FAKULTNÍ NEMOCNICE BRNO
A LÉKAŘSKÁ FAKULTA
MASARYKOVY UNIVERZITY

KLINIKA DĚTSKÉ
ANESTEZIOLOGIE
A RESUSCITACE

Data, které zásadně ovlivnili praxi při nastavení parametrů UPV

Milan Kratochvíl

FAKULTNÍ NEMOCNICE BRNO

MUNI MED

The New England Journal of Medicine

VOLUME 342 MAY 4, 2000 NUMBER 18

VENTILATION WITH LOWER TIDAL VOLUMES AS COMPARED WITH TRADITIONAL TIDAL VOLUMES FOR ACUTE LUNG INJURY AND THE ACUTE RESPIRATORY DISTRESS SYNDROME

THE ACUTE RESPIRATORY DISTRESS SYNDROME NETWORK*

The New England
Journal of Medicine

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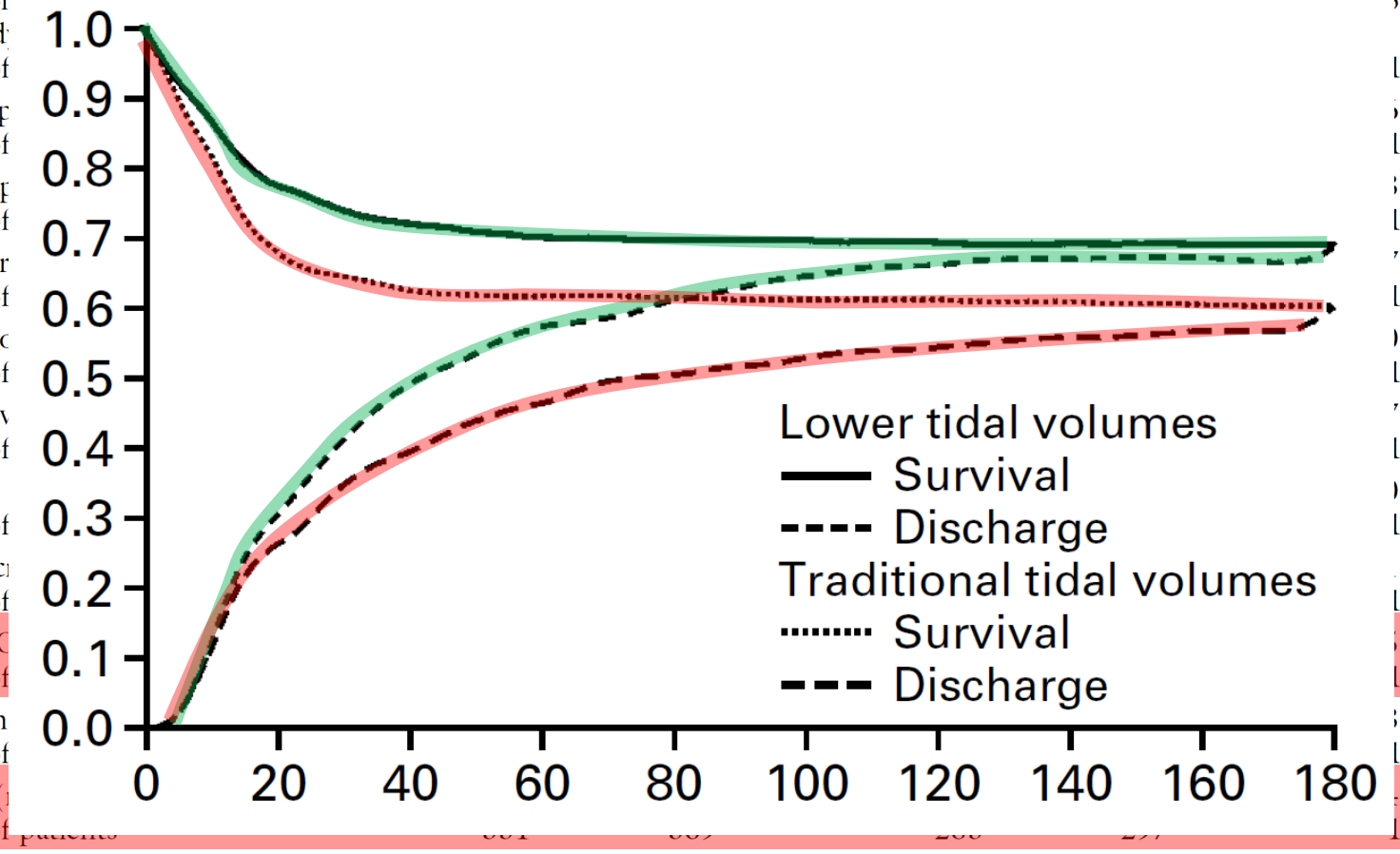
VENTILATION WITH LOWER TIDAL VOLUMES AS COMPARED WITH TRADITIONAL TIDAL VOLUMES FOR ACUTE LUNG INJURY AND THE ACUTE RESPIRATORY DISTRESS SYNDROME

THE ACUTE RESPIRATORY DISTRESS SYNDROME NETWORK*

...ING THE FIRST SEVEN DAYS OF TREATMENT IN PATIENTS WITH ACUTE LUNG INJURY
...ND THE ACUTE RESPIRATORY DISTRESS SYNDROME.*

	DAY 1		DAY 3		DAY 7	
	GROUP RECEIVING LOWER TIDAL VOLUMES	GROUP RECEIVING TRADITIONAL TIDAL VOLUMES	GROUP RECEIVING LOWER TIDAL VOLUMES	GROUP RECEIVING TRADITIONAL TIDAL VOLUMES	GROUP RECEIVING LOWER TIDAL VOLUMES	GROUP RECEIVING TRADITIONAL TIDAL VOLUMES
Tidal vol / body					...±1.4	11.4±1.4
No. of					181	179
Plateau p					...±7	37±9
No. of					168	173
Peak insp					...±9	44±10
No. of					178	177
Mean air					...±14	20±10
No. of					176	173
Respirato					...±7	20±7
No. of					185	181
Minute v					...±3.8	14.9±5.3
No. of					182	177
FiO_2					...±0.17	0.54±0.20
No. of					185	181
PEEP (c					...±3.4	9.1±4.2
No. of					185	181
PaO_2:FiO					...±71	164±88
No. of					148	160
PaO_2 (m					...±17	75±21
No. of					148	160
$PaCO_2$ (					...±12	40±10
No. of patients					147	160
Arterial pH	7.38±0.08	7.41±0.07	7.38±0.08	7.41±0.07	7.40±0.07	7.41±0.08
No. of patients	351	369	285	297	148	160

