



novalung
academy™

iLA® REGISTRY

June 2007 – July 2010



iLA[®] REGISTRY

- The iLA[®] registry consists primarily of the Clinical Support assisted first applications or in difficult clinical cases of the iLA Membrane Ventilator[®]. Therefore the patient data shown here represents a negative selection bias.
- All users worldwide are now invited to send their data.
- Data and results from experienced users can not yet be included.

NOVALUNG: SOLUTIONS FOR LUNG FAILURE



Through 2008
Patient sedated



2009
Patient awake



2011
Patient mobile

PATIENT POPULATION

Subgroup	Registry 2008 (n=200)	Registry 2009 (n=385)	Registry 2010 (n=500)
ARDS total	132	197	268
- of which analogous to Villar et al.*		1	2
- of which analogous to Terragni et al. **		5	7
Acute on chronic	6	98	125
- of which exacerbated COPD		57	84
- other acute on chronic		41	41
Weaning Support	0	8	14
Increased cranial pressure	2	6	9
Bronchopleural fistula	4	17	23
Bridge to Lung Transplant	2	6	7
Others	54	53	59

*Criteria analogous to Villar J et al. Crit Care Med 2006;34:1311-1318.

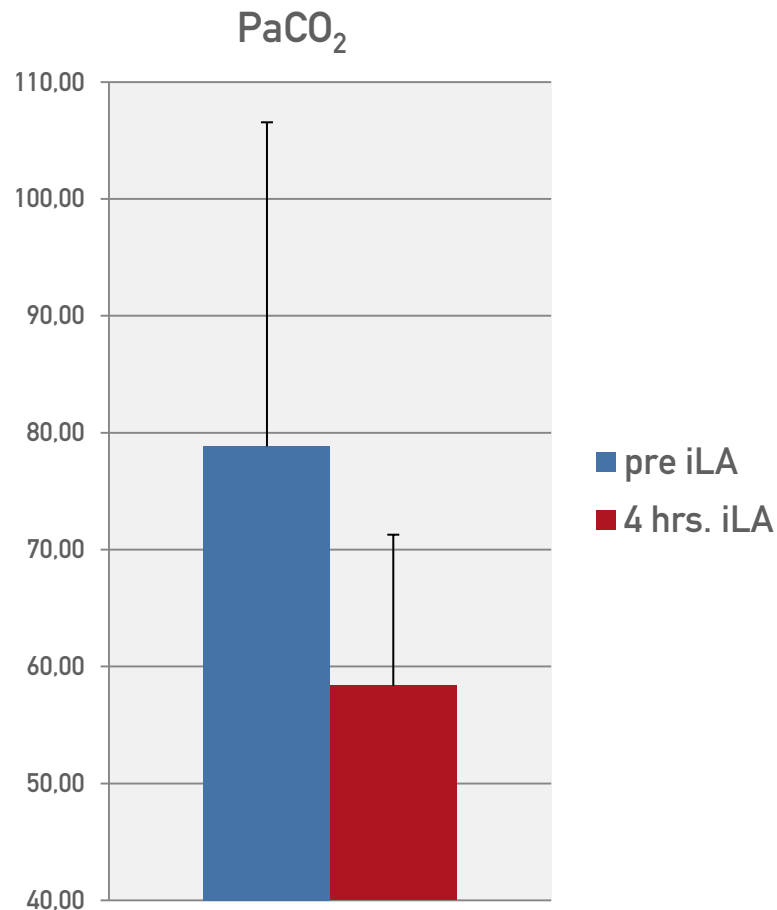
**Criteria analogous to Terragni PP et al. Anesthesiology 2009;111:826-834.

STABLE EFFECTIVITY DATA

TOTAL POPULATION RESULTS (N=500)

