for Government Intervention
The rationale for Public sector provision of HSC services is long established and accepted. This SOC for an EHCR for Northern Ireland is a considered response to the needs identified through numerous strategies, plans and reviews: over a five year period we have reviewed, assessed, analysed and reported on the need for change within our HSCNI. An EHCR programme would contribute to meeting the aims, objectives and needs identified in the eHealth and Care Strategy, Transforming Your Care (TYC)\textsuperscript{5}, Quality 2020 (Q2020)\textsuperscript{3}, The Donaldson report\textsuperscript{4}, Making Life Better\textsuperscript{5}, and Delivering Social Change\textsuperscript{6}.

Need
Four key aspects of need have been identified:

1. Rising demand, constrained resources
The demands on our services and staff are increasing, in line with other health and care economies, in the context of constrained resources. Regional solutions are needed to provide the best possible health and wellbeing outcomes at a cost that represents best value, supporting the adoption of proven best practice, reducing waste and duplication of effort, increasing time with patients and clients, increasing the degree to which the HSC operates as a single, coherent system.

\textsuperscript{2} Transforming Your Care, DHSSPS, 2011
\textsuperscript{3} Quality 2020, DHSSPS, 2011
\textsuperscript{4} Right Time, Right Place, The Donaldson Report
\textsuperscript{5} Making Life Better, DHSSPS, 2014
\textsuperscript{6} Delivering Social Change
2. **Support for programme of regional reform**  
The HSCNI needs unified, focused reform that supports effective and sustainable redesign across all care sectors across the whole region – acute, community, ambulance, social, primary and independent. The TYC vision of provision of services closer to home, designed around patients and clients, remains highly relevant, but has yet to be fully underpinned by enabling technologies to support mobile working and integrated service redesign, providing modern ways for patients, clients and carers to interact with services and advice.

3. **ICT system replacements**  
There is an urgent need to look at replacing our aged Patient Administration Systems (PAS). Our 8 PAS are coming to end of life and need to be replaced by 2020 with the 10 year costs anticipated to be in the region of £80 - £100m. Since the 1980s, our HSCNI has relied upon these (PAS) to record and manage hospital activity. Our services depend upon numerous key operational interfaces with PAS, to enable care professionals to review blood tests, radiological images, theatre lists and patient and client information on the Northern Ireland Electronic Care Record (NIECR) at the point of care, and to feed multiple local clinical information systems with basic patient information.

In addition to the issues regarding PAS, a significant number of other information systems are also due for replacement over the next 5-10 years, such as laboratory, pharmacy and radiology information systems. There is a growing burden of supporting increasing numbers of interfaces between systems, including the need to re-engineer and test new interfaces whenever a system is replaced or upgraded. Having multiple databases and data models also limits the opportunities for meaningful clinical and operational analytics.

The service is in agreement that any replacements should be ‘Once4NI’, e.g. a single PAS for the HSC.

4. **Patient safety, quality and efficiency requirements for new digital solutions**  
It is recognised that quality and patient safety improvements are key to improving outcomes. Improvements in clinical and care processes also relate to value, helping to avoid inappropriate care (overuse, underuse and misuse) and reducing unwarranted variation.

Unwarranted variations in health and care are those variations in clinical practice and outcomes that cannot be explained by illness, demographic factors, medical evidence or patient preference. Improvements can be made from implementing recommended best practice such as NICE guidelines, but significant advances are made if clinical teams have the data and support to analyse their practices and outcomes, agree on best practice in the local context, minimise variation from this, and monitor and track their outcomes. The availability and timeliness of such data is currently limited in Northern Ireland due to the fragmentation of systems or lack of digital data collection.

Example priority areas, currently paper-based, but with a well-defined need for digital solutions include electronic prescribing in hospitals, care noting and an electronic ambulance patient record form. Initial work on these areas indicates that the more closely these solutions are integrated with the core patient record, the more benefits can be had in terms of patient safety, efficient workflows and reduction of duplication of seeking information from patients and clients, and recording that information.