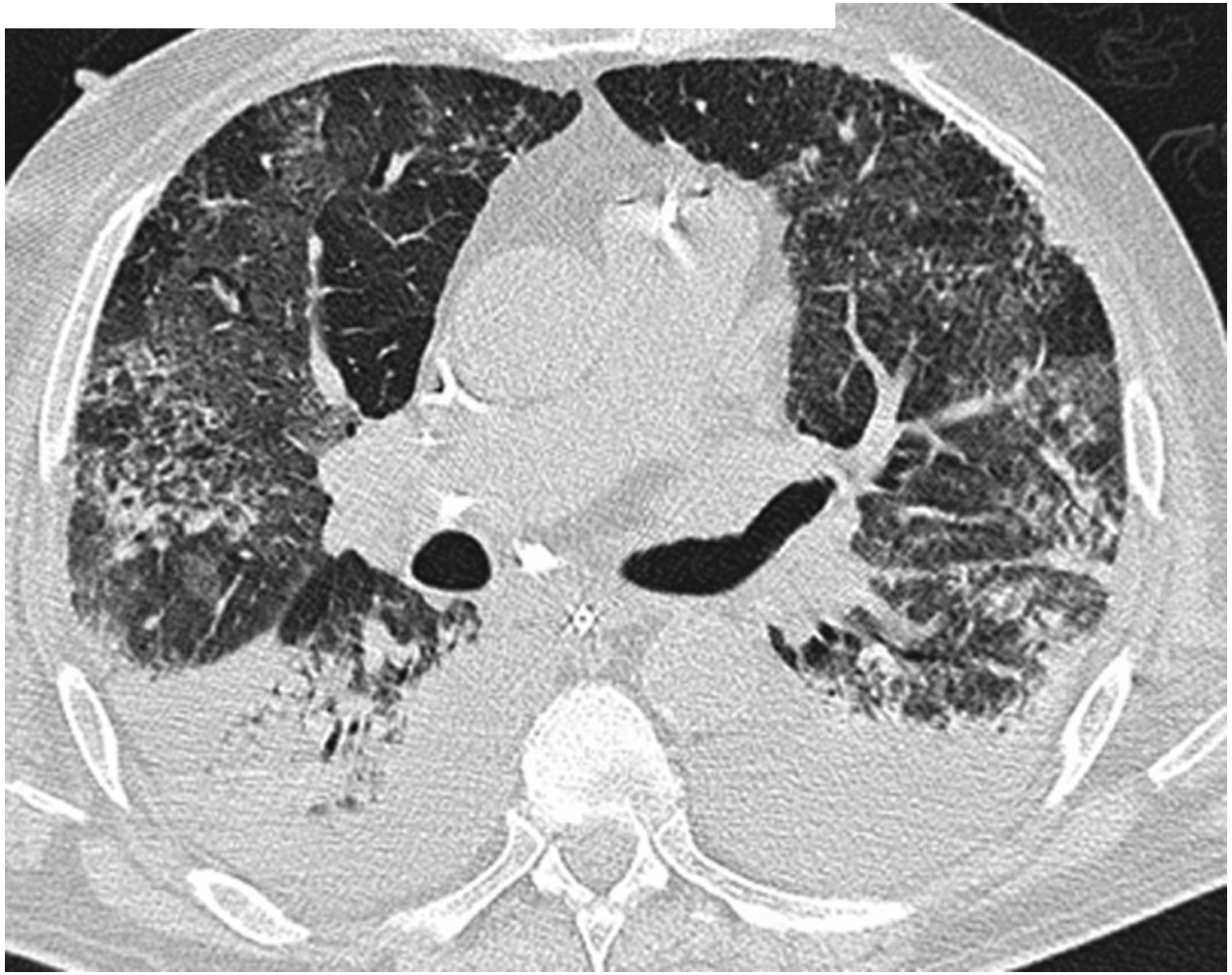


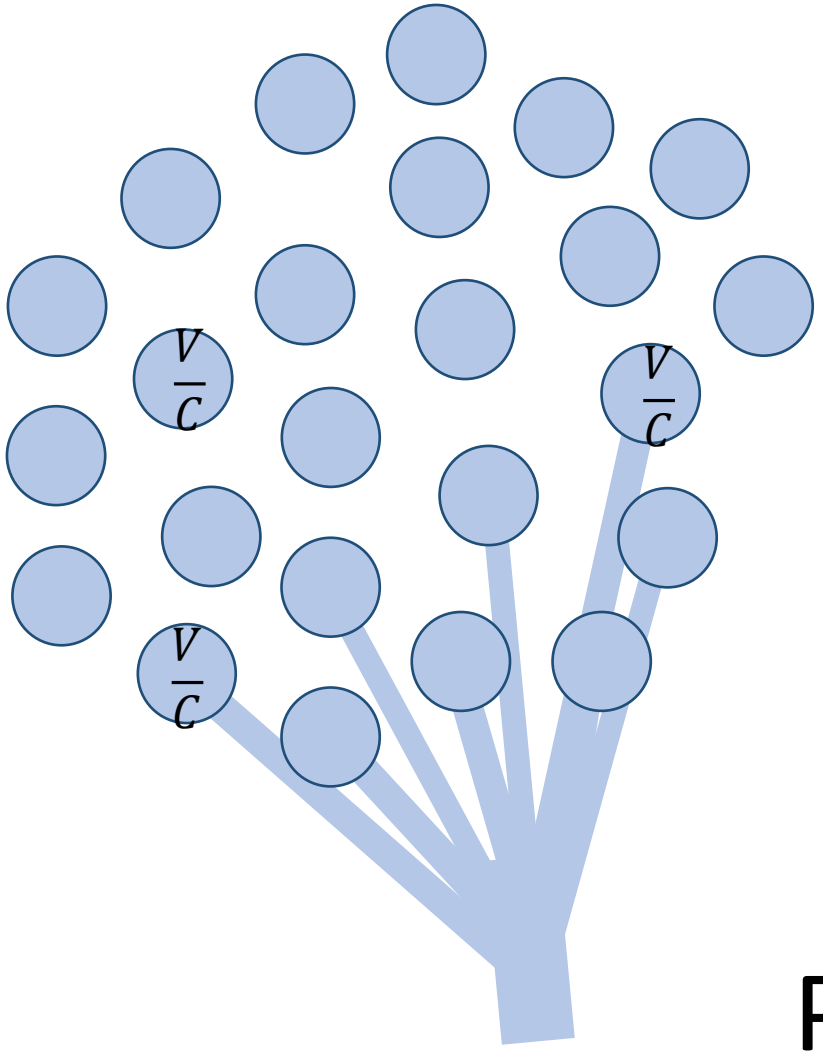
Intensive Care Med (2005) 31:776–784
DOI 10.1007/s00134-005-2627-z

