NHS
Tees, Esk and Wear Valleys
NHS Foundation Trust

ITEM NO. 2.3

DATE:	**14th August 2019**
TITLE:	**Oxehealth (Digital Care Assistant): trial-to-scale**
REPORT OF:	**Elizabeth Moody (Director Nursing & Governance)**
REPORT FOR:	**EMT**

This report supports the achievement of the following Strategic Goals:	✓
To provide excellent services working with the individual users of our services and their families to promote recovery and wellbeing	x
To continuously improve the quality and value of our work	x
To recruit, develop and retain a skilled, compassionate and motivated workforce	
To have effective partnerships with local, national and international organisations for the benefit of the communities we serve	x
To be recognised as an excellent and well governed Foundation Trust that makes best use of its resources for the benefit of the communities we serve.	x

Executive Summary:

TEWV would like to explore Oxehealth's Digital Care Assistant (DCA) to:

- Improve safety, quality and patient experience in inpatient facilities
- Release pressure on our inpatient workforce by saving clinical time on wards

The DCA is technically validated (Class IIa medical device) and clinically validated in real-world Mental Health settings: in use across inpatient services (Older Adult, Acute, PICU, seclusion, S136), has >500,000 room-hours of live running, and two reports published by NHS Trusts on efficacy and value. 19% of NHS Mental Health Trusts are working with Oxehealth.

The Trust would like to trial-to-scale the DCA across a representative set of inpatient services, building on learning from other NHS Trusts. Should it deliver benefits to patients, staff and the Trust, TEWV has intent to scale it across its services

Each locality has nominated services to take part in the trial-to-scale, based on highest unmet clinical need, geographic spread and minimal operational disruption:

- Scarborough: Rowan Lea ward: 20-beds (MHSOP Organic and Functional)
- Darlington: Cedar ward: 10 beds + seclusion (PICU, West Park Hospital)
- Tees: Newberry ward:14 beds + seclusion (CAMHS, West Lane Hospital)
- York: Minster ward: 12 beds (Adult Acute, assessment & treatment)
- Middlesbrough: Sandpiper ward: seclusion (Forensics)

Oxehealth have created a long-term investment option that would make both trial-to-scale and widespread uptake (e.g. into new York Hospital) feasible for the Trust: **[I/S]** per ward per month for the trial, reducing to **[I/S]** at scale **[I/S]** per ward per year reducing to **[I/S]** per ward per year).

Whilst the trial will focus on quality improvement, anticipated financial benefits include a reduction in enhanced observations (reducing agency/bank spend), time and cost savings associated with fewer incidents (& associated reviews) and time savings associated with faster, more effective observation and interventions on wards.

Recommendations:

That EMT support the trial-to-scale, starting in the locations proposed above.

MEETING OF:	**Executive Management Team**
DATE:	**14th August 2019**
TITLE:	**Oxehealth (Digital Care Assistant): trial-to-scale**

1. INTRODUCTION & PURPOSE:

Analysis of Trust incidents, patient activity and staff and service user feedback all indicate that there a number of challenges currently facing the Trust in relation to the delivery of safe inpatient care. This is also demonstrated by a high and increasing number of shifts required for the reason of 'enhanced observation', management of ligature risks, substance misuse incidents, observation of service users at night, physical health monitoring post rapid tranquilisation and patient falls data.

Oxehealth's Digital Care Assistant (DCA) is an innovative solution improving safety and experience on inpatient Mental Health wards. It uses an optical sensor to pay attention to a room; it can see movement and measure vital signs. It supports nurses working on wards, and has been proven to reduce safety risks (Older Adult = falls, Acute = ligatures, self-harm, violence/aggression, contraband use). It enables an improved patient experience, with patients reporting better sleep, feeling safer and greater sense of privacy at night (*A good night's sleep: a new standard for night observations in mental health hospitals*. By: Oxford Health NHS Foundation Trust with support from Oxehealth, 2019).

