NHS
Lancashire and South Cumbria
Integrated Care Board

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Independent Evaluation of the Nobi lamp pilot in Lancashire and South Cumbria

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Lancashire and South Cumbria team

Links to full report

- The full report that this presentation summarises can be found here:
- https://www.lancaster.ac.uk/c4ar/nobi/

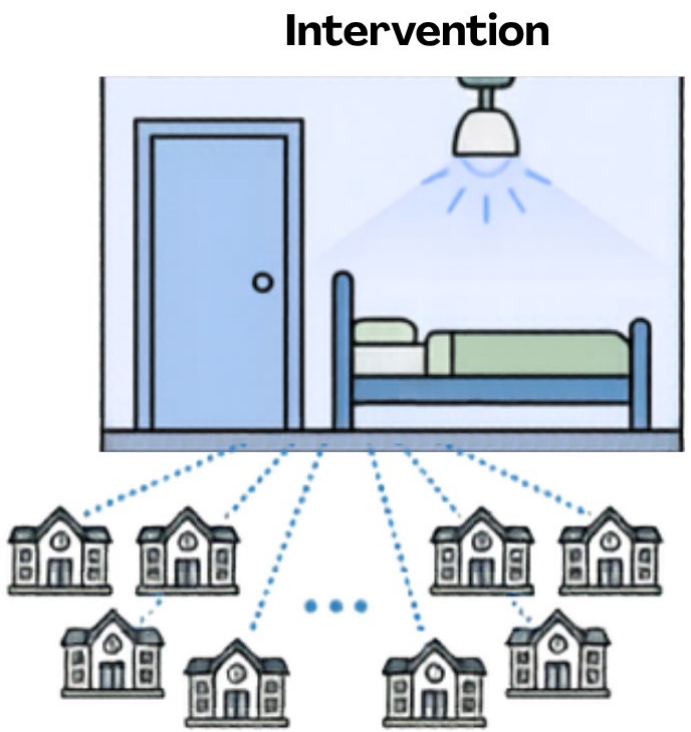
This set of slides is intended for Nursing and Residential Care homes, Local authorities and ICBs and other users to be able to disseminate the key points of the evaluation to further audiences.

What is The SMART Lamp Technology?

- Digital technology is rapidly reshaping adult social care. AI enabled, sensor-based technology shift practice from *reactive* monitoring to *preventative* care.
- The lamps function as both a ceiling light and an intelligent monitoring device.
- They analyse resident movement enabling real time fall detection with reported 100% accuracy.
- They detect falls and the alert to staff helps eliminate long liesand associated harm
- Nobi lights activate when a resident gets out of bed, reducing disorientation and nighttime falls.

- When a fall does happen, Nobi provides a short sequence of anonymised images to support root cause analysis, enabling homes to identify patterns such as poor footwear, clutter, nighttime wandering or medication effects.
- **This data driven learning supports better care planning and targeted risk reduction interventions**.

The Nobi Lamp Pilot Intervention



800 Smart Nobi lamps were installed in around 20% of the bedrooms in 80 Nursing and Residential care homes in the Lancashire and South Cumbria region. 68 homes were in a position to provide Nobi data for this study and we were able to analyse ambulance call outs for 57. Lamps were installed in the bedrooms of residents with high fall risks.

The aims were

- Reducing unwitnessed and hidden falls;
- Shortening long lie durations through immediate alerts;
- Lowering ambulance call-outs and conveyance;
- Generating actionable insights to inform care plans (e.g., nighttime mobility, post meal patterns).

What do we already know? What don't we know?

Before we started analysis of the data, we did a review of previous work on a range of fall detection devices, including this one. We found that:

- Most previous studies found a reduction in long lies, ambulance call-outs and hospitalisations.
- Most studies did not find a significant reduction in fall rates and injurious falls
- Few studies had proper control groups
- Those studies that reported a reduction in fall rates and injurious falls tended to be qualitative studies, pilot studies without control groups, case studies or unpublished reports with mainly anecdotal data that did not clearly describe a statistical methodology
- **No studies conducted analyses that would tell us about reduced risk of falls, or evidenced prevention.**

Objectives of the Evaluation

1. To determine whether this technology has reduced resident falls and is likely to prevent future falls, reduced staff response time after a resident has fallen and before help comes, and reduced ambulance call-outs, distinguishing those leading to hospital conveyance from those where no conveyance occurred.