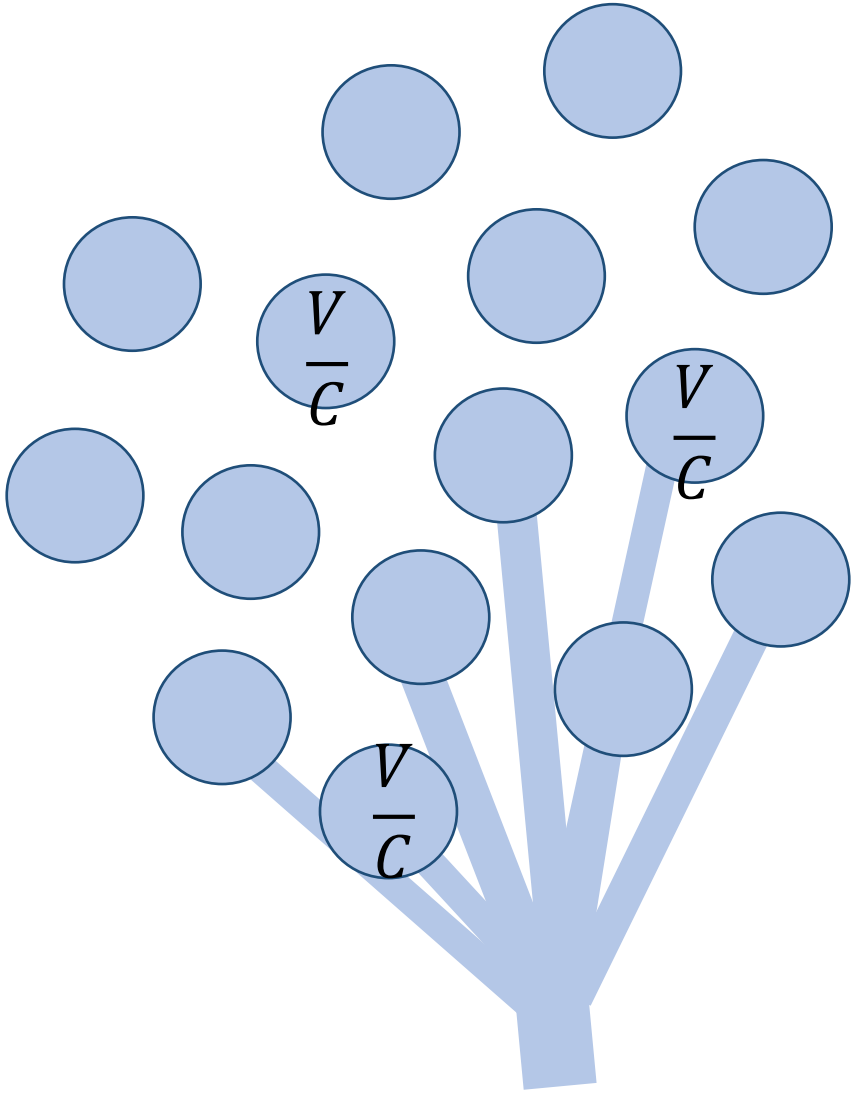
SEMINAL STUDY

Luciano Gattinoni
Antonio Pesenti

The concept of "baby lung"







$$P = \frac{V}{C}$$

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JOURNAL OF APPLIED PHYSIOLOGY
Vol. 28, No. 5, May 1970. *Printed in U.S.A.*

Stress distribution in lungs: a model of pulmonary elasticity

JERE MEAD, TAMOTSU TAKISHIMA, AND DAVID LEITH
Department of Physiology, Harvard University School of Public Health, Boston, Massachusetts 02115

The NEW E
JOURNAL of
ESTABLISHED IN 1812 JULY 22,

CARING FOR THE CRITICALLY ILL PATIENT

Higher versus Lower Positive
in Patients with the Acute Resp

The National Heart, Lung, and Blood Ins

Ventilation Strategy Using Low Tidal Volumes, Recruitment Maneuvers, and High Positive End-Expiratory Pressure for Acute Lung Injury and Acute Respiratory Distress Syndrome

A Randomized Controlled Trial

Maureen O. Meade, MD, MSc
Deborah J. Cook, MD, MSc
Gordon H. Guyatt, MD, MSc
Arthur S. Slutsky, MD
Yaseen M. Arabi, MD

Context Low-tidal-volume ventilation reduces mortality in critically ill patients with acute lung injury and acute respiratory distress syndrome. Instituting additional strategies to open collapsed lung tissue may further reduce mortality.