⇒ Confirmation of results from previous analysis

PACO₂ NORMALIZED RAPIDLY

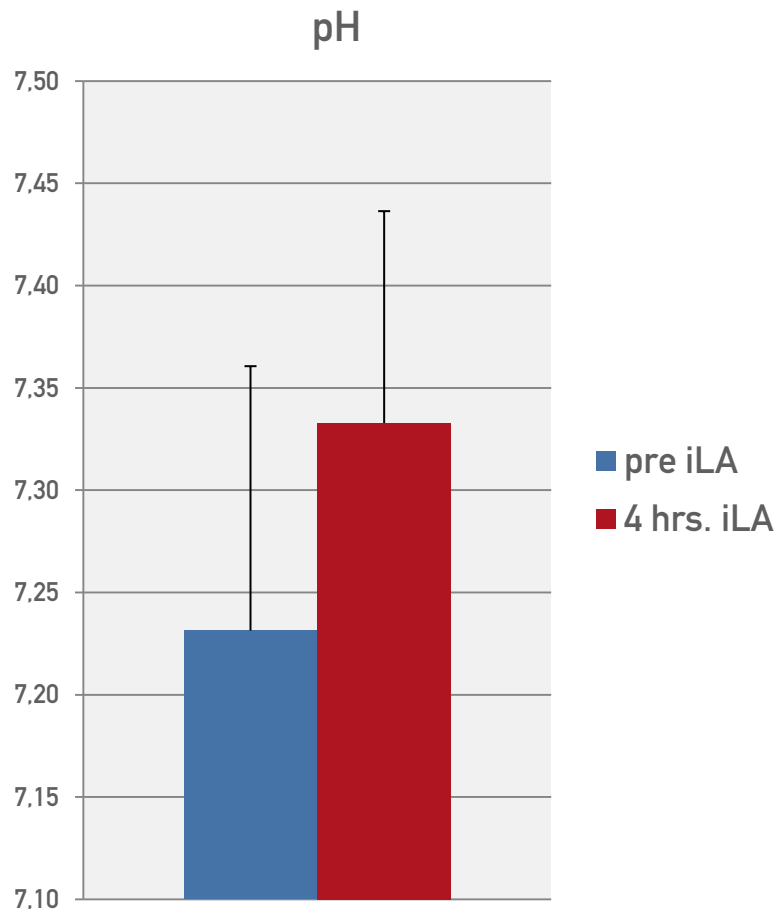


- PaCO₂ normalizes rapidly: an effect of physics and physiology

CLINICAL IMPACT:

- Reduction of the invasiveness of mechanical ventilation
- Sedation can be reduced rapidly and implementation of spontaneous breathing can be accelerated (e.g. in case of weaning, exacerbated COPD)

pH NORMALIZED RAPIDLY

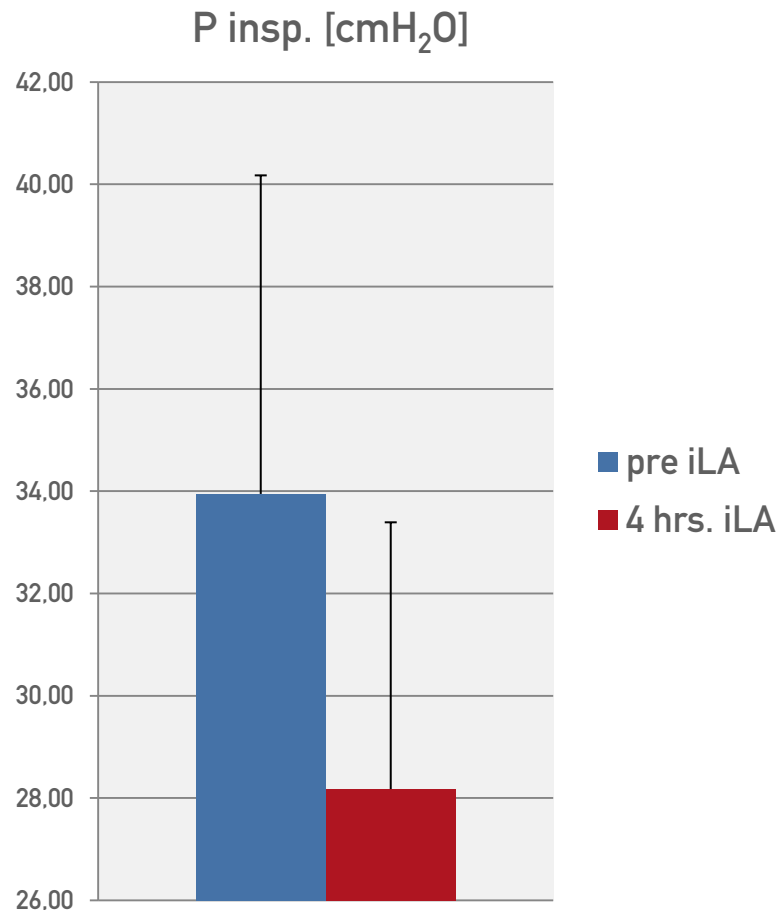


- pH normalizes rapidly with iLA[®]

CLINICAL IMPACT:

- Compensation of respiratory acidosis by iLA[®] instead of increasing tidal volumes and respiratory rate to help prevent VALI
- Preservation of renal function

