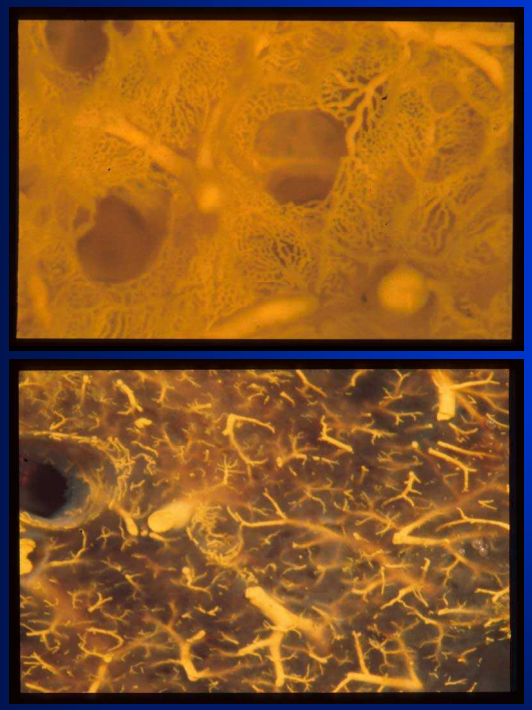
EVALUATION DE LA FONCTION VD DANS LE SDRA

POURQUOI ET COMMENT UTILISER L'ECHOCARDIOGRAPHIE?

Antoine Vieillard-Baron, Boulogne, France

L’atteinte pulmonaire induit une augmentation de postcharge du VD

- **Par destruction de la circulation pulmonaire**



W Zapol

- **En induisant un remodelage vasculaire pulmonaire**

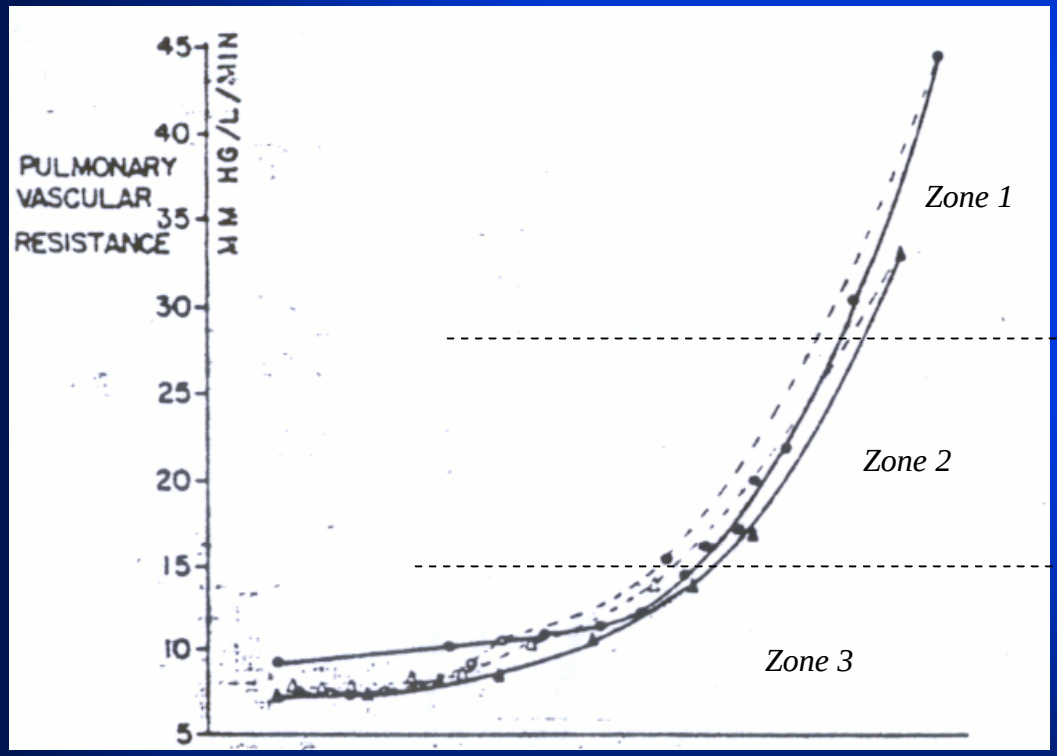
Table 1.–Factors contributing to pulmonary hypertension in acute respiratory distress syndrome

Functional	Mediator-induced vasoconstriction
	Hypoxic pulmonary vasoconstriction
Structural	Vascular compression by oedema fluid or fibrosis
	Vascular wall remodelling
	Thromboembolism
	Reduced lung volume

