

A series of audits conducted by the British Thoracic Society (BTS) have demonstrated worsening outcomes. These results prompted a National Confidential Enquiry into the care of patients treated with Non Invasive Ventilation (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, at 26%, mortality rates remain higher than in other comparable countries.

The NIV 5 care bundle is based upon findings from the NCEPOD Review, 2017.

- These have been identified as key findings and present clear opportunities to improve outcomes.
- The NCEPOD review findings were based on 678 cases.
- Overall, 42.4% of cases identified that ventilator management was not appropriate.
- 60.4% of cases identified room for improvement in ventilator management decisions.



## Appropriate case selection

NIV is only recommended in acute Type 2 Respiratory Failure where it is proven to be effective.

### Evidence

In nearly a fifth of cases, treatment with NIV was not an appropriate intervention (66/351; 18.8%). In this group, 42 out of the 66 patients died.

In patients who died, the average starting pH was 7.261. In this group, the pH failed to correct and the final pH on stopping NIV remained acidotic at 7.317.

*NCEPOD Review, 2017*



## Treatment Escalation Plan in place

A RESPECT form is to be completed with specific reference to suitability for invasive ventilation or NIV as ceiling of treatment.

### Evidence

In 77 cases where reviewers felt that NIV treatment failure was predictable, 26 patients had no treatment escalation plan in place.

In 36 patients, the reviewers considered that the initial acidosis was so severe that intubation would have been appropriate. Of these, 14/36 were not referred to critical care.

*NCEPOD Review, 2017*



## NIV to be started within 60 minutes of decision to treat

### Evidence

There was a delay in starting NIV in 27.4% patients in the view of the reviewers and in 15.0% in the view of the clinicians.

When NIV was initiated in the first 24 hours of admission, mortality was 25.1%.

Initiation of NIV in the emergency department or the acute medical unit was associated with a mortality rate of 25% and 31.5% respectively. In other areas, the mortality rate was 40% or higher.

*NCEPOD Review, 2017*



## Inspiratory pressure of 20 cm H2O achieved within 60 minutes

### Evidence

The ongoing ventilator management after initial set up was not appropriate in 34.7% cases.

In 51.4% of the cases reviewed, ventilator settings were not adequately documented.

In 20% of cases, the inspiratory pressure was not increased at all after starting NIV.

In 45% of cases, the inspiratory pressure remained below 20 cm H2O for the whole of the NIV episode.

*NCEPOD Review, 2017*



## Arterial or capillary blood gas to be repeated within 2 hours of starting NIV

### Evidence

Blood gas sampling was too infrequent in almost a third of cases (32.3%).

*NCEPOD Review, 2017*

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improving NIV care**  
<https://www.weahsn.net/niv>