2. To determine whether it has changed how Nursing and Residential care homes deliver care for the residents they support.

3. To determine what impact it has had on residents' quality of life.

4. To investigate in what kind of circumstances Nobi lamps can support care in a different way to a 1-1 package of care and be the least restrictive practice?

5. To determine whether this approach offers value for money, using the NWAS data on ambulance call-outs to infer costs avoided driven by the falls prevention capacities of Nobi.

6. To consider how this intervention can be scaled and sustained

What did we do? Methods summary

- **Quantitative data (Numbers)** from the Nobi smart lamps, from the North West Ambulance service and from a questionnaire (the CHSMQ) sent to managers and staff
- **Qualitative data (people's comments)** from feedback on benefits or challenges from care home managers, from open text boxes in the questionnaire, and from an interview as part of a deep dive case study

Quantitative data answer the question of **whether or not** the lamps improve outcomes and by how much, and what might that save in terms of costs.

Qualitative data answers the questions of **how** that is happening – what are the changes perceived and experienced by staff that result in the changes in the number outcomes.

That is, the two types of data support each other.

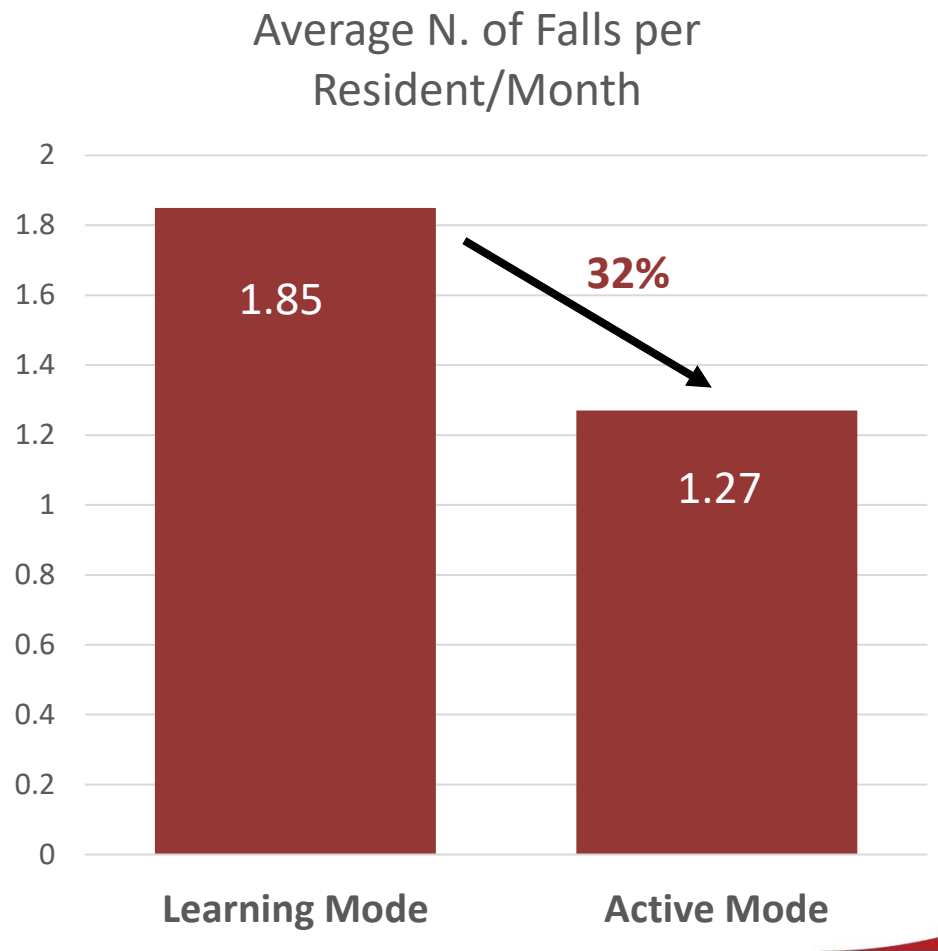
- Importantly, this ensures the staff voice is heard.