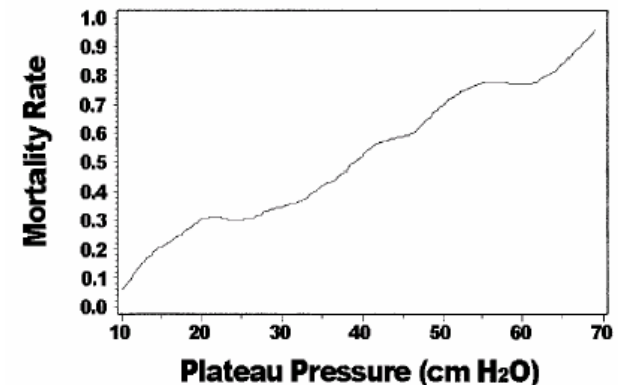
PEAK INSPIRATORY PRESSURE REDUCED



- iLA[®] reduces barotrauma without sacrificing other lung protection settings

CLINICAL IMPACT

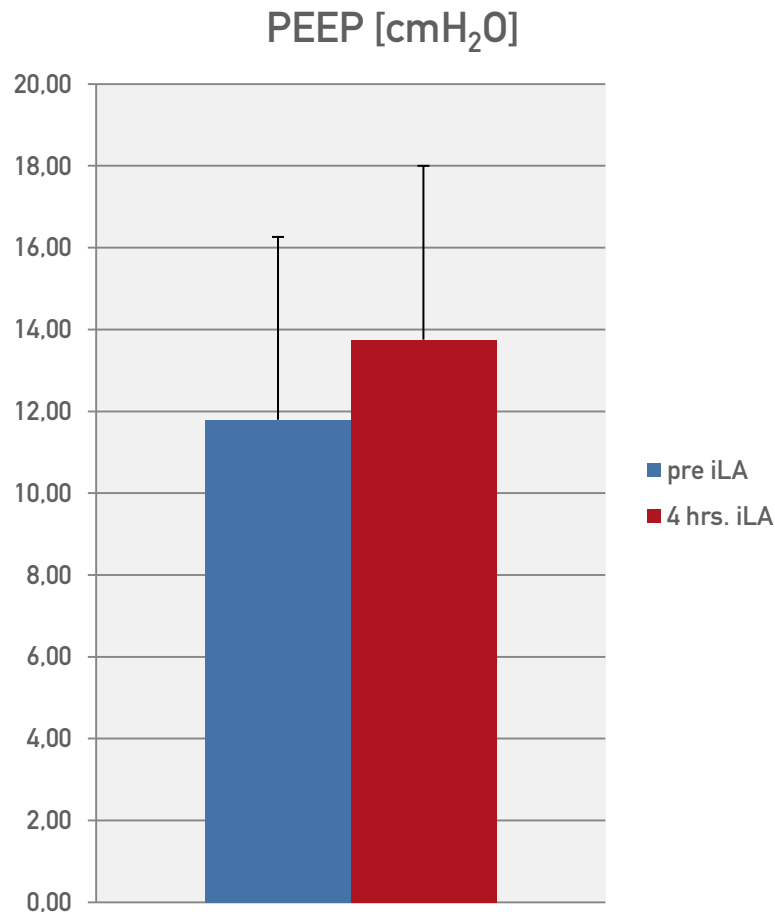
- Metaanalysis shows reduced MV pressures are associated with lower mortality :



Brower et al, AJRCCM (2002)



PEEP OPTIMIZED

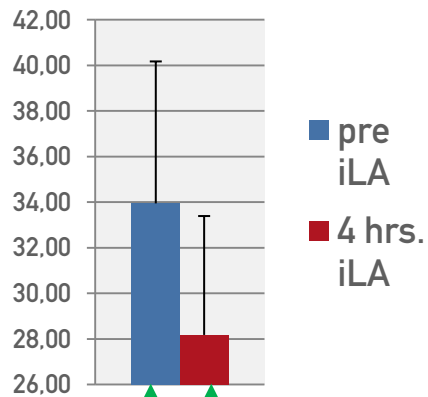


- Optimization of open-lung concept by adjusting PEEP
- Improvement in FRC / oxygenation
- Reduction of the pressure delta between the end inspiratory and end expiratory pressure level

