



## Executive Summary

The BTS Respiratory Support Audit is the first national audit of enhanced respiratory care for acute hospitals in the UK. It builds from the previous BTS Acute Non-Invasive Ventilation (NIV) Audits and a successful pilot Respiratory Support Audit in 2021-22. The Respiratory Support Audit ran from 1 February – 31 March 2023, with a data entry period of 1 February - 30 June 2023.

The audit had two parts:

- An organisational questionnaire – one record to be submitted by each participating site to provide information on available resources for each institution.
- A patient questionnaire – one record per patient.

Below is a summary of the key findings for the organisational and patient level parts of the audit.

### Overall findings

- Hospital mortality was much lower for patients in hospitals with a Respiratory Support Unit (23%) than those in non-RSU hospitals (35%).
- 60% of hospitals had a designated RSU, but only 42% of patients requiring enhanced respiratory care were treated in an RSU.
- 44% of hospitals were routinely staffed at a 1:4-1:8 nurse-to-patient ratio, despite national standards stating that the ratio for enhanced care should not fall below 1:4.

### Key findings of the Organisational Audit: Completed for 115 Hospitals

- Compared to pre-pandemic studies, there has been no meaningful increase in the provision of enhanced respiratory care.
- Only 60% of hospitals had a designated RSU.
- Of those with a designated RSU, few met all the key staffing and infrastructure standards. For example, only 25% of designated RSUs were routinely staffed at a 1:2 nursing ratio.
- 44% of hospitals had a nurse-to-patient ratio of 1:4-1:8. National guidance recommends 1:2 nursing if starting acute NIV (approximately 50% of RSU caseload) and cautions that enhanced care cannot be consistently delivered at 1:4-1:8.
- Only 30% of hospitals reported having 24/7 consultant medical supervision of respiratory enhanced care.
- Central monitoring of patients' vital signs was only available in 22% of hospitals with no designated RSU, and 64% of hospitals equipped with an RSU.

### Key findings of the Patient-level Audit: 4,136 Individual Patient Records From 119 Hospitals

#### Treatment settings

- Only 42% of patients requiring enhanced respiratory care were treated in an RSU.
- Even if a hospital was equipped with an RSU, patients were frequently managed elsewhere; in RSU-equipped hospitals, only 64% of patients who required enhanced care received this care in an RSU.
- Escalation of patients to critical care was extremely low (3% of whole cohort), even in the event of very early failure of non-invasive support at ward level.



### Reason for enhanced respiratory care admission

- Acute hypercapnic respiratory failure treated with NIV was the most common reason for admission for enhanced respiratory care (48%), followed by acute pneumonia (16%), non-respiratory hospital capacity issues (6%) and COVID-19 (5%).

### Use of respiratory support

- Non-invasive ventilation (NIV) was used in 63% of the cases, and High-flow oxygen therapy (HFT) for 25%.
- Despite the high-acuity nature of HFT use (average 60% oxygen requirement), patients were more likely to receive HFT in routine (non-enhanced) ward settings compared to other patients receiving enhanced care.

### Survival outcomes

- Hospital mortality was much lower for patients in RSU-equipped hospitals (23%) compared to those in non-RSU hospitals (35%).
- Case-mix adjustment using the NIVO score for patients with COPD treated with NIV, showed lower mortality in enhanced care settings (33%) compared to a standard ward settings (46%). This variation widened the more acutely ill the patient.
- Patients with acute pneumonia had a survival rate of 64% in an RSU or equivalent setting, compared to 48% in standard wards.

### National Improvement Objectives

Based on the above findings, three national improvement objectives have been identified:

1. Each hospital that admits patients with acute lung disease should have an RSU or RSU equivalent to provide enhanced care. Current 60%: **Target 100%**
2. Acute respiratory support (NIV, HFT, CPAP) for patients with acute lung disease should be delivered in an RSU or equivalent area with appropriate staffing levels (including HDU and critical care areas) and should not be used routinely in unenhanced, standard ward areas. Current 49%: **Target >75%**
3. Patients with COPD who experience early NIV failure (within 2 days of starting) in the absence of high-risk prognostic factors (e.g. if NIVO score < 5) should be discussed with critical care to consider the merits of treatment escalation. Current 17%: **Target >50%**

**Timeline:** Within 12 months of audit publication.

Further information on findings and audit conclusions can be found in two main reports, found here (<https://www.brit-thoracic.org.uk/quality-improvement/clinical-audit/national-respiratory-support-audit-2023/>).