Results – Frequency of Falls

- 840 residents were monitored using the technology.
- Of these, 628 residents (75%) were observed across both Learning and Active Modes

•Controlling for **Time** & **Resident** variability, our analytic model shows a significant reduction in the average number of falls per resident by about 32%

•Sensitivity analysis showed no variation /similar impact across all age groups or both genders.



Results – Prevention of Falls

- People differ in ways we often can't fully measure, such as Frailty, Underlying health, Mobility, Cognitive status. Even within the same diagnosis, the severity of symptoms can vary. In our models, we controlled for Time & Resident variability – in other words, we compared each resident to themselves over time, accounting for *changes that affect everyone at the same time*. This gives more certainty (reliability) to our findings because we have adjusted for these factors that may be different in a different context.

- Controlling for **Time** & **Resident** variability, our analytic model shows a significant decrease in the odds 'probability' of falling in a day ≈ Residents experienced relatively ***more*** Zero-Fall days in Active Mode compared to Learning Mode by about **33**%.

- **That is, the likelihood of falling has reduced by 33%**

In Summary

Our Analysis shows the Technology:

- Reduced the Frequency of Falls by 32%
- Prevented Falls by 33%
- Decreased the Staff Response Time by 9 Minutes

Does having Nobi Lamps reduce ambulance call-outs compared to in homes without it?

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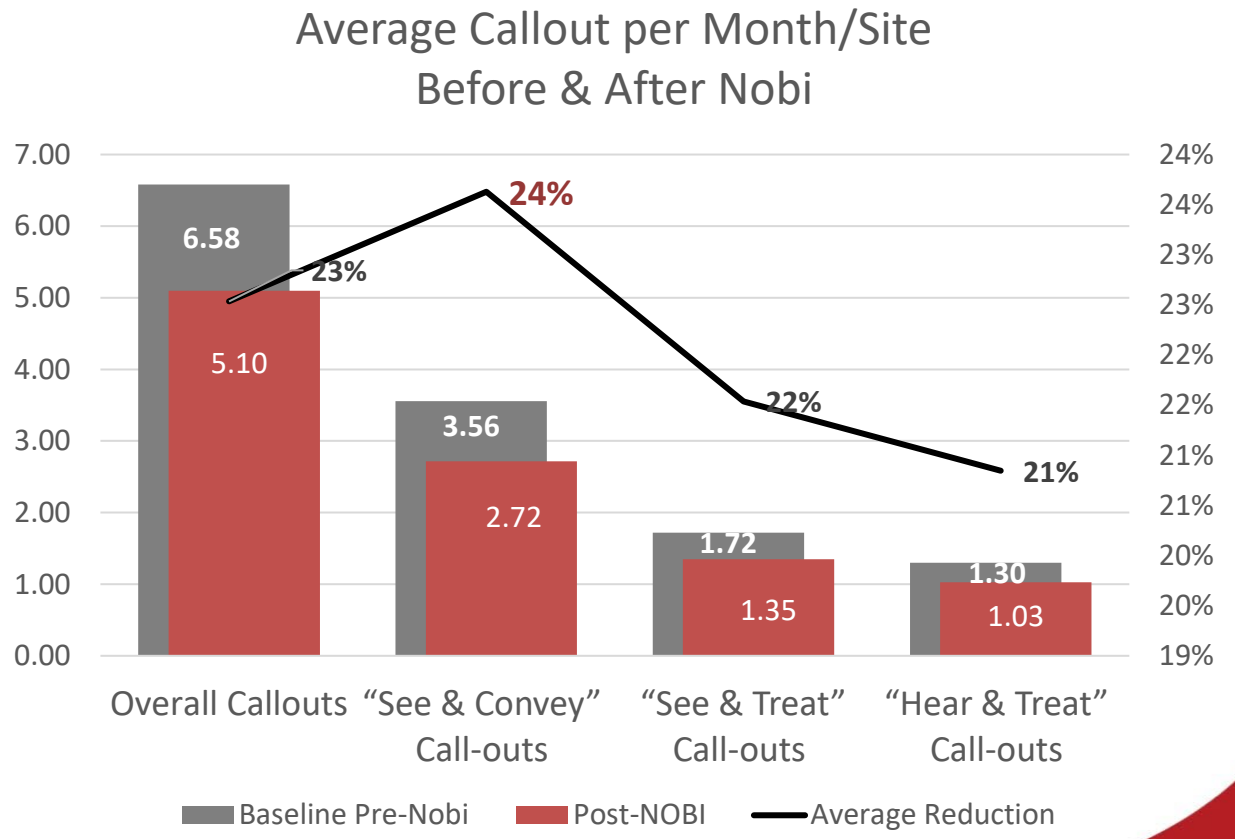
Our analysis included 428 nursing and residential care homes with reported ambulance callouts in the period from April 2024 to March 2026; 57 of these had Nobi in an average of 22% of their rooms

