DESERVE
National Evaluation of Deteriorating Patients Services: a Martha's Rule Summative Evaluation sub-study

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1. Introduction & short summary

The recent introduction of the Martha's Rule initiative changes the core requirements of an NHS hospital's deteriorating patients service. How the implementation of Martha's Rule will change the make-up, protocols, and workload of deteriorating patient services is not known. Hospital provisions for deteriorating patients vary widely. This national service evaluation aims to better understand the availability, staffing, and workload of these services and to track the direct and indirect impacts over time of the introduction of Martha's Rule.

Further information on the wider summative evaluation of Martha's Rule and this sub-study is available at:

2. Organisation and administration

DESERVE – National Evaluation of DEteriorating Patients SERvicEs:
a Martha's Rule Summative Evaluation sub-study

This national service evaluation is a sub-study of the NIHR funded summative assessment of the Martha's Rule implementation. DESERVE is a service evaluation as determined by the HRA decision tool (see graphic below) and therefore no ethics or HRA approval are required. The overall study has been submitted for ethical approval to HRA, however the DESERVE service evaluation will be conducted under local service evaluation governance at each site.

2.1 Study committee

The study is organised and delivered by the Martha's Rule Summative Evaluation team:
Principal Investigators: Mr John Welch and Prof Ramani Moonesinghe.

The study committee includes: Dr Kate Honeyford, Dr Dave Brealey, Dr Katharina Kohler, Dr Chris Woodmansey, Dr Emily Yeung, Professor Damian Roland and Professor Joseph Manning.

2.2 Site leads and local collaborators

For this study we will recruit Site Leads from each hospital trust. The Site Leads will have knowledge of their hospital's service provisions for deteriorating patients and clinical experience in the care of deteriorating patients. The Site Leads will need to be clinically employed within their trust throughout the time of the first service evaluation (a single 7-day period in September 2026 – December 2026 as chosen locally). The Site Leads will acquire local service evaluation approval, lead the data collection at their site, and have responsibility for data submission and quality. Additionally, individuals at each site can become Local Collaborators by making a substantial contribution to local data collection and submission. Site Leads and local Collaborators will all be credited in the resulting publication as specified below in the authorship agreement section (Section 5.1).

Site Leads can change over the time of the study, in particular for the repeat surveys (which will take place in 2027/2028). It is the responsibility of the Site Lead to record any changes to Site Lead responsibility and add additional or replacement Site Leads into the database.

With the signature at the end of the document/upon agreeing to participate via email/by completing the site survey the Site Leads will confirm that they have received and read the protocol and agree to conduct the study in accordance with:

a. the attached protocol (subject to amendments)
b. the stipulations and requirements of their local hospital quality improvement and/or service evaluation team.

2.3. Administrative structure details

2.3.1. Study committee

The study committee has responsibility for overseeing all aspects of the study management including:

- Development of:
  - protocol
  - data collection tools
  - data analysis plan and manuscripts
- Data governance of submitted data
- General study management issues
- Data analysis
- Provision of summary data to participating sites upon request
- Publication of summary documents and reports
- Drafting and revision of manuscripts
- Submission and revision of manuscripts

2.3.2. Participating site leads

The Site Leads have responsibility for:

- Local registration of the DESERVE service evaluation, following the local site's clinical governance processes
- Obtaining local approval for the DESERVE service evaluation, prior to commencing data collection
- Overall management of the study at local site in line with the study protocol
- Recruitment of local data collectors and Local Collaborators
- Collection of data from hospital databases, data repositories, and service performance and delivery data
- Data collection and submission to online data collection platform as per study protocol
- Data query resolutions
- Adherence to local guidelines and reporting requirements

- The completeness, accuracy, and integrity of the data collected by the data collectors at their site

3. Overview

3.1 Background information:

Strengthening the early recognition and management of clinical deterioration remains a central patient safety priority across the United Kingdom. Deteriorating patients place significant pressure on ward teams and hospital services. In 2024, 243,592 patients died in NHS hospitals across England and Wales[1] based on prior studies of the proportion of preventable in-hospital deaths,[2] an estimated 8,769 of these deaths may have been avoidable.

