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Service evaluation of cross-specialty UK rapid sequence intubation events

Submission date
07/01/2026

Recruitment status
Not yet recruiting

Registration date
23/01/2026

Overall study status
Ongoing

Last Edited
15/01/2026

Condition category
Signs and Symptoms

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[X] Record updated in last year

Plain English summary of protocol
Background and study aims
When patients need emergency care to support their airway and breathing, whether for urgent surgery or because they are critically ill, medical professionals perform a procedure called a rapid sequence intubation (RSI). A breathing tube is placed into the windpipe to keep the airway open and ensure oxygen reaches the lungs. This is performed using a series of steps to reduce the risk of stomach contents travelling up the food pipe and down into the lungs (aspiration), leading to chest infection (pneumonia), breathing difficulties and potentially death. RSI was a well-described technique first published in 1970. However, since the original description, patient populations and anaesthetic techniques have evolved, and there is now wide variation in what medical professionals believe constitutes an RSI and when and how they perform it.

This study aims to understand how RSI is currently performed in hospitals across the UK. The expected outcomes are to gain an up-to-date, in-depth understanding of RSI practice in the UK; identify practices that may be particularly effective and safe; develop hypotheses that will guide further research to improve clinical practice and patient safety in this area; and inform the development of consensus definitions of RSI.

Who can participate?
Patients ≥18 years (known or believed), in-hospital (within NHS hospital grounds), experiencing RSI events confirmed by anaesthetic, emergency medicine and/or critical care teams.

What does the study involve?
1) A survey of intensive care, emergency departments and theatres to examine what protocols and equipment they have available for RSI and what training they run to support this
2) An observational study where medical professionals report how and why they perform RSI in real-life situations
3) A survey of doctors, of different grades and specialities, assessing when and how they would perform an RSI in different cases, using clinical vignettes

What are the possible benefits and risks of participating?
By defining how RSI is practised today, we believe this research will improve training, make recommendations for best practices and support medical professionals across a range of

disciplines in delivering the safest and most clinically effective care possible for patients undergoing emergency airway management.

There are no participants in this observational service evaluation; only anonymised, non-identifiable data are collected, with no impact on patient care and no anticipated risk. The findings may contribute to improved understanding of current rapid sequence intubation practice and inform future quality improvement and guidance.

Where is the study run from?
University Hospitals Bristol and Weston, UK.

When is the study starting and how long is it expected to run for?
March 2026 to March 2027.

Who is funding the study?
Difficult Airway Society, UK.

Who is the main contact?
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Contact information

Type(s)
Principal investigator, Public, Scientific

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Difficult Airway Society grant application number
G.03.25

Study information

Scientific Title
Service evaluation of cross-specialty UK rapid sequence intubation (RSI) events

Acronym
SECURE

Study objectives
SECURE will be a cross-sectional, prospective service evaluation that aims to characterise in-hospital RSIs in adult patients across NHS hospitals, as performed by anaesthesia, intensive care medicine (ICM) or emergency medicine (EM). The objectives will be to: describe the availability of resources and local governance surrounding RSI performance; capture a snapshot of RSI events to describe contemporaneous practice; estimate the incidence and describe the immediate complications of RSIs, and evaluate drivers of variation in individual self-reported RSI practice. The findings will be audited against current national and international guidance for undertaking RSI including those of the Project for Universal Management of Airways (PUMA) recommendations for undertaking RSI and upcoming UK guidance from the RCoA and DAS.

Ethics approval required
Ethics approval not required

Ethics approval(s)

Primary study design
Observational

Secondary study design
Epidemiological study

Study type(s)

Health condition(s) or problem(s) studied
Rapid sequence intubation (RSI)

Interventions
SECURE will consist of three separate surveys: 1) Site Survey of RSI-related resources by Site Leads, 2) Vignette-based Survey of individual self-reported RSI practice across clinical vignettes, and 3) Activity Survey of actual RSI events by intubating teams. Survey content has been informed by current literature, intubation registries (such as EMAR), and recommendations from organisations such as DAS. Internal review by cross-specialty expert advisers has been undertaken, followed by informal piloting at several study sites.

Each survey follows an international consensus-based checklist methodology for reporting of survey studies (CROSS). All survey forms (Case Report Forms, CRFs) will be created using REDCap (https://project-redcap.org), a secure web application for online surveys, and made available to submitting teams or individuals via QR code. These will be built by a data management expert at the sponsor site.

1) Site Survey
Site Survey CRFs will be completed by Site Leads during a one-month study window (1st - 30th March 2026). Depending on in-hospital services available, Site Leads will complete up to six CRFs, one for each of the following clinical areas: general theatres/recovery; obstetric theatres /recovery; remote anaesthesia areas (e.g. radiology, ECT); resuscitation team areas (e.g. hospital wards); critical care areas (ICU and HDU), and the emergency department.

The survey will be a baseline evaluation of resources supporting RSI events across four domains: hospital characteristics, staff infrastructure, physical equipment and information governance.

Specific questions will revolve around the accessibility in terms of patient monitoring, pre- and per-oxygenation, drug management, laryngoscopy, intubation (including rescue techniques), ventilation, personnel, staff training, relevant policies/guidelines, and learning opportunities. The results of the survey will help inform whether RSI resource availability or limitation varies across the UK.