- Overall callouts in care homes selected for NOBI installation were reduced by 23% from about 6.58 callouts per site per month.
- Callouts with hospital conveyance have a **statistically significant** decrease of about 24%
- Compared to Nursing Homes, Residential homes had a weaker & statistically non-significant reduction in callouts.



Does this save on NHS costs? Scenarios used to estimate costs

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Scenario (1) the most conservative: There is **no admission from all callouts transferred to the hospital,** with all transferred residents being released after A & E evaluation.

Scenario (2): out of callouts conveyed to the hospital, there is **40% chance of being admitted for a short stay**, and the rest (60%) have no admission and are being released after A & E evaluation.

Scenario (3): out of callouts conveyed to the hospital, there is **40% chance of being admitted for a long stay (12 days)**, and the rest (60%) are not admitted and are being released after A & E evaluation.

Scenario (4): out of the callouts conveyed to the hospital, there is a **40% chance of admission for a long stay for serious injury that requires extensive rehabilitation post-discharge,** and the rest (60%) are not admitted and released after A & E evaluation.

Service	Costs
Ambulance Costs	
Hear & Treat	£66
See & treat	£327
See & Convey	£459
+ Carer chaperons @19/hr	[+ £95]
A&E Evaluation and Care	£563
Inpatient short stay	£792
Inpatient long stay	£5,134
Severe injury that requires rehabilitation	£21,120

Sources: The unit costs of health and social care, NHS: Key Facts And Figures | The King's Fund