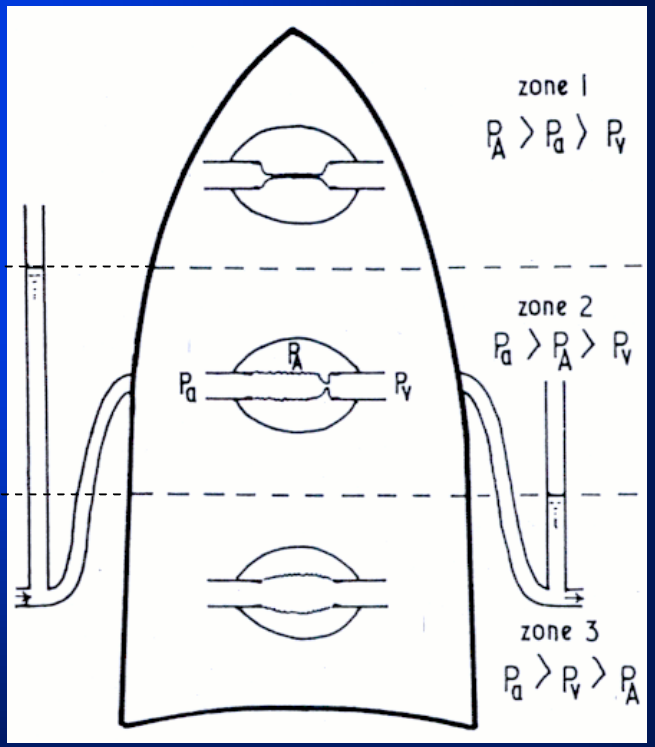
Moloney Eur Respir J 2003

La ventilation mécanique peut dégrader la fonction du VD

Whittenberger JAP 1960



West JAP 1964

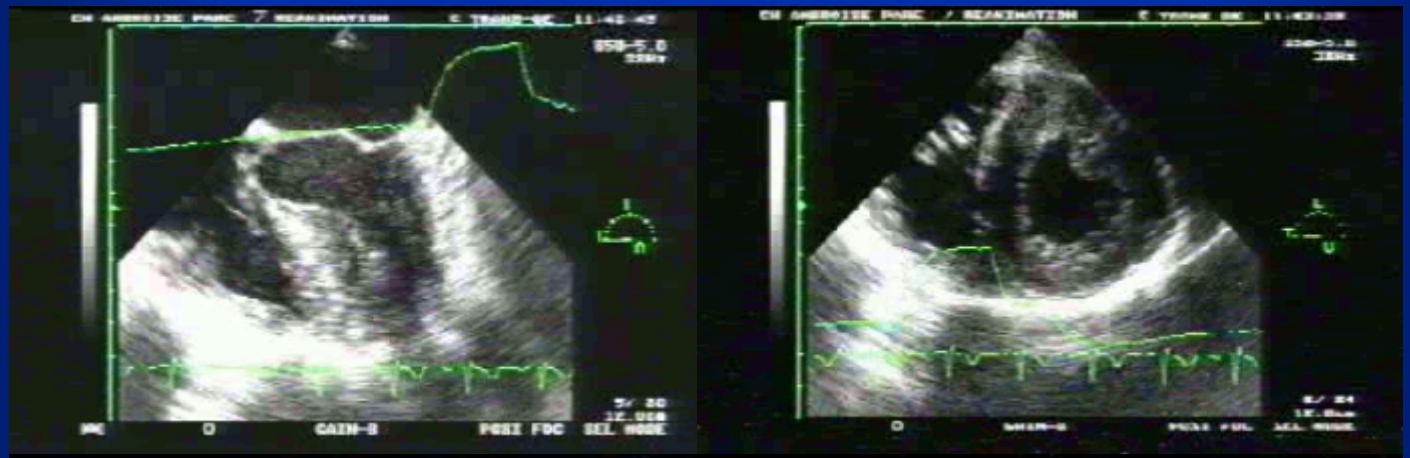


CONSEQUENCES:LE CPA

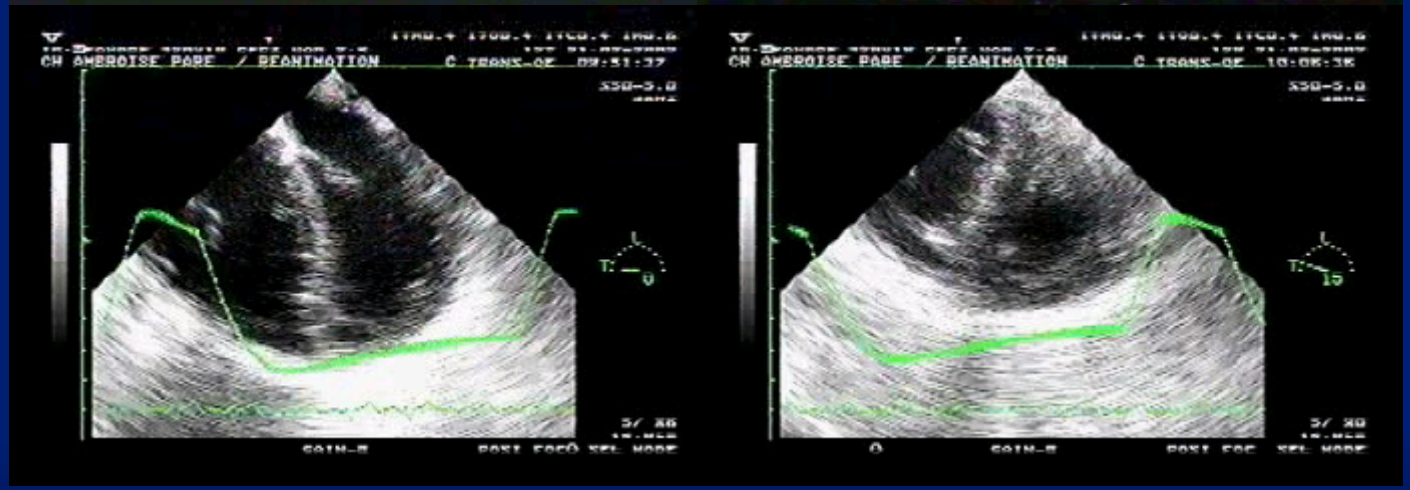
LV long axis view

LV short axis view

No ACP



ACP



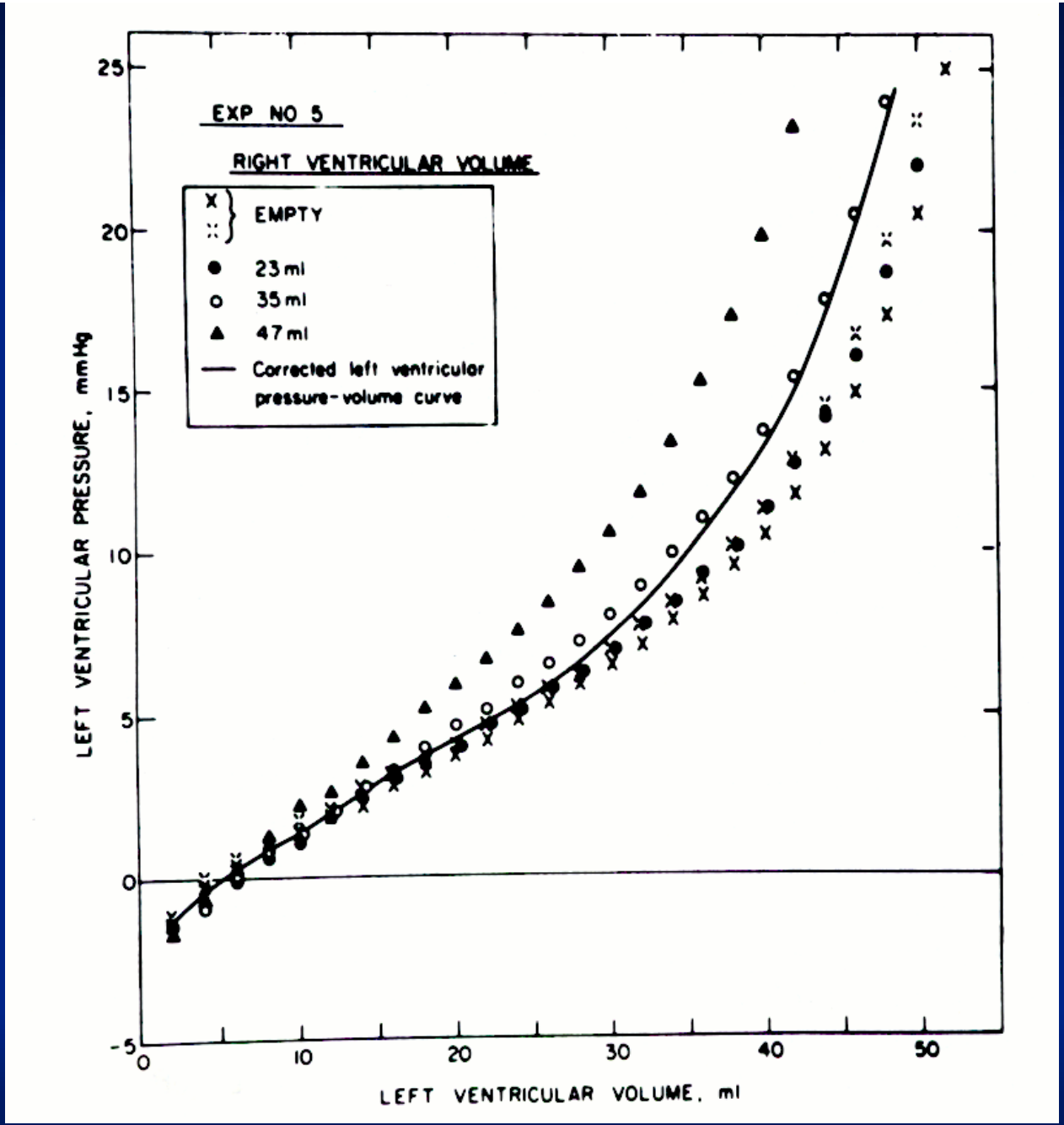
Surcharge diastolique VD

Surcharge systolique VD

CONSEQUENCES POUR LE VG

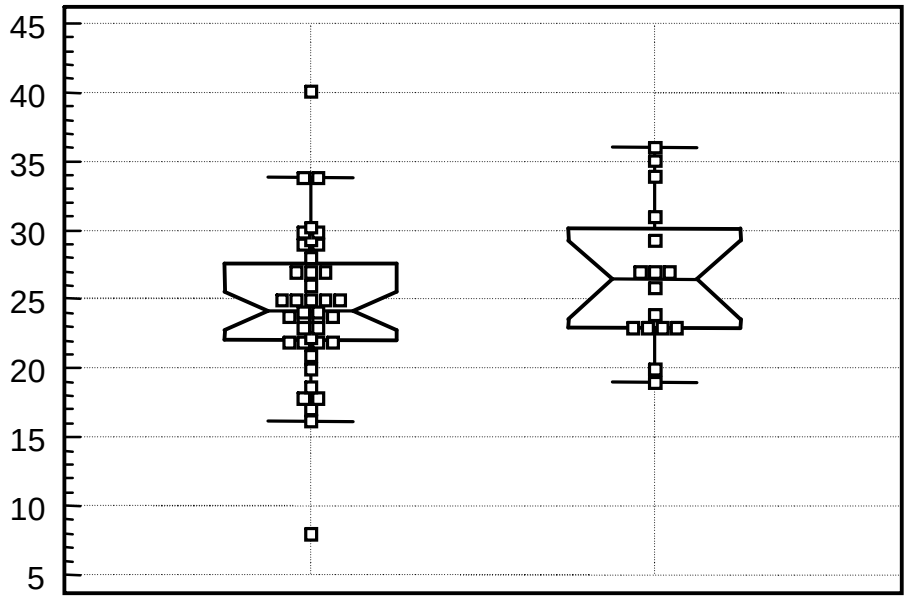
- A cause du péricarde, la somme des dimensions cardiaques reste constante en aiguë

- Toute dilatation du VD entraîne une restriction du VG avec une anomalie de sa relaxation.

