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## Implementation of the National Early Warning Score in UK care homes:

a qualitative evaluation

### Abstract

#### Background

The National Early Warning Score (NEWS) is a tool for identifying and responding to acute illness. When used in care homes, staff measure residents' vital signs and record them on a tablet computer, which calculates a NEWS to share with health services. This article outlines an evaluation of NEWS implementation in care homes across one clinical commissioning group area in northern England.

#### Aim

To identify challenges to implementation of NEWS in care homes.

#### Design and setting

Qualitative analysis of interviews conducted with 15 staff members from six care homes, five health professionals, and one clinical commissioning group employee.

#### Method

Interviews were intended to capture people's attitudes and experiences of using the intervention. Following an inductive thematic analysis, data were considered deductively against normalisation process theory constructs to identify the challenges and successes of implementing NEWS in care homes.

#### Results

Care home staff and other stakeholders acknowledged that NEWS could enhance the response to acute illness, improve communication with the NHS, and increase the confidence of care home staff. However, the implementation did not account for the complexity of either the intervention or the care home setting. Challenges to engagement included competing priorities, insufficient training, and shortcomings in communication.

#### Conclusion

This evaluation highlights the need to involve care home staff and the primary care services that support them when developing and implementing interventions in care homes. The appropriateness and value of NEWS in non-acute settings requires ongoing monitoring.

#### Keywords

early warning score; implementation science; nursing homes; qualitative research; residential facilities.

### INTRODUCTION

Care home residents are community dwelling NHS patients with complex needs. Cognitive impairment and dementia, disability, frailty, multiple long-term conditions, and polypharmacy are common.<sup>1</sup> Many are unable to communicate their needs and their mood may fluctuate.<sup>2,3</sup> The nature of paid care work in care homes is challenging. Staff are liable to stress and burnout, contributing to high staff turnover in the sector.<sup>2,4-6</sup> Concerns have been raised about the quality of health care in care homes.<sup>7</sup> Residents have 40%–50% more emergency admissions and accident and emergency attendances than the general population aged ≥75 years,<sup>8</sup> half of which may be avoidable.<sup>9</sup> Overt signs of deterioration among older adults are often absent, making the identification and management of acute illness in residents challenging. Care home staff play a key role in identifying changes in residents' health, but many have limited or no healthcare experience.<sup>10,11</sup> This presents barriers to communicating concerns to health professionals. Enhancing the ability of care home staff recognise, respond to, and communicate concerns could improve triage and reduce avoidable hospital admission.

### The intervention

The National Early Warning Score (NEWS) is a tool for identifying and responding

to acute deterioration. It can provide a common language to communicate about acute illness. To calculate a NEWS, vital signs are recorded (respiratory rate, oxygen saturation, temperature, systolic blood pressure, pulse rate, and level of consciousness/confusion) and given a score. The resulting NEWS is an aggregate score based on these vital signs. Clinical risk thresholds and associated responses have been attached to different scores.

NEWS was developed for use in UK hospitals. Its use has spread into primary care and community settings, despite limited evidence on the appropriacy and effectiveness of NEWS outside of the acute sector.<sup>12,13</sup> The Royal College of Physicians supported the development of NEWS, and advocates its use in pre-hospital assessment of acutely unwell patients to improve triage.<sup>14</sup> Research published in 2018 suggested that using NEWS outside of hospitals has potential, but the capacity for this varies between settings.<sup>13</sup> Concerns have been raised about the suitability of NEWS with patients with complex comorbidities.<sup>15,16</sup> Implementation of NEWS into care homes is already underway across multiple sites in the UK.<sup>17,18</sup> Data were published in 2019 on expected values of NEWS in care home residents.<sup>19</sup>

This article outlines the findings from the qualitative component of an evaluation of an

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## How this fits in

Despite limited evidence for its feasibility and practicality, the National Early Warning Score (NEWS) is being implemented in community settings, such as care homes, and primary care. This evaluation of an implementation of NEWS in care homes in northern England adds to the growing debate on the use of NEWS in non-acute settings. Findings indicate that the implementation of NEWS in complex community settings, such as care homes, requires diligent and thoughtful planning. Communication with care home staff and health professionals, such as community nurses and GPs, should be ongoing during intervention development and implementation.

implementation of NEWS into care homes in a clinical commissioning group (CCG) area within northern England. The evaluation was independent from the implementation process, seeking to assess whether the implementation was successful and provide recommendations for improvement.