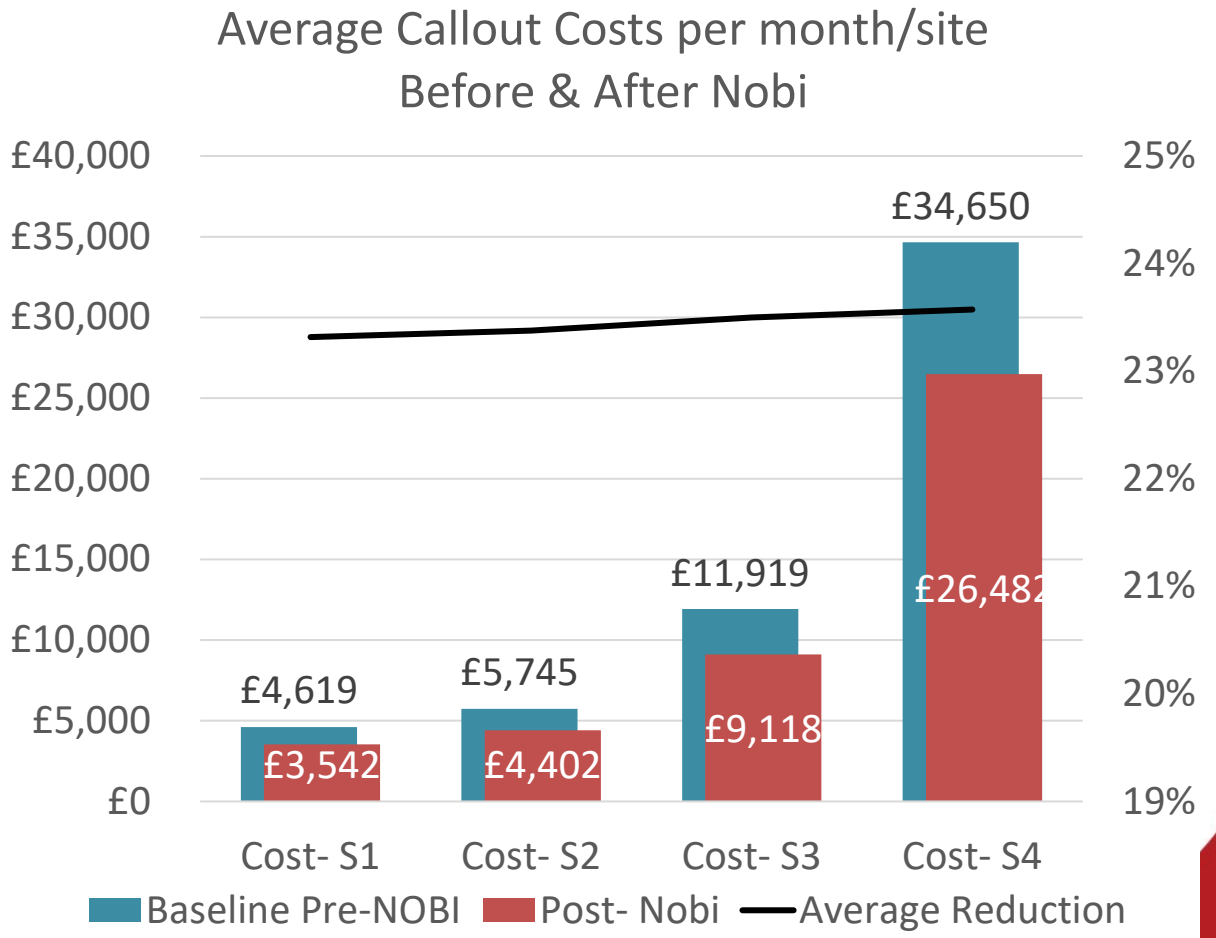
Changes in Cost Estimates

•Intervention care homes showed a **significant** reduction in costs of approximately **23–24%** across all scenarios following NOBI installation, with an average monthly saving of £**1,343** per site for S2 and £**2,801** per site in S3.

Estimated NHS savings (annualised) due to reduced ambulance call outs resulting in hospital transfer and long hospital stays

From £8,601 and £26,096 per home and £490,237 and £1,487,480 across all homes

There is potential for higher annual cost savings after using the device for 3 years

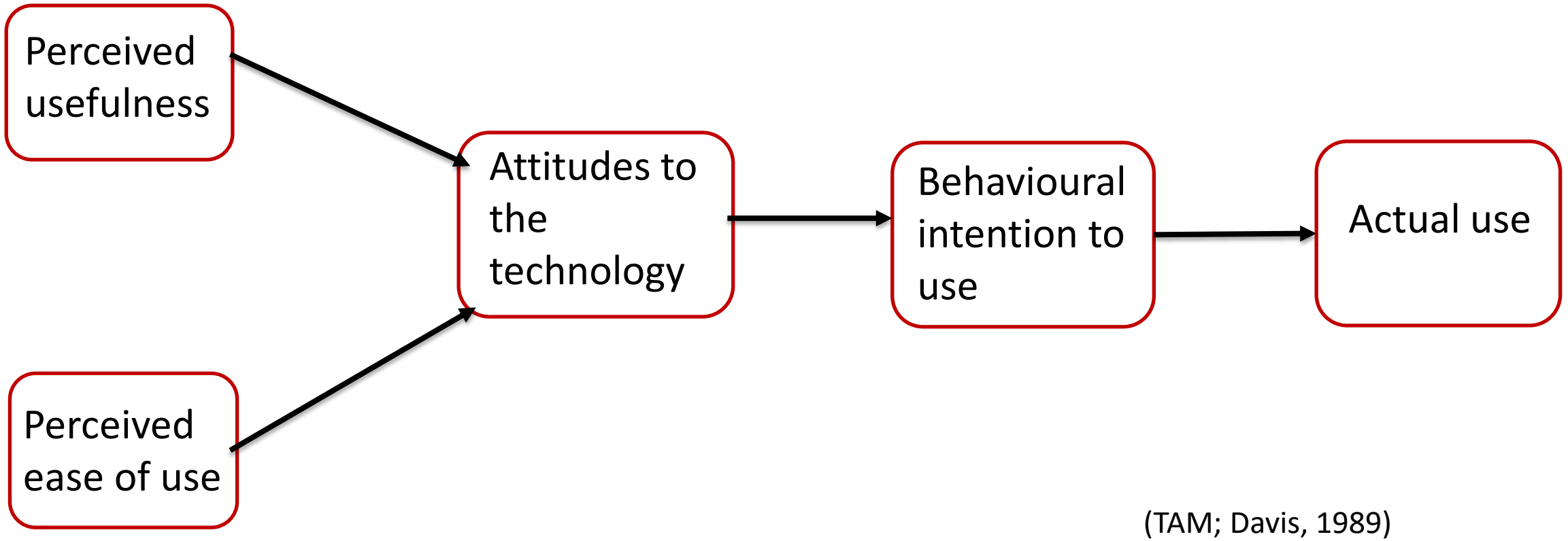


What staff said:
How the analysis of feedback and questionnaires from staff supported the numbers.