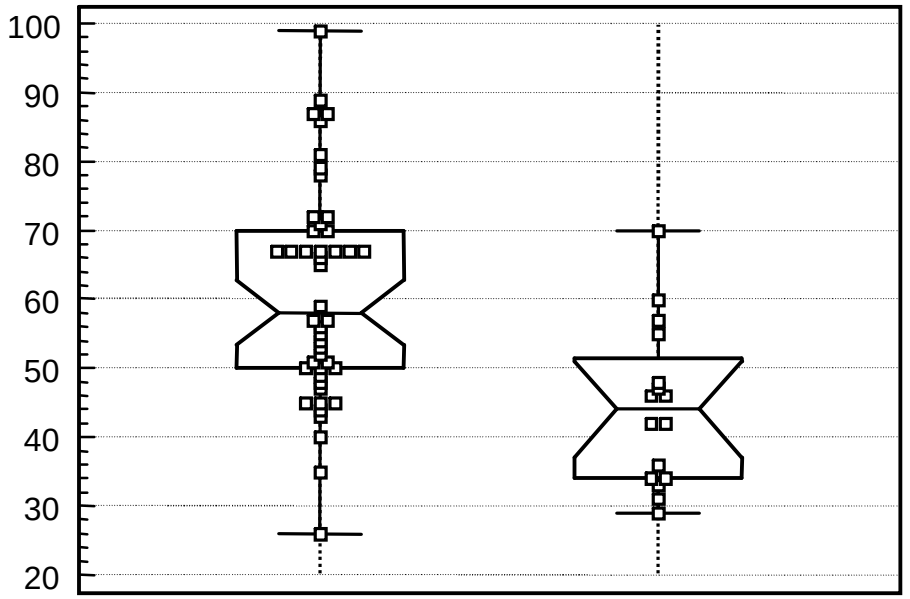


Taylor AJP 1967

EDA RV+LV (cm^2)



LVEDV (cm^3)



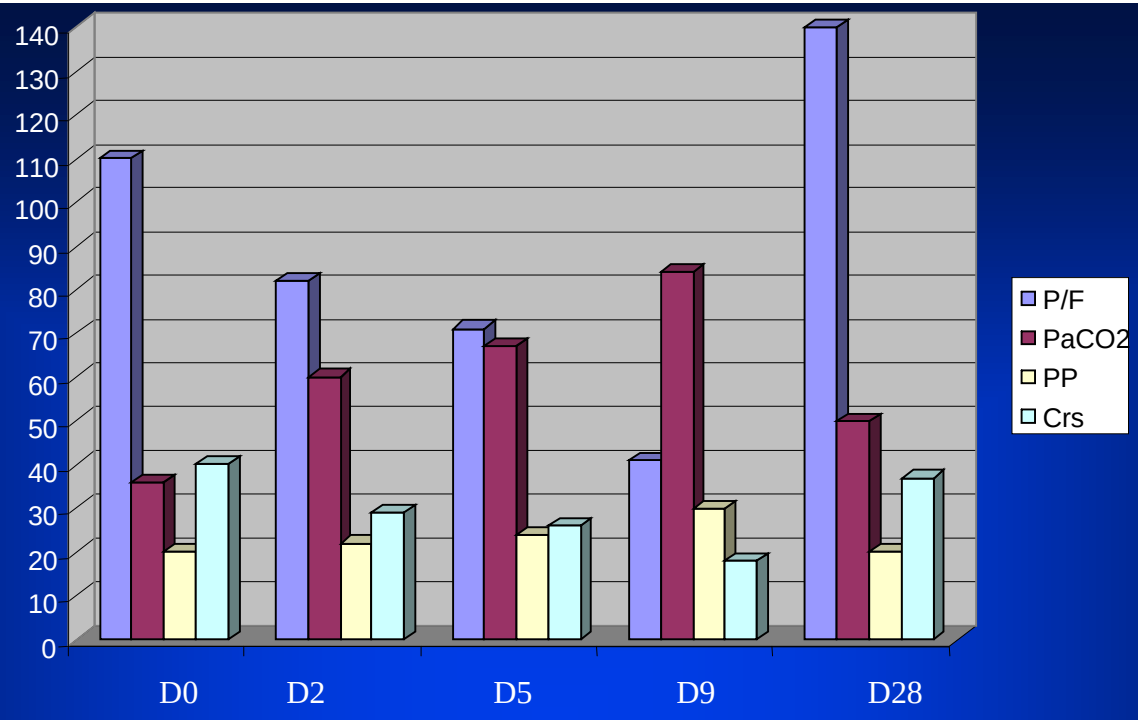
Vieillard-Baron CCM 2001

ETO A J3

75 ARDS (1996-2001)

	Gr I (56 patients) no ACP (75 %)	Gr II (19 patients) ACP (25 %)	
LVEDV	60 ± 16	50 ± 15*	(cm^3/m^2)
E/A mit	1.3 ± 0.4	0.8 ± 0.2*	
SI	32± 9	25 ± 9*	(cm^3/m^2)
HR	96 ± 19	112 ± 16*	(bt/mn)

Vieillard-Baron CCM 2001



P/F 80
Crs 25 mL/cmH_2O

P/F 40
Crs 20 mL/cmH_2O
NE 0.6 µg/kg/min

P/F 35
Crs 11 mL/cmH_2O
NE 1.5 µg/kg/min

	"historical" ARDS (n = 33)	"recent" ARDS (n = 37)
TV (ml/kg)	13 ± 2	9 ± 2*
EIP ($cm H_2O$)	39 ± 4	25 ± 4*
EEP ($cm H_2O$)	10 ± 4	6 ± 4*
$PaCO_2$ (mm Hg)	36 ± 6	51 ± 10*