There is also a need for better tools and standardised, coded data to allow improvements in how we are able to analyse information to benefit the wider population. For example, making sure that the

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services we provide are equitable and providing the best outcomes and identifying those who would benefit from early interventions to keep them in good health.

**Objectives**
The implementation and adoption of a regional, integrated EHCR is central to the successful delivery of the following three overarching strategic themes, as articulated in the DHSSPS 2015-2016 Commissioning Plan Direction⁹.

- Improve and protect population health and wellbeing and reduce health inequalities
- Provide high quality, safe and effective care in the most appropriate setting
- Ensure that services are resilient and provide value for money in terms of outcomes achieved and costs incurred

The high level objectives are:

1. **Keep people well**
   To make it easier for people to access services sooner and take a more active role in managing their health and well-being.

   To achieve better, more equitable, outcomes and improve management of demand.

   To enable patients and clients to quickly make and change appointments, access advice and reduce their need to travel to and wait for appointments.

   To provide patients and clients with digital access to their own health and care information and provide better support for self-care.

   To provide access for health and care professionals to data and digital tools to support a reduction in preventable harm to people under our care, such as preventable falls, venous thromboembolism, extended hospitalisation of frail older people, medication errors and adverse drug reactions.

2. **Support our staff**
   To reduce the time wasted due to inefficient, paper processes, in order to support staff to provide high quality, safe and effective care.

   To enable staff to spend more time with patients and clients - on valuable activities and less on transcribing, filling in multiple forms, searching for paper records, providing manual data returns and moving paper around.

   To provide staff in the community with up to date information to better manage their daily visits and remove the need to return to the office to check or input data.

   To provide front-line care teams with real-time access to meaningful data on outcomes and quality indicators to support their efforts to improve and innovate.

3. **Sustain ICT support for services**
   To continue to provide essential clinical care and administrative functionality in order to support high quality, safe and effective care.

   To reduce the overall number of systems to be maintained, and the reliance on multiple point-to-point interfaces, by taking a cost-effective, benefits driven approach to replacing and retiring these systems.

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To improve interoperability and analytics capability, through the use of standardisation and coding.

As a minimum output for this objective, our 8 PASs must be replaced by October 2020 in order to reliably sustain activity across the secondary care sector in Northern Ireland.

Other systems due for replacement include:

- Laboratory, Pharmacy, Radiology Information Systems
- Emergency Department, Maternity, Critical Care, Theatres, Mental Health departmental systems

4. Enable service reform and quality improvement

To provide digital solutions to better support patients and care teams such as electronic prescribing, multi-disciplinary care noting and integrated care pathways.

To reduce unwarranted variations in services and care through the use of technology to assist in the design and support of coherent, integrated care pathways, including continuous feedback to front line care teams.

To improve the capacity for data analysis in support of efforts to effectively move forward with programmes of reform and quality improvement initiatives, providing better information for targeting improvements and investment.

To enable a population health approach to improve preventative care and deliver better, more equitable health and wellbeing for the people of Northern Ireland.

Constraints

- **Budget** – this represents a major upfront investment, even at the minimum scope. The investment required for a full reform programme enabled by an EHCR would be significant in terms of scale, aggregation and visibility. The current funding model of short term capital commitment is at odds with an effectively planned and implemented longer term programme.

- **Capacity** – the resource requirement for moving to a single PAS for NI is considerable. The degree of top-level commitment, care professional leadership, skills, engagement and resources required for the implementation of an EHCR is of a different order than previous HSCNI transformation programmes. All HSCNI organisations will need to pull together to an unprecedented extent to make EHCR happen as a key enabler of regional transformation right across health and social care.

- **Service continuity** - The change management approach should minimise risks of disruption to HSC services and pressure on staff from ‘change fatigue’ from multiple, incremental initiatives and implementations.

- **PAS Interfaces** – a significant number of eHealth systems are critically dependent on data flows to and from the current PAS systems, e.g. Laboratory orders and results, NIECR etc.