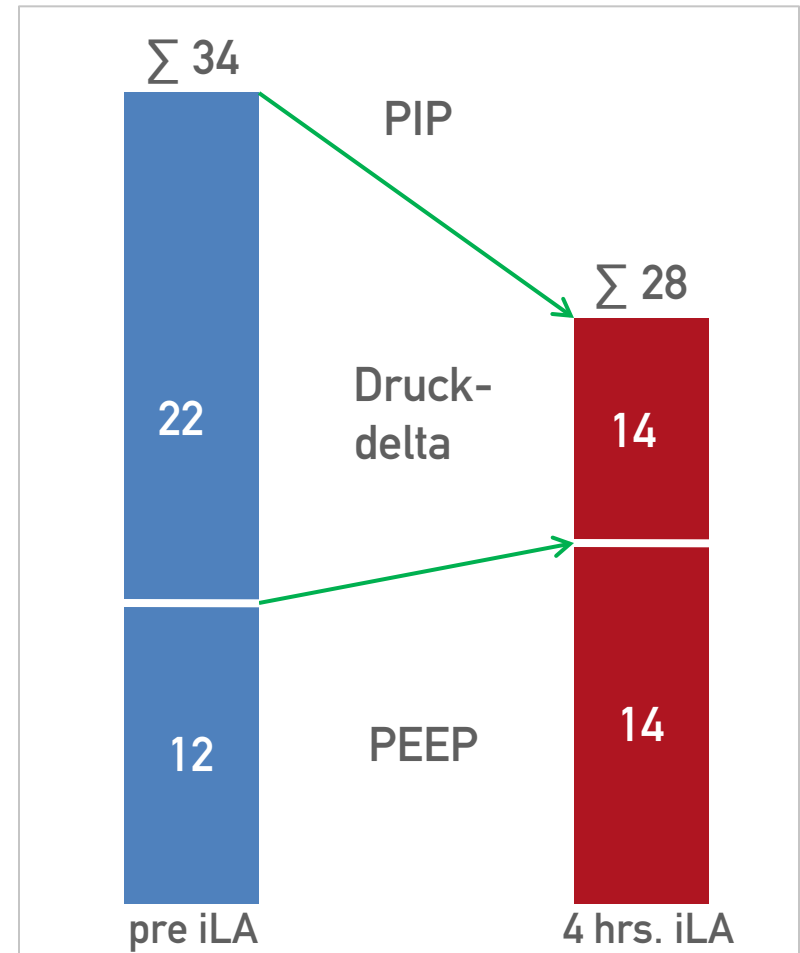
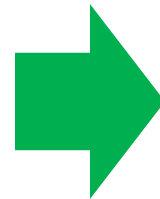
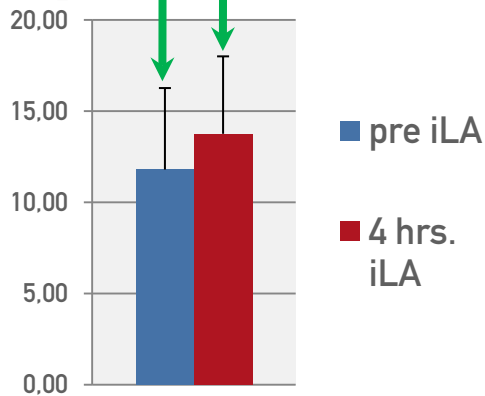


REDUCTION OF THE PRESSURE DELTA

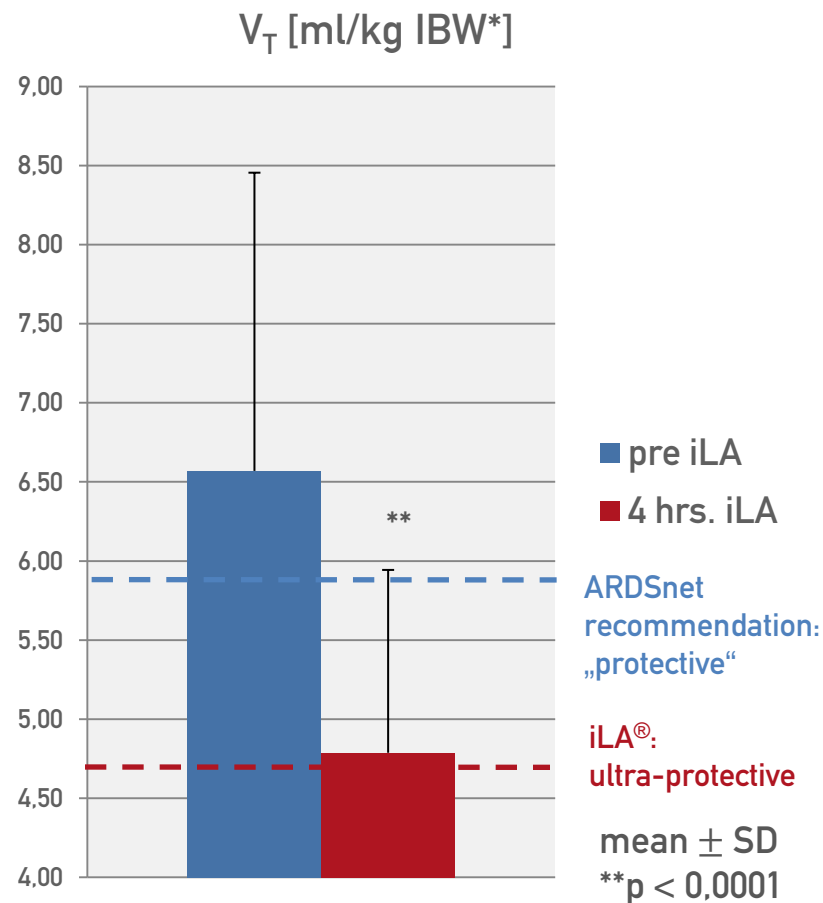
P_{insp} [cmH₂O]



PEEP [cmH₂O]