Objective To compare an established low-tidal-volume ventilation strategy with an experimental strategy based on the original "open-lung approach," combining low tidal volume, lung recruitment maneuvers, and high positive-end–expiratory pressure.

concealed allocation and blinded
March 2006 in 30 intensive care

tients with acute lung injury and
fraction not exceeding 250.

al volumes of 6 mL/kg of predicted
cm H_2O, and conventional levels
rimental strategy included target
teau pressures not exceeding 40
d-expiratory pressures (n=475).

ality.

met criteria for acute respiratory
similar in the 2 groups, and mean
positive end-expiratory pressures were 14.6 (SD, 3.4) cm H_2O in the experimental group vs 9.8 (SD, 2.7) cm H_2O among controls during the first 72 hours ($P<.001$). All-cause hospital mortality rates were 36.4% and 40.4%, respectively (relative risk [RR], 0.90; 95% confidence interval [CI], 0.77-1.05; $P=.19$). Barotrauma rates were 11.2% and 9.1% (RR, 1.21; 95% CI, 0.83-1.75; $P=.33$). The experimental group had lower rates of refractory

Positive End-Expiratory Pressure Setting in Adults With Acute Lung Injury and Acute Respiratory Distress Syndrome

A Randomized Controlled Trial

Alain Mercat, MD
Thomas E. Stewart, MD
for the Lung Open Ventilation Study Investigators

Context The need for lung protection is universally accepted, but the optim

The NEW ENGLAND JOURNAL of MEDICINE

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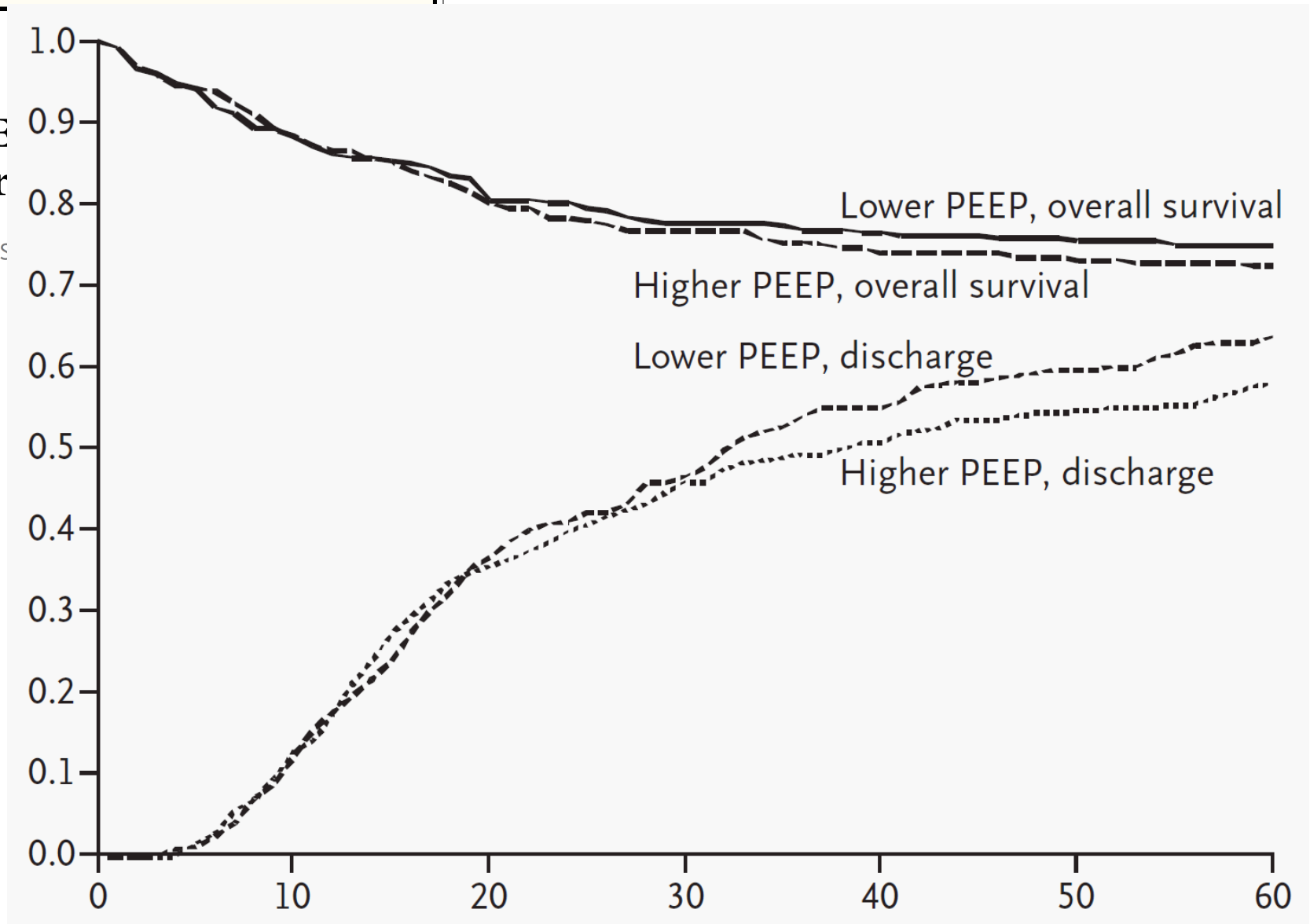
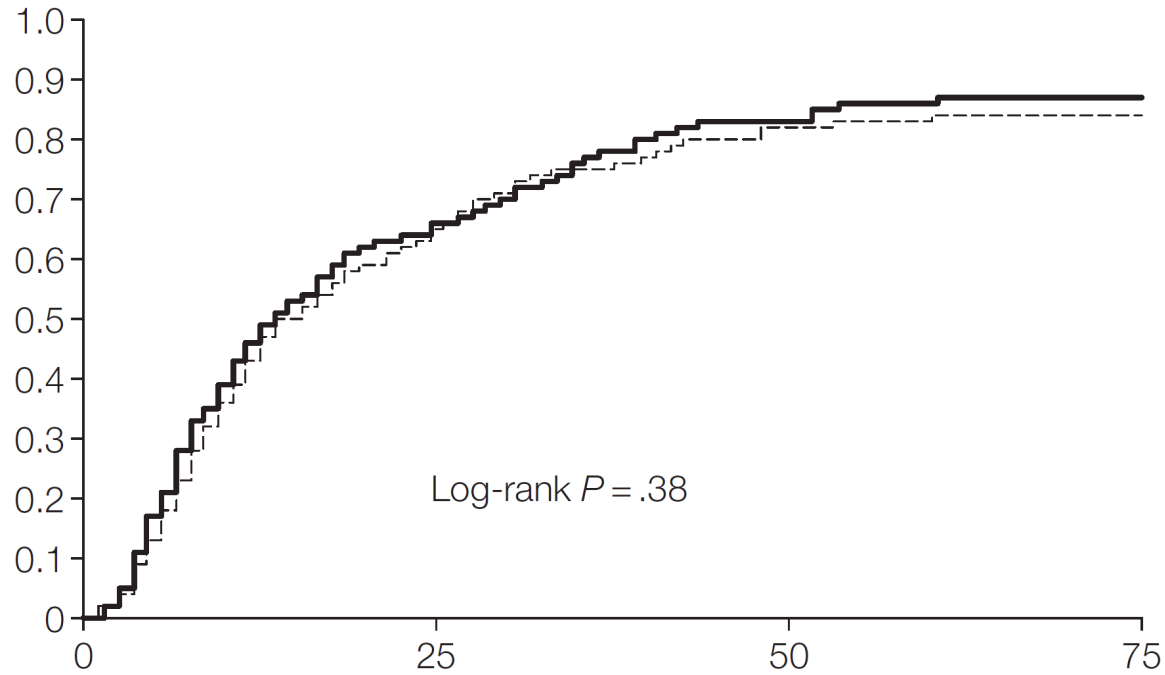
Higher versus Lower Positive End-E in Patients with the Acute Respirator