Section 3: Stakeholder Issues

There are a wide range of relevant stakeholders, including but not limited to:

- HSCNI service users, their families and carers
- HSCNI staff
- Service provider organisations including HSC Trusts, Agencies, GP Practices, Community Pharmacies, etc.
- Independent provider organisations, including care homes, hospice providers, voluntary sector
- HSC Board and Local Commissioning Groups
- Government Departments e.g. DHSSPS, OFMDFM
The awareness and engagement of these stakeholders in the design and implementation of an EHCR would be critical to its success and to the capacity of the HSCNI to reform using the EHCR. All of these stakeholders will be further consulted as part of the development of the OBC.

To date, there has been significant engagement with senior strategic leaders, senior care professionals, senior management and eHealth leaders including the eHealth & Care Strategic Programme Board, whose members represent a broad range of stakeholders. The goal of an EHCR for Northern Ireland is widely endorsed.

Section 4: Management & Implementation
Management and implementation arrangements will be in accordance with best practice, including Managing Successful Programmes and Prince2. A Project Board will be established, with relevant stakeholder groups providing input and assurance through a Reference Group. For the business case stage, the Project Board will report to the eHealth Strategic Programme Board. Business Case preparation will be undertaken by a team to be based in HSCB but with a membership drawn from across HSCNI on a temporary basis. Governance arrangements post-business case stage are likely to change to take account of the required approach to delivery of the preferred option.

High level requirements for the OBC and for commencing procurement will be informed by service need, with significant input from care professionals. A procurement strategy will be prepared, with the intention to allow further development of those high level requirements as part of formal engagement and dialogue with suppliers during the procurement phase, again with full care professional involvement and staff side engagement.

The scale of transformation will impact significantly on managerial, information analysis, commissioning, clerical, workforce planning, training and educational processes. Significant consultancy support is not anticipated. A modest investment in external quality assurance may be required. Internal capacity will be reviewed as part of preparation of the OBC and further consideration given regarding if and how HSC resources may need to be supplemented to meet business case objectives.

Decisions on which current eHealth applications and infrastructure projects to stop, start, alter or limit scope will be required. Short term tactical investments may be needed to existing organisational and regional solutions to prepare for the EHCR. Other pre-EHCR preparation projects will need to be started to standardise infrastructure, work processes, care pathways and agree data definitions.

Section 5: Consideration of Options
As a minimum the scope of this project seeks to put a replacement in place to cover the business need of the current PAS. However, as part of the option sift and appraisal, the project will consider a number of variations of scope, scale and pace, which will impact on the costs, risks and time to benefits.

Functional Scope: Research suggests there is a range of related functions and clinical workflows which should be presented as an integrated suite to care professionals to avoid data reentry, risks from data transfers across systems and support improved care processes. However, some specialist systems have well established industry integration standards which are tried and tested over many years and may remain outside the EHCR functionality suite without compromising on data sharing and patient safety. These include laboratory, document management and PACS/Enterprise image systems.

The eventual scope of an EHCR implementation must reflect the ambitions and objectives of the HSC. The broadest scope would provide functionality across most acute, community, primary care, ambulance, social and mental health areas as well as citizen access, population health care and comprehensive data analytics capability. A narrow scope could be limited to patient registration and
scheduling with the option to expand functionality in the future. However, the level of benefits available is impacted by the progress towards fully integrated care systems and processes.

**Scale:** Northern Ireland is uniquely positioned to consider fully the options around scale of an EHCR. Many implementations elsewhere are limited to the acute sector, due to organizational boundaries and the high resource, high risk nature of the acute sector. The greatest benefits are seen in successful implementations in a number of pioneering US Accountable Care Organisations that cover the full spectrum of services from primary care through to specialist hospital care.

**Pace:** From the evidence examined, there is no clear ‘right way’ to implement a Regional EHCR. Typically they are implemented either over a long period of time, system by system or over a much shorter period with multiple systems and/or facilities going live together. Northern Ireland is also at a different starting point from many, with progress made in regional systems such as NIECR.