ULTRA-PROTECTIVE TIDAL VOLUME



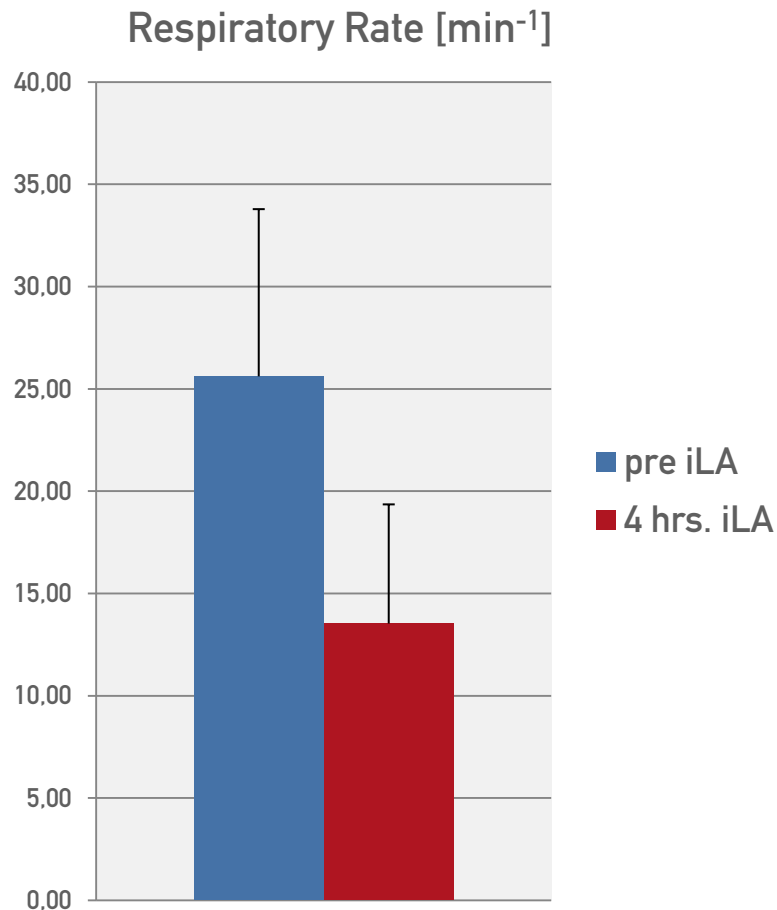
*IBW = ideal body weight

- Clinical use of iLA[®] enables „ultra-protective“ tidal volumes (V_T)

CLINICAL IMPACT:

- Reduces inflammatory response
- Reduces hyperinflation of the remaining functional lung tissue (“Baby Lung”)

RESPIRATORY RATE NORMALIZED RAPIDLY



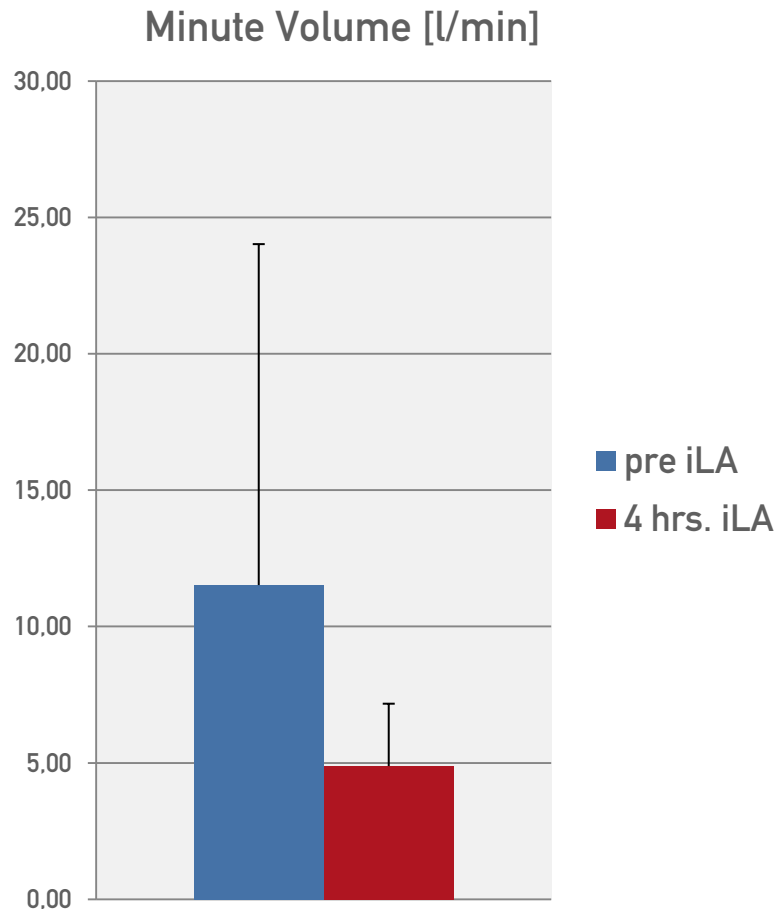
- iLA[®] enables rapid normalization of the respiratory rate

CLINICAL IMPACT:

- Early spontaneous breathing
- Avoids VIDD
- Avoids Intrinsic-PEEP
- Lowers “stress & strain”



