

Our Ref: LW/Imw/FOI.210.23 Date: 3rd August 2023

Laurie Wrench Deputy Director of Governance North Staffordshire Combined Healthcare NHS Trust Lawton House Bellringer Road Trentham ST4 8HH

Dear

Tel 01782 275030

Freedom of Information Act Request

I am writing in response to your e-mail of the 7th July 2023. Your request has been processed using the Trust's procedures for the disclosure of information under the Freedom of Information Act (2000).

Requested information:

- 1) Does North Staffordshire Combined Healthcare Trust have plans to implement Oxevision? **Yes**
- Please provide details of plans to implement Oxevision, including which wards this will be located on. The Trust is planning to pilot Oxevision in Psychiatric Intensive Care Unit (PICU) and ward 6
- 3) Please provide documents related to plans to implement Oxevision, for example business case and policy documents

Please see Appendices 1 and 2 attached.

Financial costings have been removed as the Trust is applying Section 43 exemption to this aspect of the request as release of the information is likely to prejudice the commercial interests of any person (A person may be an individual, a company, the public authority itself or any other legal entity).

If you are dissatisfied with the handling of your request, you have the right to ask for an internal review of the management of your request. Internal review requests should be submitted within two months of the date of receipt of the response to your original letter and should be addressed to: Dr Buki Adeyemo, Chief Executive, North Staffordshire Combined Healthcare Trust, Trust Headquarters, Lawton House, Bellringer Road, Trentham, ST4 8HH. If you are not content with the outcome of the internal review, you have the right to apply directly to the Information Commissioner for a decision. The Information Commissioner can be contacted at: Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF.

Yours sincerely

· Wrench.

<u>Laurie Wrench</u> Deputy Director of Governance



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North Staffordshire Combined Health NHS Trust

Project Proposal - Oxihealth Patient Monitoring System

1.0 Introduction

During the past 12 months the Trust has been reviewing new technologies that can support with improving safety and quality in inpatient services. Identifying how, as part of the digital by default agenda, innovative digital technologies can provide solutions to the Trust's most pressing safety and quality challenges in inpatient services.

Several discussions have taken place with Executive Directors, the Acute and Urgent Care and Specialist Directorate, including Clinical Directors, Service Managers, Ward Managers and the Senior Leadership Teams (SLT).

In December, 2020 SLT approved the Patient Monitoring System Business Case and the capital investment required to procure the device in every room, across 7 wards at Harplands. However, the recurrent revenue investment required has remained a challenge due to the high likelihood in order to sustain the system there would need to be a small change to reduce staffing establishment across the wards.

2.0 Revised proposal

Approval is being requested to direct award to Oxihealth to implement a proof of concept and pilot on 2 wards, PICU and Ward 6 for a period of 12 months.

The minimum findings of this pilot should seek to identify;

- Does the patient monitoring system contribute to a cost benefit in reducing agency and temporary staffing?
- Can the patient monitoring system reduce the safer staffing establishment to cover the revenue costs of the scheme?
- Does the patient monitoring system contribute to less incidents on wards and therefore improved staff and patient experience?
- Is there enough evidence to consider wider implementation across other wards?

3.0 Financial implications of a pilot

Annual Cost	£'000
Capital Investment	(redacted)
Revenue Costs:	
Service License	(redacted)
Cost of capital*	(redacted)
Total Revenue Costs	(redacted)

*Depreciation assumed to be 10 years

Capital Funding

Capital costs include the hardware & installation (redacted), which is covered within the capital plan.

Revenue Funding

There is no funding source, therefore it is requested that this is covered from anticipated vacancy slippage.

4.0 Recommendation

- 1. In order to remain current and up to date with advances in mental health practice, the Executive Team agree to the proof of concept and finances required to direct award to Oxihealth.
- 2. Agree to the Deputy Director of Operations leading an Implementation Group to further develop the scope of the pilot and the benefits realisation.
- 3. Agree to a proposal to return to SLT, 6 months following implementation to consider the findings and agree to full implementation or alternatives ways to improve patient safety.

5.0 Reference



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- 4. THE CASE FOR CHANGE
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1. INTRODUCTION

As part of North Staffordshire Combined Healthcare NHS Trusts Strategy 2020 and beyond, there is an aspiration to improve quality and maintain patient safety by exploring digital opportunities.

Safety and quality challenges in inpatient services include the risk of falls, self-harm, assaults and physical health deterioration.

In addition, current observation practices (especially at night) to confirm patient safety lead to poor patient experience (including complaints of lack of sleep from intrusive staff observations) and poor staff experience.

The Trust has been reviewing new technologies that can support with improving safety and quality in inpatient services and identify how, as part of the "digital by default" agenda, innovative digital technologies can provide solutions to the Trust's most pressing safety and quality challenges in inpatient services.