From initial analysis it would appear that the cost differential for either approach is not significant, although with a shorter implementation, the costs are accrued much earlier in the process. However, benefits are realised much earlier with a shorter implementation and rollout. With a longer implementation and rollout there is the added risk that funding sources are disrupted or curtailed due to external factors that could not be foreseen so far in advance. In addition, the time to benefit reflects the duration of the full implementation process.

**Potential high-level options:**

- Option 1 - A Do Nothing option (included in line with NIGAEA guidance)
- Option 2 - Do minimum - one PAS for Northern Ireland, replacing the current PAS functionality only.
- Option 3 - Regional EHCR to replace existing PAS functionality and address a broader range of acute care functions and clinical workflows e.g. Laboratory, Pharmacy, Radiology Information Systems, Emergency Department, Maternity, Critical Care, Theatres, Mental Health departmental systems, Electronic Prescribing, Care Noting and Care Pathways

  Possible Options 3 (a), (b), (c) etc. A sliding scale of functions that optionally could be delivered – depending on supplier capabilities, costs, benefits and HSC requirements

- Option 4 - Regional EHCR, as option 3, but including community services and potentially pre-hospital care (Ambulance, Out of Hours Centres).
- Option 5 - Single EHCR, as option 4, but including Primary Care – a shared record for patients and clients across the whole continuum of care, across the whole of Northern Ireland.

### Section 6: Costs, Benefits & Risks

The following costs are made based on early indications from market research, experience elsewhere and from other regional projects. A number of assumptions have necessarily been used in order to arrive at potential 10 year figures to aid decision making at this point, but there will be significant refinement of the costing models required through the OBC process.

Revenue costs for the future ‘non-EHCR’ projects and system replacements are calculated at 20% of capital cost, as is standard practice, but note that the analysis of the actual revenue impact will require much more detailed work. Note also that there is likely to be a bridging requirement to cover a period where current systems are still supported alongside the introduction of a new system.
High level costs for an EHCR programme across the whole continuum of care are estimated below, with an anticipated final revenue position of £20m p.a.:

Table 1 – Estimated 10 year cost of an EHCR solution

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<tbody>
<tr>
<td></td>
<td>£m</td>
<td>£m</td>
<td>£m</td>
<td>£m</td>
</tr>
<tr>
<td>Capital</td>
<td>128.0</td>
<td>39.0</td>
<td>0.0</td>
<td>167.0</td>
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<tr>
<td>Revenue</td>
<td>15.0</td>
<td>85.0</td>
<td>40.0</td>
<td>140.0</td>
</tr>
<tr>
<td>Total Capital and Revenue</td>
<td></td>
<td></td>
<td></td>
<td>307.0</td>
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These costs would be offset by avoiding the need for investment to support or replace other systems. In Denmark, for example, the regions implementing an EHCR reduced their active eHealth projects from around 150 projects to 35. The experience in Lothian NHS Board was a reduction from over 800 separate systems and databases down to some 60, which were expected to further reduce.

At the minimum scope of replacement of PAS (Option 1), 10 year costs are anticipated in the region of £80m - £100m (assumes implementation in 2018/19). Mid-scope/scale options 3 and 4 could be delivered for around £200m total 10 year costs, not including the costs and benefits of other solutions that might then be required to meet needs not addressed in these minimum and Mid-scope options.

A best effort attempt has been made to provide estimated replacement and implementation costs for the provision of separate systems to cover the functionality that could be provided by an EHCR (note this is not the entirety of the eHealth Programme), with an anticipated final revenue position of £20m p.a.:

Table 2 – Estimated 10 year cost of investing in separate systems.

