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# Rapid Evidence Synthesis: RESTORE2

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# Rapid Evidence Synthesis:

Rapid Evidence Syntheses (RES) are produced by the National Institute for Health and Care Research (NIHR) Applied Research Collaboration Greater Manchester (ARC-GM). The methods used are based on a framework set out in Norman et al. 2022 and previously registered on the Open Science Framework (OSF). [a,b]

RES use evidence synthesis approaches and draw on the GRADE Evidence to Decision framework[c] to provide rapid assessments of the existing evidence and its relevance to specific decision problems. In the first instance they focus on evidence from guidance and existing evidence syntheses. They are undertaken in a real-time context of decision-making around adoption of innovative health technologies and are designed to provide a "good-enough" answer to inform decision problems in a short timescale. RES methods are flexible and adaptive. They have evolved in response to user feedback and differ depending on the nature of the assessment undertaken.

**RES are not intended to serve as a substitute for a systematic review or rapid review of evidence.**

We welcome feedback and are particularly interested to hear how you have used this Rapid Evidence Synthesis.

Please send any queries or comments to:

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# Additional information:

This work was undertaken by the National Institute for Health Research (NIHR) Applied Research Collaboration Greater Manchester (ARC-GM). The views expressed are those of the author and not necessarily those of the NIHR or the Department of Health and Social Care.

[a] Norman, G. Rapid evidence synthesis to support health system decision making. *OSF registration.* 2020 [cited 2023]; Available from: osf.io/hsxk5

[b] Norman, G., et al., Rapid Evidence Synthesis To Enable Innovation And Adoption in Health and Social Care. *Systematic Reviews,* 2022. **11**: p. 250. https://doi.org/10.1186/s13643-022-02106-z

[c] Alonso-Coello, P., et al., GRADE Evidence to Decision (EtD) frameworks: a systematic and transparent approach to making well informed healthcare choices. 1: Introduction. *BMJ,* 2016. **353**: p. i2016.

# 1. Summary

There is no comparative evidence and **very limited evidence** evaluating the impact of RESTORE2 on patient or service outcomes for people in residential care. There is evidence which **varies in strength** and relevance for use of each of the components of RESTORE2, or similar interventions.

## 1.1 Summary

- We did not identify comparative evidence evaluating the use of RESTORE2 for residential care settings. Very limited descriptive information is available for the impact on outcomes.
- There is some reasonably relevant evidence from primary non-comparative observational studies that soft signs observed by nursing assistants may be predictive of acute illness in older people being cared for in residential settings; impact on patient outcomes is less clear and may be dependent on the involvement of healthcare professionals.
- Evidence for pre-hospital triage using NEWS 2 is limited; evidence from cohort studies of use in hospital and paramedic settings supports its predictive value but does not address impact on patient outcomes. There is evidence from systematic reviews that early warning systems generally, when used in hospital and prehospital settings, have predictive value; but evidence for impact on outcomes is more mixed. Use of early warning systems shows limitations in adherence when implemented by healthcare professionals; this may be relevant to residential settings.
- There is moderate certainty evidence from a systematic review that use of the SBAR structured communication tool improves patient outcomes. This includes directly relevant evidence from nursing homes looking at outcomes related to hospitalisation.

# 2. Methods

## 2.1 Description of the Intervention

RESTORE2 (Recognise Early Soft Signs, Take Observations, Respond, Escalate)[1] is a tool designed to enable care home staff to recognise and respond to signs of possible physical deterioration in care home residents. It identifies “soft signs”, supports observation taking and incorporates calculation of a National Early Warning Score (NEWS2).[2] It includes an escalation tool and a structured communication plan (SBAR).[3] It is a downloadable, printable paper-based form.[4] There is a RESTORE2 mini (Soft signs) version available which only uses the soft signs approach. It’s use, or that of an equivalent tool, was recommended by the British Geriatric Society in their guidance on managing the COVID-19 pandemic in British care homes.[5]

## 2.2 Key Questions

1. What is the effect of using RESTORE2 on outcomes for care home residents? Evidence for components may need to be considered in addition to the “bundle”. Outcomes include unplanned health service use as well as patient morbidity and mortality.
2. What is the effect of tools like RESTORE2 (or those like the key components of RESTORE2) on outcomes for care home residents?
3. What is the reliability of the RESTORE2 and its relevant components in identifying care home residents who are at risk of deterioration compared to other methods or routine care?

## 2.3 Search

We searched PubMed and the Cochrane Library which includes the Cochrane Central Register of Controlled Trials (CENTRAL) and the Cochrane Database of Systematic Reviews (CDSR). We searched initially for RESTORE2 and subsequently for terms relating to its key components. We specifically screened the websites of the following Cochrane groups: Cochrane Global Aging and Cochrane Effective Practice and Organisation of Care (EPOC). We also searched relevant websites including that of the Wessex Academic Health Science Network (AHSN), the Sepsis Trust, NHS England and NICE. Key terms were “RESTORE2” and terms for the component parts of the RESTORE2 tool. We scanned references of relevant identified material and conducted further iterative searching where appropriate. Searches were carried out between July 14 and 16th 2020.