This implementation of NEWS into care homes, supported by the local CCG, involved 47 care homes within the CCG's remit. NEWS was briefly implemented in seven care homes before being implemented across the remaining 40 care homes. External training was delivered by the CCG to a selection of staff from each care home. This covered the theory behind the NEWS, how to take vital signs, and entering data into a bespoke tablet computer to generate a NEWS. Trained staff were tasked with training colleagues. The CCG provided ongoing technological support and top-up training.

Care home staff were required to take monthly vital signs measurements to maintain baseline NEWS readings for each resident. NEWS measurement was also undertaken if staff members suspected a resident was unwell. Data were entered into the tablet computer. The tablet provided staff with specified responses to the NEWS, ranging from guidance to repeat NEWS within a certain time frame, to seeking emergency medical help. Data were designed to be shared with health professionals, such as GPs, community nurses, NHS 111, and urgent care services, to inform triage and decision making. The introduction of NEWS into the care home setting is a complex intervention, defined as *'interventions that comprise multiple interacting components, although*

*additional dimensions of complexity include the difficulty of their implementation and the number of organisational levels they target'*.<sup>20,21</sup>

At the time of the evaluation, NEWS implementation had been ongoing for 24 months; support staff consisted of one non-clinical CCG employee; and one-third of care homes within the CCG's remit were regularly measuring NEWS.

This article describes an evaluation of the implementation of NEWS in this area, which aimed to identify factors that inhibited and enabled successful implementation, and ways in which the implementation could be improved.

## METHOD

Qualitative interviews were conducted with stakeholders in addition to quantitative analysis of NEWS recordings from the 47 care homes over 24 months, published elsewhere,<sup>19</sup> and a survey sent to care homes in the area (see Supplementary Table S1; Responses to the NoMAD survey instrument, and Supplementary Box S1; Survey instrument, for details).

## Participants and recruitment

The evaluation concerned care homes, and health services that support them, in a CCG area in northern England. Care home staff, NHS health professionals, and CCG staff were recruited using purposive and convenience sampling. The research team were supplied with data from the CCG indicating whether the care homes were currently measuring NEWS, if they had started and then stopped, or never started. This data was used to place the care homes into three categories of engaged, inconsistent, and not engaged. This informed purposive sampling, aiming to support the inclusion of care homes from each category.

Care home managers were approached via email, with an attached information sheet. Reminders were sent a week later, followed up with phone calls. Time(s) for the researcher to visit a home and conduct interviews with staff were confirmed with managers. Health professionals were identified with support from the CCG and invited by email and follow-up telephone calls. Telephone interviews were offered.

## Data collection

Data collection occurred between May and August 2018. Written informed consent was obtained before data collection. Semi-structured interviews were

conducted to enhance understanding of the implementation process, reasons for good or poor engagement, and important contextual factors. The majority of interviews were held face-to-face, some interviews were held via telephone, and one interview was held via an emailed set of open-ended questions. Face-to-face interviews with care home staff were typically conducted in care homes. Topic guides provided focus and structure to the interviews (see Supplementary Appendix S1; Topic Guides). The semi-structured approach allowed the researcher to explore any unexpected responses and topics. Interviews lasted between 15 and 35 minutes, and were audiorecorded. Field notes supported analysis.

