

Developing Effective Hospital Weaning Programs

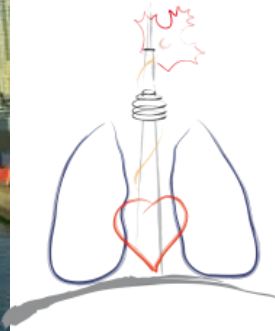
First Annual Symposium | **Thursday September 24, 2015**

MaRS Discovery District - Toronto



Weaning The Heart or the Lungs?

Laurent Brochard
Toronto

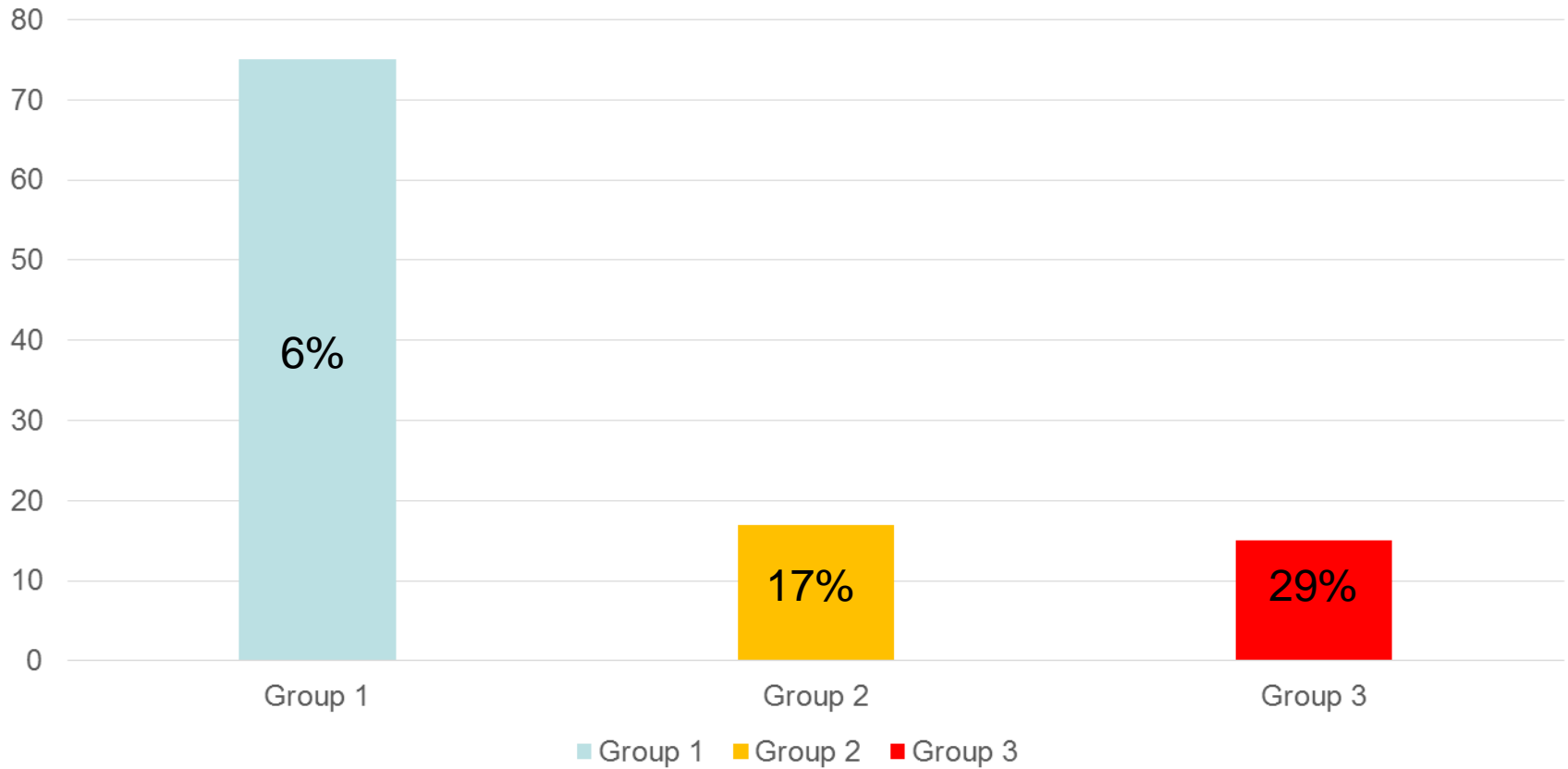


Conflicts of interest

- Our clinical research laboratory has received research grants for clinical trials from the following companies
 - Covidien (PAV+)
 - Dräger (SmartCare)
 - General Electric (FRC)
 - Respironics (NIV)
 - Vygon (CPAP)
 - Fisher Paykel (high flow)