Most clinical environments have established escalation pathways that guide increases in the level of care, whether through enhanced monitoring, targeted investigations, therapeutic interventions, or transfer to a higher acuity setting. These escalations pathways vary across different settings and hospitals, but may involve ward staff, the patient's primary medical team, specialist services, or critical care teams, depending on the severity and trajectory of the patient's condition. Deterioration is often marked by abnormal physiological parameters and rising acuity scores such as NEWS2.[3] NICE therefore recommends the use of 'track and trigger' systems to guide when a patient's care should be escalated.[4] However, a significant proportion of patients experience clinical deterioration despite prior normal physiological observations,[5] and there is evidence that patients or their loved ones can recognise and communicate impending deterioration before it occurs.[6, 7]

Martha's Rule (MR) is a patient safety initiative in England[8] that seeks to address some of the limitations of primary track and trigger systems. Martha's Rule is designed to support the early detection of patient deterioration and has 3 key components:

1. **Wellness question (self-reported health status)**. Patients will be asked, at least daily, about how they are feeling, and if they are getting better or worse, and this information will be acted on in a structured way.
2. **24/7 access to independent urgent clinical review**. All staff will be able, at any time, to ask for a review from a different team if they are concerned that a patient is deteriorating, and they are not being responded to.
3. **Patient and family-initiated escalation of care**. This escalation route will also always be available to patients themselves, their families and carers and advertised across the hospital.

This national survey aims to capture and describe the diversity of services used across the NHS, regardless of the local name or remit of the team or individual who responds to deteriorating patients.

For simplicity, in this protocol any service which cares for deteriorating patients - such as a critical care outreach team (CCOT), rapid response / medical emergency team, Hospital 24/7 & Hospital at Night, or equivalent - will be referred to as 'Outreach'. However, all NHS acute hospital trusts are requested to collect data whether their pathways use 'Critical Care Outreach' staff or any other type of staff or set-up related to caring for deteriorating patients.

3.2 Why is this service evaluation important?

Martha's Rule Martha's Rule has now been included in the NHS Standard Contract. This requires all hospital trusts within England to implement the 3 core components of Martha's Rule by 31 March 2027.[8] Hospitals in other UK nations have also been trialling MR or similar processes.[9]

The impact of this national roll-out on deterioration prevention, resource use, and health equity is not yet clear. Patient wellness questions have shown an ability to predict future outcomes, and provide

information not captured by Early Warning Scores.[6,7,10,11] However a pilot study of introducing a wellness question into UK practice revealed poor uptake by clinical staff.[12]

Patient and family activation of Outreach teams has been previously explored in Australia[13,14] and the United States[15], but only at the local level in the United Kingdom[16,17]. Evidence suggests a wide range of rates of uptake in practice,[15,18,19] with the design of the system and local cultures as potential influencing factors.[19-21] Although these pathways are designed to empower patients, research has revealed demographic imbalances in usage,[13,16] which may lead to inequities if not monitored and addressed. In many settings the majority of calls have been for issues other than acute patient deterioration,[14-16] but a small number of patients requiring escalation as far as critical care have been detected,[14-16,18,19] and user satisfaction with the service is often high[14,15,19]. Capturing how the public uses this pathway as it is introduced across the NHS, and whether demands on Outreach staff change, will help guide which services are required for an effective triage and a satisfactory response.

This service evaluation is part of a wider study to understand the impact of MR on patients, staff, and healthcare systems. We will draw on survey data to understand the effect of MR on Outreach services across the NHS. We will use this data to understand the make-up of Outreach teams, provision of service across the day/week, overall workload, relative abundance of MR calls, and to track changes in the care for deteriorating patients provided by the NHS.

