



Implementation of RESTORE2 in Care Homes in England: A Mixed-Methods Evaluation

RESEARCH

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ABSTRACT

Context: Older adults are more susceptible to acute deterioration. Delayed recognition or response is linked to poor health outcomes and adverse events. Identification and management of deterioration is more difficult in this population due to increasingly complex healthcare needs and limited/no healthcare knowledge of some staff. Enhancing ability of care home staff to recognise and communicate concerns could reduce avoidable harm for residents at risk of or experiencing physical deterioration.

Objective: To evaluate the implementation of RESTORE2, a physical deterioration and escalation tool, in care homes.

Methods: A mixed-methods approach, comprising individual semi-structured interviews and online survey, was used. A total of 35 care home staff from 34 care homes took part in this evaluation.

Findings: Implementation of the full RESTORE2 tool was low. Several challenges that impeded successful implementation including complexity, uncertainty over carers' role in carrying out clinical observations, inadequate training and buy-in from health-service providers, need to be addressed. Nevertheless, some benefits including improved staff knowledge/confidence to identify deterioration, escalate and communicate concerns, as well as potential to reduce unnecessary healthcare utilisation particularly 999 calls and hospital admissions were reported.

Limitations: This study was limited by the small sample size of the quantitative phase. The Covid-19 pandemic affected recruitment and engagement with care homes.

Implications: RESTORE2 has a long way to go to become a common language in social care. Collaboration between health professionals and care staff is important for RESTORE2 to become embedded into practice. Further quantitative and qualitative research is required to strengthen the evidence base.

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INTRODUCTION

The rise in the number of older adults has been deemed a global phenomenon (Siegel *et al.*, 2019). Older adults with complex needs who are unable to manage at home often reside in long-term care (LTC) facilities. These are settings other than the older adult's home, home of family/friends or a hospital-based facility where older adults reside and receive long-term care services from paid staff with no intention of returning home (Siegel *et al.*, 2019). Heterogeneity exists in the LTC sector with differences between countries in care service provision, funding, ownership, regulations, professionals employed and terminology (Siegel *et al.*, 2019). In the UK, LTC facilities are called care homes. There are over 16,700 care homes in the UK, of which 70% are residential and 30%, nursing homes (Carehome.co.uk, 2023). Approximately 372,000 older adults live in care homes in England. Residential homes provide accommodation and 24-hour personal care and support, such as help with washing, dressing, medication management and mobility. In contrast, nursing homes have qualified nurses and care assistants to provide nursing care in addition to residential care (Carehome.co.uk, 2023). Resident characteristics in residential and nursing homes are similar (Gordon *et al.*, 2018).

Care homes care for large numbers of older adults with complex health and social care needs, high functional dependency and unpredictable clinical trajectories (Goodman *et al.*, 2017). Most residents are aged 85 years and over, in the last years of life, take several medications, and live with cognitive impairment, dementia, frailty, immobility, incontinence, pain, communication difficulties and multiple long-term conditions including cancer, stroke and heart disease (Dudman *et al.*, 2018; Gordon *et al.*, 2018). Consequently, they are at high risk of experiencing acute deterioration. Increasing rates of disability, dependence and intensive care support, combined with depression in this population mean that staff not only manage physical needs but also psychological, behavioural, social and emotional needs of residents (Dudman *et al.*, 2018). Care work in care homes is challenging with staff at increased risk of stress and burnout, contributing to high staff turnover rates (Holst and Skär, 2017). As of July 2023, the vacancy rate for care work stood at 10.4% due to recruitment and retention difficulties (Skillsforcare, 2023).

The provision of long-term care for people residing in care homes is a global challenge (Prince *et al.*, 2015). Residents' complex healthcare needs are not met by existent care models and variation exists in care provision (Gordon *et al.*, 2018; NIHR Evidence, 2021). The Care Quality Commission (CQC, 2020) found that in 275 (1%) homes, care provision was inadequate or of poor quality and in 3429 (15%) homes, care provided required improvement. Furthermore, residents rely on primary

healthcare services for access to medical care and referral to specialist services (Goodman *et al.*, 2017), and have historically struggled with GP and pharmacist input, inadequate emergency and preventative care, and a lack of dentists and speech/language therapists (Goodman *et al.*, 2017; MacLeod *et al.*, 2021). In addition, aspects of healthcare are increasingly being undertaken by care home staff without appropriate medical qualifications and training (Cavendish Review, 2013; Spilsbury *et al.*, 2011). The high workload, turnover rate and recruitment and retention difficulties affect care home quality and safety practices (NIHR Evidence, 2021). Hence, care quality and safety is of increasing concern for adult social care (Damery *et al.*, 2019; Devi *et al.*, 2020; NIHR Evidence, 2021).

Healthcare provision in care homes is reactive and inequitable with unnecessary hospitalisations (Goodman *et al.*, 2017). Residents have 40–50% more emergency admissions and accident and emergency attendances than the general population aged over 65 years, half of which are for conditions which could be prevented or treated in the home and therefore, avoidable (Goodman *et al.*, 2017; Harrison *et al.*, 2016; Smith *et al.*, 2014; Wolters *et al.*, 2019). Improving identification and management of deteriorating patients is a major priority for the National Health Service (NHS). Primary care services, often delivered from a distance, rely on care home staff to interpret residents' health status (Goodman *et al.*, 2017). However, overt signs of deterioration in older adults are often absent, making identification and management of deterioration challenging. Furthermore, staff may have limited or no healthcare knowledge and experience, making communication of concerns to healthcare professionals difficult (Russell *et al.*, 2020). Enhancing the ability of care home staff to recognise and communicate concerns could reduce avoidable harm for residents at risk of or experiencing physical deterioration. RESTORE2, a physical deterioration tool, may be beneficial.

RESTORE2 (Recognise Early Soft Signs, Take Observations, Respond and Escalate) is intended to support care homes to identify and manage physical deterioration in order to improve residents' outcomes and reduce unnecessary use of hospital resources, such as ambulance service, 999 calls and avoidable hospital admissions (NHS west Hampshire CCG, now part of Hampshire and Isle of Wight ICS, 2020). RESTORE2 is used when there are concerns that a resident is unwell or at risk of deterioration. It incorporates nationally recognised tools including soft signs, national early warning scores (NEWS2) and structured communication (SBARD) (Table 1). Prior to being used in community settings, RESTORE2's components were applied in hospitals. RESTORE2 is a printable paper-based form, co-produced by Hampshire and Isle of Wight Integrated Care System (ICS) and Wessex Patient Safety Collaborative. There is also a RESTORE2 mini (soft