WIND new classification / Mortality

Weaning groups

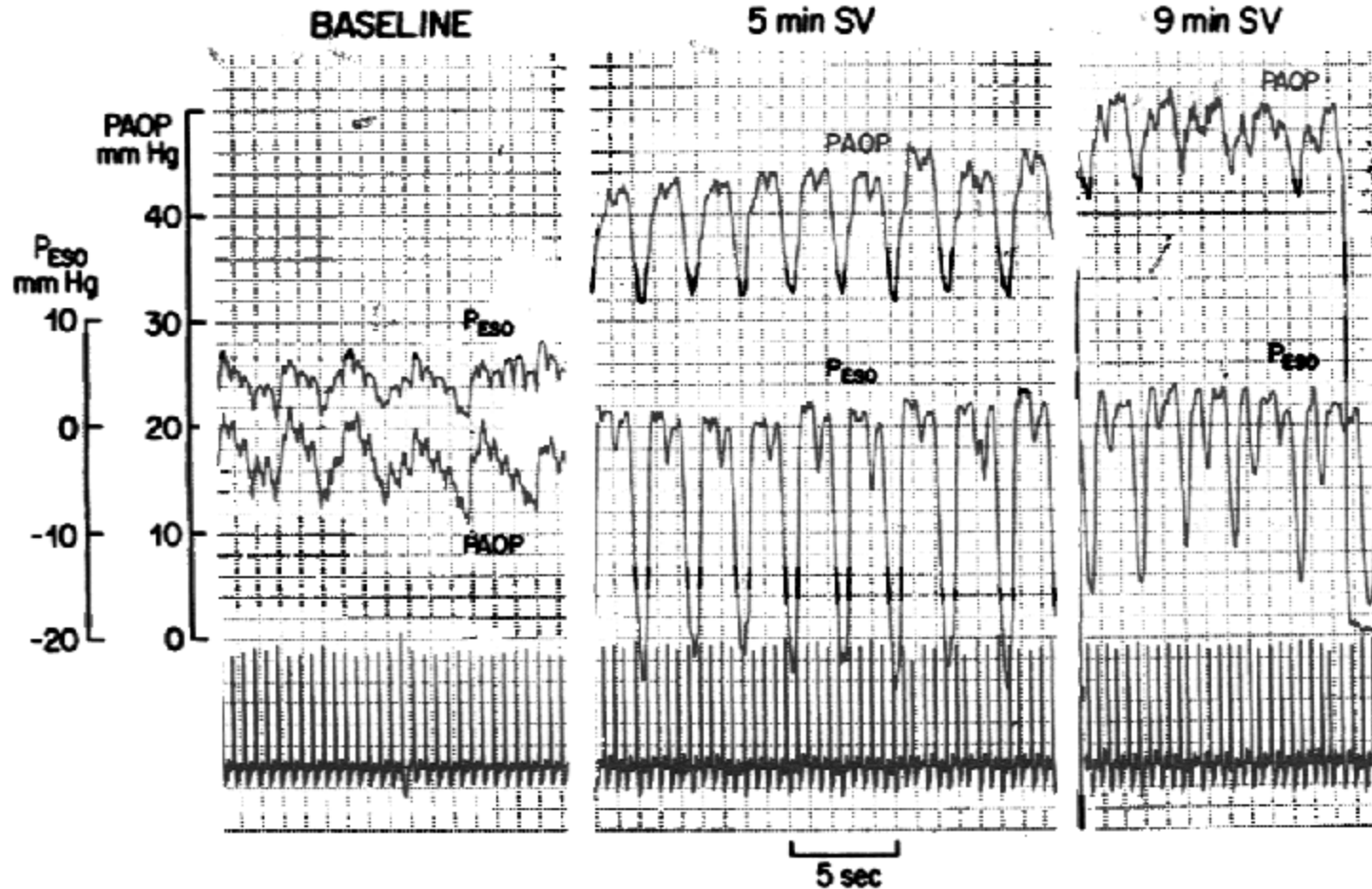


Weaning-Induced Pulmonary Edema

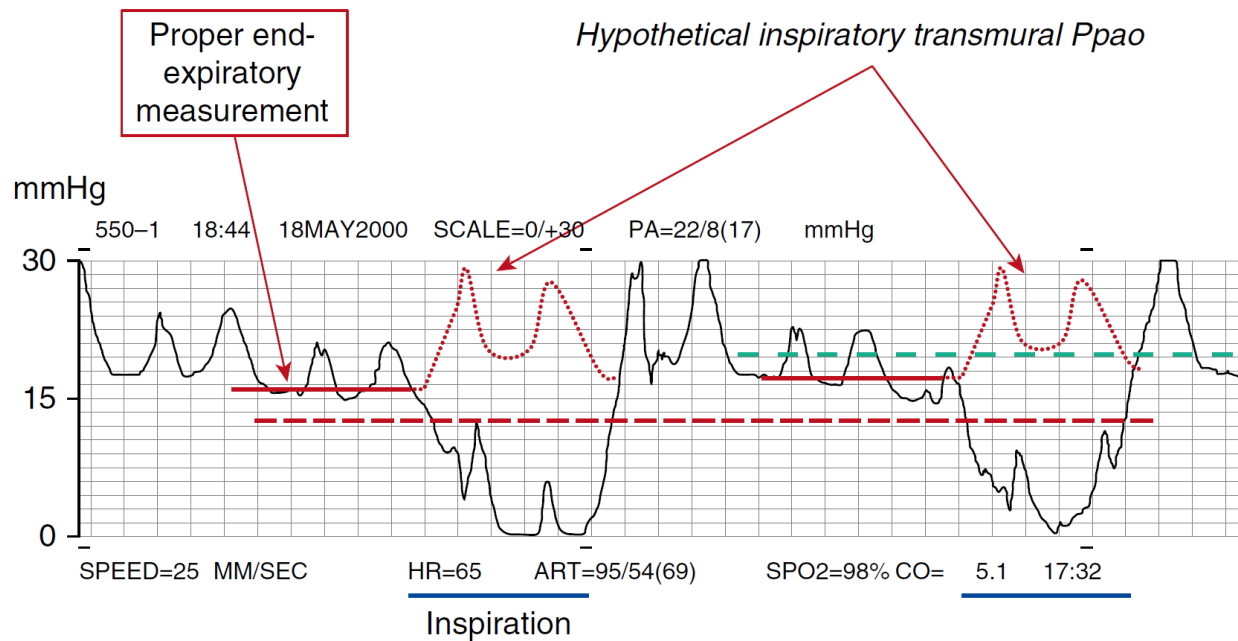
- Identification and mechanisms

Acute LV dysfunction during unsuccessful weaning from MV

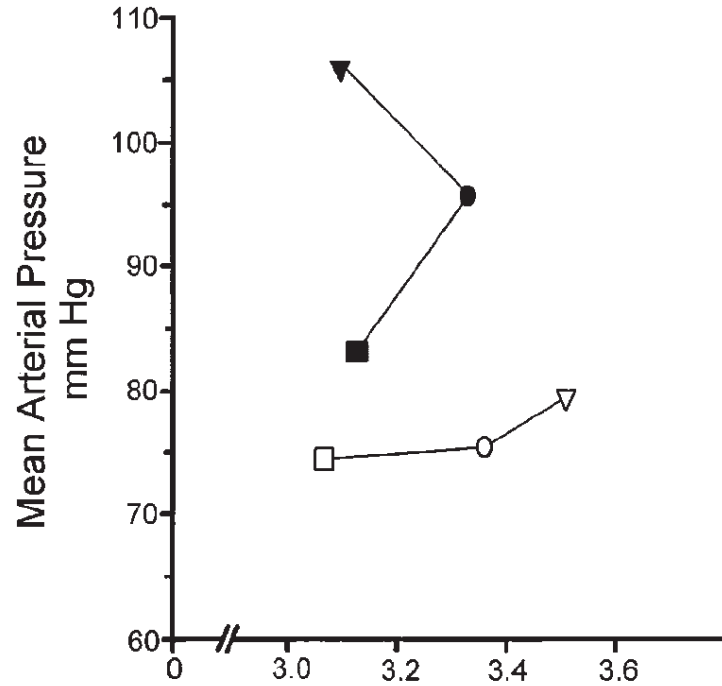
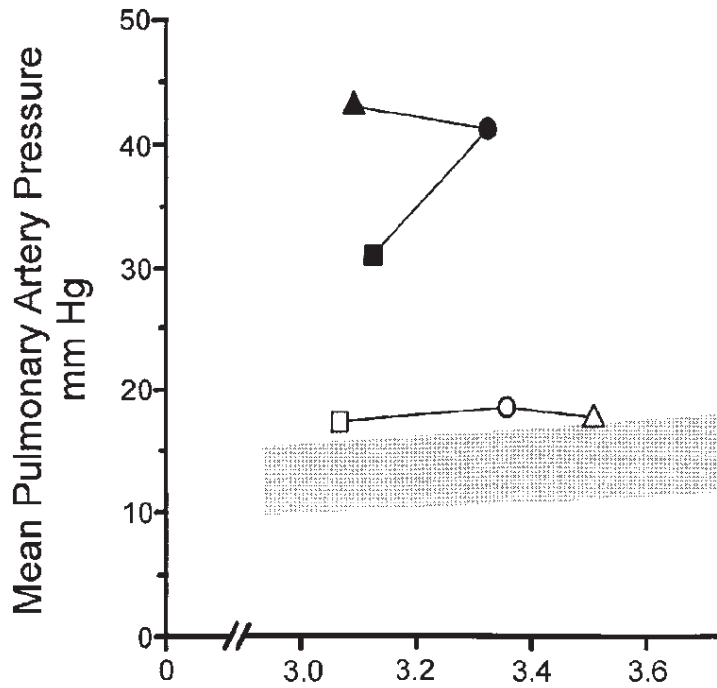
F Lemaire, JL Teboul, WM Zapol et al. ANESTHESIOLOGY.1988; 69:171