2) Vignette-based Survey
The Vignette-based Survey CRF will be distributed by cross-specialty Regional and Site Leads over a one-month collection window (1st – 30th June 2026). Participants will be clinical practitioners in anaesthesia, ICM, or EM who are airway-trained (defined as having completed or reached the equivalent level of competence as that described in the RCoA "Initial Assessment of Competency") and involved in RSI decision-making. The survey will complement the Activity Survey of intubating team practice by seeking to identify the drivers of variation in self-reported practice.

Individual practitioners will be surveyed on their choice of RSI components and techniques across the same selection of iterative, factorial clinical scenarios. The survey methodology will offer a base vignette as a baseline measurement without any clinically complicating RSI risk factors. This will be followed by a small number of factorial vignettes, each with a single additional clinical risk factor that might trigger use of RSI, to enable comparison with baseline practice. Specific risk factors of interest will include pulmonary aspiration and other physiological challenges related to airway management, such as altered respiratory function, haemodynamic status, and neurological status.

3) Activity Survey
The Activity Survey aims to provide a snapshot of real-world RSI events across different clinical areas, hospital sites and UK regions. The Activity Survey will characterise the environmental, patient-related, and technical aspects of user-defined RSI events (i.e. an event the reporter considers to be an RSI) and will also document and estimate the incidence of immediate complications following RSI (between induction and up to 30 minutes after the airway has been secured).

Data will be collected prospectively over a continuous 14-day period within a broader data collection window (13th April - 25th May 2026). Exact dates will be agreed locally to enable simultaneous data collection across all clinical areas at each study site. Individual clinicians within intubating teams will complete the CRF contemporaneously for user-defined RSI events. Local teams will be advised to flag erroneous or duplicate entries to the central team.

The Activity Survey will capture data on situational, patient-related and technique-specific factors, as well as on pre-specified immediate complications. Core outcomes from Airway Terminology and Outcome Measures (ATOM) will be followed as closely as possible, where available, for airway-specific immediate complications.

Data from all three surveys will be uploaded immediately to a central, secure REDCap database at the sponsor site. After submission, to ensure compliance with data protection and IG standards, no patient information (or unique identifiers) will be accessible by local teams. Database access will be restricted to selected members of the SECURE Investigation Group, who will monitor the data regularly for accuracy and completeness.

The project statistician has been consulted on the design of each survey and to improve analysis workflows. As a descriptive service evaluation, no formal sample size calculation was performed. The final analysis will be conducted using complete CRF entries only and incomplete entries will

be excluded. After cleaning and analysis, data will be archived in accordance with the Information Governance policy of the sponsor site (UHBW) for five years maximum with our PI acting as the custodian.

Completion of the Site Survey at each site will be a mandatory prerequisite to the Activity Survey and we will expect near 100% capture. The Activity Survey capture rate will be estimated based on denominator data from previous UK studies, including NAP4. Response rates for the Vignette survey will be estimated using publicly available clinician numbers from the General Medical Council and specialty colleges.

Data will be primarily categorical, with pre-populated answers, except for a few free-text questions (whole number entry). Full descriptive analysis for each survey will include absolute numbers/percentages within categorical groups and some medians / inter-quartile ranges (IQR, 25th to 75th percentile). Methods will include the x2 test or exact tests as appropriate.

Additional analysis will be conducted in collaboration with the statistician. This will include a more detailed exploratory statistical analysis for the Activity Survey around immediate complications and risk factors (situational, patient and technical factors). Logistical regression using the direct method will be used to calculate the odds of success of intubation on the first attempt. For the Vignette-based Survey, we will undertake mixed-effects modelling to analyse practitioner responses.

All tests will be two-tailed, and where possible, actual P-values (level <0.05) and 95% confidence intervals (CI) will be reported. We will summarise responses to all survey questions, identify themes and consensus points, and explore variability in responses (cross-specialty, between different types of NHS hospital and inter-regionally in the UK).

Intervention Type
Other

Primary outcome(s)
1. User-defined RSI events measured using data collected from Case Report Forms (CRF), stored in the REDCap database, on clinician reporting over the 14 day period at one time point

Key secondary outcome(s))

Completion date
01/03/2027

Eligibility

Key inclusion criteria
RSI events meeting ALL the following criteria:
1. In-hospital (within NHS hospital grounds)
2. Patients ≥18 years (known or believed)
3. By anaesthetic, emergency medicine and/or critical care teams

Repeat RSIs in the same patient will be included as a new event

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 years

Upper age limit
110 years

Sex
All

Total final enrolment
0

Key exclusion criteria
RSI events meeting ANY of the following criteria:
1. Out-of-hospital (outside NHS hospital grounds)
2. Patients <18 years of age (known or believed)
3. Not by anaesthetics, emergency medicine or critical care teams
4. Patients with a functioning tracheostomy in situ
5. Intubations during cardiac arrest

Date of first enrolment
01/03/2026

Date of final enrolment
30/06/2026

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
University Hospitals Bristol and Weston NHS Foundation Trust
Bristol Royal Infirmary
Marlborough Street
Bristol
England
BS2 8HW

Sponsor information

Organisation
University Hospitals Bristol and Weston NHS Foundation Trust

ROR
https://ror.org/03jzzxg14

Funder(s)

Funder type

Funder Name
Difficult Airway Society

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Data sharing statement to be made available at a later date