How technology can change services

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Research and non-contact monitoring

- Research: to assess whether novel non-contact monitoring technology improves quality of care and safety for staff and patients

- Research Ethics Committee (REC) & Health Research Authority (HRA) approved – patients must give consent on admission

- Non-contact technology (Digital Care Assistant) installed in bedrooms & seclusion

- Collaborative development, quantified outcomes

- Live since January 2019

The environment

- 1 male PICU (11 bedrooms + seclusion)

- 1 female acute (22 bedrooms) + 1 male acute (20 bedrooms)

- Very busy - avg. 94% occupancy

- ~75-130 patients discharged per year per ward

- Ongoing substantive staffing challenges

- >50% self-harm + assaults happen in bedrooms on female ward, 20-30% on male wards

- Self-harm dominant incident type in female bedrooms, assaults in male bedrooms

The technology in the room

- Optical sensor = camera + infrared illumination in secure housing in each room

- Screen in nurses' station, designed for patient privacy

- Pulse & breathing rate measurements without disturbance

- Alerts & warnings to high-risk activity, e.g. bathroom dwelling, multiple people in a room, leaving room at night

- Reports on patient behaviour, e.g. time spent in bed, time spent in room, bathroom visits

Positive impact on safety & quality since introducing the technology into services

PICU

✓ **26%** ↓ **in bedroom assaults**

✓ **40%** ↓ **in rapid tranquilisation**
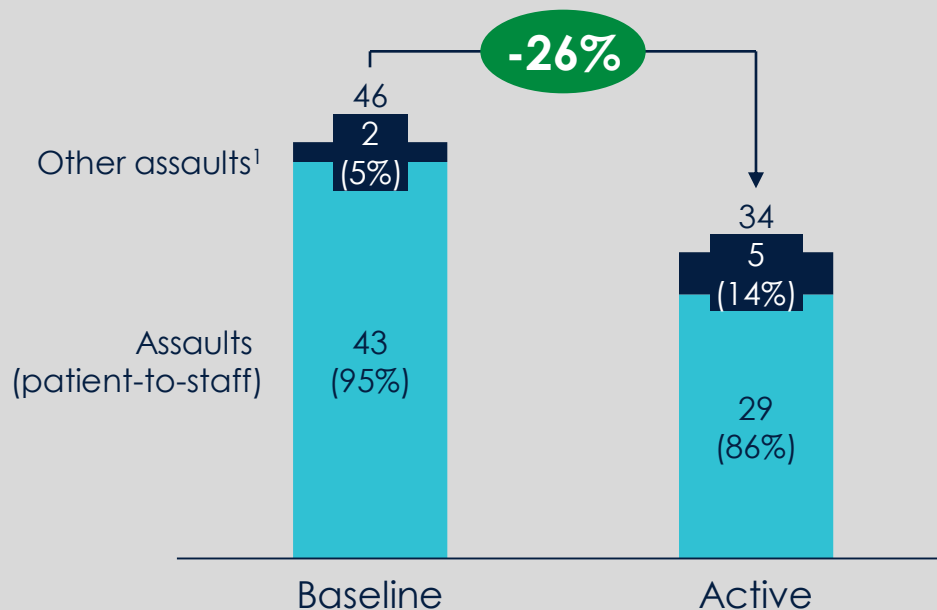related to assaults[1]

✓ Improved **physical health monitoring**

In PICU, assaults in bedrooms reduced by 26% during the active period compared to the baseline

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Assaults in bedrooms
baseline vs. active study period

Assaults in bedroom, PICU ward[2]
Jan 18 to Dec 19

Other assaults[1]

Assaults (patient-to-staff)

-26%

46
2
(5%)

43
(95%)

34
5
(14%)

29
(86%)

Baseline

Active

Comments

- Assaults in bedrooms reduced by 26%

- Severity mix remained broadly unchanged, with 90% low harm, 7% moderate harm.[3]

- There were no assault incidents associated with an A&E visit in the active study period (vs. 2 staff injury related A&E visits in the baseline)

- Staff are better able to monitor patients in the bedroom in a less intrusive way, and are able to gain additional information on patient location through the use of "in room" and warnings/alerts including multiple people

Source: Caludon incident data analysis, Jan 18 - Dec 19. 1. Other assaults include patient-patient assaults and assaults (other) incident categories. 2. Bedroom incidents include incidents in the en-suite bathroom. 3. 3% of incidents were not categorised.