Several discussions have taken place with Executive Directors, in Acute and Urgent Care Directorate and the Specialist Directorate, including with Clinical Directors, Service Managers, Ward Managers and the Senior Leadership Teams. A Project Group was set up to develop this business case, including representatives from clinical, operational, estates, IT, finance and procurement. In addition, ward teams, service users and carer representatives have been engaged to seek opinions on the potential impact of this business case. These discussions have been positive and instrumental in defining the scope and preferred option outlined in the paper.

2.1 Fit with Trust strategy

The case supports the following strategic goals for the Trust:

Provide the highest quality services: using digital technology to support and enhance clinical staff to reduce safety incidents, improve quality of care, and patient and staff experience whilst in hospital.

Digital by default: giving clinical teams a digital "tool" to support, enhance and empower them to care for patients in the therapeutically most beneficial way and manage safety risks on the ward.

Create a learning culture to continually improve: using digital technology to support staff to improve ways of working and evidence the safety, quality and efficiency benefits of those improvements over time. In addition, and under strict governance, digital technology can provide objective, auditable data to support with near miss and SI investigations to help individuals, wards and the organisation to learn.

Maximise and use our resources intelligently and efficiently: using digital technology to support more efficient use of clinical time (especially acute given current staffing shortages), thereby encouraging skilled staff to focus their expertise on recovery focused, therapeutically beneficial activities.

COVID-19 recovery: given infection control risks presented by contact and proximity with suspected COVID-19 patients, using digital technology to minimise avoidable clinician contact with patients who need to be isolated and their cardio-respiratory vital signs and activity measured on a regular basis.

Dormitory eradication: In addition, this case is in alignment of the ongoing dormitory eradication and elimination of mixed sex accommodation agenda and the Trust Reduced Ligature Programme.

2.2 Fit with national or local economy strategy

The strategic case for this service reflects national and local priorities on safety and quality in mental health inpatient services, and is based on good principles:

It supports the STP's objectives of:

- Focused prevention
- Effective and efficient planned care

It is in line with national CQC and NHSE/I priorities for inpatient wards:

- Zero suicide ambition
- Reducing self-harm especially ligature risks
- Reducing restrictive practice
- Reducing violence & aggression

- Reducing sexual safety risks
- Reducing falls in older adults
- Improving staff wellbeing on inpatient wards.

If this case is successful, it will strengthen the safety and quality of the Trust's inpatient services, improve staff productivity and demonstrate the Trusts ability to adapt to evidence-based digital technologies in the NHS.

2.3. Service context

This case is focused on inpatient mental health facilities. The following services are considered within the case: PICU, acute working age adult wards and older adult wards.

3. CURRENT SERVICE PROVISION

In inpatient wards, current clinical operations to manage/monitor patient safety in inpatient services are largely human resource based and are based on a risk assessed observation level (i.e. intermittent or close observations).

This approach continues to be a grievance for our patients, who feel that their privacy and sleep are being disturbed at night, which is detrimental to their recovery. In addition, the current approach has not fully addressed safety concerns; despite best efforts, incidents including SIs still occur on wards.

Whilst substantial progress has been made to improve patient safety in inpatient services, incident data from 2019 indicates there is further progress that can be made in areas including self-harm, falls and assaults:

Ward	Service Type	Falls (#)	Self-Harm (#)	Assaults (#)	SIs (#)
PICU	PICU	11	11	80	-
Ward 1	Acute	14	170	51	-
Ward 2	Acute	5	10	59	-
Ward 3	Acute	22	222	120	2
Ward 4	Older People	85	1	37	3
Ward 6	Older People	48	6	24	-
Ward 7	Older People	68	3	24	4

Table 1 – Patient Safety Data (2019)

In addition, the current observation process (intermittent and close observations) is labour intensive to undertake.

For example, in 2019/20 close observations are estimated to have cost approximately £1.1m each year. This is estimated to be the cost of a WTE Band 3 Healthcare Assistant (£1.1m as safe staffing levels allow for 1 x 1-2-1 per shift). It is difficult to be able to identify the actual costs of observations due to intermittent & general observations that can take place per shift.

This figure does not include the actual spend associated with 1-2-1 observations from overspend (bank & agency) as this is hard to calculate to exclude sickness and vacancy.

The current observation process has several other challenges, including:

- It can lead to a lack of staff engagement, with the monitoring of patients becoming "mechanical" and non-therapeutic in nature
- Staff cannot objectively identify what happened prior to and during a serious incident in a bedroom, and current data/documentation lacks clarity and identifiable crucial information for clinical decision making.

Several environmental factors are exacerbating this situation, including:

- There has been an increase in patient acuity for our inpatient services, including since the start of the COVID-19 pandemic
- There has been an increase in the complexity associated with managing patients physical health, exacerbated by the limitations in place due to COVID-19 infection control.