Jardin ICM 1999

Monitoring

Incidence du cœur pulmonaire aigu

61%
Jardin CCM 1985

25%
Vieillard-Baron CCM 2001

Mortalité 64%

Mortalité 32%

I

IMPACT DE LA PRESSION PLATEAU SUR LA FONCTION VD

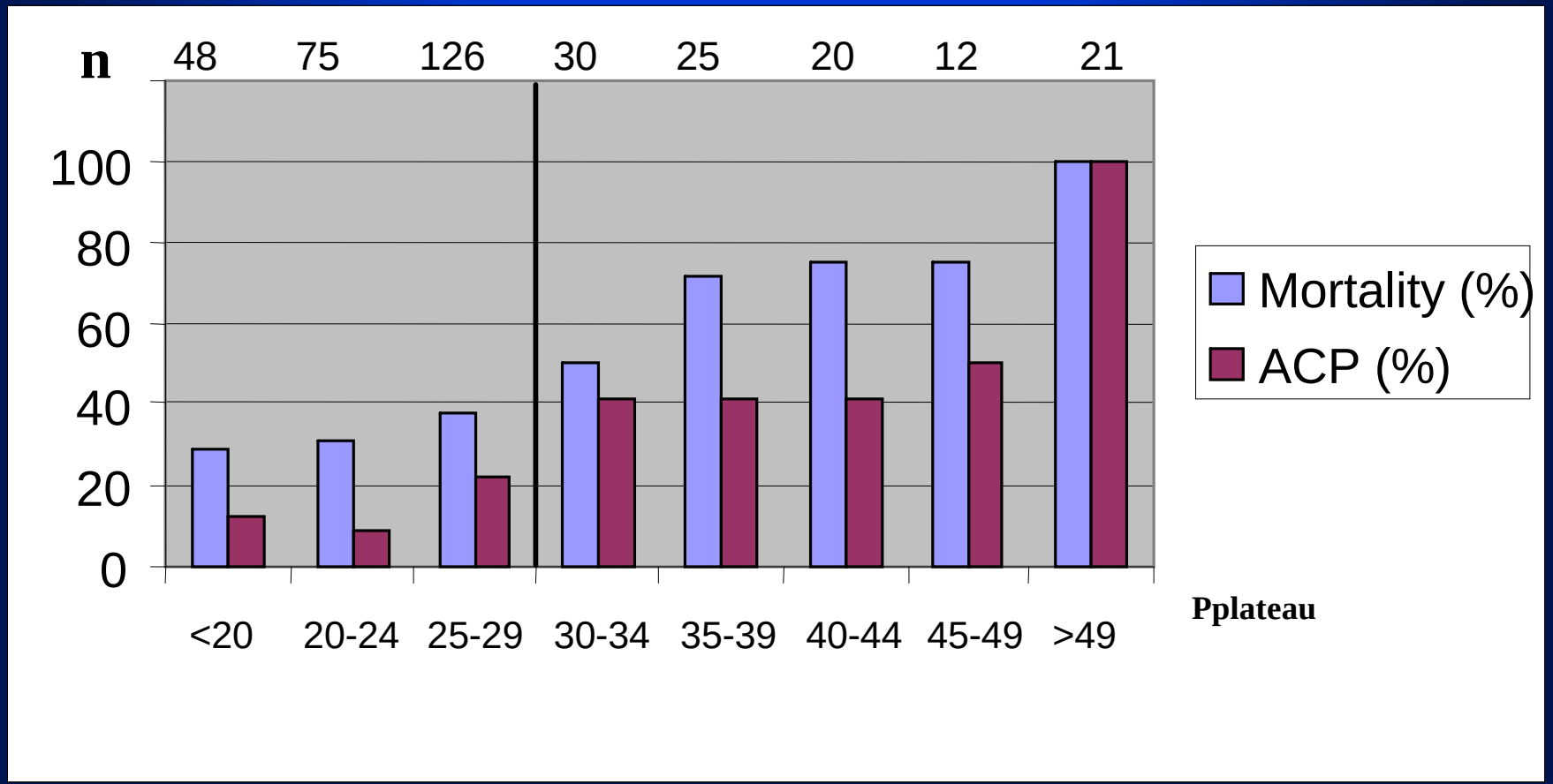
Facteurs prédictifs de CPA

23 ARDS 1985
Jardin CCM 1985
75 ARDS 1996-2001
Vieillard-Baron CCM 2001

	No ACP (65)	ACP (33)	univariate	multivariate
Age	52 ± 17	48 ± 16	NS	
IGS II	54 ± 17	51 ± 13	NS	
PaO_2/FIO_2 (mmHg)	131 ± 53	104 ± 31	0.005	NS
$PaCO_2$ (mmHg)	45 ± 10	45 ± 13	NS	
TV (ml/kg)	9.3 ± 2.3	10.7 ± 2.8	0.1	NS
Crs (ml/cm H_2O)	38 ± 8	31 ± 7	0.0000	NS
Plateau (cm H_2O)	25 ± 7	37 ± 12	0.0000	0.04
PEEP(cm H_2O)	6 ± 4	10 ± 4	0.0000	NS

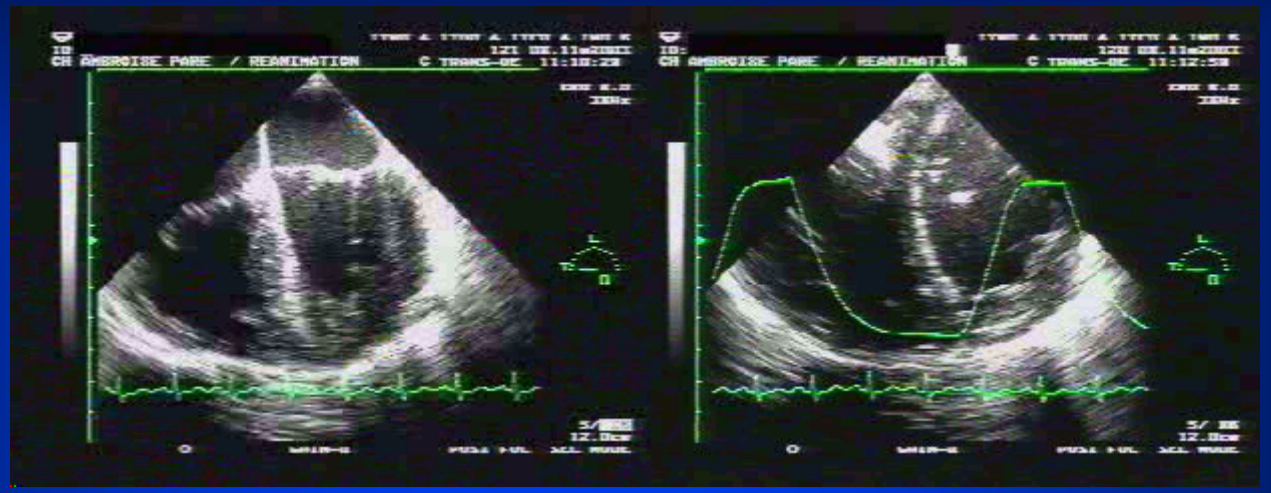
357 ARDS patients investigated by echocardiography between 1980 and 2005