TEWV would like to trial the Digital Care Assistant across a representative set of inpatient services. Each locality has nominated services to take part in the trial-to-scale, based on highest unmet clinical need, geographic spread and minimal operational disruption:

- Scarborough: Rowan Lea ward: 20-beds (MHSOP. Organic and Functional)
- Darlington: Cedar ward: 10 beds + seclusion (PICU)
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- Middlesbrough: Sandpiper ward: seclusion (Forensics)

The purpose of this paper is to assess the business case for an initial trial of the Digital Care Assistant in TEWV.

2. BACKGROUND INFORMATION AND CONTEXT:

How does the Digital Care Assistant (DCA) work?

The DCA is based on an optical sensor and infrared illumination that can monitor a service user's movement/activity, pulse and respiration rate in their bedroom. The equipment is installed in a secure housing that is anti-break and anti-ligature. There is no device attached to the service user, and the system works 24/7 (even in total darkness).

When someone walks into a room, the DCA detects where they are. It notices movement on or through objects/locations and triggers appropriate "alerts" to risky activity, or notes the activity down for clinicians to review in "activity reports".

Alerts include: "edge of bed", "out of bed", "out of room", "dwelling for an extended period of time in the bathroom", "dwelling for an extended period of time at a doorway", "multiple people in a room", "no activity detected" (used exclusively in seclusion). Each ward can choose to activate specific alerts based on what they deem to be "high-risk" activity during day/night for their patient cohort.

Reports help clinicians to identify previously unseen behavioural patterns. They can be viewed by the day or week and give data on sleep opportunity/restlessness, isolation time, en-suite bathroom visit frequency.

The DCA detects a patient's pulse & breathing rate when they are resting. It is certified as a medical device for spot-check observations. It works even when the body is partially obscured, for example by hiding under a desk. Breathing rate can be detected through thick clothing and bedding; pulse rate requires a small area of skin to be visible. It works for all skin tones.

Ward staff engage with the Digital Care Assistant via a monitor in the nurses station and/or tablet devices that are portable on the ward.

What is the clinical evidence

The DCA is clinically validated for use in Mental Health.

Technical validation: Vital Signs is a certified Class 2(a) medical device (Europe): independent assessment of utility and validation of medical accuracy in a pivotal study.

Real world validation: used across inpatient wards to improve patient safety/experience. >500,000 room-hours live running. Two NHS reports published (see "Background Papers" for full details), two in development:

Night observations: Report by Oxford Health. A modified observation protocol at night resulted in:

- Staff obtaining medically certified vital signs without switching on a light or opening a hatch/door
- Staff can now conduct observations more quickly but no less safely
- Staff reported easy-to-use and provided additional confidence/reassurance that the patient was safe at night
- Patients get a much better night's sleep and benefit from more privacy and dignity at night: 100% patients surveyed reported "feel safer" and "better sleep", 86% "greater privacy"

Older Adults: Report by Coventry & Warwickshire. Results:

- 33% reduction in falls at night; remaining falls were significantly less harmful & can all be witnessed after-the-fact
- 56% reduction in A&E demand
- 71% reduction in enhanced observations
- Staff reported improved patient safety and confidence
- Carers reported greater peace of mind
- Rated outstanding practice by CQC

Acute Adults: Evaluation report in development; qualitative findings include:

- Staff reported improved patient safety (91%) and ability to identify earlier warnings to incidents (83%), including self-harm, patient-patient conflict and contraband use
- Patients reported greater sense of wellbeing (100%) and reassured of their safety.

Seclusion: deployed in 7 NHS Trusts to improve physical health monitoring. Evaluation report in development; qualitative findings include:

- Provides additional assurance for patient safety after rapid tranquilisation, particularly in situations where it may not be safe to enter the room and when difficult to detect movement
- Increases physical health monitoring, specifically the proportion of time staff can take a pulse & breathing rate observation
- Has identified physical health risks in patients early on.

What is the efficiency/financial evidence?