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<tr>
<td></td>
<td>£m</td>
<td>£m</td>
<td>£m</td>
<td>£m</td>
</tr>
<tr>
<td>Capital</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAS</td>
<td>55.0</td>
<td>0.0</td>
<td>0.0</td>
<td>162.0</td>
</tr>
<tr>
<td>Departmental e.g. Pharmacy, Lab, PACS</td>
<td>9.0</td>
<td>30.0</td>
<td></td>
<td></td>
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<tr>
<td>Speciality e.g. Theatres, ED, Maternity</td>
<td>11.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Information Systems</td>
<td>12.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Systems e.g. EPMA, Clinical Noting, Patient Portal</td>
<td>30.0</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Clinical Portal</td>
<td></td>
<td>15.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>117.0</td>
<td>45.0</td>
<td>0.0</td>
<td>162.0</td>
</tr>
<tr>
<td>Revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAS</td>
<td>8.3</td>
<td>41.3</td>
<td>16.5</td>
<td></td>
</tr>
<tr>
<td>Departmental e.g. Pharmacy, Lab, PACS</td>
<td>1.4</td>
<td>6.8</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Speciality e.g. Theatres, ED, Maternity</td>
<td>1.7</td>
<td>8.3</td>
<td>3.3</td>
<td></td>
</tr>
<tr>
<td>Community Information Systems</td>
<td>5.4</td>
<td>9.0</td>
<td>3.6</td>
<td></td>
</tr>
<tr>
<td>New Systems e.g. EPMA, Clinical Noting, Patient Portal</td>
<td>4.5</td>
<td>22.5</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>Clinical Portal</td>
<td>0.0</td>
<td>11.3</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>Total Revenue</td>
<td>21.3</td>
<td>99.2</td>
<td>39.6</td>
<td>159.8</td>
</tr>
<tr>
<td>Total Capital and Revenue</td>
<td></td>
<td></td>
<td></td>
<td>322.1</td>
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</table>
The anticipated impact on eHealth budget requirements over the next 5 years is shown in the table below. An investment plan that includes an EHCR is projected to cost £25m more in the period to 2020/21 than the alternative, i.e., investment in replacing individual systems separately.

Table 3 – 5 year investment costs for an EHCR solution versus investment in separate systems

<table>
<thead>
<tr>
<th></th>
<th>2016/17 £m</th>
<th>2017/18 £m</th>
<th>2018/19 £m</th>
<th>2019/20 £m</th>
<th>2020/21 £m</th>
</tr>
</thead>
<tbody>
<tr>
<td>eHealth investment without an EHCR</td>
<td>56.7</td>
<td>64.0</td>
<td>66.7</td>
<td>53.5</td>
<td>49.6</td>
</tr>
<tr>
<td>Estimated EHCR Costs</td>
<td></td>
<td>20.0</td>
<td>50.0</td>
<td>30.0</td>
<td>28.0</td>
</tr>
<tr>
<td>Less the cost of systems provided by EHCR</td>
<td>10.9</td>
<td>23.0</td>
<td>30.6</td>
<td>23.3</td>
<td>15.0</td>
</tr>
<tr>
<td>eHealth investment with an EHCR</td>
<td>45.8</td>
<td>61.0</td>
<td>86.1</td>
<td>60.2</td>
<td>62.6</td>
</tr>
</tbody>
</table>

Potential Benefits
Successful implementation of an EHCR will have significant benefits which are identified below. It should be noted however that available research suggested that higher end benefits can only be gained from a single data platform and data model enabling a single, always up to date, integrated record, sophisticated clinical decision support and data analysis in support of population health.

HIMSS Analytics has developed the EMR Adoption Model (EMRAM) to guide healthcare providers on their path to digitization. The model identifies eight levels (Stages 0 to 7 shown in the table below) of electronic medical record (EMR) capabilities ranging from limited ancillary department systems through a paperless EMR environment. Research by HIMSS Analytics illustrates the idea of a ‘tipping point’ in terms of the greater benefits achieved from higher levels of EMR Adoption – this is shown in the diagram below.

Figure 1 – Correlation between digital maturity & safety and cost effectiveness
The comparative potential for benefits to be realised in the Northern Ireland context will be quantified and used in the appraisal of the options as part of the OBC process.

