



Better outcomes with non-invasive ventilation (NIV)

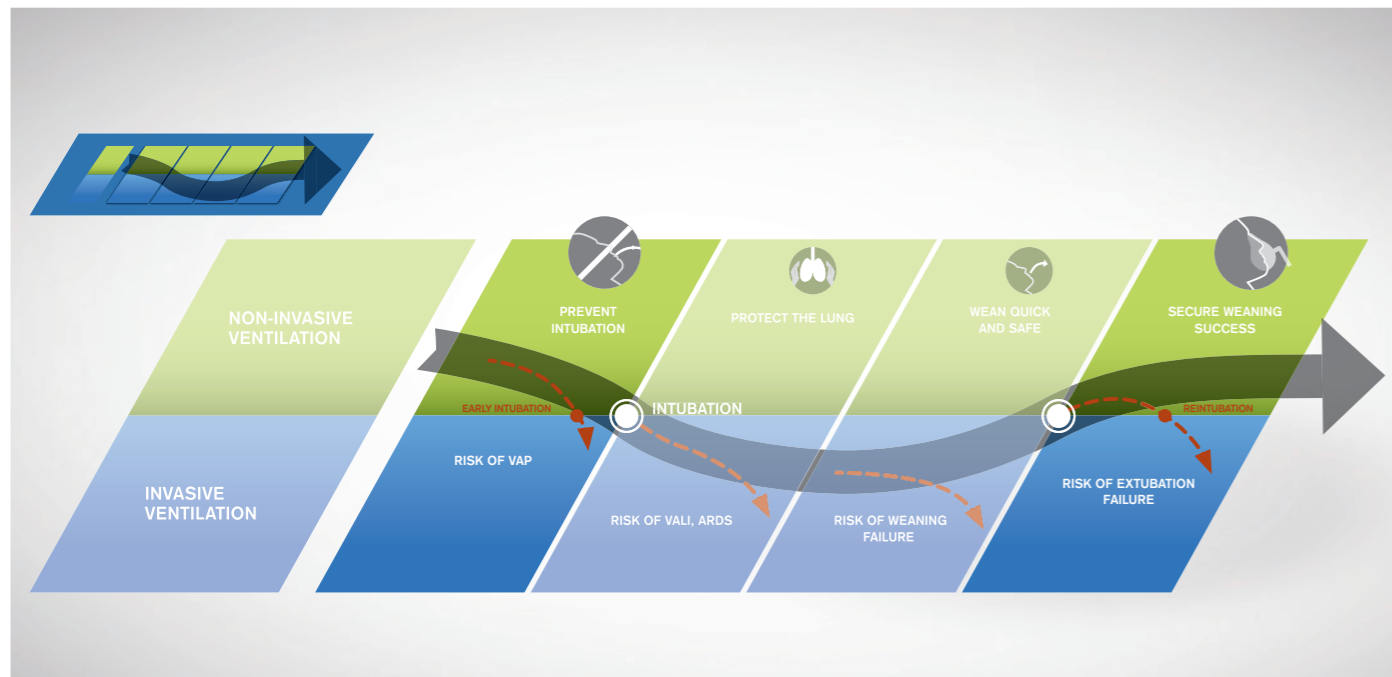
Non-invasive ventilation (NIV) is any form of ventilator support applied to patients without the use of an endotracheal tube. Therefore, potential complications of invasive mechanical ventilation can be avoided. It has been applied to many different patients with acute and chronic respiratory failure and is also used to support weaning therapy.

“Patients with mechanically-assisted ventilation often develop **ventilator-associated-pneumonia** which potentially lead to a longer hospital stay.”¹

“Oversedation during mechanically-assisted ventilation is associated with **worse clinical outcomes, including longer time on mechanical ventilation, and increased brain dysfunction.**”²

“Complications from intubation can have significant **morbidity and mortality risks.**”³

Prevent intubation as long as possible and secure the weaning in the recovery phase



MECHANICAL VENTILATION

As non-invasive as possible, as invasive as necessary. Along the Respiration Pathway a variance and diversity of treatment tools clearly improve the clinical decision-making.