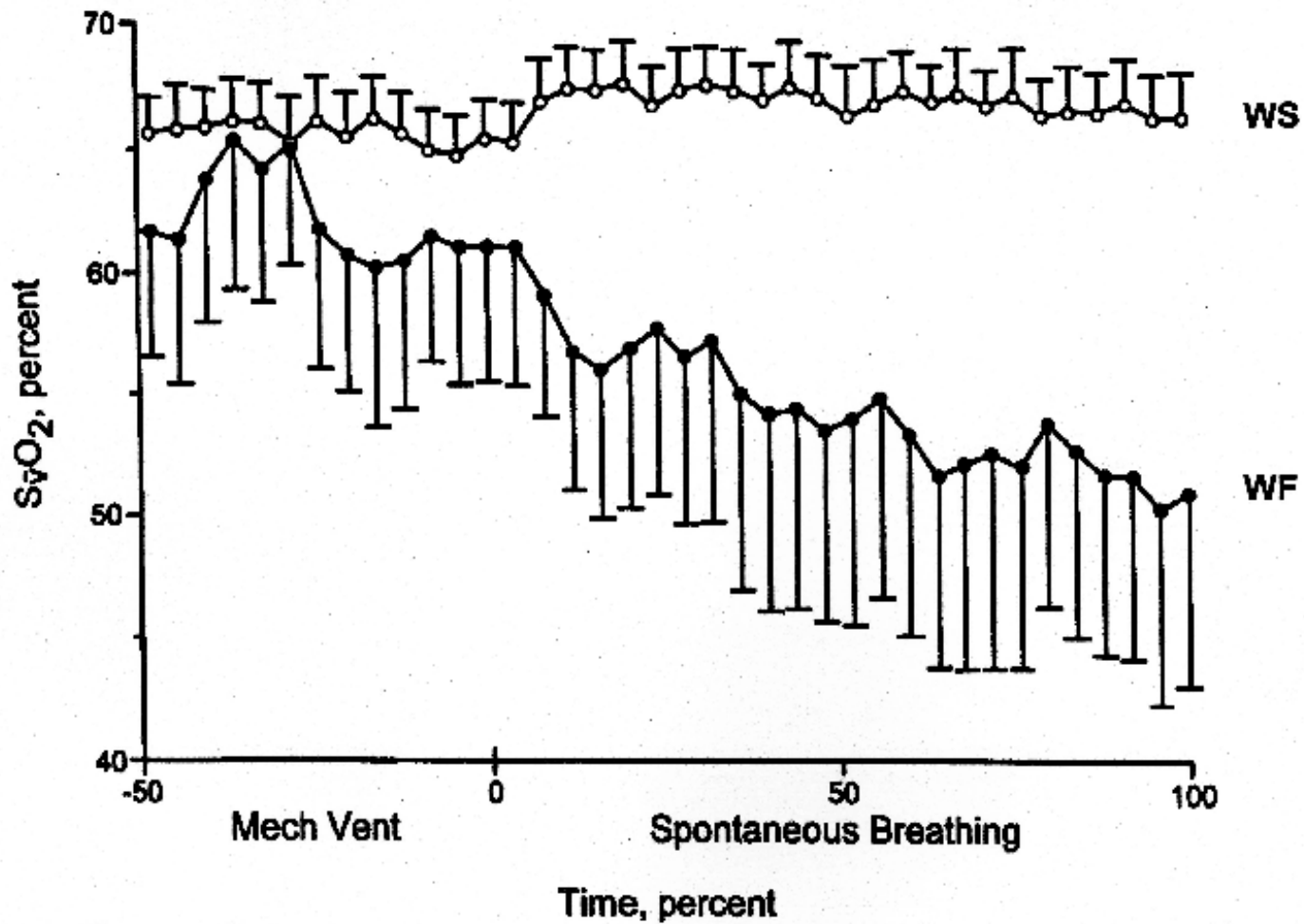
Proper Reading of Pulmonary Artery Vascular Pressure Tracings



↑ Afterload RV and LV



Jubran A, et al. AJRCCM 1998;158:1763-9

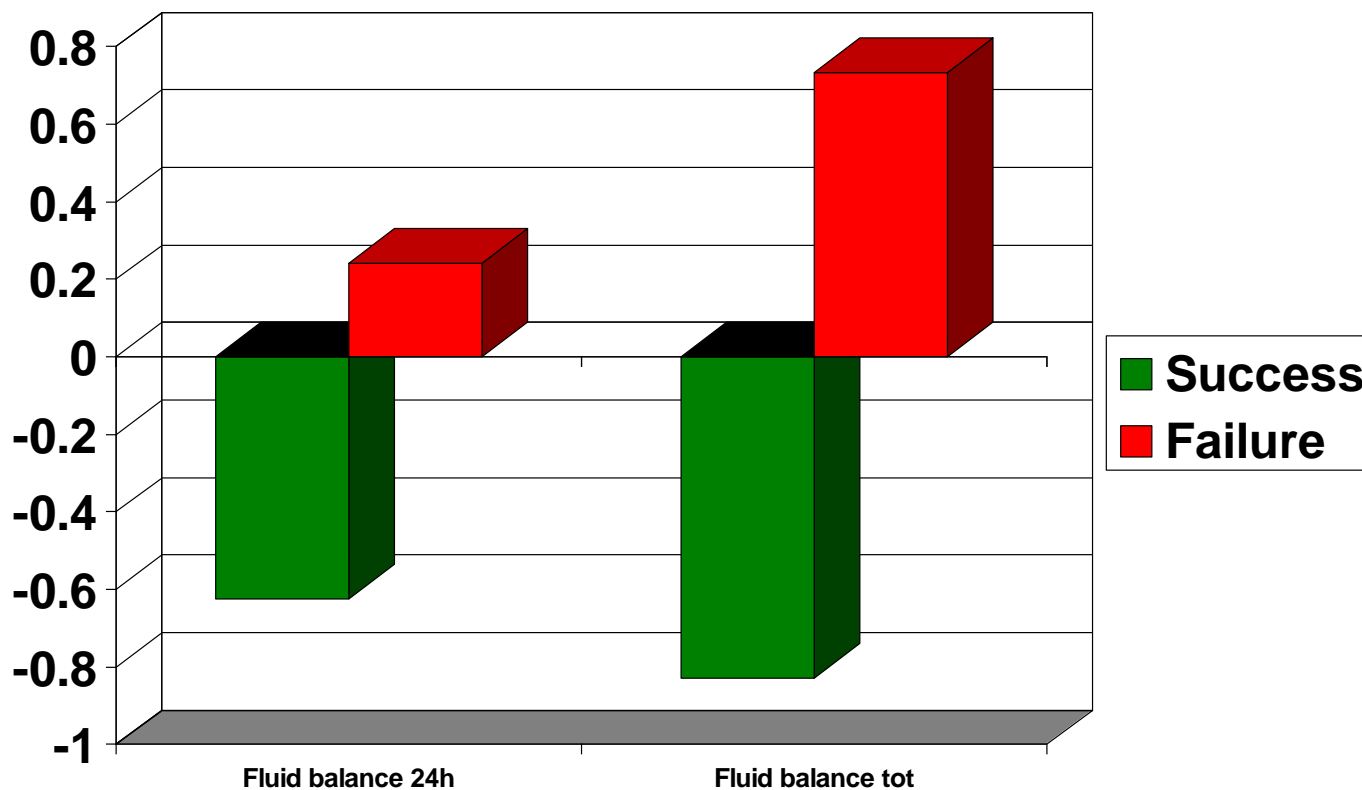


Weaning-Induced Pulmonary Edema

- Identification and mechanisms
- Importance of fluid overload

Anupama Upadya
Lisa Tilluckdharry
Visvanathan Muralidharan
Yaw Amoateng-Adjepong
Constantine A. Mantzios