MINUTE VOLUME NORMALIZED



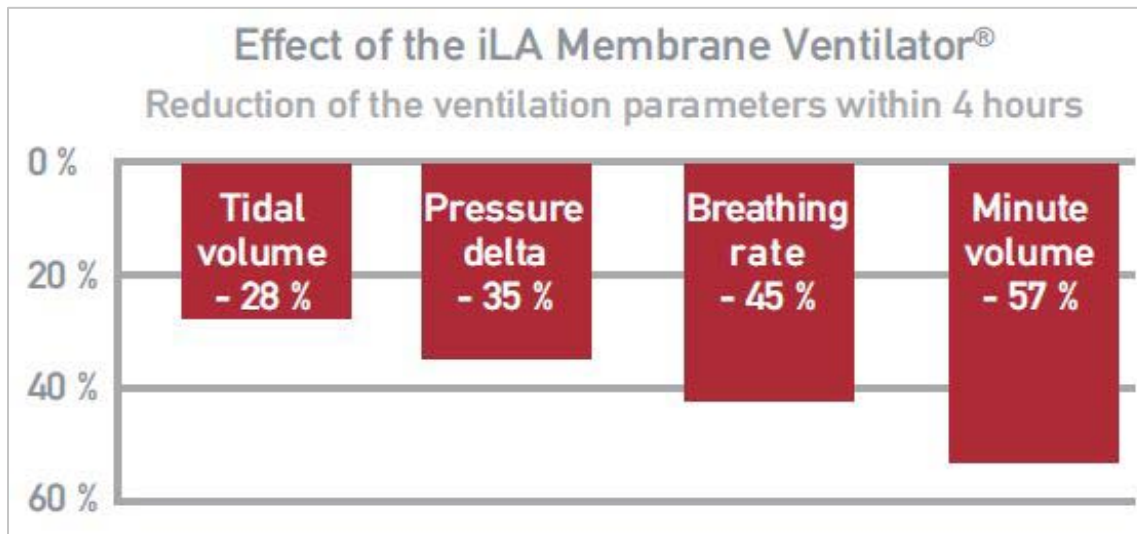
- Physiological respiratory rate and ultra-protective V_T dramatically reduce stress and strain

CLINICAL IMPACT:

- Helps prevent / reduce VALI
- Lower respiratory rate allows recovery and targeted respiratory therapy