| COMPONENT | DEFINITION |
|---|--|
| 1. Soft signs | <p>Pre-diagnostic indicator of concern. Include observed changes in patients' normal behaviour, such as shortness of breath, worsening skin colour, muscle pain, dizziness and reduced appetite/fluid intake. These observations avoid the need for complex measurement equipment and are good indicators of early negative changes in the patients' wellbeing.</p> <p>It can help with early detection of ill-health and provides the basis of a language to help verbalise the intuitive feelings that staff have when 'something just doesn't feel right' (Wessex AHSN, 2022b).</p> |
| 2. The National Early Warning Score (NEWS2) | <p>A tool for identifying and responding to acute deterioration. NEWS was developed by the Royal College of Physicians (RCP) to improve the detection and response to clinical deterioration in adult patients (Royal College of Physicians, 2017a). The tool is widely used across NHS services as it provides an approach to recognise and respond to clinical deterioration and support clinical decision making.</p> <p>It can provide a common language to communicate acute illness across the health and social care sector. To calculate NEWS, vital signs are recorded (e.g., respiratory rate, oxygen saturation, temperature, systolic blood pressure, pulse rate, and level of consciousness/confusion) and scored against level of deviation from 'normal'. Higher scores denote increased deviation. NEWS2 values guide the frequency of ongoing observations and the need for escalation (Royal College of Physicians, 2017b).</p> <p>The resulting NEWS is an aggregate score based on these vital signs. Clinical risk thresholds and associated responses have been attached to different scores (Russell et al., 2020). The NEWS2 escalation chart suggests actions that should be taken for every aggregate score, but decisions should be made alongside the knowledge of what's normal for that resident (Wessex AHSN, 2022a).</p> |
| 3. SBARD (Situation, Background, Assessment, Recommendation, Decision) communication tool | <p>A structured communication framework which enables information to be transferred accurately between staff and health services (e.g., NHS, ambulance, GP). It consists of standardised prompt questions in five sections to ensure that staff are sharing concise and focused information, whilst communicating assertively and effectively.</p> <p>Situation (an explanation for the call with a brief description of the current situation and concise overview of relevant issues including the caller's identity, address and contact number); Background (a brief description of the relevant history and how they got to this point); Assessment (a summary of the facts and best assessment on what is happening); Recommendation (what actions are being asked for? What should happen next?); Decision (what has been agreed) (Wessex AHSN, 2022c). Decisions should be in line with the resident's end-of-life (EOL) care plan.</p> |

Table 1 Components of RESTORE2.

signs and SBARD) version designed for residential care homes. Further details can be found elsewhere (NHS West Hampshire CCG, 2020; Wessex AHSN, now Health Innovation Wessex, 2022a, b, c).

RESTORE2 was recommended by the British Geriatric Society for managing the COVID-19 pandemic in care homes (BGS, 2020). It has now been embraced by integrated care systems (ICSs) in England and is being rolled out to care homes in the South East of England. Evidence of formal evaluation, however, is scarce. This paper outlines the findings from a mixed methods evaluation of the implementation of RESTORE2 in care homes in an ICS in South East England. At the time of the evaluation, implementation in this area had been ongoing for over 24 months. The evaluation was independent from implementation, and explores the impact and challenges of implementing RESTORE2, and provides recommendations for improvement.

METHODS

STUDY DESIGN

A mixed-methods approach was used, comprising an exploratory online survey and semi-structured interviews, as recommended for evaluation research

(Brophy, Snooks and Griffiths, 2008). The study targeted staff working in care homes.

Favourable ethical opinion was obtained from the University of Oxford ethics committee [R77365/RE001].

SAMPLING, RECRUITMENT AND CONSENT

Interview participants were identified with support from clinical commissioning groups (CCGs), now subsumed into ICSs, and recruited via an online survey. Eighteen potential participants indicated interest in the study and participant information sheets were sent via email. Fifteen participants agreed to be interviewed and three could not be contacted despite several attempts. Participants were purposively sampled. Inclusion criteria included:

- Aged 18 years or above
- Care home staff (carer, nurse or manager)
- Attended training on RESTORE2 and/or using RESTORE2 (including its components)

Informed consent was collected prior to data collection.

Survey respondents were recruited through dissemination of the research information and survey link by care home support teams and adverts placed in care association newsletters. The research team emailed

a small number of managers directly. Dissemination was also supported by several health and care organisations. A convenience sample was used. Inclusion criteria included:

- Aged 18 years or above
- Care home manager
- Experienced in managing risks and deterioration (using RESTORE2 and/or other approaches)

A participant information sheet was presented upon clicking the survey link and participants provided active consent by agreeing to participate before accessing the survey. The survey was open from June 2022 to August 2022, and reminders were sent out twice to ensure maximum opportunity for participation.

The survey targeted >300 care homes within the ICS. While the number who viewed the invitation is unknown, 30 respondents entered the survey. Of these, 10 did not complete any items or only completed consent statements, leaving a final sample of 20 respondents.

DATA COLLECTION

Qualitative data collection started before and continued alongside the survey.

Semi-structured interviews via the telephone, lasting 20–60 minutes, were undertaken with 15 participants and audio-recorded. An interview schedule, developed by the research team, was used to guide the interview. Semi-structured interviews were conducted to enhance understanding of the implementation process (Russell et al., 2020). Data collection was completed in October 2022. The interviews covered the following topics: views and attitudes to RESTORE2 implementation, benefits, implementation difficulties, staff training, sustainability and buy-in from care homes.

An anonymous online survey (Supplementary file 1), hosted on Qualtrics, was developed by the research team in collaboration with five social care stakeholders. Additionally, three stakeholders piloted the survey and commented on length and ease of comprehension. Following feedback, changes were made to the wording to ensure that questions were unambiguous and wording was consistent with that used in the social care sector. The survey was short, exploratory and took about 10 minutes to complete. It covered participants' profile, awareness and usefulness of RESTORE2, training, implementation difficulties and support for long-term use.

DATA ANALYSIS

Descriptive statistics were used to explore and summarise the survey data. Data were analysed using SPSS Statistics version 26.0 software (IBM Corporation). Interviews were digitally recorded, transcribed, anonymised and checked for accuracy. Qualitative data were imported into NVivo 12 software (QSR International) and analysed

using thematic analysis (Braun and Clarke, 2013) by one researcher (CN), in order to provide an interpretive exploration of the experiences of staff and managers. Transcripts were read thoroughly in order to become familiar with the data, thereafter initial codes were generated and collated with supporting data. Existing codes were then revisited and modified as coding progressed; complete (as opposed to specific) coding was done. Themes were developed inductively from the coded data and subsequently reviewed and revised. Thereafter, themes were analysed (made sense of) and interpreted. Extracts to illustrate the different facets of each theme were selected and a narrative written around each extract. Transcripts were reread to ensure that no themes had been missed and the themes aligned with the data. A sample of the transcripts were then read by one other researcher (RF) and themes discussed. CN and RF are both experienced qualitative researchers.