Data sources

- Care Home Staff & Managers Questionnaire (CHSMQ): the staff and managers' attitudes towards the technology and the extent to which they find it helpful.
- Benefits reporting data: feedback about Nobi from care homes in emails and meetings.
- Deep dive case study in Kendal care home: Semi-structured interview with manager & CHSMQ data of the staff of Kendal care home.

We used a theory called the Technology acceptance Model as a basis for our thematic analysis



(TAM; Davis, 1989)

Does the technology help in preventing falls and long lies?

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Perceived usefulness

Preventing falls

"Very effective smart lamp preventing falls to a major extent as it helps residents with night light." ID 48 (CHMSQ lead returns)

Reduction in long lies

"To have a response time of one minute and 33 seconds is phenomenal. And without the data, without the technology, that that wouldn't happen. We had a lie of nearly two hours in those bedrooms. That will never happen again" Deep dive case study Kendal care home

What is the impact of the use of the technology on ambulance call outs and hospitalisations?

Playback feature of the device can help paramedics to assess the extent of injuries and need for hospitalisations.

Reduced ambulance calls and hospitalisations

"Nobi has helped reduce hospital admissions and ambulance call outs, as they helped detect if people have banged their head or not, requiring a hospital visit or not." ID 24 (Benefits reporting data)

What is the impact of the use of the device on care provision, work patterns and staff response to falls?

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Perceived ease of use

Personalising monitoring routines to better support residents. Residents at higher risk of falls were checked more often but one-on-one care for some residents who did not need it could be reduced.

Improved staff efficiency in responding to falls and reduction in response times.

Changes in night-time monitoring routines to better support residents

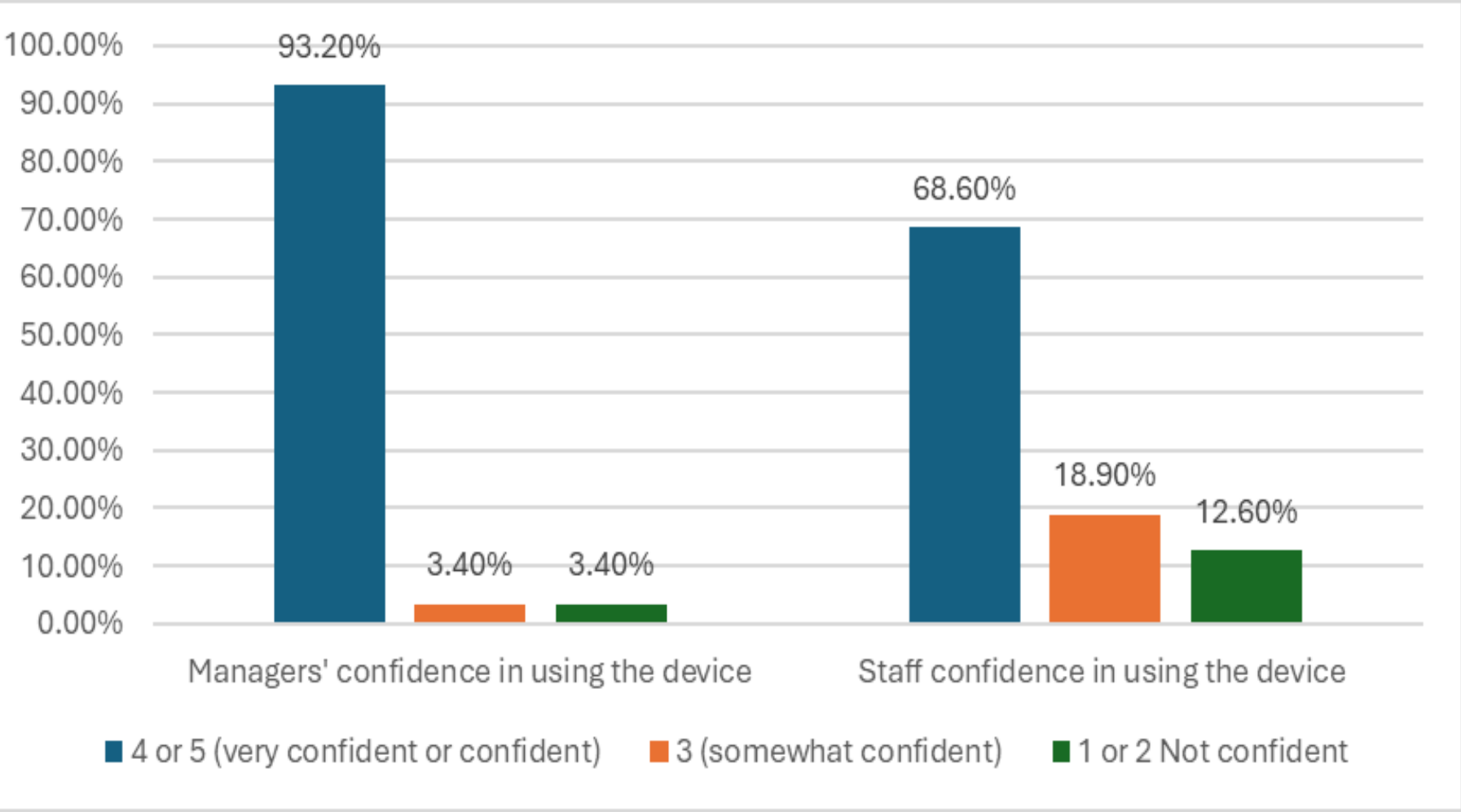
"With close monitoring of the resident at night (using sleep reports and monitoring alerts), ….care reviewers agreed the Nobi can support her care at night and reduced the 1:1 support at night." ID 52 (Benefits reporting data)