Conventional technologies, such as service user call alarms and fall detection mats, have been available for many years but have limited impact and limited clinical evidence to suggest they improve patient safety; they are supportive of a reactive system of care (i.e. they provide alerts to the fact or after the fact, minimising opportunities to intervene early and proactively to prevent harm and injury to patients or staff).

Advancements in recent years have meant new services/technologies that are supportive of proactive care are now available on the market. They have a growing evidence base with proven safety, quality and efficiency outcomes documented in NHS mental health inpatient services.

4. THE CASE FOR CHANGE

4.1 Risk to Trust of NOT proceeding with investment request

4.2 Reactive to proactive care

Proactive technologies help ward teams to reduce harm, improve care quality and save clinical time by:

- Providing clinically relevant, accurate alerts to early warning signs before an adverse event occurs, rather than after it, enabling clinical teams to intervene proactively in time
- Supporting improved care planning by presenting care insights and risk factors to clinical teams, enabling them to assess and prioritise care decisions as well as track their impact over time
- Making it easier for clinical teams and organisations to learn from how an incident occurred so the individual, ward and the organisational system of care can learn and improve.

Effective proactive care requires "data-enabled care": i.e. clinically validated risk factors and early warning signs are provided to the clinician, at the moment they need them and in a quickly digestible form that slots into how they work (ways of working, protocols and policies), helping them to choose whether to intervene to help the patient in that situation.

The actual proof of any system is the level of clinical validation. Therefore, this paper considers technology that stands up to clinical validation in mental health inpatient settings, including clinical studies, reports and real-world evidence that evidences the impact and is available publicly.

4.3 Technology & partner assessment

In identifying a potential digital technology, the main considerations are:

- Suitability of the underlying technology for use in mental health inpatient facilities
- Safety & quality benefits it can provide to care today and strength of the clinical evidence base, with an emphasis on supporting proactive care
- Suitability of technology supplier as a partner.

Suitability of the underlying technology for inpatient facilities

From market assessment, on-ward technologies that are supportive of proactive care can either be in contact with the skin (for example, a wearable device), in contact with furniture or contact-free. For the benefits sought, and in the Trust's inpatient facilities, it was considered that contact free devices with mains power supply are preferable for several reasons:

- Preserve patient independence and freedom of movement

- Are able to monitor all patients within the whole room (whereas wearables risk no monitoring of uncooperative, independent minded and disorientated/confused patients)
- Present a significantly lower risk of being used for self-harm/weaponry
- Present a lower infection control risk
- Have a lower unit breakage rate and have no requirement to be recharged.

Contact free systems use a range of sensors and are packaged with a range of functionalities.

The most common contact-free sensors are camera and radar sensors. Cameras are superior to radar sensors because they can not only supply automated measurements and alerts but also a video feed when vision into the room is required.

Looking at camera-based systems, the market leader in relation to underlying technology is Oxehealth's Oxevision; it is the only system to measure medically accurate vital signs as well as movement/activity. It is cleared as a Class IIa medical device in the UK/Europe. In addition, it is suitable for installation in a mental health inpatient facilities (i.e. the in-room equipment is patient safe).

There are two other, relevant camera-based systems available in the UK: Care Protect. Xim Lifelight.

Xim Lifelight use tablets to detect vital signs. It requires a patient or member of staff to hold a phone in front of their face. It is not a medical device. It does not monitor patient movement/activity or provide alerts to these parameters. It has no clinical evidence base. It would not be appropriate on inpatient wards – especially at night when patients are sleeping.

Care Protect install cameras and use humans to watch videos and alert staff on the wards to potential malfeasance practice. It does not have the ability to allow staff to monitor health parameters (i.e. not a medical device). It has no clinical evidence base. Their care model has a high risk of disempowering staff if seem as "spying on them".

On the basis of suitability of the underlying technology, this paper focuses on the opportunity and potential deployment of Oxevision (by Oxehealth) to inpatient facilities within the Trust. This device has been used to build the financial model in order to make the later recommendations for deploying Trust resource.

Oxevision technology

OxeVision is a contact-free vision-based patient monitoring platform. It gives ward teams clinical insight (i.e. into risk factors, early warning signs) to plan patient care and intervene proactively to reduce harm or speed up recovery. It supports a shift to proactive (not reactive) care.

It uses an optical sensor (camera + infrared illumination in a secure housing on the wall) to monitor a patient in a bedroom/seclusion room 24/7. No equipment touches the patient (it's a few metres away). Staff interact with the system via a monitor in the nurses' station and portable tablet devices.

Clinicians can:

- Take medical grade cardio-respiratory measurements remotely (i.e. no need to enter the patient's room to get pulse rate & breathing rate of a resting patient)ⁱ
- Access cardio-respiratory trends from the last 24 hours to understand if a resting patient's physical health may be deteriorating
- Receive real-time alerts to high-risk activity, prompting a safety check (i.e. if a patient spends a prolonged time in the bathroom, if a patient gets out of bed, if a patient leaves the room, if there is more than one person in the room).
- View objective patient activity reports (daily, weekly) to support clinical decision making and individual patient care planning.