### Data analysis

Recordings were transcribed verbatim, anonymised, and transferred into analysis software (NVivo, version 11) to support management and retrieval of data. Data analysis followed the principles of thematic analysis,<sup>22</sup> providing an interpretive exploration of the experiences, attitudes, and beliefs of different stakeholder groups. One researcher reviewed and coded all transcripts providing them with an in-depth understanding of the data. The remaining authors independently coded a sample of the transcripts. Emerging codes and themes were discussed as a team. This coding framework was used to analyse all transcripts. This process was iterative.

Normalisation process theory (NPT) identifies and describes mechanisms that promote and inhibit the implementation, engagement with, and integration of complex health interventions.<sup>23</sup> There are four constructs in NPT, each containing four components capturing the individual and collective work involved in changing practice (see Supplementary Table S2; Evaluation findings against NPT constructs, for details). NPT provided a framework for exploring the challenges and successes of the implementation. Findings from the thematic analysis were reconsidered, deductively, against NPT constructs to explore the engagement with, and acceptance and integration of, the intervention. Four authors conducted this analysis.

## RESULTS

### Participants

In total, 21 interviews were conducted (see Supplementary Table S3; Care Home Participants, for details). Fifteen care home staff participated from six care homes.

Two care homes were inconsistent in their use of NEWS, while the remaining four were engaged. Two care homes that were not engaging with NEWS did respond, but declined to participate. A variety of staff were interviewed: eight carers/senior carers, one registered nurse, and six managers/deputy managers. Fourteen interviews were conducted face-to-face in care homes and one was held over the phone. Interviews were one-to-one bar two that were dyadic (two participants interacting in response to open-ended questions).

Six interviews were conducted with health professionals: one GP who managed a practice, three older person specialist nurses, one nurse from a 24-hour care service, and a CCG employee involved in intervention support (see Supplementary Box S2; Additional information on recruitment and data collection). Specialist nurses visit care homes regularly, providing brief education to staff and health care to residents, acting as a link between the care homes and external services, aiming to prevent avoidable hospital admissions. The 24-hour care service provided short-term, responsive, multidisciplinary health and social care in the community, including to care homes. Because of their interaction with multiple care homes, these interviewees had a broad overview of how care homes interacted with NEWS.

### Key themes

Three key themes were identified: acknowledging and exploiting the benefits of NEWS; inhibitors to engagement and integration; and shortfalls in communication.

*Acknowledging and exploiting the benefits of NEWS.* Care home staff recognised the potential advantages of NEWS, with some expressing a sense of empowerment. Having a NEWS measurement to hand often, though not always, enabled staff to communicate more effectively with external healthcare services, with a view to avoiding unnecessary hospital admissions. Using the tablet computer to input and calculate NEWS was viewed as straightforward:

*'It does give you the backup when you're ringing for professional help ... they, kind of, listen a bit more.'* (Dyadic interview, deputy manager [DM]1, care home 4)

*'It doesn't have to be a nurse or a senior nursing staff, it can be a carer who can do it ... it makes me feel important when I've*

got that little case there [containing NEWS equipment].’ (Carer, care home 1)

*Inhibitors to engagement and integration.* Data provided by the CCG indicated that only one-third of care homes were regularly measuring NEWS. Measuring vital signs, particularly respiratory rate, posed a challenge for some care home staff, resulting in inaccurate or absent readings being used to generate a NEWS. There was a perception among health professionals that care home staff sometimes took observations at inappropriate times or failed to account for variables that could result in an inaccurate reading (for example, a resident’s nail varnish interfering with pulse oximetry).

Health professionals believed that some care homes were struggling with basic elements of care, such as hydration, making the introduction of NEWS potentially inappropriate:

*‘Sometimes get the oxygen saturations and heart rate around the wrong way ... And that is reading off the actual pulse oximeter ... Or they won’t actually take the full score, or the score will be inaccurate because they haven’t done a respiratory rate.’* (Nurse, 24-hour care service)

*‘I cover nine homes and I could probably straightaway think [specific care homes] are doing well with it ... But, that’s the minority. The rest are either struggling or paying lip service ... sometimes I think “would I even want them to be worrying about the NEWS scores, would I actually want them to be worrying about more basic: have they given them a drink; have they made sure that they’ve been up to the toilet?”’* (Specialist nurse 2)