Whilst the focus is on "invest to improve", safer and more effective care can deliver significant productivity and financial savings:

Reducing enhanced observation spend:

In Coventry & Warwickshire, they reduced enhanced observations by 71% on their Older Adult wards, a clinical time saving of 7,800 hours per year which represents a potential cost saving of [I/S]

In TEWV, enhanced observations cost the Trust approximately [I/S] in 2018/19 [I/S] April – July 2019), of which 81% are undertaken by agency/bank staff. A 20% reduction would save the Trust [I/S] per year.

Reducing serious incident costs:

An estimated cost for an NHS serious incident is recognised to be more than [I/S] in direct staff time, excluding legal expenses incurred and indirect costs, for example staff sickness because of stress. Within the Trust, we have experienced increasing legal costs associated with inquests and claims following inpatient deaths as well as seeing the well-being impact on staff.

Improving staff productivity:

Reducing incidents:

Every fall prevented saves 8.3 hours of direct clinical time; this is similar for other incident types. Reducing the number of incidents can save significant clinical time that can be reinvested to spend with patients most in need on the ward.

Faster night observations:

In Oxford Health, staff using the modified observation protocol completed observation/ care rounds 45% faster. They were able to reinvest that time in therapeutic care during their night shifts.

3. KEY ISSUES:

- The testing of oxehealth DCA would support a number of business priorities that the Trust is working towards e.g. agency reduction, reducing restrictive practice, improved physical health monitoring, zero inpatient suicide ambition, and sexual safety.
- The proposed early implementer areas have been put forward to test out the DCA technology across a range of services. EMT will need to consider if these are the right areas to test out, whether we wish to extend the scope in light of recent ligature incidents, the length of time we would want to test and how we would possibly scale up across the Trust if this was felt to be helpful technology.

- The DCA technology should be seen as additional resource to support to staff teams in terms of quality and safety, although there may be opportunities to reduce temporary staffing related to observations, it is unlikely this would impact on ward establishments.

- If EMT approves the test of DCA technology, further consideration will need to be given with regard to the baseline data and qualitative analysis to be used to evaluate the effectiveness of this.

4. IMPLICATIONS:

4.1 Compliance with the CQC Fundamental Standards:

What has the CQC reported about the DCA?

In July 2019, CQC published a case study series entitled "Driving improvement through technology", highlighting examples of innovation in care found during their work.

The DCA was one of two Mental Health case studies highlighted: [HYPERLINK "https://www.cqc.org.uk/publications/themes-care/digital-care-assistant"]

Its use was noted as outstanding practice in CQC's December 2018 report on Coventry & Warwickshire Partnership NHS Trust, with the report stating: 'Pembleton and Stanley wards had been involved in a pilot scheme to install infrared sensors in some patent bedroom. The sensors detect changes in patients' movement and vital signs. The technology aimed to support staff to changes in patients' vital signs. Staff had identified a reduction in falls since the technology had been introduced.'

It is felt that the use of this technology would support the trust to provide safe care in line with CQC Fundamental Standards.

4.2 Financial/Value for Money:

Whilst the focus is on "invest to improve", safer and more effective care can deliver significant productivity and financial savings (see page 4). The trial will evaluate both the clinical and financial benefits for TEWV.

Oxehealth offer a fully managed service based on an annual "service licence".

Oxehealth fully manage the hardware and software service. This include providing all hardware, hardware maintenance, hardware replacement for wear & tear, software management, maintenance and upgrades related to existing functionality.

For an initial 4-ward trial, the annual licence is **[I/S]** per ward. At scale, this reduces to **[I/S]** per ward. For a single seclusion room, where the DCA is not deployed in the ward, the annual service licence is **[I/S]** If the DCA is deployed in the ward, the seclusion room is inclusive in the ward licence.