The Vital Signs (pulse/breathing) functionality is a certified Class II(a) medical device in Europe.

It was designed with patient privacy in mind. Staff can only access the video feed for 10 seconds when taking vital sign observations, or when requested during an alert to high-risk activity. It is not CCTV.

The technology is real-world validated and has >2 million room-hours of live running on NHS wards.

Safety & Quality benefits

Oxehealth work with 1 in 3 NHS Mental Health Trusts in England. They have a clinical evidence base that supports the trust's safety & quality and digital agenda.

The technology has been referenced as outstanding practice by CQC in mental health and care home settings (see Appendix), and highlighted as a case study in CQC series <u>"Driving improvement through technology"</u> and <u>"Examples of innovation and good practice in response to coronavirus (COVID-19)."</u>

The following safety & quality evidence is public information from use of the technology in other NHS mental health trusts:

Benefit	Desired Outcome	Services	Mapping the Evidence
Reduce self- harm and assaults	 Reduced incidences & early warnings to self-harm Reduced incidences & early warnings to assaults 	Acute, PICU	 One-year (intervention period) before & after and partial cohort clinical study in 4 Acute wards and 1 PICU ward: 22% reduction in self-harm in Acute bedrooms 66% reduction in bathroom ligatures 15-26% reduction in assaults in Acute & PICU bedrooms respectively <i>Links:</i> Webinar (QNPICU Webinar #7 – 17 July 2020) methodology & results; publication in progress Webinar presentation notes
Reduce rapid tranquillisation events	- Reduced incidences of rapid tranquillisation	PICU	 One-year (intervention period) before & after clinical study in male PICU ward: 40% reduction in rapid tranquillisation related to assaults Staff found they could manage patient safety using less restrictive practices Links: Webinar (QNPICU Webinar #7 – 17 July 2020) methodology & results; publication in progress Webinar presentation notes
Reduce falls	 Reduced falls in bedrooms Reduced severity of harm Reduced demand for A&E services 	Older People	Two-year (intervention period) before & after clinical study in 24-bed Older Adult hospital: - 48% reduction in falls in bedrooms - 82% reduction in harmful falls - 49% reduction in paramedic callouts - 68% reduction in visits to A&E Links: Publication - submitted 8-month interim report 8-month interim report
Improve physical health monitoring	 Improve adherence to physical health monitoring Earlier detection of physical health deterioration 	All wards and seclusion rooms	Statt can now measure the medically accurate pulse & breathing rate of resting patients without entering a room. 8 NHS trusts are using the system in seclusion and/or S136 suites. Links: Patient story: identifying early signs of physical health deterioration to a medical emergency Patient story: monitoring physical health comorbidities remotely

Improve patient experience at night, including sleep and privacy/dignity	 Digitally assisted nursing observations that are as safe as traditional methods Improved sense of sleep at night Improved sense of privacy at night Improved sense of safety at night 	All	 Service evaluation in Vaughan Thomas ward: Digitally assisted nursing observations are as safe as conventional in-person observations (>17,000 observations over 755 patient nights) Patients surveyed reported improved sense of sleep (100% agree), safety (100%) and privacy/dignity (86%) 78% of staff surveyed agreed patient privacy & dignity had improved 94% agreed that the same level of safety was maintained vs. conventional in-person observations Preliminary medical data suggests that use does not lead to worse sleep, more use of medication or longer length of stay. Links: Publication (Barrera et al.) – BMJ Evidence-Based Mental Health
Improve staff experience	 Improved confidence in managing patient risk Improved sense of safety Improved peace of mind 	All	Report Staff experience has been evaluated through surveys, interviews and focus groups. Some of these results are public, including results from Coventry & Warwickshire Partnership NHS Trust: 91% (n=23) and 92% (n= 18) reported the technology improves patient safety 91% (n=23) reported the technology allows them to make better care/clinical decisions 92% (n= 18) reported that the technology helps them to provide better care 82% (n=18) would prefer to have the technology to support them through the night. Other links: Early insights report

Further benefits:

More effective care planning: clinicians are able to obtain more information on a patient's activity, behaviour and vital signs trends which is being used to support and assess the impact of care interventions over time.

For example: read <u>Yasir's story</u> where objective data was invaluable in understanding behaviour and planning care, <u>Carla's story</u> where proactive care and earlier intervention enabled positive behaviour change, and <u>Ben's story</u> where change in care decisions helped to break the cycle of behaviour.

Objective, auditable data for incident reviews: under strict governance, the trust may choose to obtain/retain objective data (vital signs data, activity reports, video data) for serious incidents to build individual and organisational learnings.