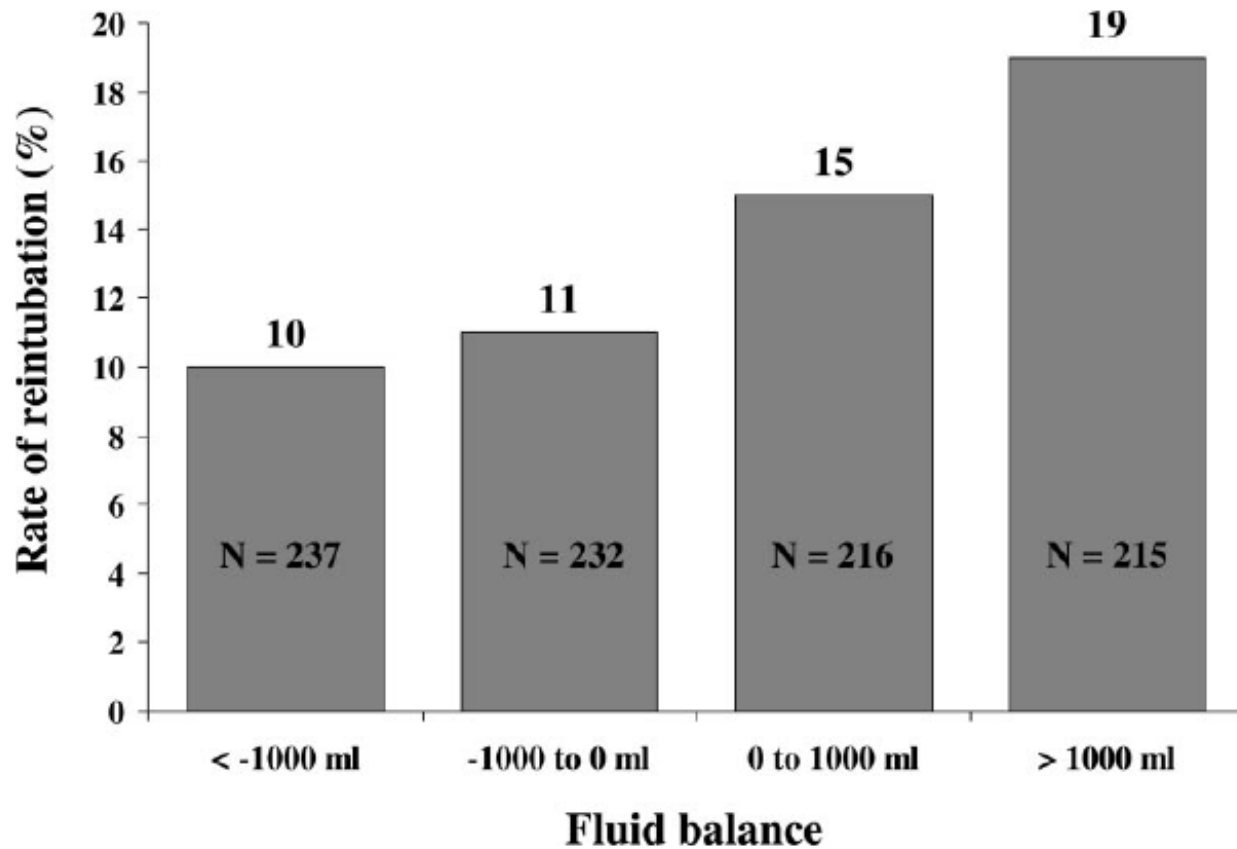
Fluid balance and weaning outcomes



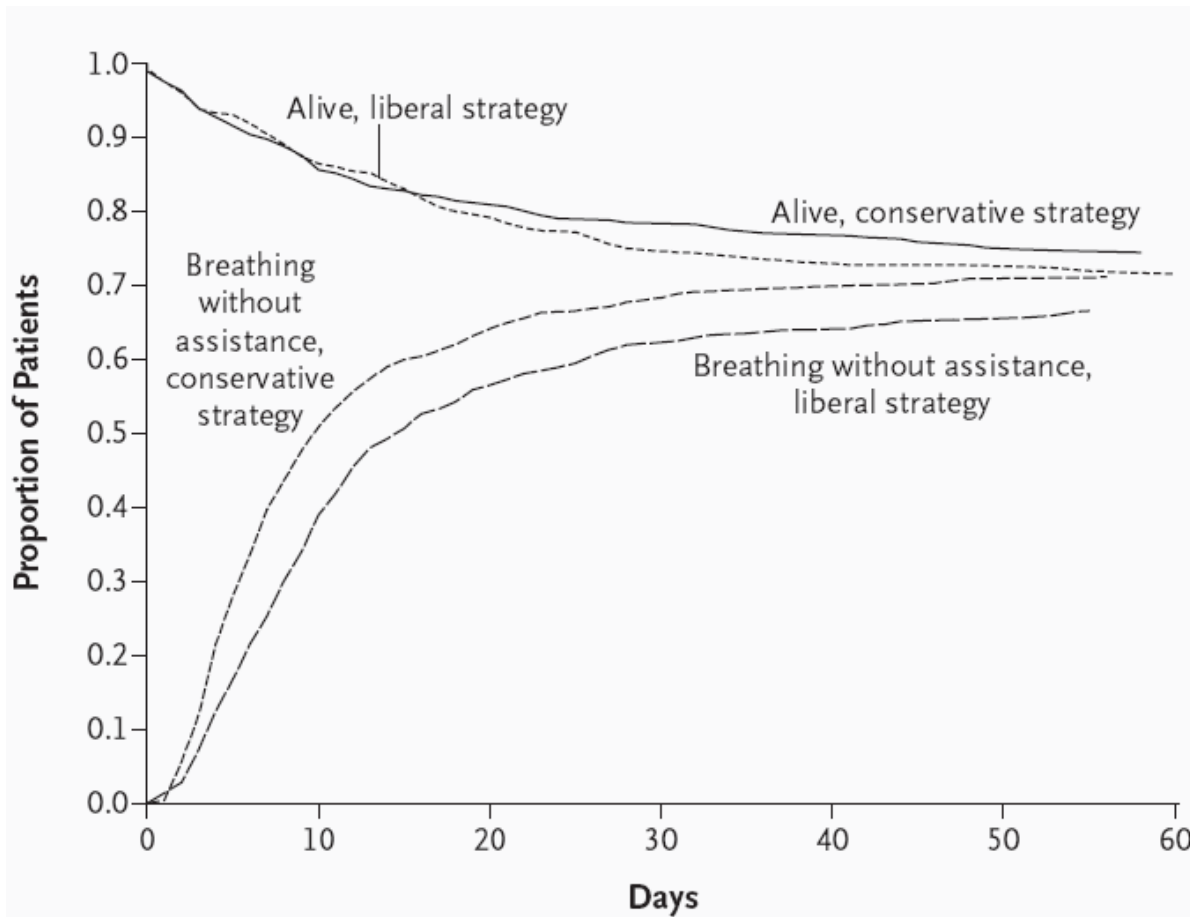
Weaning success (n=39)

Weaning failure (n=48)