With their broad view across multiple homes, health professionals were aware of regular changes in management and high staff turnover, leading to inconsistency in training and skill level across care homes. Differing levels of knowledge and skill also existed within care homes, with night staff and agency workers often having less extensive training or lower expectations of responsibility than day staff. This lack of continuity meant that not all staff were aware of or trained in NEWS, creating extra work and frustration for health professionals. This was problematic as the 24-hour care service required the sharing of a NEWS when care homes needed assistance:

*‘One of my homes has had a different manager every year. The turnaround can be very rapid ... it causes a lot of unrest amongst everybody ... some of the homes haven’t got stability.’* (Specialist nurse 3)

*‘Information is not consistent. Changes in staff does not help.’* (GP)

*‘But I think when you have got agency staff, who — sometimes they don’t even know that the equipment exists — I think that’s where sometimes you get some of the problems. Especially if they cover, kind of, night shifts and weekends.’* (Specialist nurse 1)

Care home staff viewed their work as valuable, demanding, and often unpredictable, which health professionals also recognised. This unpredictability was positioned as a potential barrier to using NEWS. The residents were at the centre of this complexity, with high level of dependency and cognitive impairment, which could result in residents becoming agitated by NEWS equipment. Thus, staff sometimes faced a choice between not obtaining a NEWS and causing distress:

*‘Staff who are in the homes on minimum wage and we are expecting them to do more within their role and within a short space of time, when possibly the residents could all be high with anxiety one day and there could be chaos in that period of time that won’t allow them to engage more with other residents.’* (Nurse, 24-hour care service)

**Researcher:** *‘So, what were your initial thoughts about [NEWS]?’*

**Specialist nurse 2:** *‘I thought it was a very good idea at the time and I suppose that my thoughts have possibly changed over a period of time. I now can understand the intricacies and the difficulties that [care home staff] ... come across.’*

**DM2:** *‘With it being predominantly dementia, there are a few that won’t tolerate it or get frightened by the blood pressure usually, isn’t it, the machine?’*

**DM1:** *‘Yes.’*

**DM2:** *‘So that will be documented and risk assessed and there’ll be something in place to say that, you know, we’re not going to cause them distress with that if they’re not tolerating it.’* (Dyadic interview, care home 4)

Care home work was viewed as undervalued, because of its demanding

nature and low pay. Asking care home staff to do more complex work like the NEWS was, at times, framed as problematic, and likely to compromise the time carers had with individual residents. Finally, the technology could also cause a barrier to using the NEWS equipment, with care homes typically citing failures with Wi-Fi connections and tablet computers not charging.

*Shortfalls in communication.* A key purpose of NEWS was to improve communication between care homes and the NHS. The data suggest that this was not fully achieved, partially as a result of suboptimal training. Training delivered to care home staff covered the theory behind NEWS and practical experience of taking vital signs with colleagues. Yet the training was perceived as being aimed at the wrong level: too high in the eyes of one of the health professionals and insufficient in the eyes of some care staff, failing to prepare staff adequately for the challenges of taking vital signs from residents:

**Researcher:** *What kind of training did you receive around [NEWS] ... ?*

**Carer:** *Very low ... if they [fellow care home staff] had additional training or more quality of training, they may feel more amenable to actually engaging with it.* (Carer, care home 3)

Consequently, health professionals reported inconsistencies in how and when NEWS equipment was being used, with some homes only using it to take observations without calculating a NEWS, and others only using the equipment now and again, thus failing to maintain monthly readings. As a result, the key purpose of the intervention appeared to have been lost.