Questionnaire and interview data were subsequently triangulated in order to provide a more holistic interpretation of the data. Triangulation facilitates generation of thick description, enhances rigour of a research study and increases confidence in the overall analysis (Hastings, 2010).

RESULTS

PARTICIPANTS' PROFILE

Participants were geographically dispersed across three counties in the Buckinghamshire, Oxfordshire and Berkshire West ICS in the South East of England.

SEMI-STRUCTURED INTERVIEWS

Fifteen participants took part in the semi-structured interviews. Participants included care home (deputy) managers ($n = 10$), nurses/nursing associates ($n = 3$) and carers ($n = 2$). Table 2 depicts the characteristics of participants and homes in which they worked.

SURVEY

The majority of survey respondents (16/20) occupied managerial level positions. A majority (14/20) also managed or worked in a nursing or dual registered care home. The number of beds in the care homes ranged from 15 to 71. Table 3 depicts respondents' characteristics.

QUESTIONNAIRE AND INTERVIEW RESULTS

The results of the survey and individual semi-structured interviews converged and are presented together by theme. Analysis identified three main themes: (1) RESTORE2 training and use (2) Benefits of RESTORE2 (3) implementation challenges and moving forwards.

| NO | IDENTIFIER | OCCUPATION | TYPE OF CARE HOME | NO. OF BEDS/TYPE OF CARE | NO. OF STAFF TRAINED (TYPE OF TRAINING RECEIVED) | CURRENT USE OF RESTORE2/COMPONENTS |
|-----|------------|---------------------------|---------------------------------------|---|--|--|
| 1. | P1 | Senior Carer | Residential | 35/older people | 34 (3 full, 31 mini) | Yes/Soft signs |
| 2. | P2 | Registered nurse | Nursing | 64/dementia; older people; younger adults. | 8 (full) | Yes/soft signs & NEWS2 |
| 3. | P3 | Assistant manager | Nursing | 70/dementia; learning disabilities; older people. | 6 (1 full, 5 mini) | Yes/soft signs & SBARD |
| 4. | P4 | Home manager | Residential | 60/dementia; older people. | 9 (3 full, 6 mini) | No |
| 5. | P5 | Student Nursing Associate | Nursing | 74/dementia; older people; physical disability, sensory impairment; younger adults. | 7 (full) | Yes/Soft signs, NEWS2 & SBARD |
| 6. | P6 | Deputy manager | Nursing | 53/dementia; older people. | 7 (full) | Yes/NEWS2 & soft signs |
| 7. | P7 | Manager/owner | Residential | 20/older people; physical disability. | 10 (6 full, 4 mini) | No/yet to implement soft signs & NEWS2 |
| 8. | P8 | Manager | Residential | 6/learning disabilities; mental health; older people; physical disability; sensory impairment; younger adults. | 3 (mini) | Yes/Soft signs, intends to incorporate SBARD |
| 9. | P9 | Carer | Residential | 6/learning disabilities; mental health; older people; physical disability; sensory impairment; younger adults. | 3 (mini) | Yes/Soft signs, intends to use SBARD when rolled out by management |
| 10. | P10 | Manager | Residential | 9/older people. | Training received (type unknown) | Yes/Soft signs & NEWS2 |
| 11. | P11 | Manager | Dual registered [Nursing/residential] | 319 (across seven nursing homes)/dementia, older people; physical disability; sensory impairment. | Unknown | Yes/NEWS2 |
| 12. | P12 | Deputy manager | Dual registered | 46/dementia, older people. | Some training on how to use NEWS2 | Yes/NEWS2 |
| 13. | P13 | Deputy manager | Dual registered | 33/dementia; learning disability; mental health; older people; physical disability; sensory impairment; younger adults. | No | Yes/NEWS2 |
| 14. | P14 | Manager | Nursing | 66/dementia; older people; younger adults. | Some training on how to put RESTORE2 into place | Yes/Soft signs & NEWS2 |
| 15. | P15 | Registered nurse | Dual registered | 28/dementia; older people; physical disability; sensory impairment. | Full training received | Yes/Soft signs, NEWS2 & SBARD |

Table 2 Interview participants' descriptive table.

| CHARACTERISTIC | N |
|---|---------|
| Total sample | 20 |
| Profile | |
| Profession | |
| Manager | 12 |
| Deputy manager | 2 |
| Clinical services manager | 1 |
| Bank Registered Nurse | 1 |
| Director | 1 |
| Unknown | 3 |
| Type of care home | |
| Residential | 4 |
| Nursing | 6 |
| Dual registered | 8 |
| Unknown | 2 |
| Location of care home | |
| County 1 | 9 |
| County 2 | 6 |
| County 3 | 3 |
| Unknown | 2 |
| Current use of RESTORE2/components | |
| NEWS2, soft signs & SBARD | 2 |
| NEWS2 & SBARD | 2 |
| Soft signs & NEWS2 | 4 |
| NEWS2 only | 4 |
| SBARD only | 3 |
| Soft signs only | 2 |
| None | 3 |
| Average number of beds | 41 ± 17 |

Table 3 Respondents profile.

These themes are described below along with representative quotes (with additional quotes appearing in Supplementary file 2). Excerpts from the transcripts are referenced using P, followed by a number and type of care home for each participant.

RESTORE2 TRAINING AND USE

Qualitative findings

Implementation of the full RESTORE2 was low across care homes. Residential homes may be expected to initially implement RESTORE2 mini (soft signs and SBARD); however, none of the homes implementing RESTORE2 (4/6) reported using both soft signs and SBARD. Implementation was particularly limited in nursing and dual-registered homes (2/9) where implementation of the full tool would be expected.

The majority of care homes were not using all RESTORE2 components, but used individual components. Those who had been introduced to RESTORE2 preferred to use one or two components which they found beneficial or easy to use. Two nursing/dual-registered homes used the full tool, another nursing home (NH) appeared to use RESTORE2 mini, four NHs used two components and two used only one component. No residential home (RH) used the full tool, three used soft signs only and another used soft signs and NEWS2. Nursing and dual registered homes (n = 9) used NEWS2 in particular, followed by soft signs (n = 6) while residential homes mostly used soft signs (n = 4); very few homes used SBARD (n = 3). Soft signs appeared to be useful to both nursing and residential homes. NEWS2 was mainly used in NHs to determine residents' acuity and challenge or reinforce clinical judgements.

Residential care staff found NEWS2 complicated. SBARD had mixed views, some felt that it was useful and improved staff confidence to communicate with service providers in a structured way. Others felt it was not useful or relevant for care homes, arguing that staff already applied the SBARD principles unconsciously when they contacted services about a deteriorating resident. Furthermore, care staff could become confused or overwhelmed with the in-depth information that the SBARD could prompt, thereby undermining their confidence.