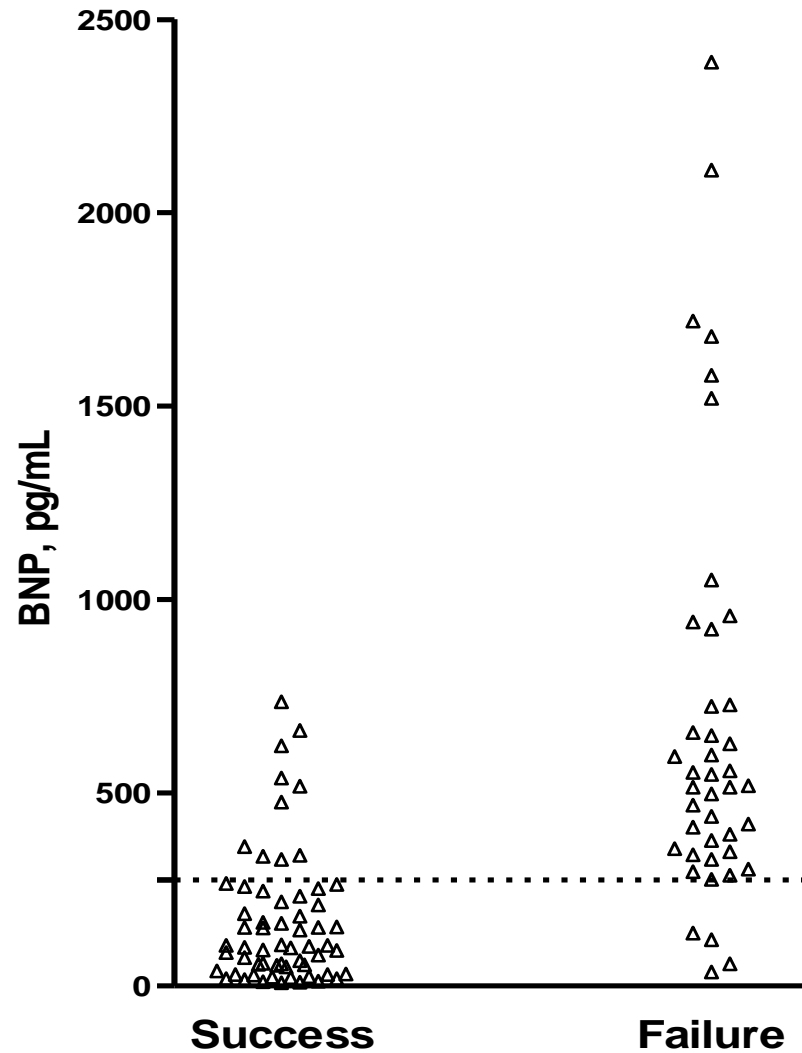
Fluid balance and reintubation

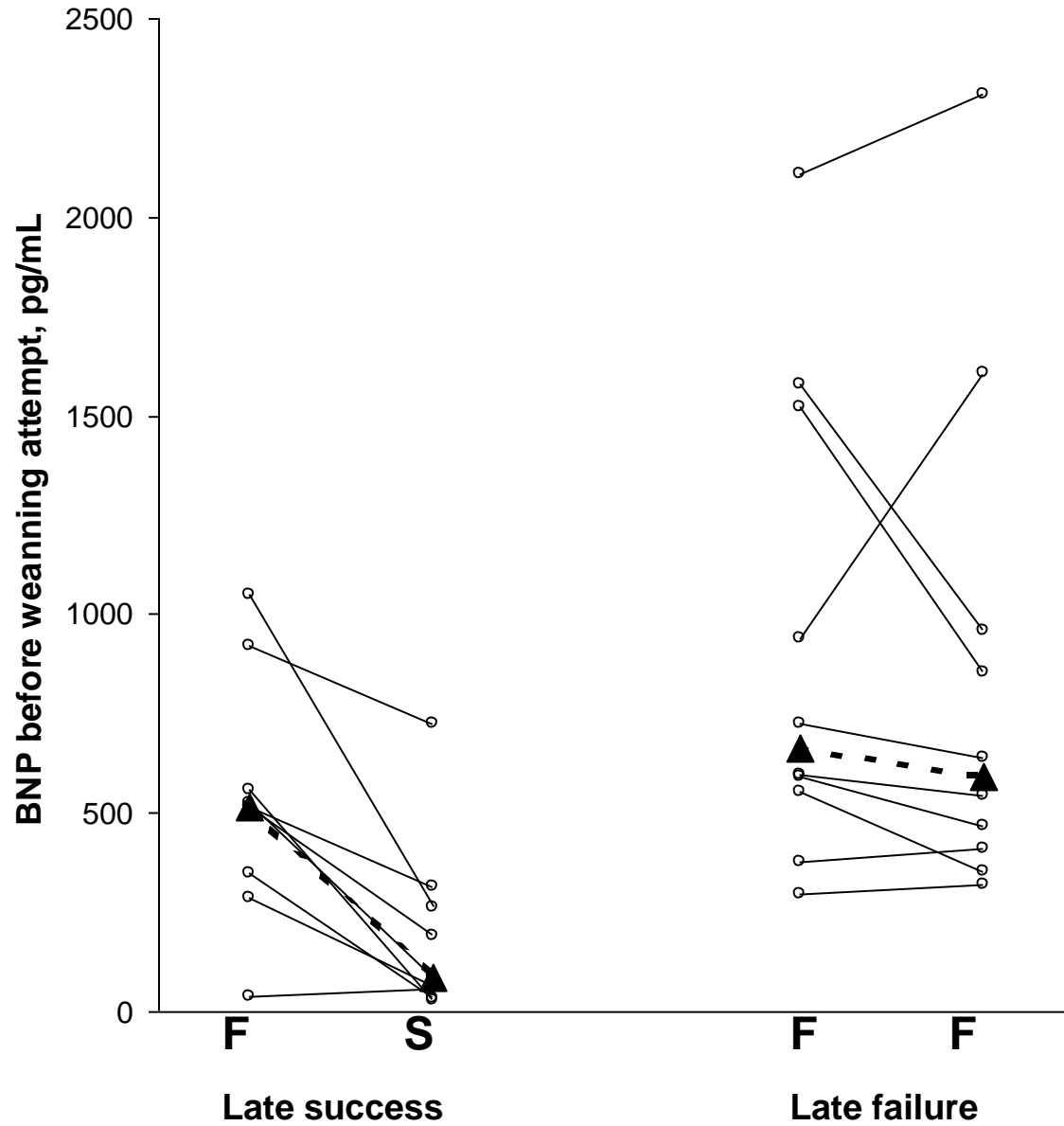


Fluid balance in ARDS



B TYPE NATRIURETIC PEPTIDE AND WEANING



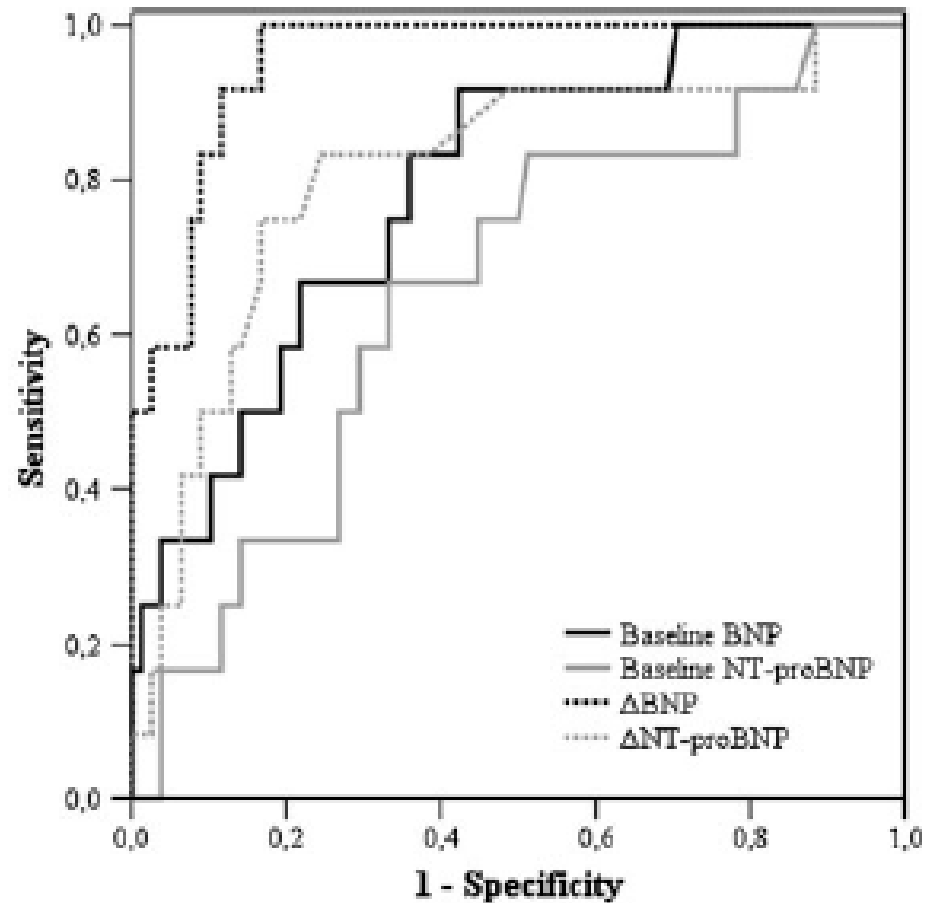


Weaning-Induced Pulmonary Edema

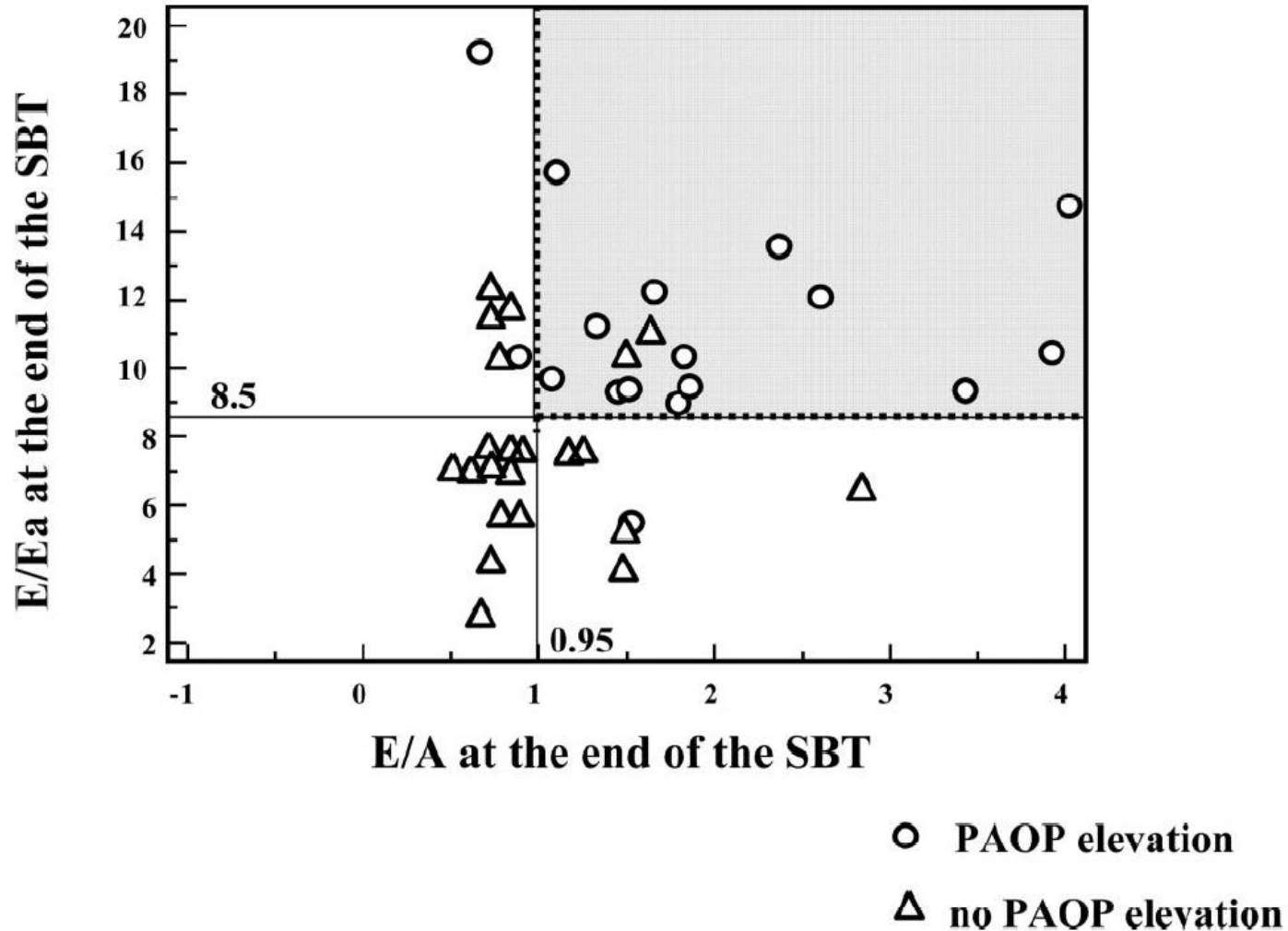
- Identification and mechanisms
- Importance of fluid overload