In PICU, results indicate a significant 40% reduction in Rapid Tranquilisation related to assaults

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Rapid tranquillisation
baseline vs. active study period

Rapid Tranquilisation events related to assaults incidents, PICU ward
Jan 18 to Dec 19[1]
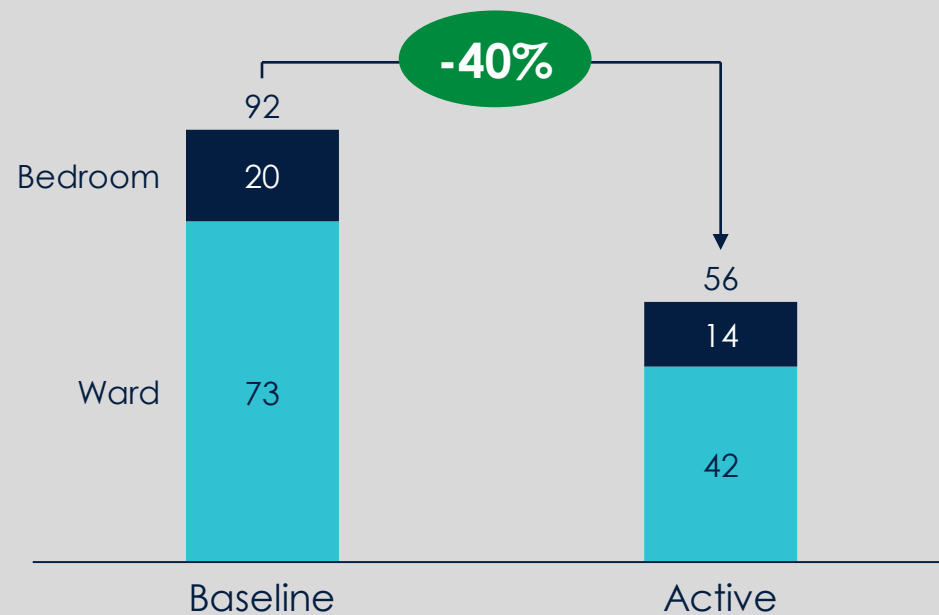
Comments

- Rapid Tranquilisation events related to assault incidents reduced 40% (p=0.001)

- Staff often guide an agitated or aggressive patient to their bedroom to deescalate an incident

- Staff can better monitor patients in bedrooms without risk of escalation and therefore can sometimes avoid use of Rapid Tranquilisation

- Rapid Tranquilisation reduced 29% for assaults in bedroom and 43% for assaults in ward

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Positive impact on safety & quality since introducing the technology into services

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PICU

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✓ **40%** ↓ **in rapid tranquilisation** related to assaults[1]

✓ Improved **physical health monitoring**

Acute

✓ Overall, **22%** ↓ **in bedroom self-harm**[1]

✓ In Female, **66%** ↓ **in bathroom** and **15%** ↓ **in bedroom ligatures**[1]

✓ Overall, **15%** ↓ **in bedroom assaults**

Whilst self-harm reduced on the Oxehealth wards, it significantly increased on the control wards during the same period

Results: Acute

Self-harm in bedrooms, baseline vs. active study period for active vs. control wards