One of the things people are frightened of, is, when they ring, either 999, or Immedicare, or a doctor, what do they say? And so, I think it's very good, the SBARD tool, to prompt people into what to say ... If Immedicare suddenly start throwing questions at you, one after the other it can actually be quite difficult for some staff ... So, there's good and bad about the SBARD, to be honest. (P10, residential home)

RESTORE2 was mainly used by nurses and to a lesser extent, (senior) carers; in some homes, it had not been rolled out to carers. Some RHs did not do observations prior to the Covid-19 pandemic and some staff struggled with this task. Some RHs took observations but less frequently than NHs, and only recorded basic vital signs e.g. temperature, pulse and blood pressure. In NHs, the onus was on nurses to carry out complete observations using NEWS2 due to inadequate carer skills in this area. Although some carers had been trained, their knowledge remained limited.

I have never done the scoring side of it ... when I had gone to take baseline observations and had to find the pulse and wasn't 100% skilled at doing that and the residents were asking what are you doing? ... So blood pressure, temps etc I found

difficult and ... I sort of could not get a very good reading. (P1, residential home)

Senior care assistants who have been trained to do so ... won't be able to check obviously everything but ... they check the patient is breathing ... take the blood pressure, they can assess if the person is conscious or not ... there is a nurse available 24/7 so it's more on nurses to have a proper scoring for it. (P12, dual registered)

Quantitative results

Similar to qualitative participants, implementation of the full RESTORE2 was low, and a majority of survey respondents only used selected components of RESTORE2. Only two (dual-registered) homes used the full tool, six used two components and nine used only one (Table 4).

Again, NEWS2 was the most frequently used component in nursing/dual registered homes; 12 homes used NEWS2 and only one was a RH. Although several homes used SBARD and soft signs, only one RH used soft signs, which is in contrast to qualitative findings where several homes used this component.

Knowledge and use of RESTORE2 was explored amongst survey respondents. Three (15%) respondents said they had never heard of RESTORE2, five (25%) had heard of it but never used it and two (10%) stopped using it; of the remaining 10, two (10%) used it occasionally and eight (40%) used it regularly.

In contrast to interview participants, survey respondents were more familiar with the individual components than RESTORE2 as a whole. For example, among three managers who said they had never heard of RESTORE2, one used NEWS2 and a second, used both NEWS2 and soft signs. Similarly, of the five that knew about RESTORE2 but never used it, two used NEWS2 and one used both NEWS2 and SBARD. The two who reported stopping using RESTORE2 continued to use SBARD.

RESTORE2 TRAINING

Qualitative findings

Most participants were first introduced to RESTORE2 via training conducted by CCGs, Immedicare (a telehealth provider) or care home support teams. Most staff found the training informative and were satisfied with the delivery. Within most homes, only a subset of staff had received training. The training was seen as more of a refresher course for nurses but an opportunity for carers/managers to learn something new.

That training is quite helpful ... learning about the soft signs of the residents and how to deal with it, how to tell to tele-medics and especially first you need to highlight to your manager and seniors ... how to approach the GP afterwards. (P9, residential home)

Some of those who attended the mini training were dissatisfied with the amount of information provided.

I got a lot of feedback from [staff] on the full course and they found the course was brilliant, they found it incredibly helpful ... The mini was a very well put together course but it just wasn't ... appropriate for residential homes ... it was a very basic level. (P7, residential home)

Training was provided mainly via online platforms. While some participants had no preference, the majority preferred face-to-face delivery or a combination of online and in-person. Some carers felt that training should include how to take observations. Similarly, managers felt that care staff needed foundational training/knowledge to be able to take observations and calculate NEWS scores.

I know it's very difficult to get consistent stats reading and I think it goes back to training on taking observations. (P7, residential home)

| COMPONENT OF RESTORE2 | TYPE OF CARE HOME | | | | |
|---------------------------|-------------------|---------|-------------|---------|-------|
| | DUAL-REGISTERED | NURSING | RESIDENTIAL | UNKNOWN | TOTAL |
| NEWS2, soft signs & SBARD | 2 | | | | 2 |
| NEWS2 & SBARD | 1 | | 1 | | 2 |
| Soft signs & NEWS2 | 2 | 1 | | 1 | 4 |
| NEWS2 only | 2 | 2 | | | 4 |
| SBARD only | | 3 | | | 3 |
| Soft signs only | | | 1 | 1 | 2 |
| None | 1 | | 2 | | 3 |
| Total | 8 | 6 | 4 | 2 | 20 |

Table 4 Use of RESTORE2 component(s) by care homes.

Quantitative results

Survey respondents were asked about staff training. Of the 15 who responded, nine (60%) said that most of their staff were yet to receive training. Care homes in which most staff had received training ($n = 6$, 40%), training was provided either virtually ($n = 2$, 13.3%) or face-to-face ($n = 4$, 26.7%) for fewer than two hours. No training had been received in one care home. Thirteen (86.7%) reported that further training and support was required.

Generally, training roll out was slow and patchy. Some qualitative participants felt that content was inadequate and for majority of quantitative participants, training and support were inadequate.

BENEFITS OF RESTORE2

Qualitative findings

RESTORE2 was reported to have several benefits for care home management and staff, including evidence of actions taken and improved confidence and competence to recognise, respond to and escalate residents experiencing deterioration. Furthermore, it aided communication of concerns to service providers and was beneficial in getting prompt medical support for residents.

It's a very good and useful tool because it can give you the acuity of the residents' condition and it gives you a time frame of how often you should be doing observations and when to escalate. (P6, nursing home)

We have got a couple of residents ... sometimes we don't really understand what's happening. When you pay attention [to] what happened in the past or last night, even [when] they wake up, how they were ... then we ring the GP ... then go to our manager ... overall, yes, it's helping us a lot ... I'm quite confident and whenever any staff is having problems with a resident I know what to do. (P9, residential home)

RESTORE2 also benefited residents and their family/friends. It contributed to better resident outcomes via prompt care and medical attention and provided reassurance that residents would only be hospitalised when absolutely necessary and in accordance with the resident's care plan. Views were mixed about whether RESTORE2 helped reduce healthcare utilisation. Some staff reported that RESTORE2 led to no observable change in healthcare utilisation; others were unsure; a few were positive that it helped to reduce 999 calls, ambulance use and unnecessary hospital admission.

A heightened temperature or confusion would lead to 999 calls and sending them to hospital ... but now ... depending on the NEWS score, we

are better able to determine when to send a resident to the hospital and when to treat them in the home ... reducing the number of calls to emergency services ... also reducing cost overall. (P2, nursing home)

Quantitative results

The survey provided additional insight into the usefulness of RESTORE2, impact on care provision and management of deteriorating residents. Respondents were asked whether they agreed or disagreed with a series of statements exploring the usefulness of RESTORE2 in care homes. Of the 15 who responded to the question, a majority agreed that RESTORE2 could help: improve staff confidence to spot when a resident is unwell ($n = 12/15$, 80%); improve staff knowledge of signs and symptoms to look for in an unwell resident ($n = 11/15$, 73.3%); and reduce unnecessary hospital transfers ($n = 10/15$, 66.7%).