In addition to problems with the training, the support being provided to care homes was limited, with one non-clinical CCG employee providing technical support across all 47 care homes. The clinical support care homes received was described as impromptu, such as when a health professional was on site or available on the phone. This resulted in unscheduled additional work for these health professionals. Care home staff were typically not given a strong foundation for engaging with the NEWS, and often lacked adequate longer-term support:

*'... respiratory rate, I have often talked through it on the phone; "I want you to count for a minute, I want you to count how much*

*their chest rises and falls". Just so we can get a value.*' (Nurse, 24-hour care service)

Knowledge of the intervention was variable. Some voiced frustrations at NHS services not always being aware of the NEWS or that it was being used in care homes. Care home staff and a specialist nurse also reported that services did not always listen to, or take account of, the knowledge and views of care home staff with regard to their residents:

*'... [care home] had a little bit of a concern, done [resident's] readings, and their readings have been really out of sync, but ... normal [for the resident]. But, looking at the [resident] themselves, they weren't that concerned for admission. But, based on those readings, the ... service haven't gone out to check them, they have just said, "You need an ambulance." ... I don't think they particularly did, and if [the service] had gone out to see them, then maybe that could have been avoided ... I don't think it's so much that the readings haven't been correct; I think it's more that they don't listen to the staff so much about what the patient's 'normal' is.'* (Specialist nurse 2)

*'If we have to ring for paramedics or 999, the triage can be just horrific ... they'll say "what's the NEWS?" ... And I think receptionists at GPs ... you would ring and say "we've done a NEWS score" and they'd be like "what does that mean?"'* (Dyadic interview, DM2, care home 4)

Representatives from care homes were not included in meetings held by the CCG about the ongoing implementation. Views of care home staff were reported secondhand, which meant that people at the frontline of the implementation were not directly involved in discussions about how it could be improved.

### **Findings against Normalisation Process Theory (NPT) constructs**

Findings were considered against NPT constructs to identify where the implementation faced barriers and where improvements could be made (see Supplementary Table S1; Responses to the NoMAD survey instrument, for details).

The concept behind NEWS was appreciated, the potential benefits of NEWS were understood, and NEWS was perceived as a legitimate part of care home work by health professionals and care home staff alike. This suggests an intellectual level of coherence, cognitive participation,



and collective action. Some care home staff described the benefits of NEWS and the confidence they gained from providing objective data to external services. Positive remarks typically came from, or concerned, care homes with a long-standing manager and staff, suggesting that homes with a stable staff base may be better suited to this complex intervention.

NEWS faced many real world barriers in its implementation in all NPT constructs. NEWS equipment was commonly not used as intended, and vital signs could be taken at inappropriate times or inaccurately, undermining coherence and cognitive participation. Both appropriateness of the training and the legitimacy of care home staff taking vital signs observations were questioned. Not all staff were trained in NEWS, causing a barrier to collective action. According to participants, NHS staff were not all aware of NEWS, some had not incorporated it into their triage protocol, and they failed to acknowledge that care home staff had a unique understanding of their residents. This hinders collective action and suggests a lack of coherence and cognitive participation among such services. Specialist nurses were not formally involved in providing support to care home staff in regard to NEWS, again impeding the integration of NEWS across the aforementioned constructs.

A considerable barrier to engagement with and integration of NEWS is based in coherence and reflexive monitoring. First, the initial implementation occurred over a large number of homes over a short period of time, providing limited time for sense-making work. In addition, key frontline stakeholders, such as care home staff and specialist nurses, were absent from implementation meetings, therefore reducing the capacity for their concerns to be voiced and discussed with those responsible for the ongoing implementation. These issues created a fragmented form of implementation that created a barrier to sense making and action, as well as reflexive learning and adaptation.

## DISCUSSION

### Summary

This study presents novel data on the implementation of NEWS in care homes. Stakeholders acknowledged that NEWS could enhance the response to acute illness in residents, improve communication, and increase confidence of care home staff. However, only one-third of care homes in this study used NEWS regularly.

Considering the findings against NPT constructs showed that this implementation did not allow the time or support for sense making or relational work to underpin the implementation. The capacity and capability of individual care homes to incorporate NEWS into existing practice were not assessed. There was limited involvement from care home staff and key health professionals in the development of the intervention and reflections on the ongoing implementation. This reduced the possibility of real world challenges and complexities of the care home setting being heard and addressed.