**Self-harm in bedroom, Oxehealth vs. control wards[1]**
Jan 18 to Dec 19

-22%

136 | 106
Baseline | Active

Oxehealth Wards

+39%

194

139
Baseline | Active
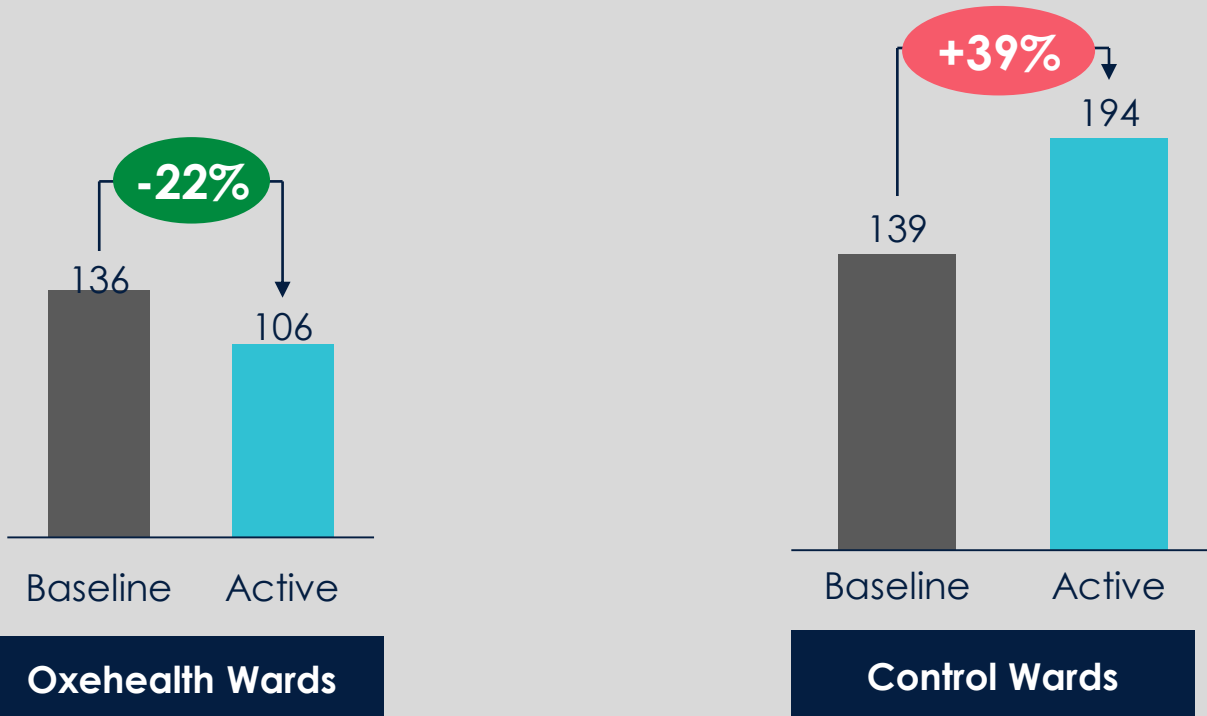
Control Wards

Comments

- Self-harm reduced by 22% on the Oxehealth wards and increased by 39% on the control wards

- There is a large sample size of self-harm incidents

- Relative change in impact of ligatures on the Oxehealth vs. control ward is a decrease of 47%

- When Oxehealth wards compared to control wards, there is a statistically significant reduction in self-harm (p=0.05)

Source: Caludon incident data analysis, Jan 18 - Dec 19. 1. Bedroom incidents include incidents in the en-suite bathroom. 2. Control wards has self-harm incidents excluded from 1 outlier patient that had very specific care needs and the frequency of self-harm incidents was much higher than is normal for patients on XXX ward

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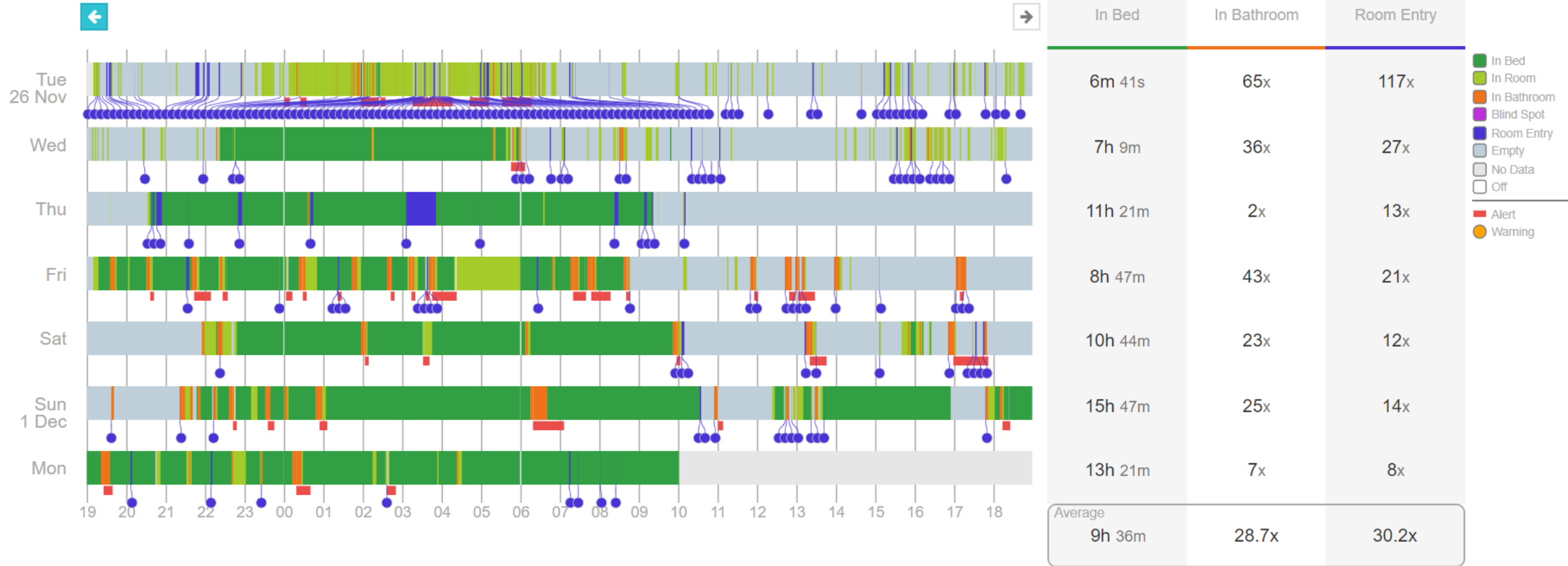
Case vignette