Respondents were also asked if they thought the use of RESTORE2 made a difference to the care provided to care home residents. Of the 16 who responded, half ($n = 8$, 50%) felt that RESTORE2 had made a positive difference, and the other half were either 'unsure' ($n = 5$, 31.3%) or felt that RESTORE2 had made no difference ($n = 3$, 18.8%).

Those who reported a positive difference ($n = 8$, 50%) noted that RESTORE2 was most useful when escalating a resident ($n = 8$) and monitoring deterioration ($n = 7$). RESTORE2 also helped with getting the right level of care ($n = 6$), reducing/preventing hospital admissions ($n = 6$), getting support more quickly and quality of residents' care ($n = 5$).

In terms of supporting deterioration, the majority ($n = 9$, 56.3%) were either unsure ($n = 6$; 37.5%) or felt that RESTORE2 did not help to support deteriorating residents ($n = 3$; 18.8%). The remaining seven (43.8%) were positive that RESTORE2 supported deterioration by reinforcing clinical judgement/concerns ($n = 7$), making it easy to record findings ($n = 5$), triggering a timely clinical response, giving staff confidence to raise concerns ($n = 6$) and helping the referral of a resident ($n = 6$).

Overall, there was a lack of agreement between qualitative and quantitative participants about the impact of RESTORE2 on care provision and management of deterioration. However, there was some consensus regarding its positive impact on staff confidence, knowledge and reduction of unnecessary hospitalisation.

IMPLEMENTATION CHALLENGES

Qualitative findings

Participants, particularly RH staff, reported several challenges with implementation, chief among these was the belief that RESTORE2 was medically oriented and geared more towards NHS than RHs. RHs also lacked the training and staffing levels to regularly carry out observations, calculate and interpret NEWS2 scores.

There is a difference between residential and nursing. So nursing have trained nurses 24/7. Residential, most, do not have any nursing experience at all. And so you need people who are going to, not only do the observations but interpret the observations. (P10, residential home)

The first thing that is a challenge for [staff] is that there is NHS number at the top, and they don't work following the NHS number, they follow DOB [date of birth]. So, that in itself means they have to run around to find the NHS number from the care plan. Already that's the first hurdle ... it's just another piece of work to ensure they have the NHS number to hand ... In its current form, no plans to implement. (P4, residential home)

Other barriers are described in turn:

The rapid implementation was difficult. Care homes were expected to implement RESTORE2 within days of receiving training but participants felt that care staff needed time to understand the tool, and gain confidence and proficiency in using it.

It would take a bit of time for it to all sink in ... if we have to use it, I will get my head round it eventually ... and until you gain confidence and build it up ... It's all new [P1, residential home]

Buy-in varied between homes and other healthcare providers. NHs reported that paramedics often asked for NEWS2 scores. RHs, however, thought external service providers (NHS, GPs, etc.) were not familiar with the tool and did not find it relevant. RHs reported that several stakeholders felt that they should not be taking observations or calculating NEWS scores which deterred RH staff from using NEWS2.

We are planning to implement RESTORE2 in full and we have started to do that but we continue to get some pushback ... like with our GP surgery, some of the GPs would like us to do observations, the others say 'oh no, that's not appropriate we will send district nurses to do it' and then the district nurses don't turn up. (P7, residential home)

Furthermore, some participants felt that RESTORE2 was complicated and needed to be simplified prior to implementation. Complexity also made it time-consuming and contributed to care homes by-passing RESTORE2 and going to a service provider with a concern.

It is too complicated for a lot of people ... I am going to explain it to my team but I feel that they are not going to get it ... Whereas if it was

a bit more simplified, then it would be easier to implement it. (P4, residential home)

Homes dealt with complexity by adapting RESTORE2, for example, rather than calling the GP as instructed, some homes called Immedicare. Other adaptations were to add in missing aspects or to simplify it.

I ... adapted [soft signs] ... It was just really to simplify it as in tick box just so that it was a language that the staff could all relate to ... it was making something that was adaptable, that was simple, but actually just had key things in there. (P8, residential home)

I've created a variant of it, we've got a bespoke version [of NEWS2] ... I wasn't completely happy with it, so I actually [adapted] it a little bit and rolled it out, so it's a bit more comprehensive. (P11, nursing home)

Safeguarding was also perceived as a barrier. Some RHs were unsure about whether taking observations and calculating NEWS2 scores fell under the carers' remit. Managers highlighted that carers were not formally trained to carry out observations and some were self-taught. Some care staff experienced uncertainty and lacked the confidence to take observations and the training was not necessarily going to fill this gap. Some RHs were concerned that mistakes could lead to liabilities and additional problems for the home, particularly if this was not endorsed by safeguarding and care quality organisations.

Liability insurance type issues in terms of whether carers are or aren't meant to do that ... in the past [regulatory agencies] raised premiums [when they discovered that carers were taking observations] ... There will be some hesitation ... from the bigger homes because they will say 'well the carers aren't trained for that and that's extra liability if they do it wrong'. (P7, residential home)

Additionally, some participants reported that their care records and management systems were digital whereas RESTORE2 is paper based. They felt that this led to duplication of effort as observations were inputted electronically and later, transferred to paper in order to use the NEWS2 grid and calculate a score. Furthermore, the paper-based RESTORE2 could reduce efficiency during emergencies in homes that were digitised.

We've moved entirely into online care records so everything is cloud-based ... we can take resident observations on that so if somebody is ill ... I will

... monitor observation every hour, every couple of hours, twice a day ... and RESTORE2 we are going to be doing it back on paper ... we would do that alongside but ideally it would be great if that could be encompassed into our care management system. (P7, residential home)

It's harder for us to act upon in an emergency case, it is paper ... everything right now we use digital ... That's the only difficulty that I'm seeing that I could face about is the fact that I need to work as an emergency basis and ... RESTORE2 is not included in our digital system yet. (P14, nursing home)

Finally, managers also discussed the challenges involved in organising rotas to cover absences if staff attended RESTORE2 training. Some managers were unwilling to train staff due to staff shortages, sickness or workload issues. As a result, some suggested that managers may require staff to complete the training in their own time. Interviewees also feared that staff may be required to undergo several training sessions in order to fully understand how to use RESTORE2.