- Diagnosis

Lluís Zapata
Paula Vera
Antoni Roglan
Ignasi Gich
Jordi Ordóñez-Llanos
Antoni J. Betbesé

B-type natriuretic peptides for prediction and diagnosis of weaning failure from cardiac origin

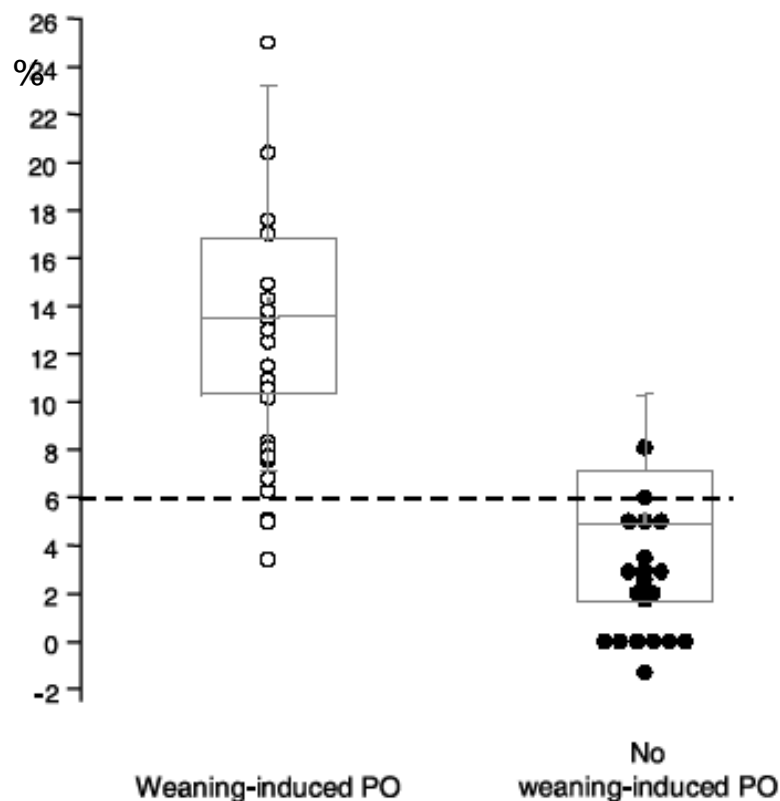


ECHO (vs PAC)



Nadia Anguel
Xavier Monnet
David Osman
Vincent Castelain
Christian Richard
Jean-Louis Teboul