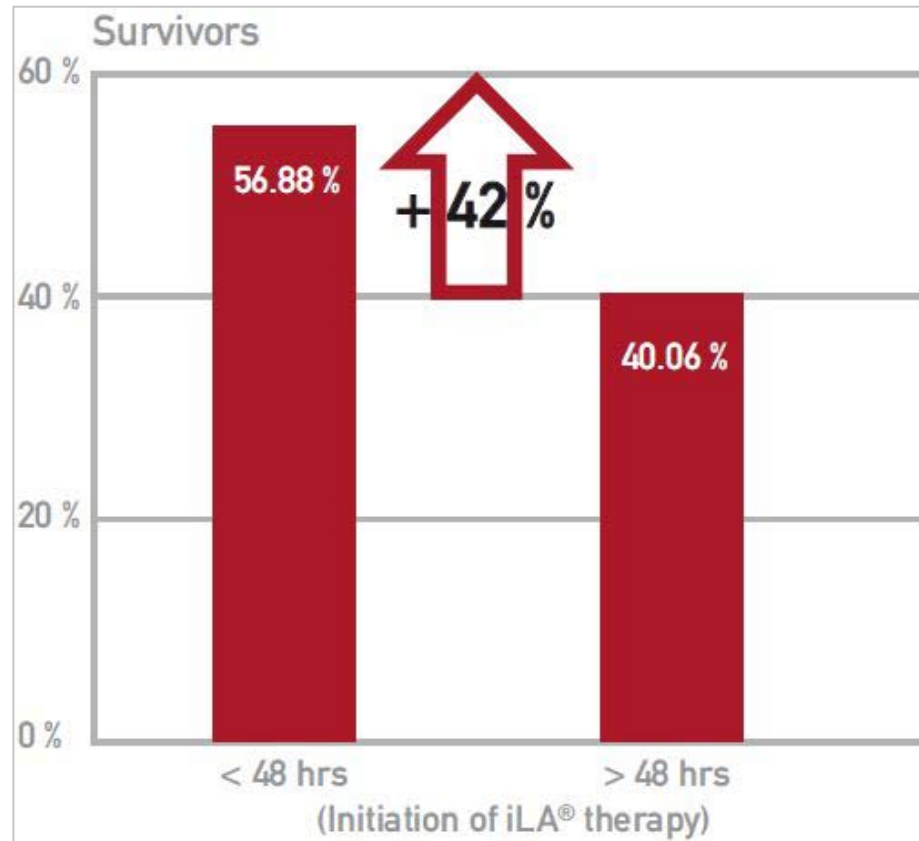


CONFIRMATION OF EFFECTIVENESS DATA



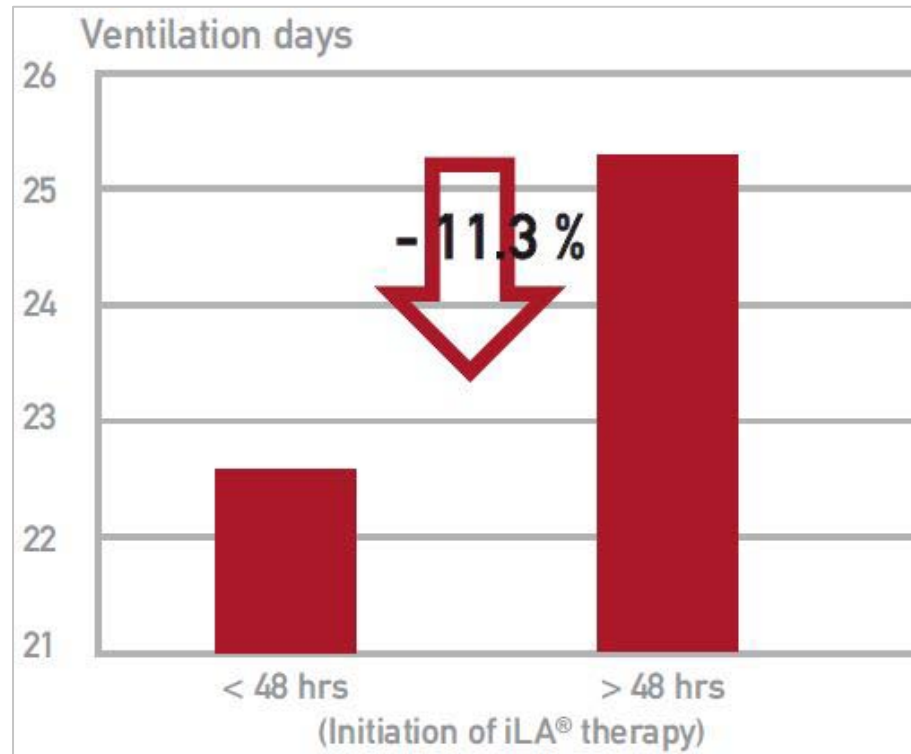
- Rapid normalization of the gas exchange: CO_2 on average 58 mmHg within 4 hours
- Rapid reduction of the invasiveness of ventilation towards physiological respiratory parameters, promoting earlier spontaneous breathing

HIGHER SURVIVAL RATE



- Early use of the iLA[®] confirmed again: **42% higher survival rate** if therapy started within 48 hours after intubation!

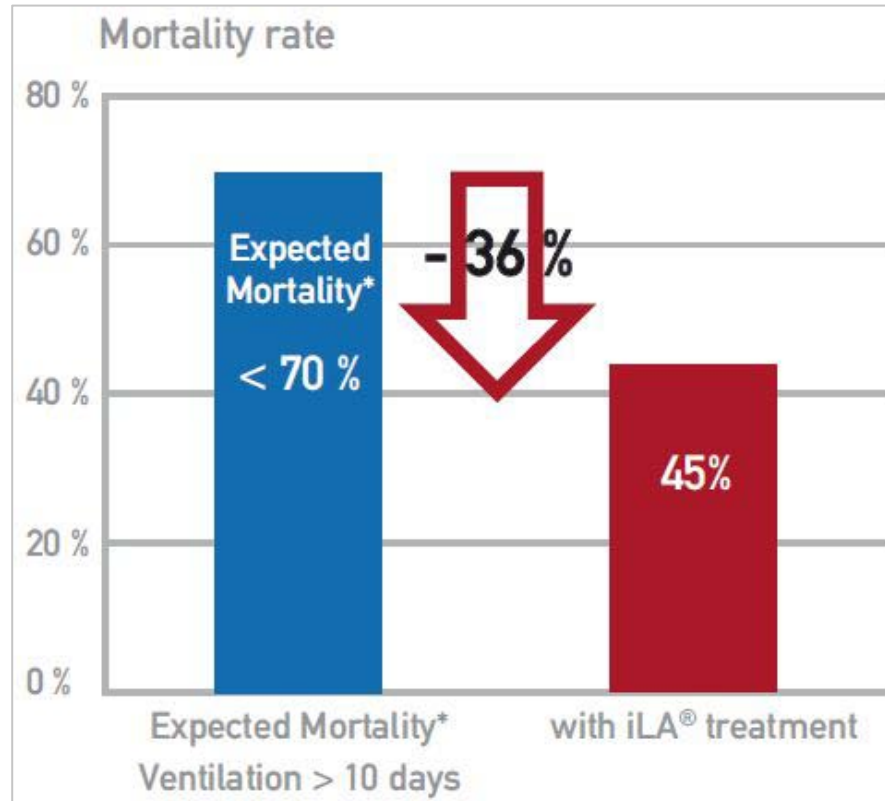
VENTILATION DAYS REDUCED



- Reduced time on ventilator if therapy started within 48 hours after intubation: absolute **reduction of 2.5 ventilation days** with early use!