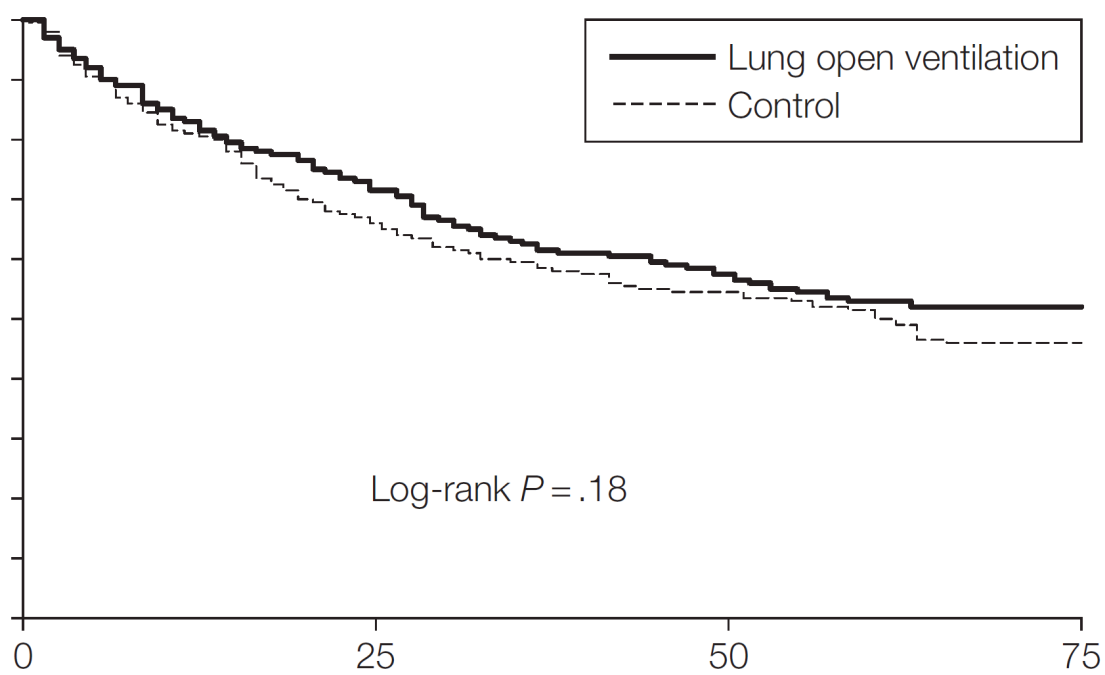
The National Heart, Lung, and Blood Institute ARDS



Ventilation Strategy Using Low Tidal Volumes, Recruitment Maneuvers, and High Positive End-Expiratory Pressure for Acute Lung Injury and Acute Respiratory Distress Syndrome

A Randomized Controlled Trial





JAMA. 2008;299(6):637-645

Positive End-Expiratory Pressure Setting in Adults With Acute Lung Injury and Acute Respiratory Distress Syndrome

A Randomized Controlled Trial

Table 4. Main Outcome Variables

Outcome	Minimal Distension (n = 382)	Increased Recruitment (n = 385)	*P* Value
	No. (%)		
Death in the first 28 d[a]	119 (31.2)	107 (27.8)	.31
Death before hospital discharge	149 (39.0)	136 (35.4)	.30
Death in the first 60 d	151 (39.5)	138 (35.9)	.31
Pneumothorax between day 1 and day 28[b]	22 (5.8)	26 (6.8)	.57
	Median (IQR)		
No. of days between day 1 and day 28			
Ventilator-free[c]	3 (0-17)	7 (0-19)	.04
Organ failure–free[d]	2 (0-16)	6 (0-18)	.04
Cardiovascular failure–free[d]	21 (4-26)	23 (10-26)	.09
Renal failure–free[d]	27.5 (8.0-28.0)	28.0 (11.0-28.0)	.23

Refining Ventilatory Treatment for Acute Lung Injury and Acute Respiratory Distress Syndrome

Luciano Gattinoni, MD, FRCP

Pietro Caironi, MD

at a FiO_2 of 0.80 or higher in the Express study.[16] Taking the 2 studies together, the numbers of patients with severe hypoxemia requiring rescue therapy were 94 (10.9%) in the higher level of PEEP group and 184 (20.7%) in the lower level of PEEP group. Although mortality was similar (60.6% and 58.2% in the higher and lower PEEP groups, respectively), the difference in incidence suggests that the rate of these pulmonary deaths was much lower in the group receiving a higher level of PEEP (6.6% vs 12.0%). One possible inference is that a higher level of PEEP may prevent a large number of pulmonary deaths, which may be the reason for the 3% to 4% mortality difference favoring the group receiving a higher level of PEEP observed both in the LOV study and in the Express study.

