EXTRAPULMONARY LUNG SUPPORT to avoid invasive mechanical ventilation in patients with hypercapnic lung failure
In a severe exacerbation of COPD the breathing pump is no longer able to meet the demand for ventilation. Due to the increased work of breathing and the resulting respiratory muscle fatigue, acute exacerbations (AECOPD) are often associated with hypercapnic lung failure (ventilatory failure). The therapy of choice for acute lung failure is the initiation of positive-pressure ventilation, which can be carried out either invasively (IMV) or non-invasively (NIV). Today NIV is considered standard therapy in respiratory failure due to AECOPD.1

NEW TREATMENT OPTIONS FOR LUNG FAILURE

New therapeutic strategies can be implemented to help avoid invasive mechanical ventilation after unsuccessful non-invasive ventilation (NIV) for hypercapnic lung failure.

| IMV results in poorer prognosis for COPD patients. Hospital survival rate between 31% and 76%. | Gain time to acclimatize the patient to NIV |
| From AECOPD avoids intubation and reduces mortality. | Avoid intubation when NIV is not tolerated |
| Up to 50% of patients with severe hypercapnic ARI and NIV require intubation and invasive mechanical ventilation during the course of their treatment and then have a poor prognosis. Measures to avoid IMV would appear to make sense. | Shorten the duration of IMV when intubation is unavoidable |
| The mortality risk increases with the duration of IMV. | Reduce analgesedation |
| Intubation was avoided in 90% of NIV non-responders with acute hypercapnic lung failure who were treated with extrapulmonary CO2 removal. | Reduce endotracheal tube-related side effects (VALI/VILI/VAP/VIDD) |
| The more severe the hypercapnia, the more efficiently extrapulmonary CO2 removal works. | Compensate for breathing pump failure through partial replacement of lung function |
| Intubation was avoided in 90% of NIV non-responders with acute hypercapnic lung failure who were treated with extrapulmonary CO2 removal. | Support ventilation (CO2 removal) |
| Support oxygenation by simply increasing the extrapulmonary blood flow. | Reduce O2 consumption of the breathing pump |

Interventional lung assist (iLA®) therapy is a well-established means of extracorporeal gas exchange in intensive-care medicine. The focus of iLA® is on highly effective CO2 removal. Combined with IMV it has been shown to enable lung-protective ventilation in ARDS and asthma. Minute volume, respiratory rate and peak inspiratory pressure are reduced significantly.

The high diffusion rate of CO2, which is 20 times higher than that for O2, together with the partial pressure gradient, allow maximum efficiency with low to moderate extrapulmonary blood flows.

The more severe the hypercapnia, the more efficiently extrapulmonary CO2 removal works.

Support oxygenation by simply increasing the extrapulmonary blood flow.

Innovative systems for extrapulmonary lung support enable new, user-friendly, highly effective solutions for gentler treatments in pulmonary medicine.

EXTRAPULMONARY BLOOD FLOW: AS HIGH AS NECESSARY – AS LOW AS POSSIBLE.

References
1 Chandra D et al. AJRCCM 2012;185(2):152-159.
EXTRAPULMONARY BLOOD FLOW: AS HIGH AS NECESSARY – AS LOW AS POSSIBLE.

**MID FLOW System Overview**

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<td>1  iLA activve®</td>
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<td>3  iLA® Membrane Ventilator</td>
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<td>5  NovaPort® twin 22/24 Fr</td>
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**MID FLOW**

EXTRAPULMONARY BLOOD FLOW

e.g., 1000 ml/min

TREATMENT COMPLEXITY

VASCULAR ACCESS

veno-venous

INVASIVENESS

moderate

AVOID INTUBATION WITH EXTRAPULMONARY CO₂ REMOVAL AND PARTIAL OXYGENATION

www.novalung.com – Your information source for extrapulmonary lung support

HAVE CLINICAL QUESTIONS?

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