3.3 Aims and Objectives:

Aims:
Characterise the structure, provisions and workload of deteriorating patient services across the NHS and track changes following the introduction of Martha's Rule

Objectives:
- To describe the setup, processes, and workforce associated with deteriorating patient care in the NHS
- To determine the escalation processes across the NHS for different inpatient groups
- To describe the specifics of the work staff deliver across the NHS with respect to deteriorating patients
- To determine the extent of implementation of MR across all participating hospitals and its evolution through time
- To assess the uptake of patient and family activated escalation in different hospitals and therefore assess the service for geographical health inequalities
- To understand the total workload related to deteriorating patients and if this changes with implementation of MR

4. Methodology

4.1 Service evaluation design

DESERVE is a national service evaluation of Outreach services and Outreach activity across NHS sites, with a focus on patient deterioration, as recognised either by Martha's Rule or by established processes. We aim to include all calls/referrals relating to acute deterioration within inpatient paediatric, adult, and maternity areas. We will exclude critical care, emergency department, and community settings.

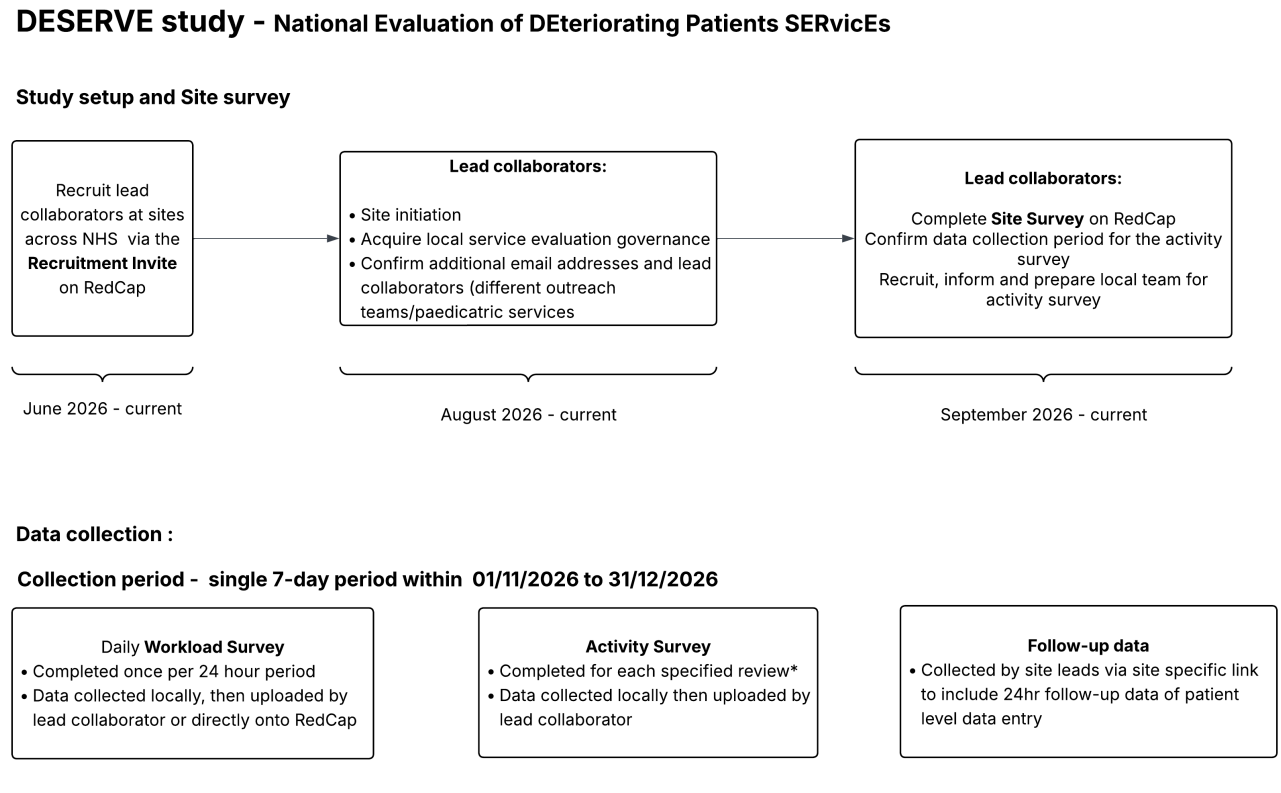
This will, in effect, be a prospective service evaluation of all Outreach activity over three one-week periods across England (in 2026 then repeated in 2027/2028) to capture both baseline data and changes over time.

