Eastern **AHSN**

Remote monitoring in care homes: a case for transformation

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Executive Summary

As part of the National Patient Safety Improvement Programme, Patient Safety Collaboratives (PSC) are commissioned to spread the National Early Warning Score (NEWS2), soft signs and SBAR to non-acute care settings extending a common language of deterioration across all health care systems. Building on our work from 2018/19 testing the implementation in care homes, COVID-19 rapidly increased the need for a faster roll out across England and became part of the PSC commissioned response to COVID-19 in April 2020.

The pilot was based on using a telehealth system to inform clinical teams. 33 residential care homes across 7 clinical commissioning groups (CCGs), representing 1,600 beds, took part in a pilot to measure the impact of using deterioration tools across the region. The 33 care homes represent 2.5% of care homes in East of England. Our initial findings are encouraging, demonstrating financial savings in excess of £200,000 over a six-month period. Staff reported improvements in responsiveness of clinical teams through use of the digital equipment, and an increased feeling of empowerment to support residents remaining in their place of choice. Training was co-designed with the Whzan team to ensure standardisation across the care homes and delivered virtually to enable flexible access for care home and GP staff.

Background

Monitoring people remotely is not a new concept in the NHSi. This type of technology has been employed across some clinical services throughout the UK, such as critical care and stroke services. Within the Whzan system, there is the ability to see an overview of multiple patients at any one time. This can help to quickly prioritise response to changes in clinical condition. Whilst non-clinical staff perform the task of taking the observations, it is important that interpretation of these observations for clinical decision-making is undertaken by the clinical professional, such as a GP or community nurse.

Recognising that we are all living longer[ii] and with clinical acuity increasing out of hospital[iii], it is to be expected that this higher acuity is replicated amongst people living in their own homes and within residential homes. Anecdotally the skill mix within residential homes has not adapted to the increased acuity and the workforce does not consistently have the skill to take observations and escalate concerns.

Monitoring physiological deterioration has long been established across the NHS and more recently is done using the validated tool, the National Early Warning Score[iv] . A track and trigger system first published in 2012 and then updated in 2017, NEWS2 utilises an aggregated scoring system based on six physiological parameters to support clinical decision making. Work in recent years has been to standardise its use across all NHS systems creating a common language of recognition and response to deterioration, now used across 99% of acute and ambulance trusts. Regardless of paper or digital format, adoption is now focused on non-acute settings to ensure a whole patient pathway is speaking the same language.

To enable staff in residential homes to identify deterioration, the Patient Safety Collaboratives have been working to enable the staff to:
1. Use a soft signs tool[v3] to articulate worries or concerns about a resident
2. Complete a NEWS2 score
3. Hold a structured conversation using SBAR[vi]

By using a common language of deterioration across the health and social care system, this approach allows for clarity when transferring vital clinical information to a health care professional.

During COVID-19, care homes were under extreme pressure[vii]. Government guidelines reduced the frequency of on-site clinical support. The Eastern Patient Safety Collaborative was made aware of an Innovate UK grant to pilot a digital solution using NEWS2. The Whzan Blue Box utilises digital replication of a soft signs tool that care homes are already familiar with such as

'Is my resident well?'[viii] and the SBAR communication tool, providing staff with a digital version of existing paper processes. Included in the Whzan box are all the components to take vital signs; these are Bluetooth enabled reducing the risk of transcribing errors. The data stored in each resident's personal profile is securely accessible to clinical decision-makers to initially validate readings and view photographic images, whilst monitoring trends, supporting the virtual ward rounds and early intervention. If a resident deteriorates this saves valuable time and a potential conveyance to secondary care.

Delivery

Care homes were recruited through their local CCGs, who identified those homes that had already completed primary care network (PCN) alignment for the Network Contract Directed Enhanced Services (DES) and had completed the Data Security and Protection Toolkit (DSPT) ensuring both clinical and information governance was in place. It also enabled all care homes to access pre-learning materials made available through Health Education England and the Royal College of Physicians. This group also facilitated local communication strategies to their supporting teams who would be involved as first responders to the care homes.

We took a flexible approach to delivery, encouraging staff to learn in an environment that was PPE free and one that fitted around their schedule and availability, using simulated examples of a deteriorating patient within the system to demonstrate its use and teach recognition techniques. In 10 virtual sessions, 82 staff were trained. In pre COVID-19 circumstances this would typically have been delivered through a minimum of 33 days face to face sessions at each individual care home. We also held virtual drop-in sessions for the wider MDT to help them understand portal access to the patient care record and its functionality. At the end of each session we were confident that the equipment was in good working order and that staff were competent in its operation.

Methodology

"Having baseline readings has helped us to discuss what would be classed as a normal reading for individuals, this has been particularly beneficial to one service user in helping to prevent unnecessary hospital visits where professionals have had concerns over lower readings".
Care Home Manager

Prolonged hospital stays can result in clinical deconditioning[ix]. This can result in a person not being able to return to a care home because they require long-term rehabilitation services. Therefore, we wanted to measure the impact Whzan could have across the system. For many initial responders, this would be the first time baseline observations were available, providing essential clinical insight of a person's physiological health.

Typically the Patient Safety Collaboratives would aim to build improvement capability within care home teams. Recognising the immense pressures during COVID-19, we decided to build an improvement dashboard utilising the observation data within Whzan. The data is presented over time, with some information in statistical process control (SPC) format. Measuring in this format supports best practice in quality improvement methodology.