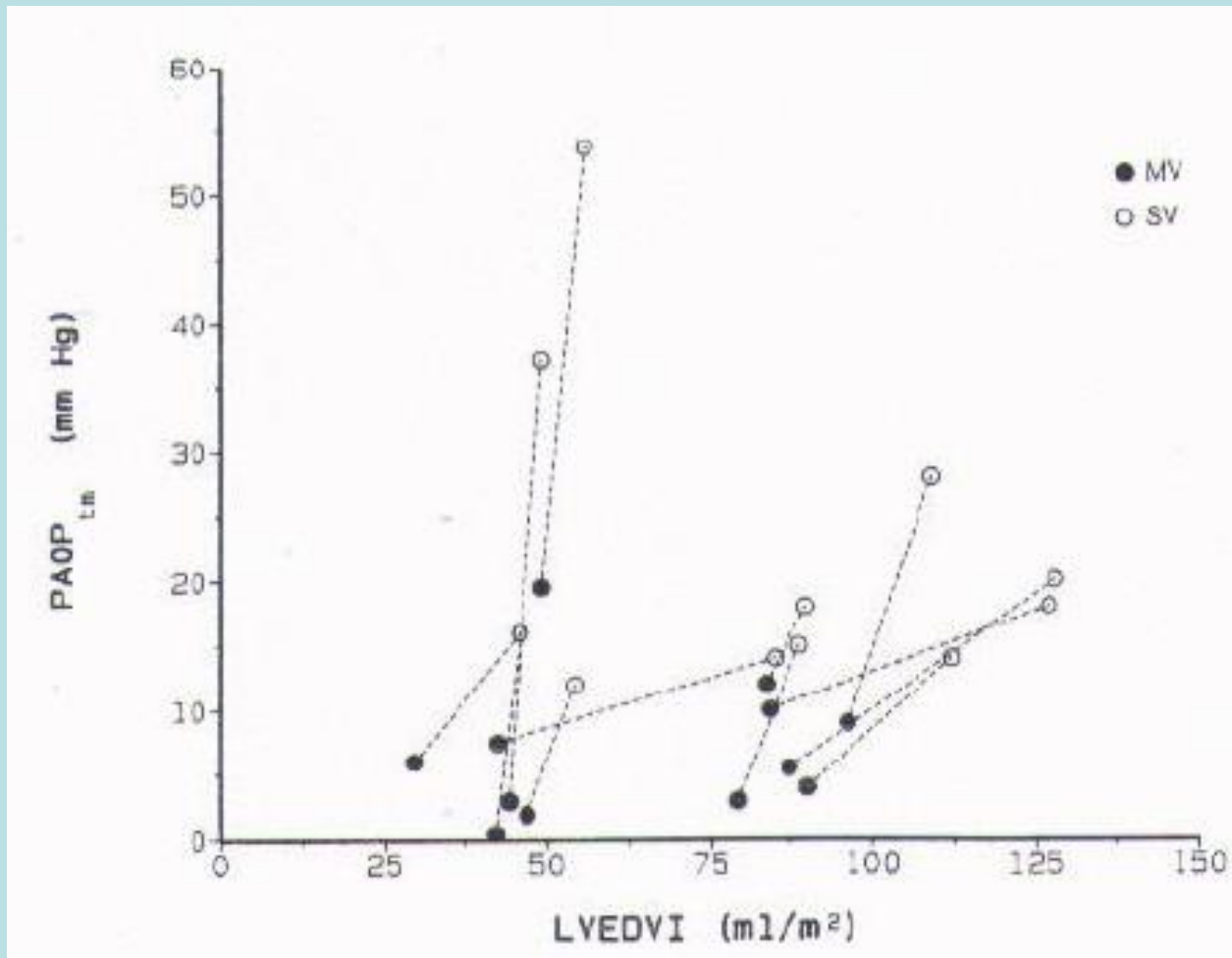
Increase in plasma protein concentration for diagnosing weaning-induced pulmonary oedema



Weaning-Induced Pulmonary Edema

- Identification and mechanisms
- Importance of fluid overload
- Diagnosis
- Cardiac dysfunction

SYSTOLIC or DIASTOLIC DYSFUNCTION



Successful weaning from mechanical ventilation after coronary angioplasty

A. Demoule¹, Y. Lefort¹, M.-E. Lopes² and F. Lemaire^{1*}

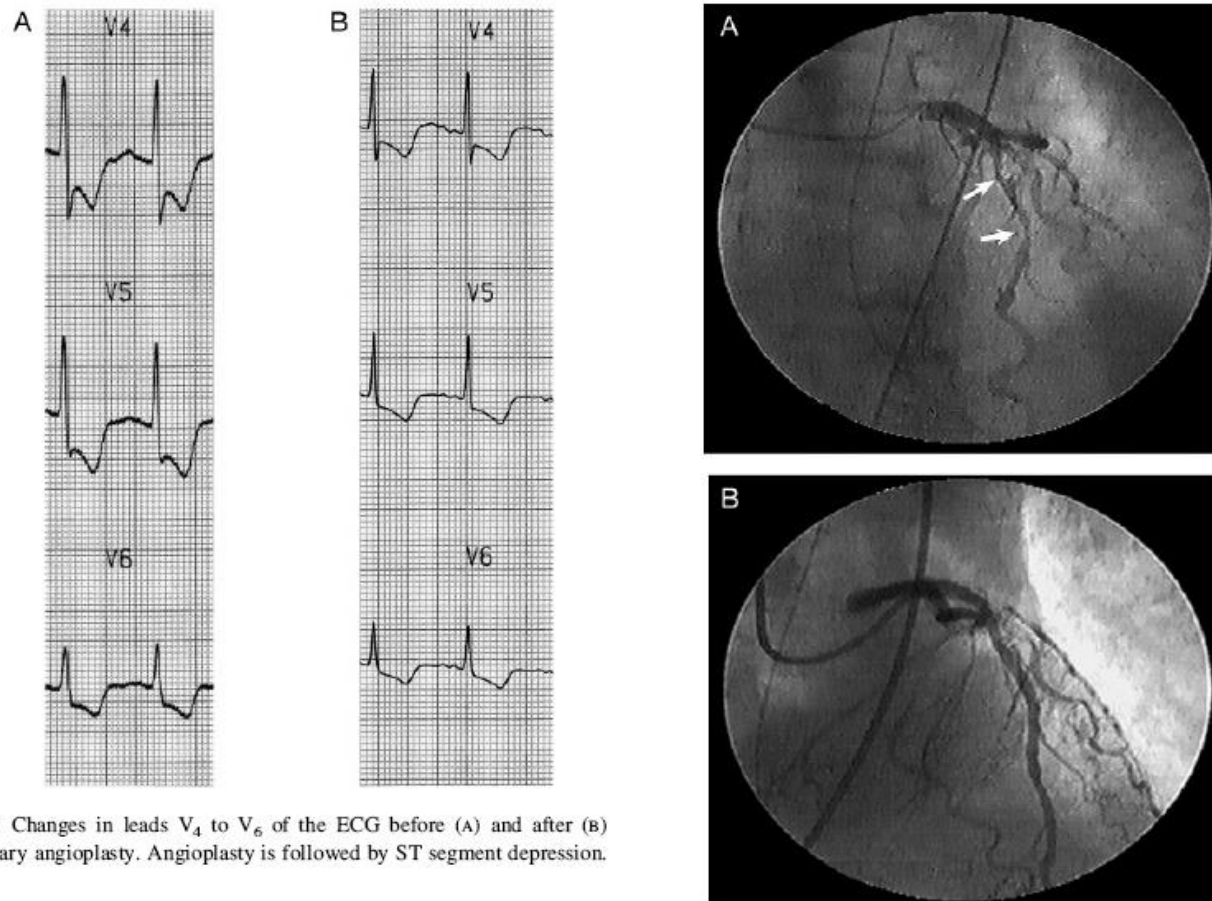


Fig 1 Changes in leads V₄ to V₆ of the ECG before (A) and after (B) coronary angioplasty. Angioplasty is followed by ST segment depression.