In addition, it is hugely costly to undertake serious incident review – not only financially but from a staff morale and productivity perspective. Having objective & auditable data to document and learn from serious incidents can save valuable time & money in these extenuating circumstances.

Operational efficiencies: Recognising that patient safety and care quality are the priority, safer and more effective care can deliver productivity and financial benefits for the trust.

For example, Coventry and Warwickshire released 8,260 clinical hours per year in their 24-bed dementia facility, equivalent to over £150k per year, by reducing 1-2-1 observations by 71%.

This case would aim to deliver the clinical outcomes alongside operational efficiencies. It is expected to deliver safety & quality improvements that lead to operational efficiencies, including releasing clinical time to care through fewer incidents, faster observations and more effective data sharing as well as reducing avoidable 1-2-1 observations.

5. OPTIONS APPRAISAL

5.1 Options for Consideration

Several discussions have taken place with Clinical Director, Service Managers, Ward Managers and the Senior Leadership Teams across the Acute and Urgent Care Directorate and the Specialist Directorate. Two clinical workshops were held to seek views of ward teams. Matrons continue to engage with ward teams via team meetings, Ward Managers Task and Finish and WM Innovation Forum. In addition, discussions took place at SUCC to seek opinions from service user and carer representatives.

The three options considered in this case are:

- 1. Do nothing: discounted as it will not provide required safety & quality improvements
- 2. Rollout to selected services: rollout to all single-occupancy rooms in services where the technology has proven to impact safety & quality PICU, Acute, Older People.
- 3. **Complete rollout across all inpatient services:** the market lead supplier does not have clinical evidence on the impact in LD and CAMHS services at this time. This option is discounted for now.

It should be noted that the Learning Disabilities service are exploring the use of this technology within their refurbishment plans for Ward 5 in Harplands Hospital. The Clinical and Estates teams are in early explorations, and for avoidance of doubt, these discussions are being considered separately to this business case.

It is anticipated that, should this business case be approved, the Learning Disabilities service will benefit from shared learnings and benefits from this process (e.g. procurement, information governance, general infrastructure upgrades to the hospital) and may require a separate business case to seek investment approval for its use within the LD service once all options have been explored.

6. **PREFERRED OPTION**

6.1 Description of proposed service

Option 2: Rollout to selected services: rollout to all single-occupancy rooms in Harplands Hospital services where the technology has proven to impact safety & quality – PICU, Acute, Older People.

This paper recommends that deployment should be on the pathway basis across the Trust to ensure standardisation in service provision.

The rationale for the preferred option is:

- **PICU:** to support with improved physical health monitoring and reduction in interventions that can be perceived as invasive
- **Acute:** to support with reductions in safety incidents in particular self-harm and ligatures, reduction in high observation/intervention levels, and improved behaviour and physical health monitoring
- **Older People:** to support with falls reduction, safer staffing (reduction in avoidable 121s) and improved physical health monitoring.

A workshop was held to order clinical areas in priority based on patient safety, quality and performance data for past 12 months. In addition, discussions between clinical, capital projects, estates and IT colleagues have confirmed that the following clinical priority order is feasible within existing and planned infrastructure and estates project plans.

The clinical priority is:

- 1. Ward 6 Older People
- 2. Ward 1 Acute
- 3. PICU Psychiatric Intensive Care Unit
- 4. Ward 3 Acute
- 5. Ward 4 Older People
- 6. Ward 7 Older People
- 7. Ward 2 Acute

Whilst out of scope for this paper, should Option 2 deliver satisfactory clinical improvements and operational efficiencies, it is anticipated that a separate business case may be required to consider whether to roll out the service across remaining wards within the Trust.

6.2 Workforce Impact

The case is supportive of improving staff experience and satisfaction on inpatient wards. Workforce benefits include:

- Releasing clinical time (e.g. through reducing incidents and related admin, through a more effective night observation protocol) and reducing avoidable enhanced observations (which in turn reduces agency/bank staff spend/overspend)
- Improving staff confidence and "peace of mind" in managing patient safety, especially at night, which in turn can improve morale
- Improved accuracy and efficiency of patient physical health monitoring
- Minimising, where possible, infection control risks by supporting staff to monitor physical health remotely within the ward when appropriate.

There are clear audit and data quality benefits to this system through access to objective data on which to review, report and take learnings. This can reduce staff stress and costs in litigation cases.

With all technologies, there is fear of a negative effect of "disintermediating the nurse from the patient". In practice, NHS trusts that are using the system have not found this to be the case. Instead, ward staff feedback is consistently positive in supporting confidence, peace of mind, and time for therapeutic engagement.

Utilising new and innovative technology will mean a new way of working for teams. Service Managers, Modern Matrons and Ward Managers will be involved in the development of the protocols to promote ownership and cultural change. Protocols will describe in detail the responsibilities at each level.