- **1980-1992 (156 patients) airway pressure was not limited**
- **1993-2005 (201 patients) airway pressure was limited (Pplateau ≤ 30 cmH_2O)**



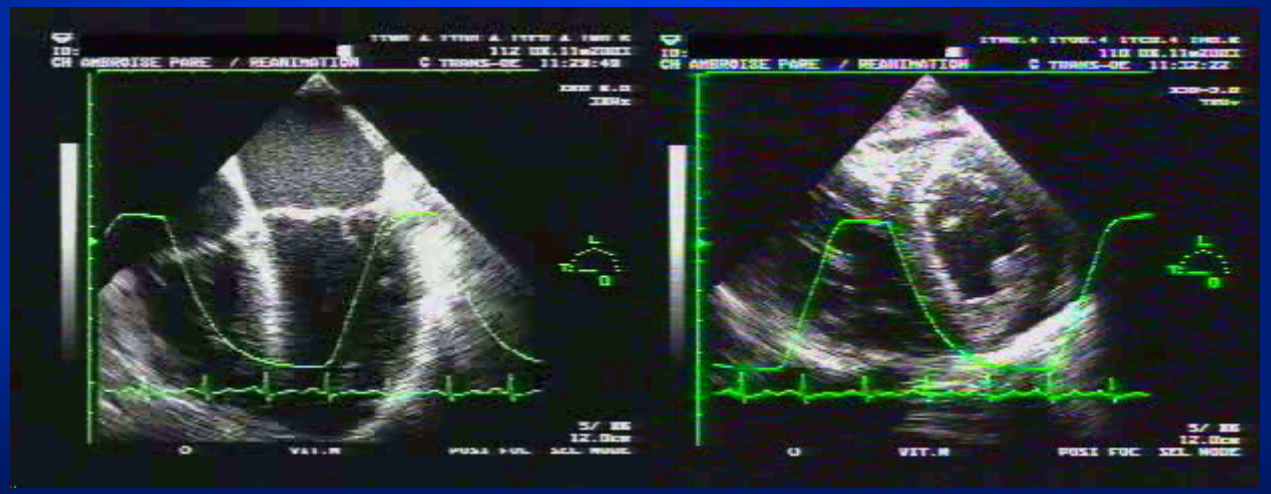
400 x 25
PEEP 5
PP 33

SAP 92 mmHg

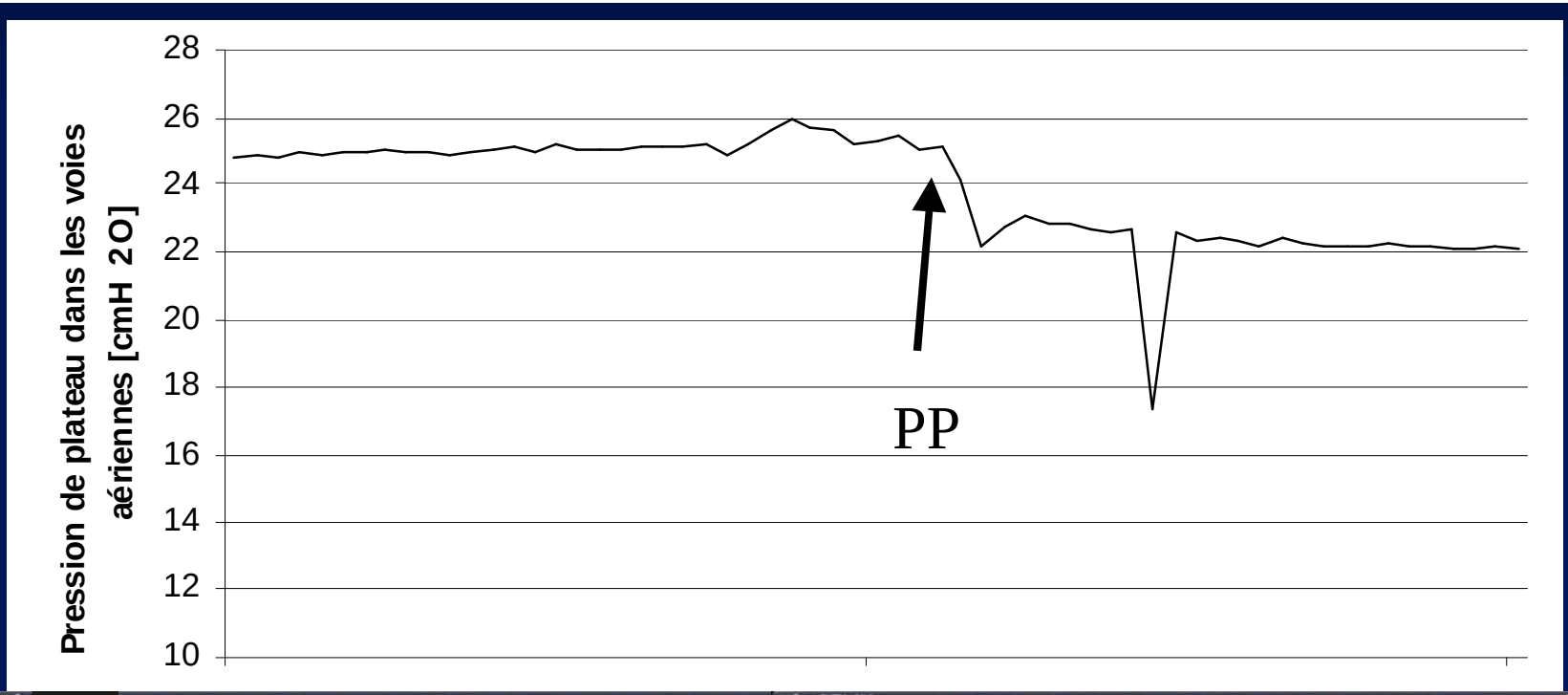


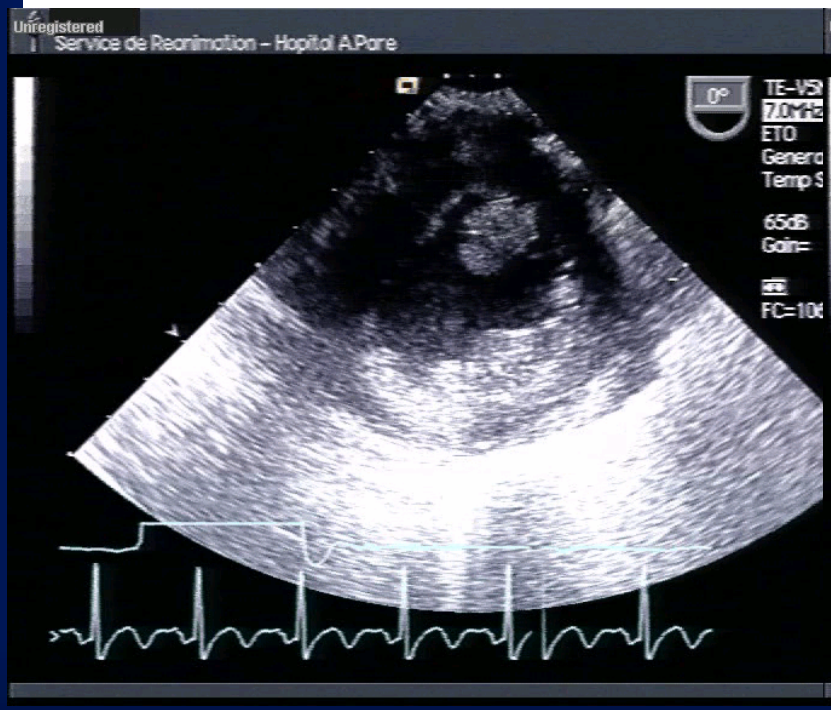
350 x 25
PEEP 5
PP 26

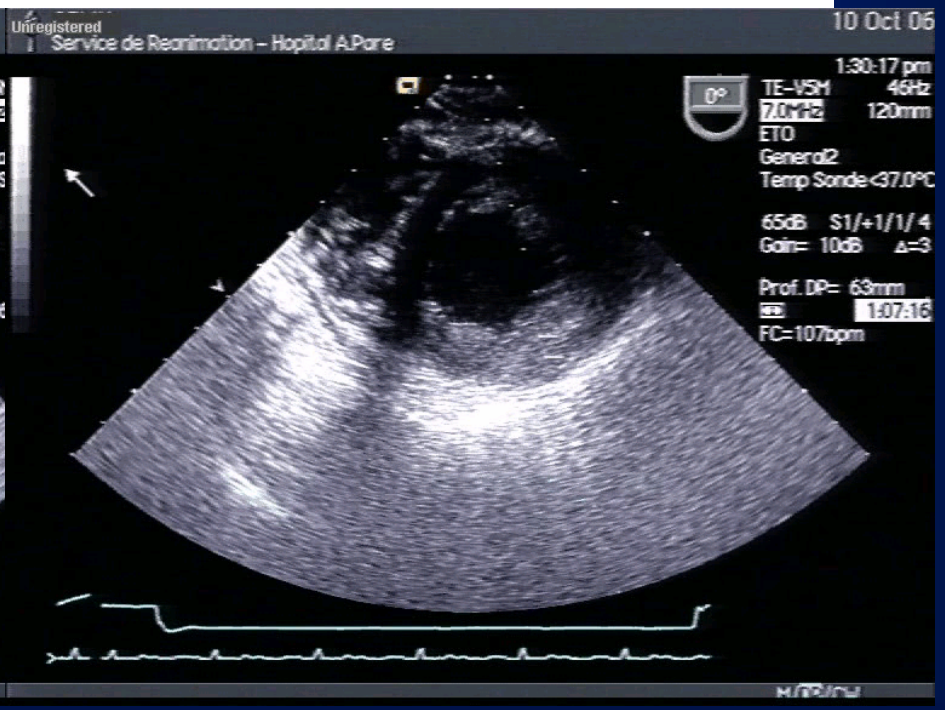
SAP 123 mmHg



	Parameters	Odds ratio	PP, PEEP
Monchi ***AJRCCM 1998*** ***1992-1995***	**Pra > Ppao**	**5.1 [1.5-17.1]**	**PP 31 [27-38]**
Squara ***ICM 1998*** ***1985-1987***	**RVSW/LVSW (%)**	**[10-35]**	**High PP**
