

TwinStream™ ICU – The lung-protective ventilation in intensive care for acutely ill patients.

TwinStream™ ICU

offers oxygenation and ventilation with unsurpassed efficiency and safety. It is the only system on the market to offer pulsatile BiLevel Ventilation **p-BLV™** (see infobox). The **p-BLV™** module generates a pulsatile gas column. This facilitates optimal gas exchange, respiratory gas conditioning and transmission of the pressure wave amplitude into the lung. This represents a significant advantage over conventional ventilation systems.

TwinStream™ ICU

With **p-BLV™** provides the best ventilation method for patients with:

- Acute respiratory distress syndrome (ARDS)
- Pneumonia (ALI - VILI)
- Severe chest trauma in the context of polytrauma

After 4 hours of ventilation with **TwinStream™ ICU**, a significant improvement of the pulmonary condition is seen.

Conventional ventilation



TwinStream™ ICU
After 4 hours under **p-BLV™**



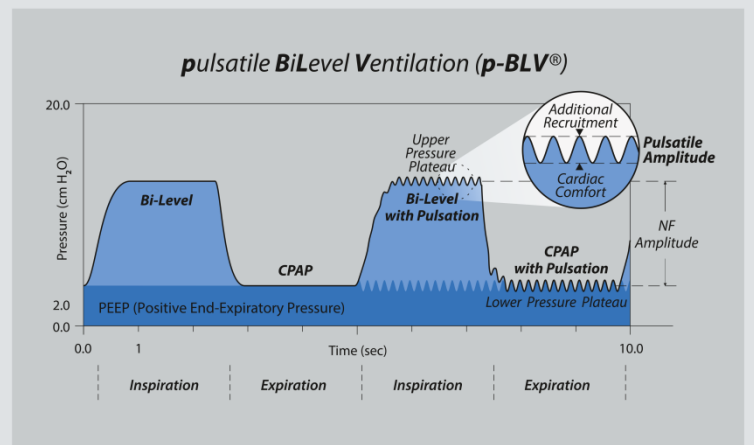
Infobox

Pulsatile BiLevel Ventilation **p-BLV™**

This innovative mode allows the application of a bi-phasic, time-cycled, pressure-controlled, variable flow ventilation, with or without a superimposed pulsatile component. The BLV of 1-100 breaths per minute can thus be supplemented with pulsations from 50 up to 1,500 per minute.

As a result of the pulsatile component, a forced mixing of the respiratory gases is produced at all levels of the respiratory system.

The normal frequency (NF) pulse is primarily responsible for ventilation. The high frequency (HF) pulse provides oxygenation, additional alveolar recruitment and haemodynamic stability.



TwinStream™ ICU – Case Reports from daily use

Case 1:

Servo, before TwinStream™ ICU

Day 1 TwinStream™ ICU

Day 2 TwinStream™ ICU

Day 6 TwinStream™ ICU

Day 9 TwinStream™ ICU



FiO₂: 100%
PEEP: 16cm H₂O
P_{max}: 32cm H₂O
RF: 14/min

FiO₂: 90%
PEEP: 17cm H₂O
PIP/MAP: 28/21
RF: 15/min, HF900

FiO₂: 60%
PEEP: 16cm H₂O
PIP/MAP: 27/21
RF: 15/min, HF900

FiO₂: 60%
PEEP: 17cm H₂O
I:E NF/HF: 1:1,5/1:1
RF: 15/min

FiO₂: 60%
PEEP: 18 H₂O
I:E NF/HF: 1:1,5/1:1
RF: 15/min

Case 2:

Servo, before TwinStream™ ICU

Day 1 TwinStream™ ICU

Day 2-3 TwinStream™ ICU

Day 4-5 TwinStream™ ICU

Day 6-7 TwinStream™ ICU



FiO₂: 100%
PEEP: 7cm H₂O
P_{max}: 32cm H₂O
RF: 25/min

FiO₂: 70%
PEEP: 16cm H₂O
PIP/MAP: 31/21
RF: 23/min, HF1000

FiO₂: 65%
PEEP: 15cm H₂O
PIP/MAP: 30/20
RF: 23/min, HF800

FiO₂: 50%
PEEP: 11cm H₂O
PIP/MAP: 26/15
RF: 22/min HF: 600

FiO₂: 45%
PEEP: 8cm H₂O
HF: 650
RF: 22/min

Case 3:

Servo

Day 1 TwinStream™ ICU

Day 2-3 TwinStream™ ICU

Day 4 TwinStream™ ICU

Day 5 TwinStream™ ICU



FiO₂: 75%
PEEP: 10cm H₂O
P_{max}: 30cm H₂O
RF: 17/min

FiO₂: 65%
PEEP: 12cm H₂O
PIP/MAP: 26/18
RF: 19/min, HF900

FiO₂: 60%
PEEP: 15cm H₂O
PIP/MAP: 27/20
RF: 19/min, HF100

FiO₂: 45%
PEEP: 14cm H₂O
PIP/MAP: 27/20
RF: 19/min HF:1000

FiO₂: 45%
PEEP: 15 H₂O
HF: 1000
RF: 19/min

TwinStream™ ICU

With **p-BLV™** we achieve:

- Rapid reopening of atelectasis
- Increased Secretolysis
- Increased gas exchange at lower airway pressures

TwinStream™ ICU

With **p-BLV™** we have no problems so far with:

- Desiccation of tracheal mucus
- Barotrauma
- CO₂ Elimination