**Quality and Patient Safety Improvements:**
- Less unnecessary care variation through standardised care processes with embedded clinical decision support delivering safer, more effective care.
- Improved medicines management across all care settings.
- Quicker, more effective communication across all care settings – better management of chronic disease, through more effective community based care with decreased admission and readmission rates.
- Improving patient, client and carer communication and potential for self-care.

Measurements used for the above include lives saved, reduction in avoidable harm from medication errors, reduction of in-hospital incidence of blood clots, infections, falls, malnutrition. All contribute to a decrease in the Average Length of Stay (ALOS) in the range of 5 – 15%. In the NI context, even at the lower estimate of 5%, this would represent £16m p.a. in costs avoided. Improving our average readmission within 30 days of discharge rates to bring them in line with the lowest readmission rates would see a further £4m p.a. avoided.

**Making the most of HSC staff and patients and clients time**
- Releasing time to care – for example, removing the need for doctors to handwrite the drugs chart, increasing nursing and social worker time available to spend on direct care rather than filling in forms. If an EHCR gives our healthcare professionals just 15 minutes back a day, this time is equivalent to more than 1,000 doctors, nurses, social workers and AHPs.
- Improved health and social care scheduling, referral, caseload and waiting list management.
- Improved patient and client flow – fewer/reduced delays on discharge, and therefore on admission.
- Reduced need for waiting list initiatives, overtime and bank staff.
- Reduction in the overhead costs associated with the creation and management of paper records.
- Reduced cost of data collection, reporting and analysis.
- Reduced duplication of cost and effort sustaining multiple ICT systems and improvement projects.

**Improved data supporting population health and wellbeing management:**
- Support for population health and wellbeing management, supporting preventative care and self-care.
- Improved planning as health and social care interventions are linked to outcomes.

**Improved capability for supporting innovation and adopting proven innovation**
- Improved data analysis in support of quality improvement and innovation in care delivery.
- A single care support platform provides opportunity to accelerate the adoption of new applications.

Elsewhere, a fully integrated EHCR delivered as part of a major transformation programme has brought numerous wide-ranging benefits that exceed the initial investment required and create a sustainable health and care service, keeping people well, making the most of staff time and leveraging data and analytics in support of quality improvement.

Considerable investment in our eHealth solutions is required just to stand still. However, the potential benefits that a more ambitious programme could bring more than justify proceeding to detailed consideration in an Outline Business Case, indeed it could be considered negligent not to explore this further for Northern Ireland.
Risks
All eHealth projects carry risk and project managers need to have a strong focus on cost control and benefit realisation throughout the projects development and implementation stage. Some of the areas from where these risks might arise include:

<table>
<thead>
<tr>
<th>Risk</th>
<th>Mitigation</th>
</tr>
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<tbody>
<tr>
<td>PAS is not replaced under any of the ‘do something’ options before end of support in 2020</td>
<td>The preparation of the OBC for the increased scope will be held to timescales with this risk in mind. A separate project is being established to identify what value-adding work can be undertaken in parallel that would assist in preparedness for a PAS replacement/EHCR.</td>
</tr>
<tr>
<td>The desired level of benefits are not delivered</td>
<td>Strong care professional and executive leadership, organised with a focus on agreeing, tracking and pursuing benefits.</td>
</tr>
<tr>
<td>Funding and affordability, including the potential for resistance to an EHCR investment plan as a result of a perceived threat to a long term buildings infrastructure investment requirement.</td>
<td>The OBC will examine a range of options of scope, scale and pace, and how these impact on cost and benefits to help inform considerations of funding and affordability. Senior management and senior strategic leadership engagement to secure agreement on capital spend priorities and understanding of EHCR benefits.</td>
</tr>
<tr>
<td>Achieving buy-in and engagement from HSC staff may be difficult. Staff may be resistant to change causing delays to implementation</td>
<td>Involve staff in design and implementation; have clinical staff driving the process, fully resourced, consistent implementation team. Early and full staffside involvement is recommended.</td>
</tr>
<tr>
<td>The HSC may not have sufficient resources with the right skills to implement and manage the change process</td>
<td>Include implementation services in contract, reduce requirements from other projects and programmes in HSC on limited staff resource.</td>
</tr>
<tr>
<td>Supplier capacity to deliver</td>
<td>Assess suppliers; develop final requirements in dialogue with full stakeholder involvement, effective contract management.</td>
</tr>
<tr>
<td>Trusts may not be able to release care professional and other staff from their duties to provide sufficient input due to work pressures</td>
<td>Reduce requirements from other projects and programmes in HSC on limited staff resources, use efficient ways of working and engaging with stakeholders.</td>
</tr>
<tr>
<td>There may be dips in productivity around the initial go-live period</td>
<td>Roll out planning needs to take account of this and ensure that the HSC can work as a whole system to absorb the demand.</td>
</tr>
<tr>
<td>Procurement and contract risks – risk of challenge, risk of contract buy-out costs</td>
<td>Centre of Procurement Expertise advice will be utilised throughout, as well as legal advice – both provided by BSO.</td>
</tr>
<tr>
<td>Risks of controversy over the cost of the programme and/or data sharing concerns</td>
<td>Benefits need to be well articulated. Wide, ongoing engagement with stakeholders will be planned and resourced.</td>
</tr>
<tr>
<td>Creation of new risks and adverse impacts</td>
<td>A holistic approach to tracking of expected benefits will allow unexpected adverse impacts to be identified and addressed.</td>
</tr>
</tbody>
</table>

Section 7: Funding & Affordability

All options are to be funded from capital and revenue DEL.

Options identified will present different levels of capital investment, from the minimum for the ‘Do Minimum’ replacing the PAS systems at a total 10 year cost of £80m - £100m, to the creation of a single integrated information system for NI at a 10 year cost of some £307m.
With regard to phasing, capital costs for the ‘Do Minimum’ option from 2016/17 – 2020/21 are forecast in the region of £55m, with capital costs for the most comprehensive integrated record estimated at £128m for the same period.

The risks and benefits for each option will increase through the range of options, with the greatest benefits associated with those options that address the ‘tipping point’ set out under ‘Potential Benefits’ above.

In order to embark on a strategy that is for the development of an EHCR, the capital funding for the preferred option must be guaranteed through to 2020/21. With regard to revenue, the bridging requirement will need to be quantified, as there will be a period where we will be paying revenue charges for our existing systems as well as for the new systems.

This has been considered as part of the Department’s Capital Priorities Review. Such an investment is significant and would mean having to delay the implementation of other elements of the capital programme.

**Conclusion**

Agreeing to take forward an EHCR programme is a major undertaking with significant risks. The reform and service delivery benefits outlined above make the decision to progress consideration of an EHCR approach compelling. Investment levels over the long term to deliver a fully integrated record through an EHCR are comparable with the alternative ‘system by system’ approach, with costs over the period to 2021 some £25m higher for an EHCR approach. Avoiding the costs of unnecessary treatment, together with productivity improvements could yield efficiencies with a value of over £50m per annum. It is therefore essential that a fuller assessment of the range of options to deliver improved health & wellbeing is undertaken through the development of an outline business case.

Commitment of the full HSC will be required to deliver this programme at its most ambitious scope and scale, and it is essential that early and wide-ranging discussions and engagement is undertaken, and continues to take place throughout the next stages of business case development.

The immediate tasks are to:

1. Establish a governance structure to manage this programme, involving strong care professional leadership and cross-service engagement in determining objectives, benefits and high-level requirements.
2. Stocktake and review current, planned and proposed eHealth projects and systems and other HSCNI initiatives which may be affected or better facilitated by implementation of an EHCR.
3. Produce an Outline Business Case, to be further refined during a dialogue process once in procurement phase to allow full input from care professionals, the wider HSCNI and suppliers.