The data collection specifics are detailed below. We will collect data on the composition of the Outreach team, and their working patterns, workload and reach across their hospital site. We will collect data on acutely deteriorating patients subject to outreach review, the specific trigger for the

review, interventions initiated, and the outcome of the patient 24 hours after the review. Additionally, we will collect information on the overall Outreach workload and skill mix throughout the data collection period.

4.2 Survey specifics

Data will be collected by dedicated data collectors at each institution as recruited by the Site Leads. This will typically be members of the Outreach team or a suitably qualified researcher or clinician. The data collection will be conducted over one-week periods, to be repeated twice. This will include structural/site information, an outreach team level data collection, and patient level data collection and the initial data collection for the team and patient level activity will be during a week-long interval between 01/11/2026 and 31/12/2026.



The initial approach will be via a **Recruitment Invite** in order to recruit the interested sites. The reason for the separate invite and data collection is to allow several Outreach teams per site (e.g. paediatrics or maternity) to participate and to allow sending documents and protocols to the Local Collaborators. It will also enable the following aspects to be sent via personal links and therefore allow asynchronous data entry.

1. The **Site Survey** data collection will include:
    a. Outreach Services: Information on the trust, hospital site, and Outreach team. Including capacity, critical care and Outreach provisions and structures, staffing, funded skill-mix, escalation pathways, and remit (paediatrics, maternity, adults, specialist).
    b. MR Implementation: Including dates and proportion of wards that the implementation covers.

2. The **Outreach Activity** data collection (from a 7-day period) will include:
    a. Deteriorating patients survey (referring to the patients reviewed by the Outreach team):
        - Age group

- Referral and review details (timings, reason/trigger for referral)
- Reasons for the referral e.g. physiological trigger, Martha's Rule
- Interventions/management changes in broad categories (eg. fluids changes, O2 changes, new medication prescription, increased monitoring, critical care admission)
- 24 hr generic outcomes (e.g. EWS score, critical care admission, death)

b. **Workload survey (referring to the data collection period and recorded every 24 hours):**
   - Number of patients referred to Outreach team (including details on referral pathway and nature of review)
   - Number of patients referred via Martha's Rule (including details on nature of review)
   - Critical care admission referrals and decisions

4.3 Data collection

No patient identifiable data will be collected. All data will be collected in standardised forms. An initial recruitment questionnaire will lead to a Site Survey, followed by the 7-day Outreach Activity (using the Deteriorating patients survey and Workload survey). Data will be collected through secure webforms (implemented on REDCap) with pre-determined data fields and entry choices. Any temporarily recorded hard copy data collection forms at local sites should have their data uploaded to REDCap and be destroyed securely afterwards.

Patient record access will only be needed for local teams with access for clinical care and audit purposes at each centre, performed by members of the local study team. The patient will not be contacted directly in any capacity during their inpatient stay or after the study and no direct involvement of the study team in patient care will occur. Site identifiers will be encoded. The key linking site ID and hospital name will be kept securely on a UCLH computer. Data will only be entered by teams with local governance and permissions that have access to data and patients charts as part of their routine clinical care. No information will be collected that does not pertain to usual patient care. No interventions that are not part of routine patient care will be performed. Data will be analysed for the survey cohort to answer the questions outlined in the service evaluation aims and objectives, and will be performed on the complete data with only aggregate results published. Site-level aggregate data may be confidentially released to individual Site Leads upon their request.

4.4 Data handling and security

The electronic database will be kept on a secure platform managed by REDCap, only investigators involved in the study will have access to the database. The participating log, which links each site identification number to the trust and hospital, will be stored securely and separately from the study data, with access restricted to investigators involved in the study. Subsequent analysis will be carried out using aggregate and pseudonymised data only on an approved server within a trusted research environment for safekeeping of data. Pseudonymised data may be shared by encrypted email between University and NHS accounts. Only aggregated results without identifiable information will be published. Requests for data for sub-studies or secondary analyses will be considered with appropriate data governance in place.