JAMA, February 13, 2008—Vol 299, No. 6

Higher vs Lower Positive End-Expiratory Pressure in Patients With Acute Lung Injury and A

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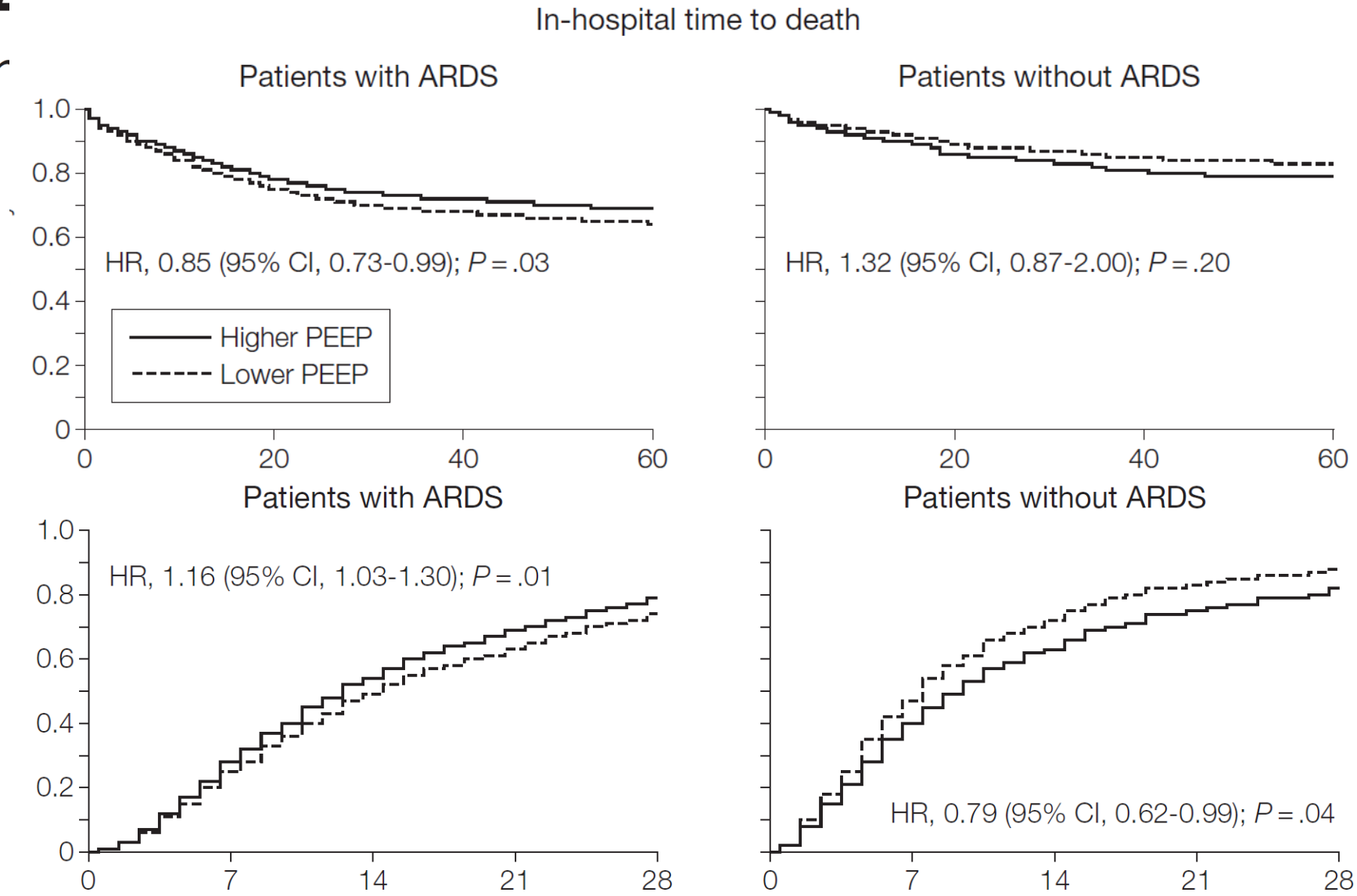