What is incredibly difficult ... is making time for the amount of training that is required ... we don't have the manpower and we don't have the time to be doing these courses. (P7, residential home)

Recognition that it depended on the managers and whether or not people are taken off the groups to do the training or if they can do it in their own time. Managing the rotas could be a challenge, particularly around sickness. (P3, nursing home)

Quantitative results

Survey respondents also experienced implementation challenges. Similar to qualitative participants, a lack of buy-in from GPs and other services, time constraint and uncertainty of staff in taking observations affected implementation; others were inadequate training and staff turnover (Figure 1). Furthermore, six respondents provided additional barriers, that they felt affected implementation (in a free text section), chief among them were that homes lacked confidence that it was beneficial to residents; SBARD was time-consuming; RESTORE2 was lengthy, alien, medical-oriented and disregarded by NHS staff.

The extent to which NHS staff, who care homes worked with, understood RESTORE2 was also explored as this was identified as an implementation challenge in the qualitative phase. Most respondents felt that NHS staff either did not understand RESTORE2 or only had some understanding of it. They reported that NHS staff understanding varied from greatly ($n = 4$, 26.7%), to some extent ($n = 6$, 40%) or none at all ($n = 5$, 33.3%).

There was consensus that inadequate buy-in from NHS, GPs and other services, staff confidence, staff shortages, medical-orientation of RESTORE2 and time constraint affected implementation.

Moving forwards with implementation

Qualitative findings

Participants provided suggestions about how staff can be supported to use RESTORE2 effectively such as digitising RESTORE2 and integrating it into existing electronic care systems, gauging each home's competency level and then providing training accordingly. Other suggestions are described below.

To help increase buy-in, participants believed that it would be easier for care home staff to use RESTORE2 if it

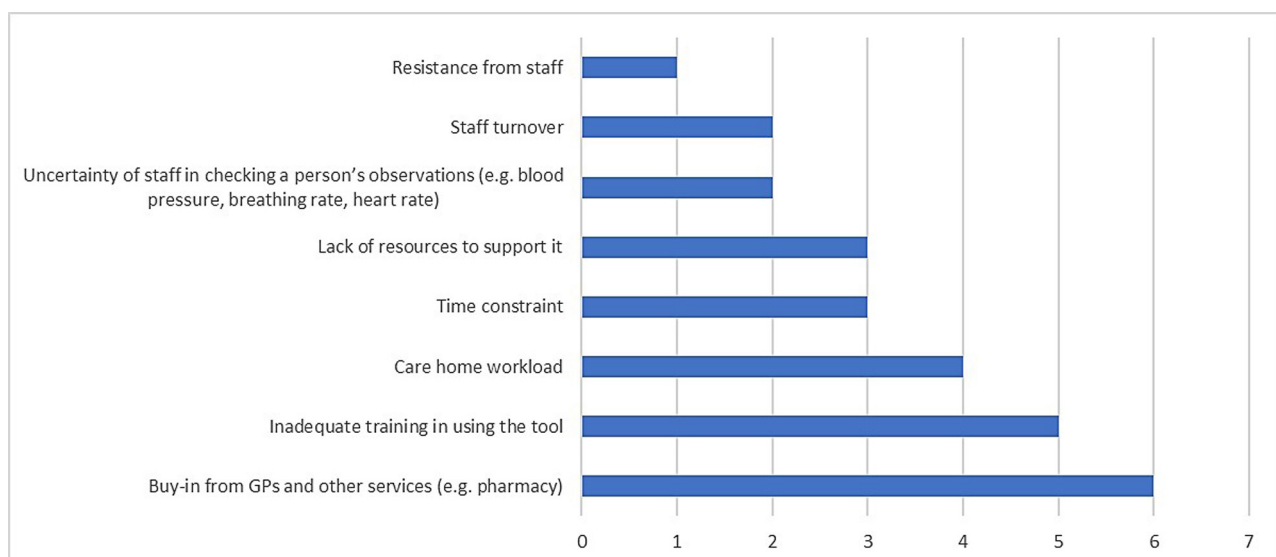


Figure 1 RESTORE2 implementation difficulties.

were more widely understood and used among medical professions. It was suggested that if health service providers requested NEWS2 scores routinely, care home staff would come to view it as an important aspect of residents' care. Otherwise, staff may feel it is additional and unnecessary paperwork.

Link it to your GP, for example, whereas if you have filled out all that form and then the GP is asking for something completely different, it's almost like well why did I bother doing it? (P8, residential home)

Furthermore, respondents recommended that training should consider different learning styles and place more emphasis on hands-on learning. In-person and ongoing training and support was also suggested as a way to encourage and support staff to use the tool. Interviewees also felt it was important to ensure that staff grasped the value of each component of RESTORE2 and understood the implications of what they were being asked to do.

The biggest challenge anticipated would be getting staff to understand it. Training to some extent in addition to a coaching session so they are given a fake patient and told right this is the situation what are you going to do? That's the only way to get people to embrace it – getting them to do some mock scenarios. (P4, residential home)

Like for any of the new things that come into place [training has to be provided] again and again ... It might take some time for everyone to get used to it but once they are used to it they would feel more comfortable. (P12, dual registered)

Additionally, stepping up awareness of RESTORE2 and encouraging managers to roll out training more widely within the home was deemed important for improved knowledge exchange across professions and RESTORE2 becoming a common language across care homes.

If everyone at work has done it and talk about it, then it would be better as we will bounce off one another with the information we are given ... I don't find it very useful now but it would be more useful in future when it has been introduced more widely and implemented across [county]. (P1, residential home)

Training should be more often and each and every team leader, senior staff and registered nurse should attend the training in order to be more knowledgeable. So it should be extended

to everyone and should be held more regularly in order to include everyone. (P2, nursing home)

Participants, particularly those working in RHs, emphasised the need to simplify and adapt the tool to suit the care home sector.

I would like to see it RAG [Red-Amber-Green] rated ... So, if we see someone's gone to amber, we know we need to start doing observation ... whereas green, we can do a simple observation and put in the handover and make staff aware ... the SBARD is a good tool that has to be adapted to a care setting and not a medical setting. (P4, residential home)

Managers stressed the need to upskill carers, particularly RH staff, to enable them to take observations and use RESTORE2 appropriately. Participants suggested care staff were increasingly taking on nursing roles without adequate formal training. Staff were likely to value training on aspects such as pressure ulcers, venepuncture and catheterisation, EOL care and simple wound dressing, as well as opportunities to work towards entry-level nursing qualifications

There is no course for carers which is a real entry level nursing qualification and that is what I think a lot of carers could need ... getting a district nurse in to re-dress a basic early stage ulcerated leg ... is a waste of time ... So upskill the carers in the residential homes so they can do a little bit more ... Dressings, observations, catheter care. ... Also, it could help with recruitment of social care workers. (P7, residential home)

Quantitative results

Ten survey respondents also detailed how staff could be supported to embed RESTORE2 in practice. The need for further training was the most frequently cited including training night staff and making an e-portal available (n = 5); others were improving staff confidence to use RESTORE2 and recognising that inadequate confidence impedes training attendance (n = 2); improving staff understanding of the benefits to residents' care and recognising that taking observations accurately takes time but the benefits (eventually) outweigh time constraints (n = 2); and encouraging better engagement from GPs, out-of-hours service and NHS staff (n = 1).