Weaning-Induced Pulmonary Edema

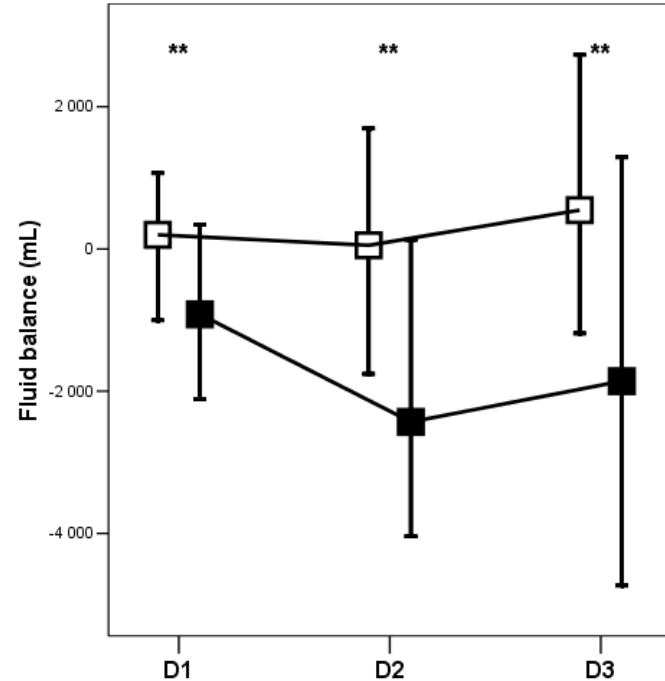
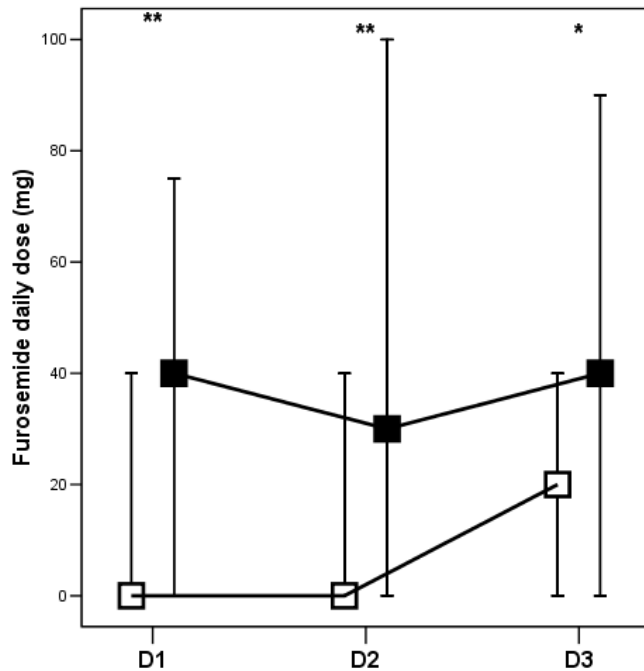
- Identification and mechanisms
- Importance of fluid overload
- Diagnosis
- Cardiac dysfunction
- Management

Natriuretic Peptide-driven Fluid Management during Ventilator Weaning

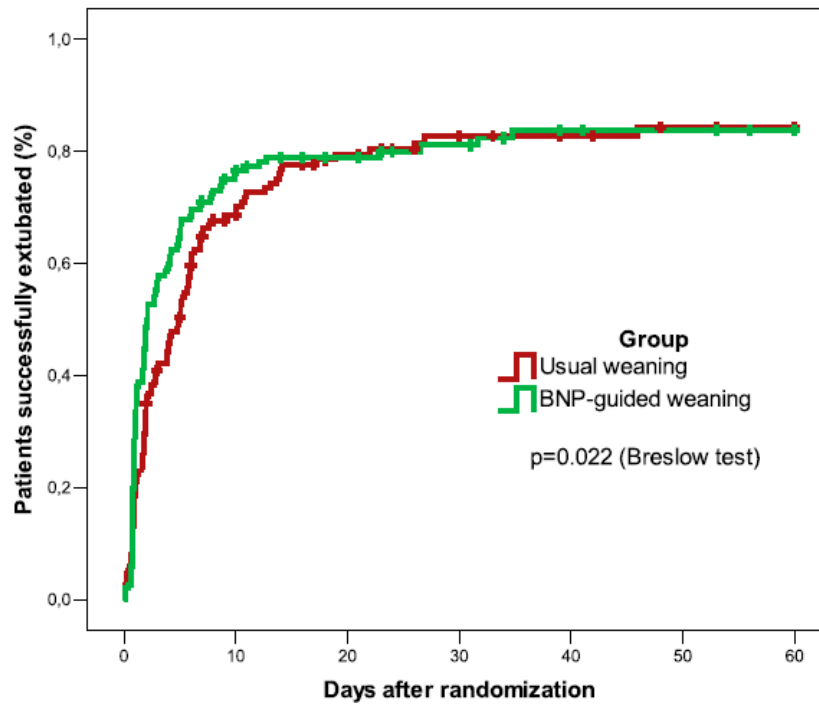
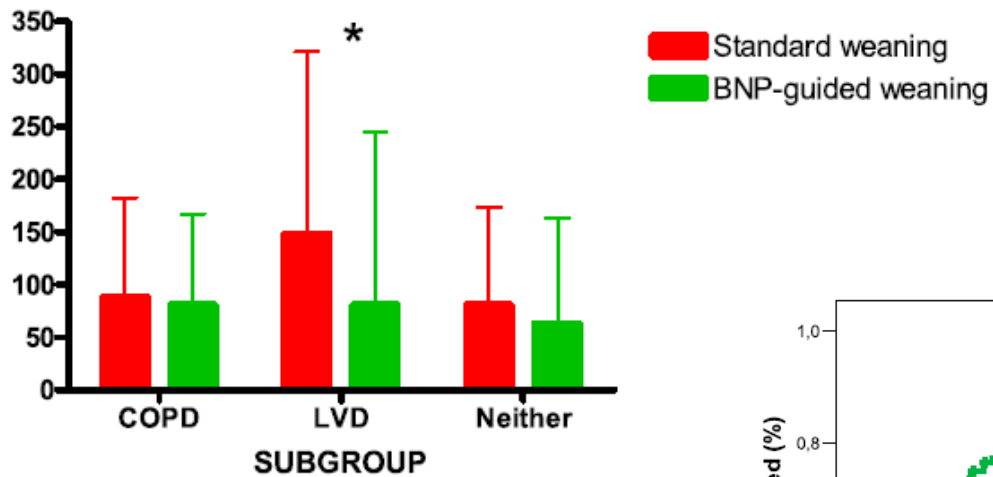
A Randomized Controlled Trial

AJRCCM 2012

Armand Mekontso Dessap^{1,2,3}, Ferran Roche-Campo^{1,4}, Achille Kouatchet⁵, Vinko Tomicic⁶, Gaetan Beduneau⁷, Romain Sonnevile⁸, Belen Cabello⁴, Samir Jaber⁹, Elie Azoulay¹⁰, Diego Castanares-Zapatero¹¹, Jerome Devaquet¹², François Lellouche¹³, Sandrine Katsahian¹⁴, and Laurent Brochard^{1,2,3,15}



*p<0.05 between usual weaning and BNP-guided weaning
**p<0.01 between usual weaning and BNP-guided weaning



Weaning: Heart or Lungs?

- Fluid overload and/or cardiac dysfunction are among the main causes of difficult weaning
- Cardiac biomarkers may help to detect, prevent and treat fluid overload
- Specific cardiac mechanisms may need to be sorted out for appropriate therapy