NIV with automatic leak compensation in all ventilation modes supports the seamless transition from one application mode to another supporting minimal invasiveness.

Non-invasive ventilation (NIV)

ONE DEVICE FOR INVASIVE AND NON-INVASIVE THERAPY

This approach simplifies the continuous implementation of an optimal ventilation strategy. The NIV option means that non-invasive ventilation can be applied ...

- in all ventilation modes*
- with comprehensive monitoring
- with alarm adaptation
- with automatic leak compensation

You can start with NIV whenever the patient is ready for it, without the need to change devices. Should intubation be necessary the therapist can quickly and easily switch to an invasive ventilation mode.

PREVENT AND SHORTEN INTUBATION TIME

Intubation has been linked to an increased risk for the development of ventilator-associated pneumonia², weaning problems and patient discomfort. Due to these risks, both intubation and invasive ventilation should be avoided whenever possible. NIV helps to avoid re-intubation and shorten recovery times^{1,4}. The use of NIV has been expanded to intensive care applications, including the treatment of acute chronic respiratory failure.³ It is an excellent choice for intermittent application when partial respiratory support is needed. NIV applied as a weaning method in COPD enables faster weaning and has a positive effect on mortality rates.⁵



NIV with the Evita V800



NIV with the Savina 300

WHAT IS NIV?

NIV – non-invasive ventilation is a broad term for any ventilation therapy applied in a non-invasive way, e.g. via a mask or nasal prongs. Therefore, NIV, or NPPV (Non-invasive Positive Pressure

INTELLIGENT ALARMS AND PARAMETER ADAPTATIONS

When non-invasive ventilation is chosen, alarms that are not applicable will not be displayed. In order to avoid artefacts, various alarm settings may be deactivated (e.g.: MVE, Vti high and Apnea monitoring). For improved patient safety, a clearly visible displayed message alerts the user to any deactivated alarms.

SENSITIVE LEAKAGE COMPENSATION

Leak compensation is an essential part of NIV therapy. With leakage compensation the flow-trigger sensitivity is adjusted according to leak size. In volume-controlled modes, the patient always receives the set tidal volume. In pressure-controlled modes, the set pressure levels are continuously maintained. Even in the presence of large leaks, our ventilators flexible leak compensation system continuously provides the exact amount of breathing gas needed to complement the patient’s flow demand.

ANTI-AIR-SHOWER

In case the mask has been taken off the Anti-Air-Shower function detects this disconnection and reduces the device given high flow (e.g. for leakage compensation) to a minimum level. This may help to reduce a possible contamination of caregivers and ambient air. Accordingly, reconnection is detected and ventilation will continue automatically with the previous settings.

Ventilation), is also very often referred to as “mask ventilation”. This is in contrast to “invasive ventilation”, where an endotracheal tube or a tracheal canula serves as an invasive interface between the patient and the ventilator.

1 Kalanuria A, Zai W, Mirski M. Ventilator-associated pneumonia in the ICU. Crit Care (2014) 18: 208. <https://doi.org/10.1186/cc13775>

2 Hughes CG, McGrane S, Pandharipande PP. Sedation in the intensive care setting. Clin Pharmacol. 2012; 4: 53–63

3 Loh KS, Irish JC. Traumatic complications of intubation and other airway management procedures. Anesthesiology Clinics of North America [01 Dec 2002, 20(4):953-969]

*In neonatal ventilation only in SPN-CPAP and PC-CMV

1 Ferrer M, et al. Noninvasive ventilation in severe hypoxemic respiratory failure: a randomized clinical trial. Am J Respir Crit Care Med Vol 168. pp 1438–1444, 2003

2 Collard HR, Saint S, Matthay MA. Prevention of ventilator-associated pneumonia. Ann Intern Med. 2003 Mar 18;138(6):494-501

3 Becker H F, Schönhofer B, Burchardi H. Nicht invasive Beatmung. Vorwort, S 59; Thieme 2005

4 Ram FSF et al. Non-invasive positive pressure ventilation for treatment of respiratory failure due to exacerbations of chronic obstructive pulmonary disease. The Cochrane Library 2005, Issue 4