JAMA. 2010;303(9):865-873

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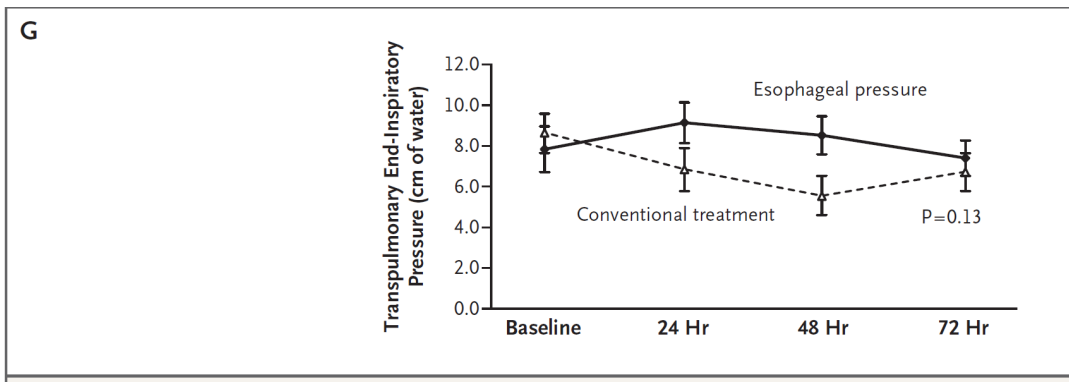
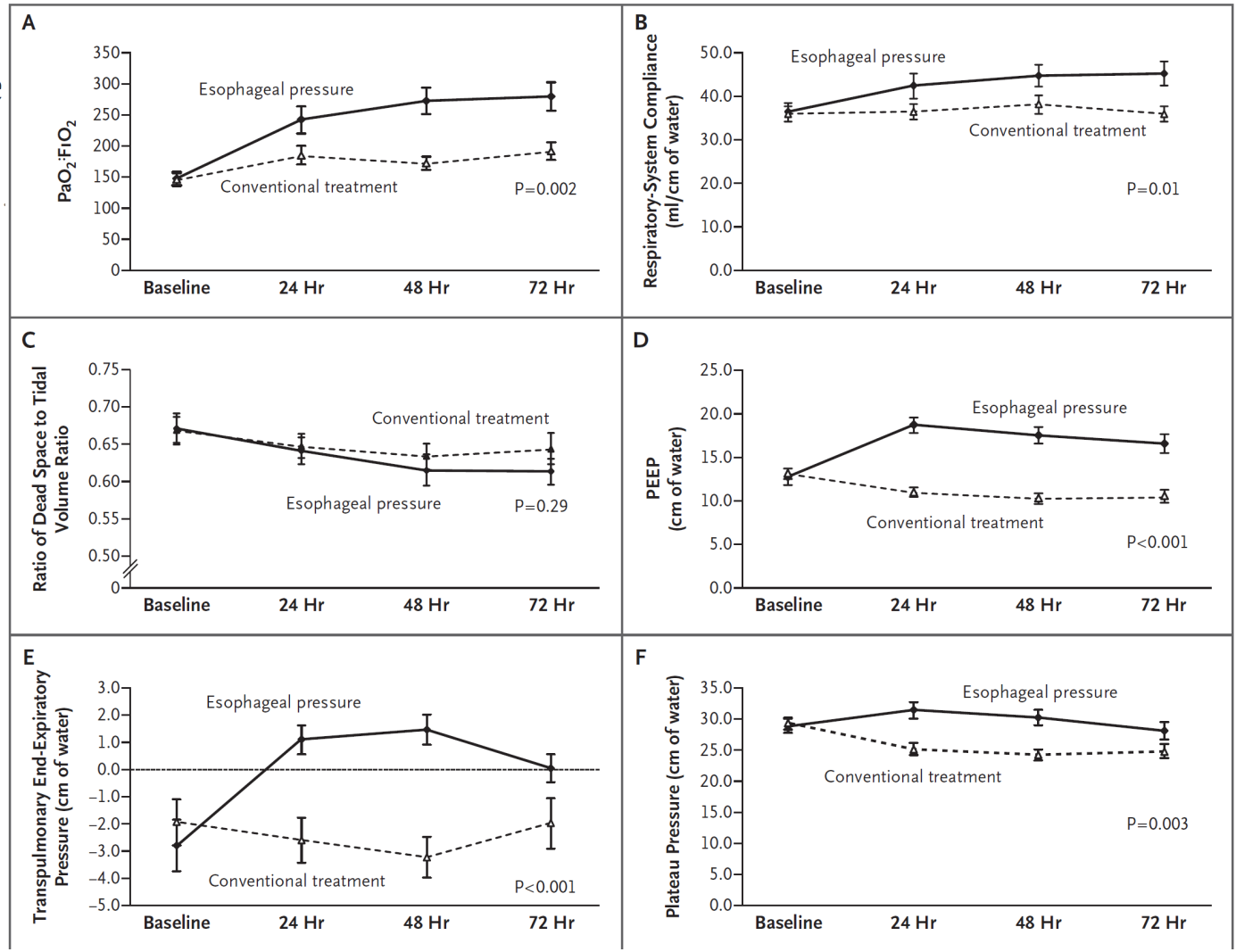
ESTABLISHED IN 1812 NOVEMBER 13, 2008 VOL. 359 NO. 20

Mechanical Ventilation Guided by Esophageal Pressure in Acute Lung Injury

Daniel Talmor, M.D., M.P.H., Todd Sarge, M.D., Atul Malhotra, M.D., Carl R. O'Donnell, Sc.D., M.P.H., Ray Ritz, R.R.T., Alan Lisbon, M.D., Victor Novack, M.D., Ph.D., and Stephen H. Loring, M.D.





N Engl J Med 2008;359:2095-104.

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Prone Positioning in Severe Acute Respiratory Distress Syndrome

Claude Guérin, M.D., Ph.D., Jean Reignier, M.D., Ph.D., Jean-Christophe Richard, M.D., Ph.D., Pascal Beuret, M.D., Arnaud Gacouin, M.D., Thierry Boulain, M.D., Emmanuelle Mercier, M.D., Michel Badet, M.D., Alain Mercat, M.D., Ph.D., Olivier Baudin, M.D., Marc Clavel, M.D., Delphine Chatellier, M.D., Samir Jaber, M.D., Ph.D., Sylvène Rosselli, M.D., Jordi Mancebo, M.D., Ph.D., Michel Sirodot, M.D., Gilles Hilbert, M.D., Ph.D., Christian Bengler, M.D., Jack Richecoeur, M.D., Marc Gainnier, M.D., Ph.D., Frédérique Bayle, M.D., Gael Bourdin, M.D., Véronique Leray, M.D., Raphaele Girard, M.D., Loredana Baboi, Ph.D., and Louis Ayzac, M.D., for the PROSEVA Study Group*

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Prone Positioning in Severe Acute Respiratory Distress Syndrome