All study documentation will be kept for a minimum of 5 years from the protocol defined end of study point. When the minimum retention period has elapsed, study documentation will be destroyed with permission from the Sponsor.

5. Publications and governance

5.1. Authorship and Publication

The study will be conducted in the name of the **"The DESERVE study investigators"** and all publications arising from this study will be under this name, with only the study committee and PIs named individually. A detailed appendix will be submitted to acknowledge the relative contribution of all participants:

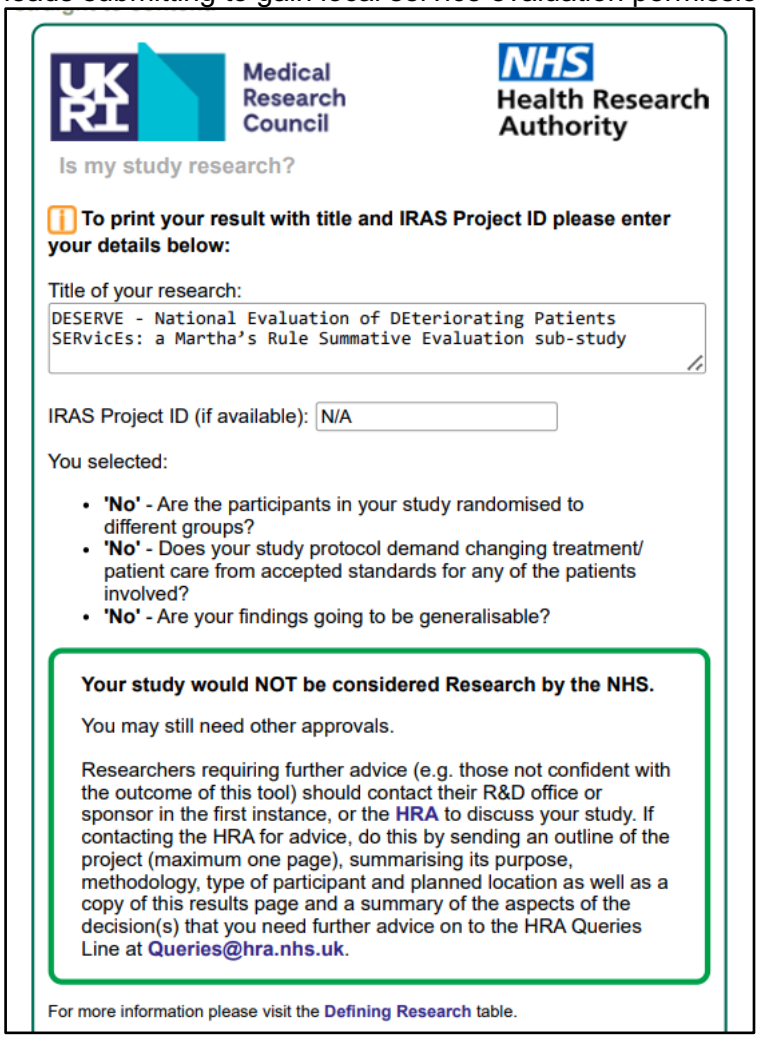
Site Leads and local Collaborators

a. Sites will be listed alphabetically
b. All Site Leads whose sites contributed data will be named and listed within the collaborative authorship section
c. All local Collaborators as agreed within each site will be named and listed within the collaborative authorship section

Only the members of the study management committee will be eligible to present study material at conferences, which will be in the form of standardised slides. Individual sites must agree to not publish data outside of this study.

5.2 Governance & ethical considerations

This study is a service evaluation, centrally registered at UCLH (the sponsor site) and involves collection of de-identified information resulting from standard care provided by Outreach teams. The study does not involve any interventions and only evaluates care given. Individual sites will acquire local service evaluation governance. We anticipate that this protocol will serve as a guide for site leads submitting to gain local service evaluation permissions/governance.



6. Funding

NIHR Award: NIHR505847 – MArtha's Rule Summative evaluation Team (MARS Team)

7. Contacts:

Email: marse@ucl.ac.uk

Website https://psrc-network.nihr.ac.uk/marthas-rule-summative-evaluation/

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