5 Nava S, Ambrosio N, Cini E, et al. Noninvasive Mechanical Ventilation in the Weaning of Patients with Respiratory Failure Due to Chronic Obstructive Pulmonary Disease. Ann Intern Med. 128: 721 – 728; 1998

How rotation strategies can improve NIV tolerance

Non-invasive respiratory support encompasses CPAP. Positive pressure respiratory support is delivered by utilising an external interface such as a Nasal mask, Oronasal mask, or Total-Face mask. Two key factors involved in successful NIV treatment are the rotation of the mask type and choice of interface. Studies have proven that alternating different mask types, from nasal to oronasal or Total-Face masks, improves the effectiveness of

treatment when treating acute respiratory failure. Furthermore, selecting the correct type of interface greatly reduces painful skin breakdown and ulcerations. Thus, an alternating interface strategy not only reduces the points of highest pressure, but also improves NIV tolerance and efficacy. We work together with you to find the best rotation strategies, both for mask and interface types, to promote your patient's comfort.^{7,8}



Full-face mask NovaStar® plus*



ClassicStar® NIV total-face mask



ClassicStar® plus nasal mask*



ClassicStar® plus NIV oronasal mask*

Improved outcomes have been shown with NIV

”NIV leads to a reduced number of complications by 62 % and treatment errors by 50%.“¹

”Early NIV reduces the need for intubation by 59 %.“^{2,3}

”NIV leads to a shorter stay on the ICU and a reduced length of hospital stay by average of 3 days.“⁴

”The mortality rate for COPD patients using non-invasive ventilation falls by 48 %.“³

”NIV increases the quality of life for patients.“^{1,5,6}

- 1 Ferrer M, et al. Non-invasive Ventilation during Persistent Weaning Failure. Am. J. Respir. Crit. Care Med. 2003
- 2 Elliott MW. Non-invasive ventilation for acute respiratory disease. British Medical Bulletin 2004
- 3 Ram FSF et al. Non-invasive positive pressure ventilation for treatment of respiratory failure due to exacerbations of chronic obstructive pulmonary disease. The Cochrane Database of Systematic Reviews 2004
- 4 Warren DK, et al. Outcome and attributable cost of ventilator-associated pneumonia among intensive care unit patients in a suburban medical center. Crit Care Med. 2003
- 5 Nava S, et al. Time of non-invasive ventilation. Intensive Care Med. 2006 Mar
- 6 Bülow HH, et al. Experiences from introducing non-invasive ventilation in the intensive care unit: a 2-year prospective consecutive cohort study. Acta Anaesthesiol Scand 2007

*not available in the US

7 Hilbert G, Gruson D, Gbikpi-Benissan G, Cardinaud JP. Sequential use of noninvasive pressure support ventilation for acute exacerbations of COPD. Intensive Care Med. 1997;23:955-961.

8 Ozyilmaz E et al. Timing of noninvasive ventilation failure: causes, risk factors, and potential remedies. BMC Pulm. Med. 2014; 14:19

NIV IS AVAILABLE FOR THE FOLLOWING DRÄGER ICU VENTILATORS:

- Evita® V800
- Evita® V600
- Evita® Infinity® V500
- Evita® V300
- Savina® 300 Select
- Savina® 300 Classic



D-5759-2018

Dräger Evita® V800

Not all products or features are for sale in all countries or are only available as an option.

TECHNICAL DATA EVITA V-SERIES

Option NIV alarms

MVe	0.01 ... 40 L/min or off
VTi high	0.110 ... 4 L or off
Apnea monitoring	5 – 60 s or off
Tdisconnect	0 ... 60 s
Ti max	0 ... 60 s

TECHNICAL DATA SAVINA 300

Option NIV alarms

MV low	0.2 ... 40 L/min or off
VTi high	0.06 ... 4 L or off; with Pediatric Plus 0.03 ... 4 L or off
Apnea monitoring	15 – 60 s or off
Tdisconnect	0 ... 60 s
Ti max	0 ... 60 s

CORPORATE HEADQUARTERS

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