Both groups highlighted training, upskilling staff, improving staff confidence and understanding of the benefits of RESTORE2, and buy-in/engagement from GPs, NHS and other services as being important for implementation.

DISCUSSION

To our knowledge, this is the first study to evaluate the implementation of RESTORE2 in care homes in England. Severe constraints on care home staff and access to homes because of the Covid epidemic weakened the scale and definitiveness of results. Staff were able to identify some potential or actual benefits of RESTORE2, which included improved confidence to identify a deteriorating resident, to escalate and raise concerns, and to communicate with other health professionals; these findings were supported by RESTORE2 case studies (NHS West Hampshire CCG, 2020; Wessex AHSN, 2022a). Furthermore, residents were increasingly treated in the home and hospitalised only when necessary or in line with their care plan, thereby reducing unnecessary hospital admissions. There was also some impact on healthcare use including reduced 999 calls and ambulance utilisation; this is supported by findings in another ICS (NHS West Hampshire CCG, 2020). RESTORE2 components were also associated with some benefits but also drawbacks. NEWS2 provided an objective way of communicating clinical conditions and helped to challenge or reinforce clinical judgements, similar to other studies on NEWS2 use in primary care, ambulance service and care homes (Brangan et al., 2018; Hodgson et al., 2022). Staff relied on this objective clinical information to back up their intuition that a resident was unwell and felt confident that healthcare providers would take their concerns about deterioration more seriously (Stocker et al., 2021). The appropriateness of NEWS2 use in care homes has, however, been questioned amidst concerns that it may not accurately reflect acute clinical deterioration in the oldest old and most frail living with multi-morbidity (Hodgson et al., 2022; Vardy et al., 2022). NEWS2 also had limited use in RHs owing to its complexity. Soft signs have been found to be predictive of subsequent illness (Boockvar, Brodie and Lacks, 2000; Tingström, Milberg and Sund-Levander, 2010; Tingström et al., 2015) and helps to verbalise the intuitive feelings that staff have when 'something just doesn't feel right' (Wessex AHSN, 2022b). Communication breakdown is recognised as one of the main causes of adverse events in clinical routine and a systematic review (Müller et al., 2018) found that SBAR improved patient safety when used to structure telephone communication. It also reduced adverse events, provided cues on what should be communicated to external providers, and improved organisation of residents' clinical information as well as communication among staff; similar to this study findings, SBAR was found to be time-consuming (Renz et al., 2013; Shahid and Thomas, 2018).

There is a growing interest in using RESTORE2 in community settings; however, evidence shows that uptake of RESTORE2 mini (residential homes) and full RESTORE2 (nursing and dual-registered homes) is low. The use of the tool in care homes is not without

challenges. Nursing and residential homes experienced barriers relating to lack of integration with care systems, managing absences when staff attended training, inadequate training/support, missing aspects or complexity requiring adaptation of the tool, medical orientation and time constraint. RHs also faced additional barriers regarding acceptability and appropriateness for RHs, safe-guarding, inadequate equipment and confidence to measure NEWS2, lack of buy-in and rapid implementation. As a result, some participants were not motivated to invest time and effort into using RESTORE2 or cherry-picked component(s) they felt were easy to use and beneficial, hence, there was a lack of consistency in use. In contrast to guidance on the use of RESTORE2 set out by the Wessex AHSN, now Health Innovation Wessex (2022a), homes adapted various components to make it easier to use, suit the care home setting or meet residents' needs. Community and mental health services also adapted NEWS2, sometimes beyond its original design, to fit various patient groups (Brangan et al., 2018). Some care homes measured incomplete parameters (Stocker et al., 2021) due to inadequate equipment or training and although guidance has been developed in recognition (RCP, 2020), the clinical skills and judgement required may be unavailable. The need for simplicity, adaptation and personalisation was advocated. Tailoring RESTORE2 and using components rather than the full tool may be unavoidable in the care setting, making understanding impact difficult. Furthermore, some care homes did not feel encouraged and supported in using RESTORE2 due to inadequate buy-in from the NHS and the limited number of GPs using NEWS2 (NHS North East Quality Observatory Services, 2021), which hindered collective action, as seen in another study (Russell et al., 2020). A realist review (Goodman et al., 2016) highlighted the importance of joint working between care home staff and health professionals for interventions to be integrated into care home practice. The lack of integration with care records is also pertinent particularly as 40% of care homes are fully digital and the government is set to digitise 80% of care homes by 2024 to help improve quality, safety and efficiency and to allow real time data to be shared across NHS and social care (Department of Health and Social Care, 2021; Ellis, 2022). This has implications for RESTORE2 use in digitised homes. To become a common language across health and social care, a system approach which ensures everyone buys into RESTORE2 is needed and challenges need to be addressed.

The difficulty for staff in taking vital signs (observations) is not fully appreciated. There is an assumption that residential homes began taking observations during the pandemic and as such, have developed these skills (BGS, 2020; Stocker et al., 2021). However, staff skills and confidence are over-estimated. Chambers et al. (2023) highlighted that staff confidence is vital to identifying acute deterioration in residents. This evaluation found

that despite training, some staff lacked the confidence to take observations and were not prepared for the challenges of taking observations in a setting with residents who may be unwell, agitated or uncooperative. High patient acuity, dependency or reduced staffing level affect effective monitoring, recognition of deterioration, appropriate escalation and timely response (Ede et al., 2021). Care staff spend more time with residents than nursing staff, making care staff pivotal to early identification of acute clinical deterioration. However, physiological measurements required to calculate NEWS2 are not routinely measured in RHs and may present challenges for staff (Russell et al., 2020) in line with the study findings. Unregistered care staff are often relied on to identify acute deterioration, but there are concerns that early clinical indicators may be missed due to their lack of clinical training, affecting confidence in unregistered staff to identify deterioration (Hodge et al., 2023). These concerns are not unique to the UK, in Australia, the skill mix of the aged care workforce has been deemed problematic as the majority do not have the skills to conduct daily monitoring of clinical parameters (Australian Royal Commission into Aged Care Quality and Safety, 2021). The legitimacy of taking vital signs in some care homes was also questioned. These findings are consistent with a recent study into NEWS2 implementation (Russell et al., 2020). Taking clinical observations is not straightforward and taking respiratory rates is often challenging even for those with healthcare training (Cardona-Morrell et al., 2016; Churpek et al., 2015). NEWS2 is not always used accurately, and wider clinical assessment and context may be overlooked; hence clinical judgement is vital (Welch, Dean and Hartin, 2022). This is particularly relevant to carers without healthcare training who are unfamiliar with taking clinical observations. In hospitals, NEWS2 is primarily used by nurses (Brangan et al., 2018), using it outside this setting necessitates involvement from a wider group of individuals with varying skills and experience, which presents a challenge to roll out (Brangan et al., 2018). Hence, further training and ongoing support is vital.