# 3. Results

## 3.1 RESTORE2

Information identified from the Wessex AHSN on the use of RESTORE2 in care homes provided some qualitative information that hospital admissions (including mental health admissions), length of stay on admission to hospital, and GP visits may have been reduced since staff began using Soft Signs and News 2 (key parts of RESTORE2). This is attributed at least in part to more rapid review of residents by registered nurses. [6, 7] The data presented appear to refer to 17 care homes run by a single provider but are difficult to interpret because few numbers are presented, and the total number of residents is not given. The number of hospital visits avoided is reported as 25 [7] or 35; [6] the discrepancy may arise from the fact that it is unclear whether RESTORE2 or Soft Signs alone is being referenced. Positive feedback and reductions in 999 calls and ambulance trips were also reported.[8]

No description is given of research methods, but it appears to be a retrospective comparison of numbers of patient referrals to primary and secondary care combined with interviews or surveys of staff. These reports are hard to evaluate but any differences seen may not be attributable to the change in practice; changes in the resident population or other changes in management of facilities or provision of care may be factors in the outcomes reported. We did not identify any reports of more formal evaluations.

A 2017 realist evaluation of features and mechanisms that support NHS service delivery to care homes for residential care of older people identified the importance of review and consultation at service handover points,[9] something that interventions such as RESTORE2 may support. An earlier systematic review found that interventions to support integrated working between the NHS and residential care settings typically did not incorporate residents' priorities or acknowledge the skills of staff working in residential care. [10]

## 3.2 Soft Signs

We identified a systematic review from 2015 which looked at nurse recognition of signs for concern in general hospital wards. [11] (An earlier review from 2009 looked at the same issue. [12) The review included 18 studies (qualitative, quantitative and mixed methods) which evaluated 37 signs contributing to 10 general indicators.[11] The review concluded that worry/concern could occur with or without changes in vital signs. This is reliable but indirectly relevant evidence as both the population and the staff/setting differ from those considered in our key questions. Soft signs have been incorporated into more formal Early Warning Score Systems which include clinical indicators (see below).

Soft signs have been assessed in people living in residential care and found to be predictive of subsequent illness in this population. [13-15] A cohort study documented identification by nursing assistants of 388 episodes of early signs/symptoms of suspected infection (including "not normal for this resident") in 204 residents over a year and supported their correlation with possible or definite infection in 80% of cases.[15] No comparison was made to other means of early assessment.

Qualitative studies support the role of observations by nursing assistants in clinical decision making but found that responses by nurses and medical professionals were key to further action.[16,17] Studies were carried out in Sweden; the population of residents and care workers may be reasonably relevant to the UK.

## 3.2 NEWS 2

NEWS 2 [2] has been evaluated for prehospital triage. These cohort studies found that NEWS 2 does predict the likelihood of in-hospital early mortality, showing diminishing predictive value with time (e.g. 7 or 30 day mortality); [18] and whether people will be admitted to ICU, admitted to hospital or discharged from ED.[19] The direct relevance of these cohorts to use of NEWS 2 to assess people in their place of residence (residential home) is unclear as they are assessing use of the tool by ambulance services and other health professionals after they have been contacted about a person of concern. The impact of using NEWS2 on patient outcomes is also unclear but is likely to be similar to those for Early Warning Systems more generally.

Early Warning Systems have been evaluated in recent systematic reviews. These primarily look at use in patients already within the secondary or emergency care settings and deal with validation and performance metrics [20] None of the included studies in the review assessed NEWS 2 but a large number assessed NEWS (precursor). An earlier review looked at the impact of early warning scores on patient outcomes; this predates NEWS 2. [21] The authors found mixed evidence for impact on mortality and cardiac outcomes. Another systematic review [22] examined use of early warning systems in the prehospital setting. One of the included studies assessed NEWS (the precursor to NEWS 2). Williams found that Early Warning Systems had predictive benefit in the prehospital setting but that there were substantial differences between the systems.

A recent systematic review evaluated compliance with Early Warning Systems and found that this was poor.[23] Inaccuracy of scoring, missing elements and calculation errors were identified along with reduced compliance with escalation protocol where EWS scores were higher. The causes of poor compliance were unclear. While this evidence is based on a mix of study designs and comes from hospital settings, the studies were conducted in the UK and similar health systems (Denmark, Netherlands) and the issues identified may also be applicable to residential care settings. This review suggests that implementation of early warning tools may be substantially different to the published process. Some of the studies assessing the predictive performance of early warning systems use retrospective calculation of the scores, which may produce a different result to a contemporaneous use of the system as the operational context is different.

## 3.2 SBAR

A recent systematic review has assessed the impact of use of SBAR on patient safety [24] Some of the included studies were carried out in residential care settings. This well conducted review included 11 studies of which three had contemporaneous comparators. The single RCT was conducted in a nursing home and focused on anticoagulation management. This used SBAR trigger tools as part of the interventions. Two before-and-after studies set in nursing homes looked at impact on transfers to hospital, transfers by critical condition and transfers resulting in

hospitalisation; these did not use additional trigger tools.[25,26] The review concluded that there was moderate certainty evidence that use of SBAR improved patient safety and that this was particularly the case when used to structure telephone communication.

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