Annual costs for TEWV trial:

ANNUAL	Service Licence cost per licence £	Number of licences	Total Annual cost £
Per ward	[I/S]	4	[I/S]
Per seclusion room		1	
Total (excluding VAT)			
VAT			
Total (including VAT)			

ONE-OFF COST	Installation
Trust install per room (est.*)	[I/S]
Oxehealth install per room	
Total	

Terms:

- [I/S] *minimum contract.*

Installation notes:

- ** Wiring and housing installation to be completed by Estates / designated contractors. We estimate, based on previous installations in the NHS, that the Trust's installation cost would be around* [I/S] *per room. This would be confirmed by a full site survey conducted by Oxehealth and Trust Estates and IT teams*
- *Broadband and Wi-Fi connectivity to be provided by Trust IT.*

Not included:

- *See installation notes*
- *Hardware replacement for patient damage or staff misuse or damage will be charged at the replacement cost plus engineer call-out fee at the time.*

For a [I/S] contract, TEWV would need to purchase the hardware outright. Estimated hardware cost, subject to full site survey, is [I/S]

4.3 Legal and Constitutional (including the NHS Constitution):

None to consider

4.4 Equality and Diversity:

Evaluation from other mental health trusts indicates that the use of this technology supports service users to feel safe and enhances privacy and dignity. Trialling the oxehealth solution across a range of diverse services will provide an opportunity to see this can benefit patients across a range of settings.

4.5 Other implications:

Implementation:

Oxehealth have a well-established process to deploy and embed the Digital Care Assistant on wards. They provide end-to-end support, run a train-the-trainer model for sustainable staff engagement, and have a full set of implementation resources (e.g. protocols, How To guides, Information Leaflets).

From contract, the Oxehealth equipment lead-time is 6-8 weeks, during which the installation preparation (e.g. cabling works) and operational/clinical protocol updates can be completed. Once installed (installation cadence: 5-6 rooms per day), the system enters a 6-8 week period of "blind running", during which the algorithms are tuned and staff engagement and education is completed. The system can then "go live". "Go live" can be phased by site if preferred.

TEWV have already started initial engagement across divisions and central functions to ensure smooth implementation.

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5. RISKS:

The deployment of Digital Care Assistant on wards has been proven to reduce patient safety risks to patients within in-patient settings. If it was deployed and embedded across the Trust using a risk based approach to implementation then the Trust should see the clinical benefits delivered.

6. CONCLUSIONS:

The Digital Care Assistant has been proven to deliver clinical benefits, in particular improving patient safety and experience on wards, as well as providing efficiency/financial gains in other NHS mental health trusts. To-date staff, patient and regulatory (CQC) feedback has been positive.

The recommendation is therefore to trial the Digital Care Assistant across a representative set of services in order to determine its utility, efficacy and return on investment before considering a full scale rollout across TEWV inpatient services.

7. RECOMMENDATIONS:

That EMT support the trial in the proposed locations (4 wards + single seclusion room).

Author
Oxehealth (Digital Care Assistant): trial-to-scale
Elizabeth Moody (Director Nursing & Governance, Deputy CEO)

Background Papers:

Safer Dementia Care by Coventry & Warwickshire Partnership NHS Trust

- Older Adult: 8-month [HYPERLINK "https://www.oxehealth.com/mint-project/uploads/539605819.pdf"]; compa
  Oxehealth installed in 50% rooms of 24-bed hospital:
  - 33% falls reduction at night (72 to 48)
  - 56% reduction in A&E demand (10 to 4)
  - 71% reduction in enhanced observations: 7,800 clinical hours saved annually
  - Staff reported improved patient safety and confidence
  - Carers reported greater peace of mind
  - Rated outstanding practice by CQC

A Good Night's Sleep by Oxford Health NHS Foundation Trust

- Acute: [HYPERLINK "C:\\Users\\surteesr\\AppData\\Local\\Microsoft\\Windows\\INetCache\\cwood\\AppData\\Roaming\\Microsoft\\W lth"]. Oxehealth installed in 6 high acuity rooms in male ward to improve night observations. Evaluated modifiec baseline:
  - Staff confirm patient safety without disturbing/waking patients (disturbance rate <2%, P<0.05)
  - Halves nurse observation time
  - As safe as conventional protocol
  - Patients reported feeling safer (100%), sleeping better (100%), and greater privacy (86%)

  >5,000 observations taken over >300 patient nights.

- Seclusion - deployed in 7 NHS Trusts to increase physical health monitoring post-rapid tranquillisation.