Training for care home staff was seen as an important aspect of their professional or skills development. Some of those who had been trained to use RESTORE2 deemed the training inappropriate. As residential and nursing homes differ in skillset, a more tailored approach may be necessary. Care homes are challenging environments for intervention implementation (Low et al., 2015; Smith et al., 2019), yet training was swiftly followed with implementation over a short period of time, providing limited time for staff and managers to make sense of it. Training was delivered in a fragmented way. The majority of staff had yet to receive training, in some homes, nurses attended training, while in others training was extended to more experienced carers. Inadequate training and support may have delayed

roll out of RESTORE2 and contributed to differential uptake of components, as training needs highlighted by staff were substantial. Moreover, residents' needs are becoming increasingly complex and some care homes are inadequately equipped to meet them (RCN, 2012). Carers are increasingly taking on more duties including those meant for nursing roles, often without appropriate training (RCN, 2012). This underscores the need for upskilling carers to meet these needs and improve the quality of care provided to residents (RCN, 2012). The growing gap between residents' needs and the skills and knowledge of the workforce caring for them has been recognised, fuelling the impetus to upskill support workers in health and social care (Imison, Castle-Clarke and Watson, 2016). However, inadequate staffing levels and lack of funding reduce the motivation to provide more advanced training, resulting in stretched services and lower care quality.

RECOMMENDATIONS

Recommendations are provided in Table 5, along with the key issues to be addressed by relevant stakeholders.

STRENGTHS AND LIMITATIONS

A strength of this study was the use of a qualitative approach to gain an in-depth understanding of the shortcomings and successes of the implementation of RESTORE2 from the perspective of care home staff and managers. These findings were enhanced through the collection of quantitative data. Limitations were that the care homes implemented RESTORE2 at different time points and some were yet to be trained. This meant that some homes were not using RESTORE2 or were at different stages of roll out. This differential take-up also influenced the amount of experience different participants had of using RESTORE2, which may have affected their views. Some differences were found between quantitative and qualitative participants' experiences of RESTORE2. It is difficult to identify the reason for these, but it is possible that response and/or selection bias may have played a role. The majority of homes used component(s) rather than the full tool and although this provides insight into use of the tool in care homes, it weakens the evidence on impact of RESTORE2. The sample size for the quantitative aspect was also very small, despite the use of a multi-pronged recruitment approach, limiting the analysis and robustness of the results.

The challenge of conducting research in the care home environment (Collingridge Moore et al., 2019) was exacerbated by the ongoing Covid-19 pandemic (Ritchie et al., 2023). This made engagement with care homes difficult. Access to residents in particular were highly restricted during the epidemic and was out of the question for researchers. This was a limitation of the study and residents would be a key part of a full evaluation. Barriers hindering recruitment of care homes are well

| ISSUE TO ADDRESS | STAKEHOLDER | RECOMMENDATION |
|---|---|---|
| Roll out limited by inadequate buy-in | Integrated Care Systems (ICSs) | <ul style="list-style-type: none"> Promote RESTORE2 awareness, uptake and usage across health and social care. Scale up coverage and usage of RESTORE2 to include all health professionals that interact with care homes. This may require extending the groups who receive RESTORE2 training. |
| | Primary and secondary health care professionals | <ul style="list-style-type: none"> GPs, paramedics and call handlers should consistently request for observed soft signs and/or NEWS2 scores and encourage use of structured communication prompts when handling calls from care home staff. |
| Variations in staff-skill set in nursing and residential homes | Trainers | <ul style="list-style-type: none"> Training should take into account the existing skills of staff in each care home and generic training should be avoided. Where appropriate, training should be provided on how to take observations. Training should include all care home staff who work with residents and not just nurses and some senior carers. |
| High staff turnover makes it likely that there will often be new members of staff, some of whom may not have been trained to use RESTORE2 | Care home managers | <ul style="list-style-type: none"> Ensure that training is provided on a regular basis so that new staff are equipped with the skills to use RESTORE2. Appoint RESTORE2 champions to support ongoing training in the use of RESTORE2. |
| Insufficient time to embed RESTORE2 in working practice | Trainers and care home managers | <ul style="list-style-type: none"> Ensure that sufficient time is given between training and roll out to enable staff to develop the confidence and skill to use RESTORE2. |
| Staff require substantial support and knowledge of RESTORE2 may diminish over time | ICSs, trainers and care home staff | <ul style="list-style-type: none"> Provide staff with ongoing access to (a) trainers (face-to-face or remotely), (b) online training modules and (c) resources to enable staff to address questions and refresh their knowledge. |
| Use of paper-based forms is labour-intensive and inefficient | ICSs, care home providers and managers | <ul style="list-style-type: none"> Incorporate RESTORE2 into digital management systems in order to keep up with the move to digitise social care by 2024. |
| Additional research is needed to strengthen the evidence base | ICSs, health innovation networks (HINs) and researchers | <ul style="list-style-type: none"> Further implementation and evaluation of RESTORE2 should be conducted in the context of wider changes in the health and care system to improve the quality of support to homes. The reason for the use of different components of RESTORE2 by care homes requires further exploration. |

Table 5 Recommendations.

recognised and have led to the exclusion of care homes from research. These include time-constraint, workload, inadequate research knowledge/interest, perception of the value of the research, suspicion over researchers' motives, communication problems (e.g., recruitment emails being ignored), and lengthy recruitment time, typically lasting between 8–13 months (Lam et al., 2018; Law and Ashworth, 2022). In order to encourage participation in future research, incentives would be provided and longer time allowed for recruitment.

CONCLUSION

RESTORE2 is increasingly being rolled out to care homes. It has several potential benefits including improved confidence to identify deterioration, escalate and communicate concerns, and has potential to reduce healthcare utilisation, particularly 999 calls, ambulance service and hospital admissions. However, RESTORE2 has a long way to go to become a common

language across the health and social care sector, the myriad of challenges that affect use and successful implementation need to be addressed, a culture change is required to adopt and sustain use and a system approach which ensures everyone buys into RESTORE2 is needed. The continued roll out of RESTORE2 into care homes requires further rigorous quantitative investigation into its impact on healthcare utilisation and cost-effectiveness, as well as qualitative exploration of the views of residents and mechanisms of action, to strengthen the evidence base.

ADDITIONAL FILES

The additional files for this article can be found as follows:

- **Supplementary file 1.** RESTORE2 survey. DOI: <https://doi.org/10.31389/jltc.192.s1>
- **Supplementary file 2.** Additional participant quotes. DOI: <https://doi.org/10.31389/jltc.192.s2>

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COMPETING INTERESTS

The authors have no competing interests to declare.

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