Attendance at training sessions will be necessary for all ward staff when implementing the technology therefore consideration will be made as to the roll out of the training sessions to limit any disruption to service delivery. Engagement and training sessions can be conducted within 30 minutes and the supplier is flexible to fitting in to ward schedules.

Relevant training will be carried out by the supplier in the first instance and it is anticipated that training champions (approx. 1-2 hours to become a champion trainer) will be assigned to cascade the training and use of the technology with other staff and new starters on local induction.

6.3 **Physical infrastructure, Estates and Facilities**

Estates colleagues conducted a site visit with Serco and the supplier to consider the impact on the physical environment. All wards except PICU and Ward 2 were surveyed in person. The site visit confirmed that the physical installation (cabling and securing housing units safety in the room) is feasible within the rooms proposed in Option 2. It also confirmed that the rooms are feasible for the technology, i.e. the set-up and make-up of the room will not have an impact on the standard "set up" of the system in the wards.

For Estates/Serco, the physical installation requires placement of in-room equipment. In-room equipment is placed in a secure housing that is securely fitted to the wall/ceiling such that it is patient safe. The inroom equipment is securely hardwired via networking and power cabling back to a server (placed in an appropriate location within the hospital site). Cabling and housing installation (including anti-pick mastic) is to be completed by the Trust/Serco. There is a fixed monitor in the nurses' station that is also hardwired back to the server.

There is an interdependency with the dormitory eradication programme.

Whilst all wards, except PICU and Ward 2, are affected by dormitories eradication works, it is anticipated to be a two-year phased programme. It is therefore expected that for those wards affected, the technology can be installed prior to the works, and then moved & reinstalled once for those wards affected by the programme. Hence, the clinical priority is not changed by the estates interdependencies.

6.4 IT and Informatics

IT Informatics colleagues conducted a site visit with Serco and the supplier to consider the impact on networking. The site visit confirmed that the networking and IT requirements for the installation (server location, broadband, Wi-Fi) is feasible within the facilities proposed in Option 2.

For IT/Informatics, the installation requires suitable server space, broadband connectivity for the server(s) and Wi-Fi connectivity for staff to use tablets throughout the wards. See site visit summary enclosed above.

Equipment will be located in new cabinets installed by the Trust in each ward's local comms rooms (or a non-IT room if there is no space). From the local cabinets, there will be a fibre link (OM4 provisionally) run back to the central server room in the hospital, where the servers will be located in a (600*1000) rack provided by the Trust. The supplier will provide the UPS, if required.

In order to create suitable space for supplier's server equipment within the hospital, new or expanded cabinets, or a new location (i.e., from a non-IT room) is required on or near the wards. In addition, and independent of this paper, the IT fibre connections from comms rooms to the central server location was in need of an upgrade and can be upgraded to include infrastructure capacity for the supplier's system.

Broadband connection will be provided to the servers via a new broadband circuit provided by the Trust.

Current Wi-Fi within the hospital in undergoing improvements to achieve 100% coverage on the wards. The proposal is to use a private VLAN on Trust switches and a copper connection between the supplier's LAN and the Trust's network.

7. PROCUREMENT CONSIDERATIONS

A full procurement exercise is being recommended in order to comply with EU procurement regulations and to ensure the Trust against any risk and liability.

8. FINANCIAL COSTS

The following capital and revenue costs for the preferred option are shown below. These compare the implementation in 7 wards (114 rooms) & Place of Safety (2 rooms) with the costs of implementing on just 1 ward. The costs assume the contract is signed on 1st July 2021. All costs are including VAT.

Table 1 - 7 Wards & Place of Safety

Information Redacted

*21/22 costs based on 1st July 2021 commencing date

Table 2 – Cost of implementing on 1 Ward only

Information Redacted

*21/22 costs based on 1st July 2021 commencing date

8.1 Capital Cost

The capital costs include upgrading the core infrastructure for this hospital for purposes beyond use of the digital monitoring system. Capital costs associated exclusively with installing the system are network field wiring and power wiring and supplier installation costs

The remaining infrastructure works are required to be in place for implementation of the digital monitoring system but will have uses beyond this business case for future digital and IT projects.

The following costs are based on 10 years depreciation.

7 Wards & Place of Safety

1 x Ward			
		-	

8.2 Revenues Costs

This is in addition to the revenue cost of capital.

Service License: The supplier provides a fully managed service based on an annual "service licence".ii This include providing hardware, hardware maintenance, hardware replacement for wear & tear, software management, maintenance and upgrades related to existing functionality and SLA.iii Their terms are 3-year term minimum contract; invoiced annually in advance.