Richard C ***SRLF 2004*** ***1999-2001***	**Pra > Ppao**	**2.11 [1.10-4.03]**	**?**
Vieillard-Baron ***CCM 2001*** ***1996-2001***	**ACP ECHO**	**NS**	**PP<27** **PEEP 7 ± 3** **Prone position**

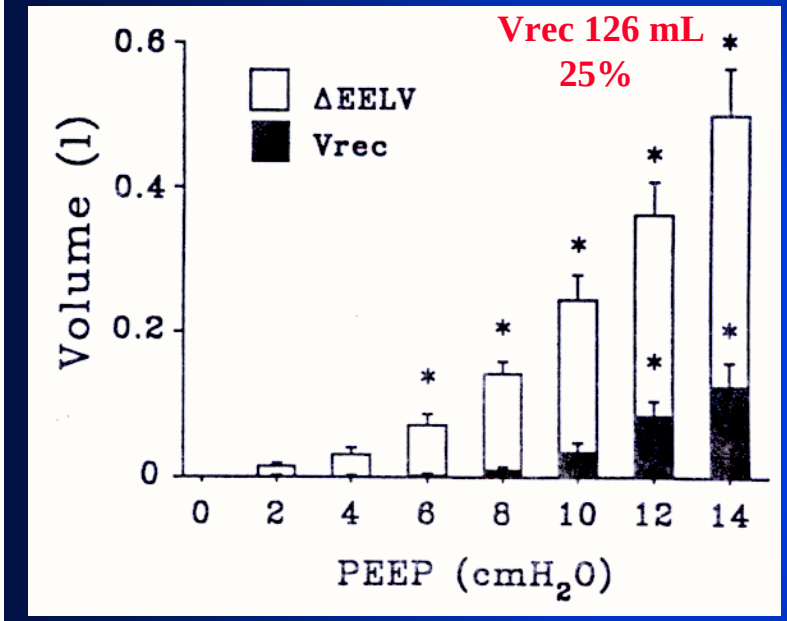

Pression de plateau dans les voies aériennes [cmH 2O]
28
26
24
22
20
18
16
14
12
10
PP


Unregistered
Service de Reanimation – Hopital A.Pare
0°
TE-V5M
7.0MHz
ETO
65dB
Gain=
FC=10

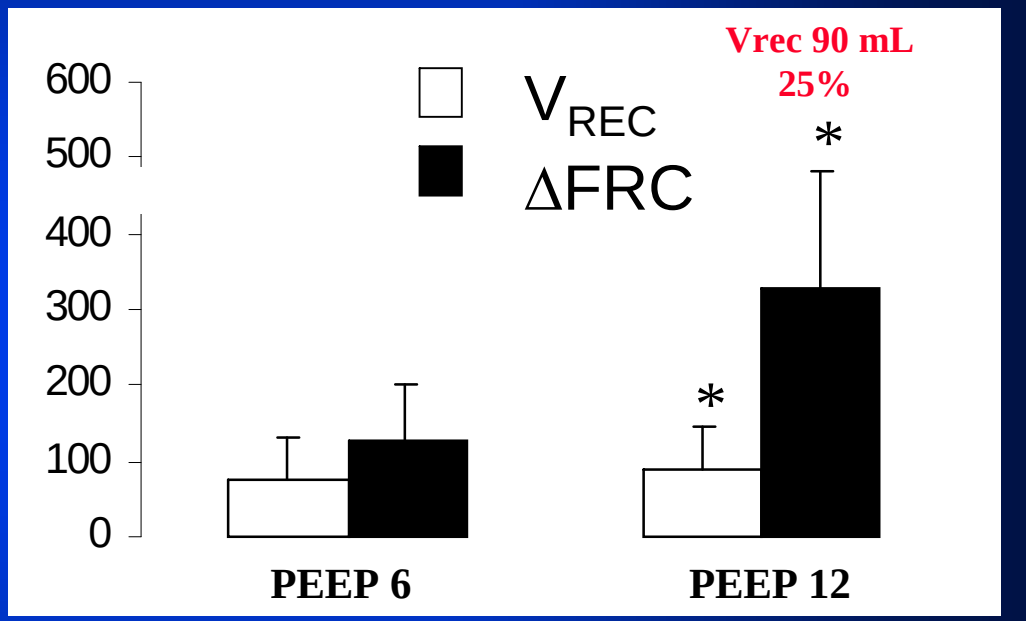

Unregistered
Service de Reanimation – Hopital A.Pare
10 Oct 06
1:30:17 pm
0°
TE-V5M
46Hz
7.0MHz
120mm
ETO
General2
Temp Sonde<37.0°C
65dB S1/+1/1/4
Gain= 10dB Δ=3
Prof. DP= 63mm
1:07:16
FC=107bpm