LOWER MORTALITY IN COPD

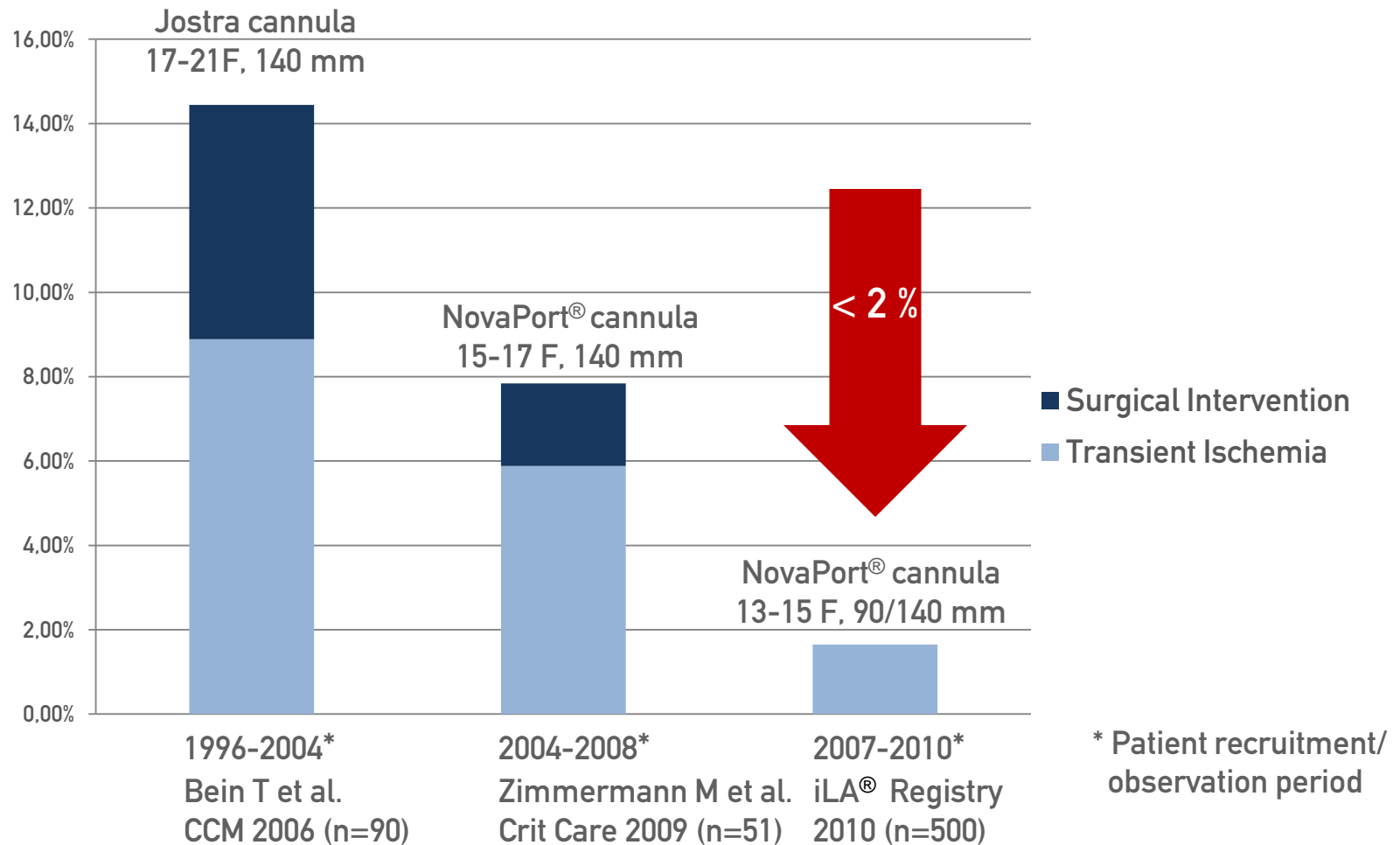


- iLA[®] use in exacerbated COPD: **36% lower mortality**

* Hill SN et al. Lung Biology in health and disease: Ventilatory management strategies for critical care 1st ed. New York: Marcel Dekker Inc.,2001:1-833



SAFETY THROUGH PROCEDURAL CHANGES



ZUSAMMENFASSUNG

- Patients are severely ill, resulting in application bias
- In particular in ARDS patients the implementation still occurs too late in the multi-organ failure process
- iLA Membrane Ventilator[®] routinely normalizes CO₂ and pH within 4 hours and allows **ultra-protective ventilation**:
 - ⇒ Reduction of $V_T < 6$ ml/kg IBW: avoiding hyperinflation of the Baby Lung
 - ⇒ Reduction of respiratory rate: Spontaneous breathing, intrinsic PEEP reduction



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