7 Wards & Place of Safety

1 x Ward

8.3 Funding Source

Case Study

Coventry & Warwickshire Partnership Trust installed the patient monitoring system on their Older Peoples wards; as a result they observed benefits that had some financial benefits related to staff time savings resulting from:

- · Reduction in enhanced observations
- Reduction in physical observations
- · Reduction in falls at night
- Reduction in patients being taken to A&E following a fall

They felt there were sufficient time savings to support a reduction of half a HCA from the rota (per ward), which would cover the cost of the investment. For context a 24/7 0.5 WTE (or 2.24 WTE) band 3 HCA per ward costs an estimated £58k per year.

Proposal

It is therefore proposed that the trust fund the capital through the capital plan for 21/22.

For revenue expenditure it is proposed based on benefits identified by Coventry & Warwickshire Partnership Trust initially it is funded as a cost pressure for 6 to 12 months. This would act as a buffer period in order to identify & quantify if the benefits substantially quantify a reduction in rota per ward in order for the patient monitoring system to be self-funded.

8.4 Efficiencies

Recognising that patient safety and care quality are the priority, safer and more effective care can deliver productivity and financial benefits for the trust.

This business case aims to deliver safety & quality improvements that lead to operational efficiencies, including releasing clinical time to care through fewer incidents, faster observations and more effective data sharing as well as reducing avoidable 1-2-1 observations.

In addition, but not factored into the analysis, it is expected that this project will have a positive and supporting impact for future safe staffing level reviews.

9. **RISKS AND MITIGATIONS**

Refer to section 12 Assessment of Risks

9.1 EQUALITY AND IMPACT ASSESSMENT

An Equality Impact Assessment has been completed and can be found below:

9.2 PRIVACY IMPACT ASSESSMENT

The supplier has completed a Data Protection Impact Assessment (DPIA). The Trust will complete an internal DPIA prior to contracting with the supplier. The supplier has comprehensive DPIA documentation and discussions are already underway to support with completion of the Trust DPIA.

9.3 QUALITY IMPACT ASSESSMENT

A Quality Impact Assessment has been completed and can be found below:

10 INTERDEPENDENCIES

The following interdependencies apply:

- Estates works, including dormitories eradication.

Whilst all wards, except PICU and Ward 2, are affected by dormitories eradication works, it is anticipated to be a two-year phased programme. It is therefore expected that for those wards affected, the technology can be installed prior to the works, and then moved & reinstalled once for those wards affected by the programme. Hence, the clinical priority is not changed by the estates interdependencies.

11 MOBILISATION PLAN

11.1 Implementation plan

Implementation will take place in a phased approach, ward-by-ward.

The implementation and ongoing evaluation will be overseen by the Inpatient Reconfiguration Programme Board, sponsored by Jonathan O'Brien, Executive Director of Operations. It will include cross-service clinical governance, finance, estates, Digital/Informatics, project management support, and senior representation from the awarded service provider.

There is a well-established approach to implementing and deriving value from this technology. It is expected the award service provider provides end-to-end support for implementation working in partnership with the Trust.

Milestone	Timescale
Business Case Approval	December 2020
Procurement completed	January – April 2021
Contract and DPIA Signed,	April 2021
Purchase Order Created	
Stage 1: Ready to Install	4-6 weeks based on hardware procurement. Cabling works can start during this phase to shorten Stage 2. This phase also includes initial communications to staff, patients, carers
Stage 2: Install Complete	6-8 weeks, phased ward-by-ward depending on clinical priorities. (See notes at end of this table). This phase also includes clinical protocol / SOP development, staff engagement, education and training plan development, and patient materials development
Stage 3 – Ready for Go-Live	4-6 weeks, phased as the wards are installed from point at which the ward is fully installed and ready to enter blind running (where the system is calibrated and configured based on the agreed functionality).

11.2 Key milestones

	This includes blind running as well as staff training and baseline data collection for benefits realisation.
Stage 4 – Go-Live	This is clinically led in terms of decision making for go live date

Installation can be done in active wards and requires flexibility from the cabling provider and service provider but does mean that no rooms need to be taken out of service for a full day. Installation can start in Stage 1 to shorten Stage 2, as long as the cabling plan is completed early on. Cabling typically takes 3-5 days per ward, depending on the size of the ward.

11.3 Assessment of risks

As with any project, the implementation process will need to be tightly managed with appropriate governance. The role of the Executive Sponsor and the Implementation Group is vital in the successful implementation of this project.

Risks are inevitable during business change projects. Through initial discussions, the following risks have been highlighted; further explanation and mitigation plans for each risk are tabled below. The identified risks will be included on the Trust Risk Register and monitored throughout the duration of the project via the Inpatient Reconfiguration Programme Board.

An initial risk assessment has been carried out and is summarised in the table below. Likelihood and impact are assessed on a scale of 1 - 5.