II

IMPACT DE LA PEEP SUR LA FONCTION VD



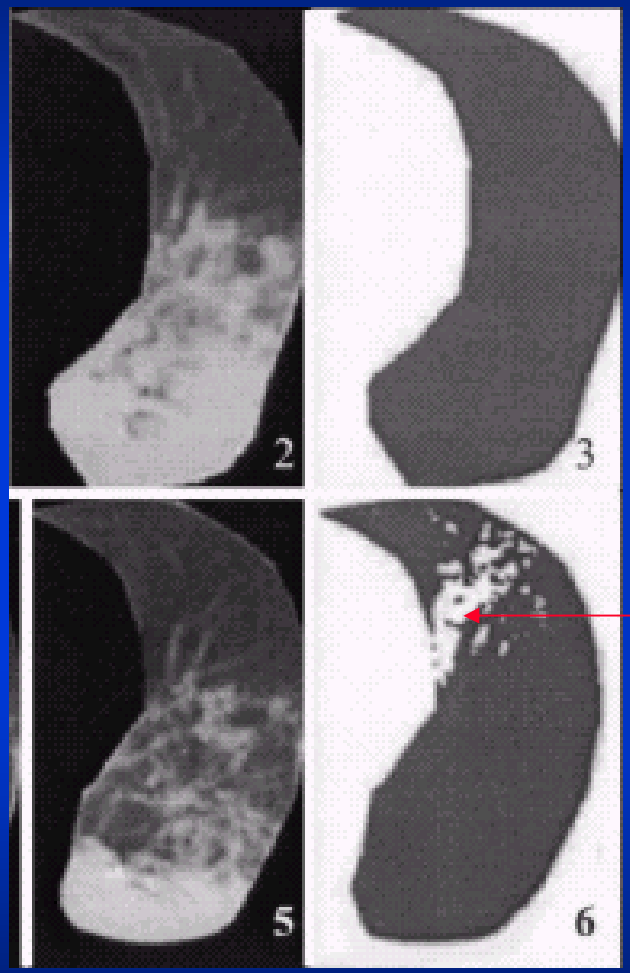
Valta JCC 1993



Vieillard-Baron ICM 2003

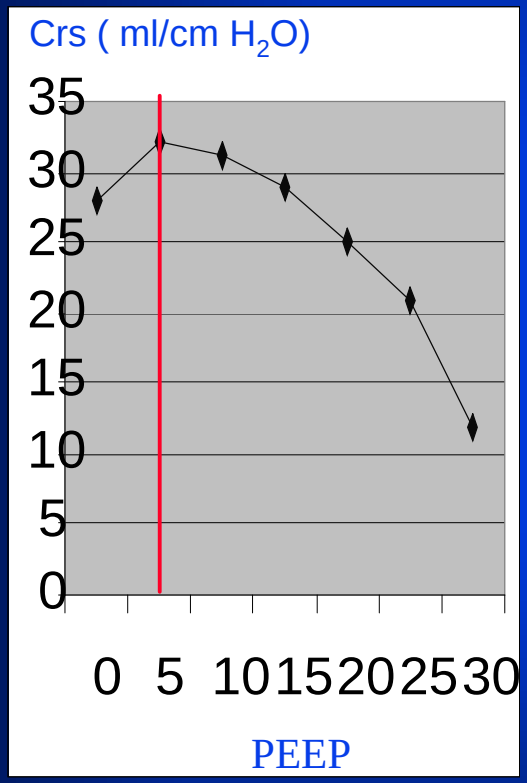
ZEEP

PEEP 15

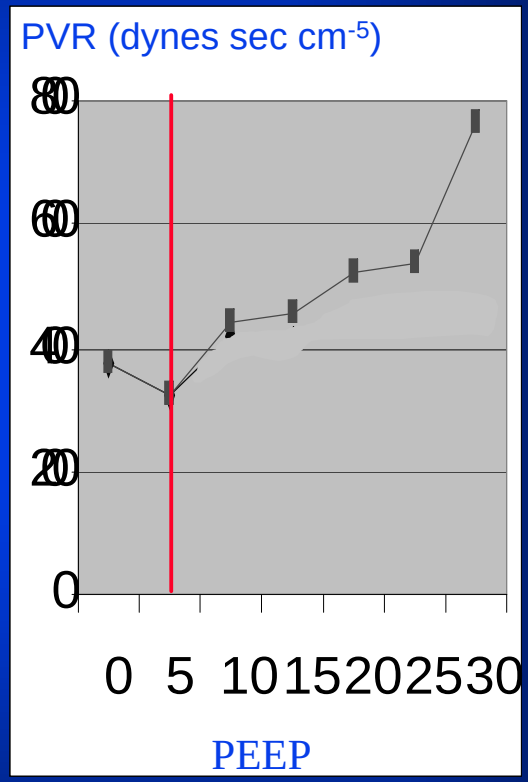


Overdistension
Anterior area

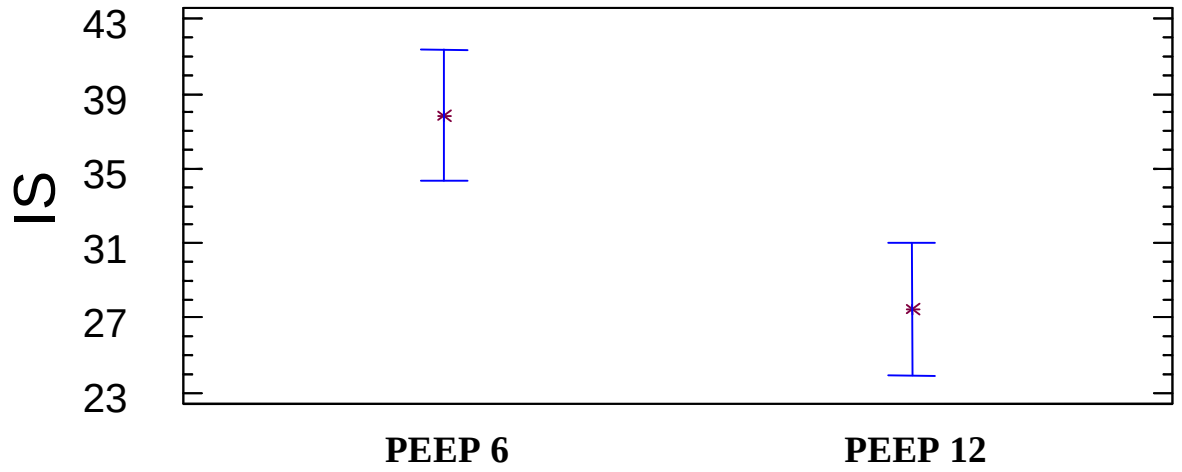
Rouby CCM 2004

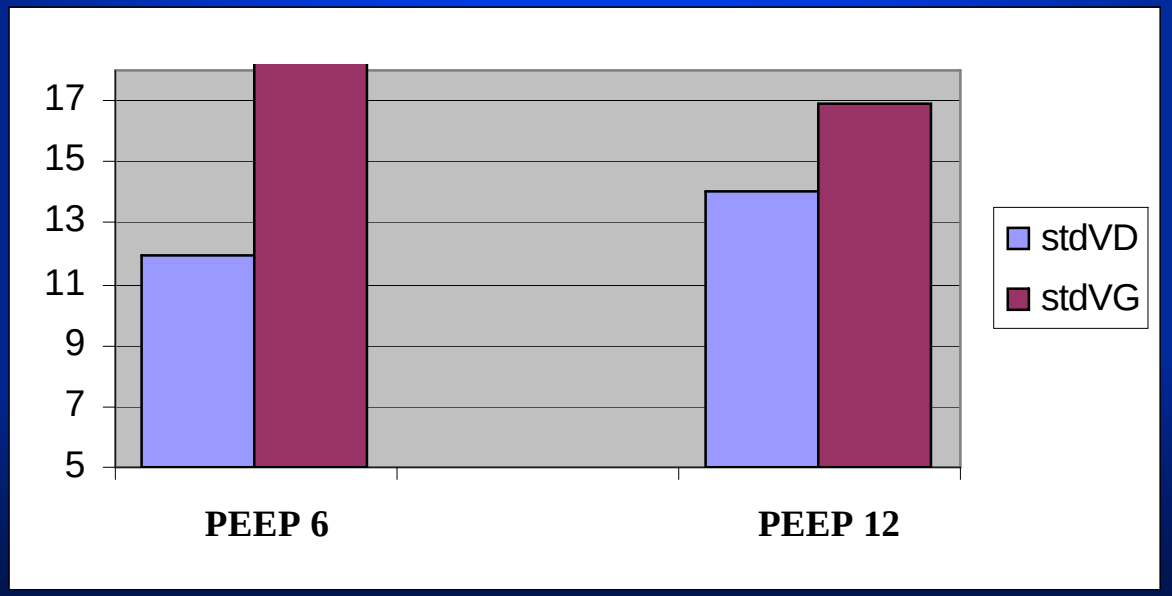


Jardin N Engl J Med 1981

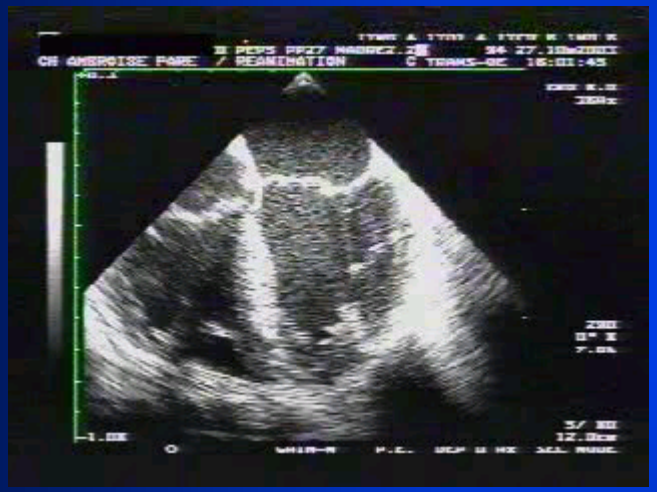