Improved staff efficiency in responding to falls

"Since the installation of Nobi lights in high-risk fall rooms, staff response times to incidents have improved significantly." ID 11 (DLQ)

"Some routine checks of residents have been more frequent due to recorded bed exits etc" ID 17 (CHSMQ lead returns)

Perceived ease of use and confidence in using the technology



Ease of use and adequate support and training to use the technology

"Staff have found the interface straightforward and the support from the Nobi team helpful whenever we've had questions." ID 27 (Benefits reporting data)

The technology helps to shape other fall prevention strategies!

Perceived usefulness:

- Supporting improvement in sleep quality.
- Informing medication reviews
- Better assessment of potential reasons for falls and informing environmental changes to prevent falls.

Better detection of changes in sleep patterns

"Sleep and night-time activity reports have enabled staff to tailor evening routines, reduce distress, and implement more effective settling strategies." ID 56 (CHSMQ lead returns)

Better assessment of potential reasons for falls

"You can make environmental changes to people's bedrooms because you can see what's happening" Deep dive case study.

Informing medication review

" After closely reviewing the data provided by Nobi, they were able to ascertain that A was suffering a fit which was causing the fall. Care staff now had strong evidence to take to their primary care weekly ward round to demonstrate resident A required a medication review. GP reviewed the data and amended medication regime, in particular medications taken at night. So far this has resulted in few falls at night and improved sleep reports." Care home ID 2 (benefits reporting data)

Recommendations (selected)

- To consider the use of such technology within falls prevention programmes in Nursing and Residential care homes and other environments where help is at close hand (e.g. sheltered and Extra Care establishments). Ensure reliable Wifi before installing Nobi.
- To use the broader utilities of the device, such as alerting to a resident being unsettled and moving around at night, in supporting older adults living with frailty
- To ensure use of playback in calls to emergency services.
- To employ the device to inform environmental modifications to support informing individualised care planning and preventing falls (e.g. furniture layout)
- To consider which residents can be safely moved to less restrictive supervision once Nobi lamps are in place in a resident's room
- Highlight the opportunity to use Nobi insights within statutory care reviews and reassessments, for example following falls, hospital discharge, medication changes or reablement, where objective evidence has historically been difficult to access.
- Constant interaction between care homes, Nobi and ICB AACC teams is recommended