Risk area	Risk identified	Likelihood	Impact	Total Score
Clinical, Workforce	There is a risk that staff will have an over reliance on the technology which may lead to harm if other processes are missed	1	4	5
Clinical, Workforce	There is a risk that the equipment breaks down	1	4	5
Clinical, Workforce, Financial	There is a risk that staff do not embrace the new technology and therefore the delivery of associated benefits will be reduced or not realised	1	5	6
Estates & IT, Installation	Current infrastructure costs are based on a maximum estimate for planned works to create space for server equipment in the hospital. There is a risk that installation is delayed should space identified not be able to be used to locate server equipment	TBD	TBD	TBD
Estates, Installation	There is a risk that installation is delayed as a result of COVID-19 activities	TBD	TBD	TBD

11.4 **Risk mitigations**

Risk identified	Risk mitigations
There is a risk that staff will have an over reliance on the technology which may lead to harm if other processes are missed	 Guidance and operating protocols will be developed for each service in collaboration with the clinical teams to ensure ownership and buy-in as to what is appropriate use of the system within existing ways of working Comprehensive and robust training will be provided to all clinical staff prior to go-live. Guidance, SOPs and other training materials will be made available to staff and teams Staff will be reminded that the technology will not replace existing assessments and policies that are in place

There is a risk that the equipment breaks down There is a risk that staff do not embrace the new technology and therefore the delivery of associated benefits will be reduced or not realised	 Regular check-ins with ward teams post go-live will ensure SOPs and guidance developed is appropriate and being utilised, as well as highlight improvements Train-the-trainer model with provider champions will ensure new staff + refresher training for existing staff in a sustainable, manageable way The supplier will have an SLA to ensure that there is a clear and timely protocol for resolution of equipment breakages Guidance and operating protocols will include staff escalation procedures for equipment breakages There will be business continuity planning as part of SOP development The supplier will have extensive experience working with ward teams to build engagement and support as well as activate usage on go-live Promotion of the benefits of the technology will be at every level and will support the culture change required Ward staff will be invited to be involved in protocol development and benefits realisation to build engagement, buy in and ownership of the project at the ward level Pre go-live education and training sessions will be held with ward staff Supporting materials will be provided to help staff engage with patients and carers about the project before, during and after go-live Train-the-trainer model with selected provider champions on each ward will encourage staff to embrace the technology Initial weekly check ins with wards post go-live will encourage sharing of good practices and early examples of how it can deliver value across team to encourage usage and activation
There is a risk that installation is delayed should space identified not be able to be used to locate server equipment	TBD
There is a risk that installation is delayed as a result of COVID-19 activities	TBD

12. EVALUATION

The following six core outcomes have been identified as the projected outcomes to rolling out the technology across identified inpatient wards across the Trust:

Outcome category	Desired outcome
1. Improved patient safety	 Reduction to incidents, including but not limited to self-harm, violence and aggression, assaults, falls Faster response time to incidents and therefore reduction in harm Learning from near misses and incidents
2. Improved physical health monitoring	 Improved adherence to physical health monitoring, for example post-rapid tranquilisation Earlier detection of physical health deterioration
3. Improved patient care	 More information to support clinical decision making, including engaging with the patient Improved observation level mix through supporting the risk management to ensure the least restrictive practice
4. Improved patient, carer experience	 Improved patient and carer experience related to sense of privacy/dignity, sleep/disturbance and safety
5. Improved staff safety and experience	 Reassurance/peace of mind that patients are safe Greater confidence in managing patient risk Improved sense of feeling safe

	Improved sense of wellbeing
6. Increased time to deliver direct care	 Effective risk management to support clinical decision making in relation to patient safety leads to fewer or shorter enhanced observations where appropriate Efficient observation rounds at night Better use of staff time due to fewer incidents

A Benefits Realisation Sub-Group will be accountable for creating the full benefits realisation plan, gathering baseline and outcomes data, and evaluating that data.

Data collected will include as a minimum incident data; observation data; patient, carer and staff experience feedback.

As a minimum, an early insights report will provide early insights in the form of thematic evaluation through qualitative data. Data for this report will be collected 3-4 months post go-live. In addition, longer-term qualitative and quantitative data will be collected over several months to produce a comprehensive report after approximately 12 months post go-live, noting that it can take time for sufficient data to be gathered and evaluated in order to sufficiently prove impact.

This Sub-Group will report to the Inpatient Reconfiguration Programme Board to review, sign-off and disseminate early insights and longer-term findings.

13. **RECOMMENDATIONS**

This paper has ascertained the benefits to introducing a digital monitoring system across some of the inpatients sites and recognises the scope to go further and consider full roll out in the coming years. It is important this work is aligned to the wider estates reconfiguration work to ensure co-ordination. This paper seeks;

- **Approval** for the capital and revenue costs needed to support the installation of this product across 7 wards
- Agreement to a full procurement exercise to ensure the Trust is OJEU compliant

Delegation of the implementation of the project to be overseen by the Inpatient Programme Reconfiguration Board

14. **APPENDICES**

Information Redacted