

# Improving NIV care

## Project Brief

### Case for Change

The British Thoracic Society (BTS) has conducted regular audits of acute non-invasive ventilation (NIV) for over 10 years, which have sadly demonstrated worsening patient outcomes. These results prompted a National Confidential Enquiry into the care of patients treated with NIV (NCEPOD 2017) which subsequently identified many areas for improvement. As a result of this enquiry, the BTS developed quality standards for acute NIV (2018). Since their introduction, there has been a slight improvement in mortality rates as identified in the 2019 BTS NIV audit. However, mortality rates remain higher than in other comparable countries at 26%.

Improving the outcomes of patients with COPD is a key priority within the NHSE Southwest Respiratory Network. The delivery of this Quality Improvement project will work to support this priority given that NIV is a core treatment in patients with COPD admitted with acute hypercapnic respiratory failure. It has been demonstrated that using NIV appropriately in this patient group improves mortality rates.

### The Approach

The need to improve NIV care is clear but an approach that consistently delivers improved practice has not been found. This project proposes monitoring both the delivery of care and outcome from NIV using 'live' information presented in time series charts rather than annual audit. The provision of 'live' performance feedback is likely to lead to more rapid improvement than the approach taken to date.

Prior to Covid-19, a group of NIV doctors, nurses and physiotherapists met to plan an improvement collaborative, however this proved unsuccessful due to a lack of project management support, ring-fenced time and administrative support. The West of England AHSN involvement will address these barriers.

This project will also seek to build upon the Respiratory Network established through the COPD and Asthma Patient Safety Collaborative Adoption and Spread Programmes, who also highlighted that there is a need to deliver a Quality Improvement project focused on improving outcomes for patients treated with acute NIV.

Quality improvement methodology will be used throughout the project, building capability and capacity for those involved.

### Project Aim

The aim of Improving NIV care is to reduce mortality rates to 10% or lower for patients who require acute NIV for Type II Respiratory Failure. This will be achieved through the implementation of 'NIV 5', a regional standardised care bundle.

### Methodology

Working with key stakeholders in the acute hospitals in the West of England, the project will seek to improve the implementation and usage of NIV 5. NIV 5 is a regional standardised care bundle, based on the BTS quality standards, which includes:

- Appropriate case selection – NIV is only recommended in acute Type 2 Respiratory Failure where it is proven to be effective
- Treatment Escalation Plan in place - RESPECT is to be completed with specific reference to suitability for invasive ventilation or NIV as ceiling of treatment.
- NIV to be started within 60 minutes of decision to treat
- Inspiratory pressure of 20cmH<sub>2</sub>O to be achieved within 60 minutes
- Arterial or capillary blood gas to be repeated within 2 hours of starting NIV

In addition, the project will aim to improve staff knowledge of NIV care and improve the patient experience through improved communication.

## Primary Outcome Measure

- The percentage of patients who receive acute NIV and die during the hospital admission.

## Secondary Measures

- The percentage of patients receiving the NIV care bundle.
- The percentage of patients receiving all four elements of the NIV care bundle.
- Length of stay of patients receiving the NIV care bundle.

## Process Measures

- The percentage of patients who are receiving NIV who have Type 2 Respiratory Failure and a diagnosis where NIV is proven to be effective.
- The percentage of patients who had a Treatment Escalation in place prior to commencing treatment.
- The percentage of patients who received NIV within 60 minutes from the point of decision to treat.
- The percentage of patients who receive an inspiratory pressure of >20cmH<sub>2</sub>O within the hour. Where this is not achieved with good reason, the reason will be articulated.
- The percentage of patients who receive a repeat arterial or capillary blood gas within 2 hours of starting NIV.
- The time of day that NIV was initiated.
- The day of the week that NIV initiated.
- The role of the clinician that initiated NIV.
- Number of staff trained on the NIV 5 care bundle.
- Staff confidence captured through a staff survey.

## Evaluation

The project evaluation will be completed by Spring 2024. The evaluation will aim to explore 4 key themes:

1. To demonstrate whether mortality rates improve through the implementation of the NIV 5 care bundle.
2. To understand whether staff confidence and competence improves as being part of the Improving NIV care project.
3. To learn from patient experience in order to improve NIV care.
4. To create standardisation of how NIV care is delivered by using a bundle and to investigate which elements of the bundle work most effectively.