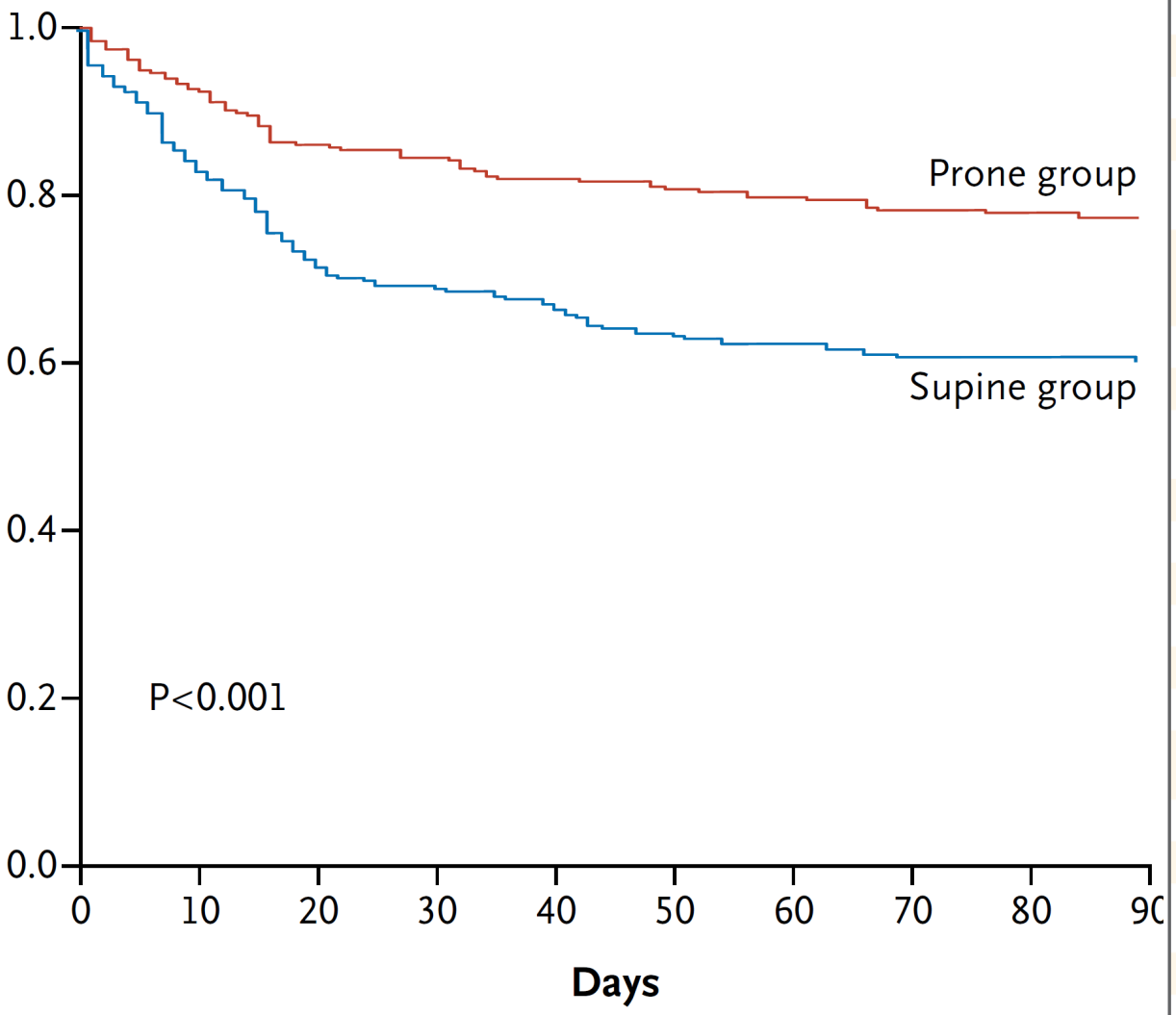

Table 3. Primary and Secondary Outcomes According to Study Group.*

Outcome	Supine Group (N=229)	Prone Group (N=237)	Hazard Ratio or Odds Ratio with the Prone Position (95% CI)	P Value
Mortality — no. (% [95% CI])				
At day 28				
Not adjusted	75 (32.8 [26.4–38.6])	38 (16.0 [11.3–20.7])	0.39 (0.25–0.63)	<0.001
Adjusted for SOFA score†			0.42 (0.26–0.66)	<0.001
At day 90				
Not adjusted	94 (41.0 [34.6–47.4])	56 (23.6 [18.2–29.0])	0.44 (0.29–0.67)	<0.001
Adjusted for SOFA score†			0.48 (0.32–0.72)	<0.001
Successful extubation at day 90 — no./total no. (% [95% CI])	145/223 (65.0 [58.7–71.3])	186/231 (80.5 [75.4–85.6])	0.45 (0.29–0.70)	<0.001
Time to successful extubation, assessed at day 90 — days				
Survivors	19±21	17±16		0.87
Nonsurvivors	16±11	18±14		
Length of ICU stay, assessed at day 90 — days				
Survivors	26±27	24±22		0.05
Nonsurvivors	18±15	21±20		
Ventilation-free days				
At day 28	10±10	14±9		<0.001
At day 90	43±38	57±34		<0.001
Pneumothorax — no. (% [95% CI])	13 (5.7 [3.9–7.5])	15 (6.3 [4.9–7.7])	0.89 (0.39–2.02)	0.85
Noninvasive ventilation — no./total no. (% [95% CI])				
At day 28	10/212 (4.7 [1.9–7.5])	4/228 (1.8 [0.1–3.5])	0.36 (0.07–3.50)	0.11
At day 90	3/206 (1.5 [0.2–3.2])	4/225 (1.8 [0.1–3.5])	1.22 (0.23–6.97)	1.00
Tracheotomy — no./total no. (% [95% CI])				
At day 28	12/229 (5.2 [2.3–8.1])	9/237 (3.8 [1.4–6.0])	0.71 (0.27–1.86)	0.37
At day 90	18/223 (8.1 [4.5–11.7])	15/235 (6.4 [3.3–9.5])	0.78 (0.36–1.67)	0.59

Závěr

- Nízké dechové objemy
- Optimálně titrovaný PEEP
- Prone positioning
- RM pouze jako rescue postup

Děkuji za pozornost