There was insufficient support and training for care homes and their staff. Key staff were trained in NEWS outside of care homes, rather than all staff receiving training within care homes. Such training may not provide the best preparation for the challenges of taking measurements in the care home, with residents who may be unwell, uncooperative, or agitated. The difficulty of measuring vital signs was not fully appreciated. Taking clinical observations is not necessarily straightforward or a quickly developed skill, which is particularly relevant to carers without healthcare training. The measurement of respiratory rate, for example, is known to be problematic, even for those with healthcare training,<sup>24,25</sup> particularly when there are time pressures.<sup>26</sup> The complexity of the care home setting and the intervention itself was not well accounted for, resulting in barriers to successful implementation.

### Strengths and limitations

A strength of this study was the qualitative approach used to gain an in-depth understanding of the shortcomings and successes of an implementation of NEWS in the care home setting from the perspective of staff in care homes and community services. Considering the findings against NPT constructs provided a clear outline of these successes and shortcomings. Limitations were that interviewees were drawn from only six care homes and unengaged care homes did not participate.

### Comparison with existing literature

There is a growing trend towards using NEWS in community settings. Evidence suggests that the transition of NEWS into such settings is not without problems, including acceptance in the setting, perceived appropriateness for certain patient groups, and uncertainty over its ability to support decision making and communication between services.<sup>13,27</sup>

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### Ethical approval

The Faculty of Medical Sciences Research Ethics Committee, part of Newcastle University's Research Ethics Committee approved this study (reference number: 1505/4648). This study is classified as a service evaluation, and did not identify patients via the NHS. Further ethical approvals were not required. The study complied with Caldicott principles, the Data Protection Act (1998), and The General Data Protection Regulation 2016/679.

### Provenance

Freely submitted; externally peer reviewed.

### Competing interests

The authors have declared no competing interests.

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Concerns have also been expressed about the potential for NEWS to 'creep' into primary care without a sound evidence base or sufficient validation.<sup>28</sup> Increasing time requirements and procedural burdens on care staff could have a debilitating impact on staff wellbeing and care practices.<sup>29,30</sup> Continued rollout of NEWS into care homes, without rigorous evidence to suggest practicality and appropriacy, could compromise staff wellbeing and the provision of person-centred care.

This evaluation highlights the need for interventions implemented into care homes to address the 'whole home', accounting for environment, culture, and care practices.<sup>29</sup> Implementation could have sought advice and guidance from networks such as *Enabling Research in Care Homes*,<sup>31</sup> developed and supported by the National Institute for Health Research, to aid recognition of the unique set of competing priorities and challenges faced by care homes. In 2016, a realist review exposed the importance of joint working between care home staff and health professionals for healthcare interventions to become viewed as legitimate and established into care home practice.<sup>32</sup>

In order for NEWS to be implemented effectively, health professionals such as GPs and community nurses need to work with care home staff and appreciate the knowledge, skills, and concerns of care

home staff in regard to the health and care of residents.

### Implications for research and practice

According to the Royal College of Physicians, NEWS is not a standalone assessment and '*any concern about a patient's clinical condition should prompt an urgent clinical review, irrespective of the NEWS*'.<sup>14</sup> Care home staff typically lack healthcare experience but are well placed to recognise soft signs of deterioration such as a change in mobility, behaviour, or appetite. While NEWS can support objective communication, concerns voiced by care home staff should not be disregarded.

Care homes are challenging environments for intervention implementation, as highlighted elsewhere.<sup>33,34</sup> This complexity should be accounted for by involving care home staff and health professionals in development and implementation, avoiding a top-down approach, and enabling the concerns of such stakeholders to be acknowledged and addressed. The readiness of individual care homes to adopt complex interventions should be assessed to avoid compromising existing care practices.

Exploring the perceptions of primary care and ambulance service staff who receive information about NEWS from care homes would be an important component of future work.

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