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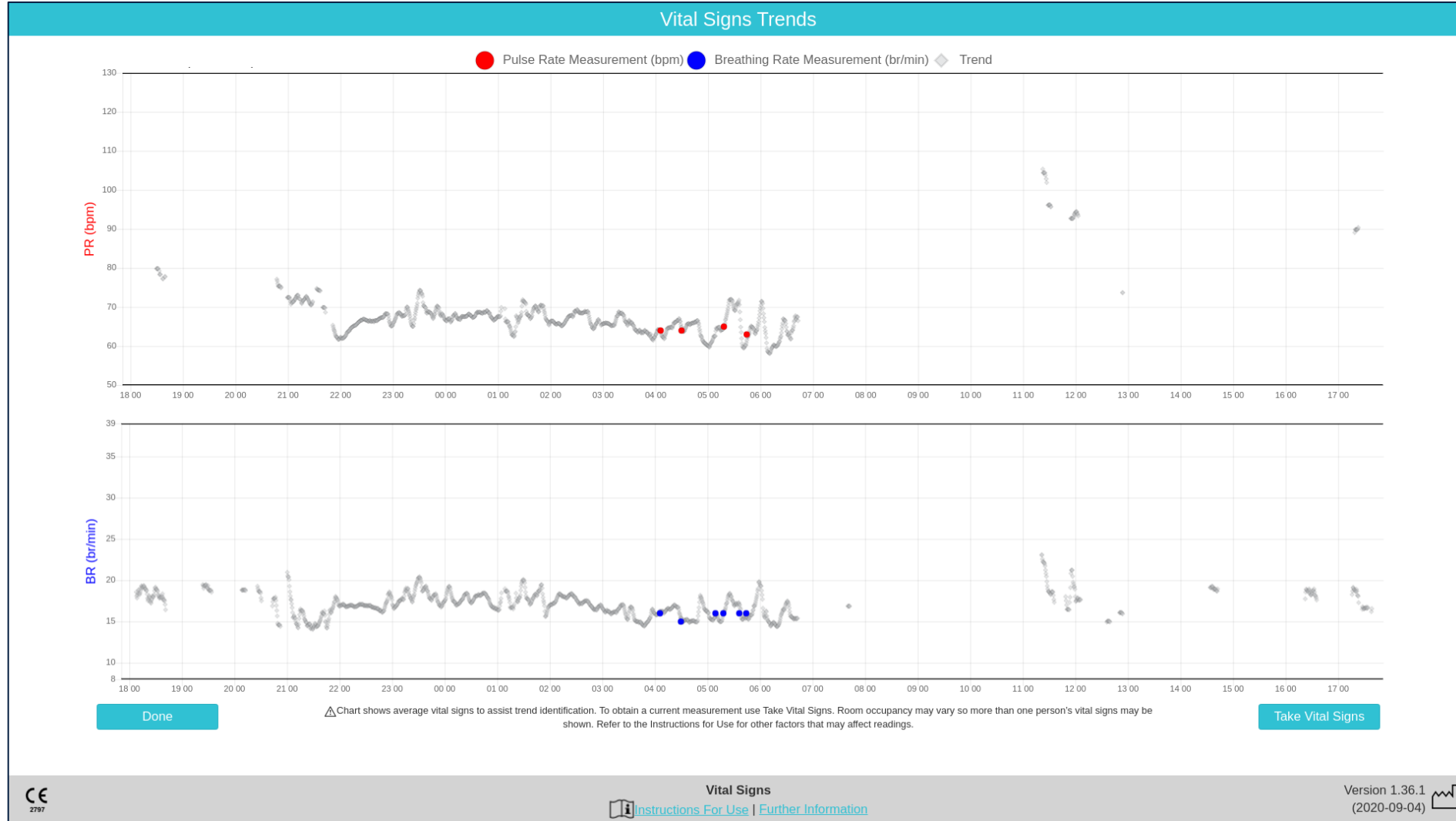
Experiences from the floor

…a colleague shares their story

Patients + Staff

- **Patient safety and quality of care is at the heart** of what we do, and the primary research objective – we've made a great leap forward

- We noticed **unintended staff experience benefits**

  ➢ "New data" to give us more options for clinical decisions

  ➢ Trusted data to give us comfort we can use it safely

  ➢ Reassurance and peace of mind for all staff

I want to leave you with this…

Technology has a place in psychiatry

It can provide reassurance to clinicians working in busy clinical environments

And can unlock "new data" that can inform decision making

Acknowledgements

- Mel Coombes – Chief Nurse and Chief Operating Officer, CWPT

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- Rachel Webb, Swanswell ward manager and all Swanswell staff

- Sandra Davison, Beechwood ward manager and all Beechwood staff

- Oxehealth team

The interface for clinicians

Source: Oxehealth