Demonstrating real-world evidence of the benefits of using this system presented us with a data collection challenge. We actively avoided adding the burden of data collection onto staff and instead chose to collect quantitative data direct from the Whzan system. We then triangulated this with ambulance activity. Separately, qualitative data has been collated including personal feedback from care home staff and responders such as GPs.

Findings

Whilst recognising that these findings represent a small proportion (2.5%) of the care homes in the eastern region, the data has shown a promising start. Our findings demonstrated the impact across the region showing significant system wide savings.

Over time staff have reported several "catches" of people who may not have previously been identified, enabling treatment at home and preventing admission to hospital. Staff also felt empowered and more confident when liaising with the wider MDT and homes are starting to use this to support the weekly ward rounds which is evident in the data, which shows sustained usage of the deterioration tools and device.

Initially, post-training and during peak periods of COVID-19 the usage in care homes was high, with some care homes taking several observations daily. This did not consistently result in a complete NEWS2 score being calculated, which could be associated with monitoring a single parameter such as oxygen saturations, or the device being used for other health care initiatives such as BP@Home.

To evaluate the impact during the pilot, datasets were compared for the six months of the pilot (September 2020 to March 2021) against the same time period in 2019 to 2020. Conveyance data was provided by East of England Ambulance Service Trust.

Return on investment (ROI)

Comparing the two datasets, the pilot period saw a reduction of 73 (15.75%) conveyances. Factoring costs for ambulance conveyance, ED attendance, 50.4%[x] converting from an ED attendance to an emergency admission, and the cost of the empty care home bed based on an average length of stay of 8.22[xi] days, the table below shows the cost saving over six months in 33 care homes.

Cost description	Unit Cost	Sub total
Ambulance, 73 conveyances	£252 per conveyance	£18,396
ED, 73 attendances	£160 average cost	£11,680
Emergency admissions, 37 admissions	£3,812 average cost[xii]	£140,362
Empty care home bed, 37 admissions	£852	£31,372
Total cost savings over 6 months		£201,810

Extrapolation of the cost savings during the pilot suggests the potential savings over 12 months could be £403,620. This represents 2.5% of care homes in the East of England. If coverage reached 80% of care homes, the potential cost saving would be £12,915,845. 100% roll out would take the potential cost saving to over £16m.The table below shows that the net saving over three years is around £34,420 per care home.

		Year 1	Year 2	Year 3
Cost	Device	£500		
	Annual licence	£365	£365	£365
	Backfill cost for staff to attend training (2hrs training	£225	£225	£225

	x 10 people per year)			
Savings		£12,230	£12,230	£12,230
Net savings		£11,140	£11,640	£11,640

Virtual training saved time to enable rapid roll out, be more inclusive and enabled us to reach a wider geographical area. Environmental savings resulted more than 2,700 road miles being avoided, equating to a saving of 0.76 tons of carbon emissions alone. Equally the use of a digital solution creates clarity in the data, reducing recording error and allowing for informed clinical decision-making.

PLEASE NOTE:
It is important to state we were unable to obtain data for care homes not participating in the pilot. We are therefore unable to exclude COVID-19 as a contributory factor to the reduction in conveyances to hospital, and therefore the modelled impacts and associated costs.
There are also additional impacts and cost benefits that have not been included in the analysis such as potential reduction in post-acute deconditioning which incur health and social costs such as physiotherapy and supported living services.

Recommendations

Our recommendation is that each care home is provided with a Whzan Blue Box or equivalent digital tool. Having a positive impact on patients, their families and the care home workforce, reducing the burden on a pressurised ambulance and acute system and evidence of potential significant cost savings make a strong case for investment. Licensing costs over time need to be included in business cases and are incorporated into the potential savings calculations.

We would encourage health and social care providers and commissioners to work together to consider commissioning and funding models given the potential benefits across the whole system.

Conclusion

Clinical engagement is the key to sustained use of deterioration tools and NEWS2 scores are isolated unless there are clinical responders. Implementation takes time, however digitally there are fewer transcribing errors with direct connectivity to a clinical decision maker and it is quicker. In time this data will contribute to the wider Framework for Enhanced Health in Care Homes (EHCH)[xiii] national agenda supporting the use of personalised care and support planning (PCSP). The versatility of this equipment can enable pathway enhancement contributing to discharge and rapid access teams. Whilst there was some resistance initially from the GP community, those that have employed its use have seen improved patient experience and richer data.

Focus should concentrate on the sustained use of digital tools but measuring the impact should measure more than usage alone. Using a business intelligence system to produce a deterioration dashboard which triangulates data from the digital tool, ambulance conveyance data with a model for improvement approach will help to inform local teams how implementation is progressing.

Implementation of deterioration management tools is currently part of the National Patient Safety Improvement Programmes and support is available from Eastern Patient Safety Collaborative. This is a fantastic opportunity to maximise support to the system and investment in digital technology in care homes to provide excellent return on investment for health and social care systems.
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[xi] Hospital Episode Statistics (HES) Data. Average length of stay of Emergency Admission referred via A&E Attendances in the East of England where A&E arrival mode = Ambulance and Age = 65+.

[xii] Hospital Episode Statistics (HES) Data. Average cost of Emergency Admission referred via A&E Attendance in the East of England where A&E Arrival mode = Ambulance and Age = 65+

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