Jardin N Engl J Med 1981


43
39
35
31
27
23
SI
PEEP 6
PEEP 12

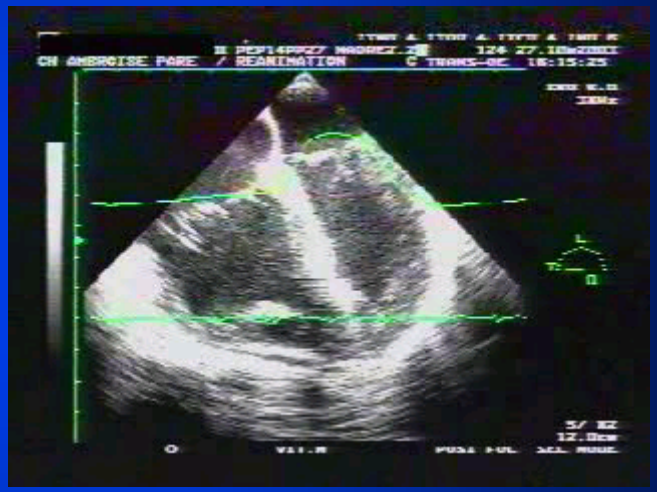

17
15
13
11
9
7
5
PEEP 6
PEEP 12
stdVD
stdVG

PEEP 7 PP 27



SI_{RV} 23 ml/m²
SAP 135 mmHg
HR 100/mn

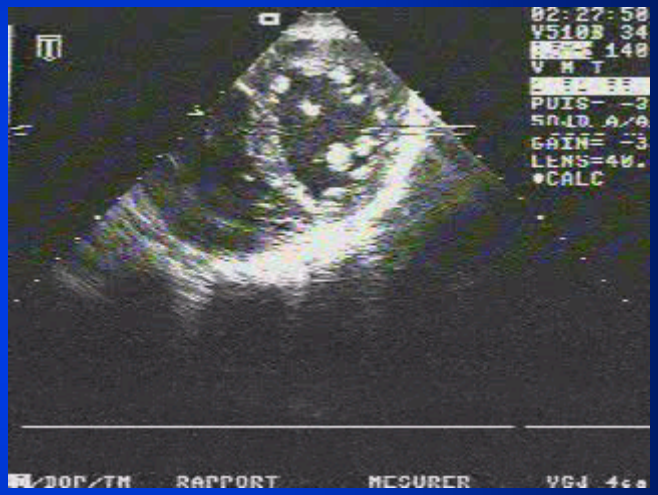
PEEP 14 PP 27



SI_{RV} 12 ml/m²
SAP 115 mmHg
HR 121/mn

PEEP 6 PP 28

PEEP 12 PP 28



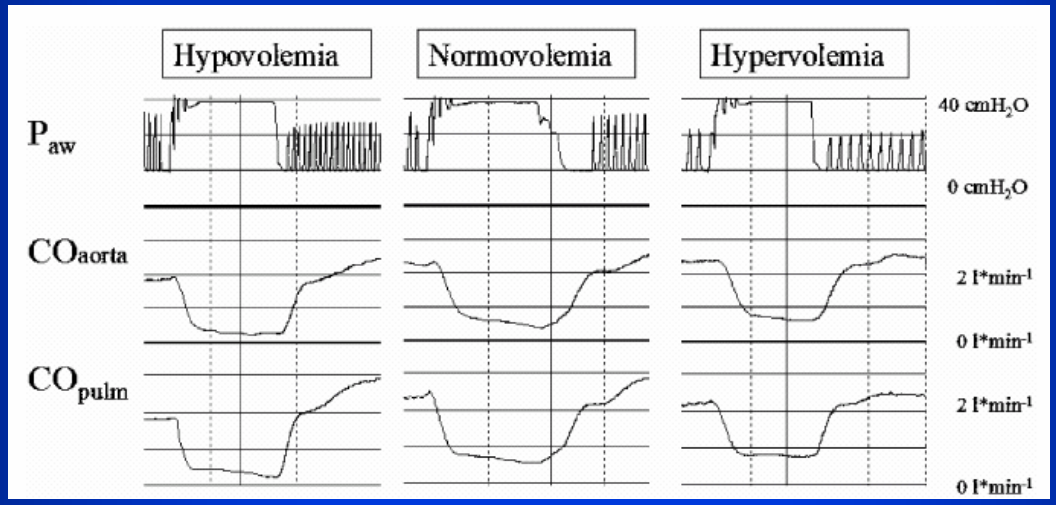
III

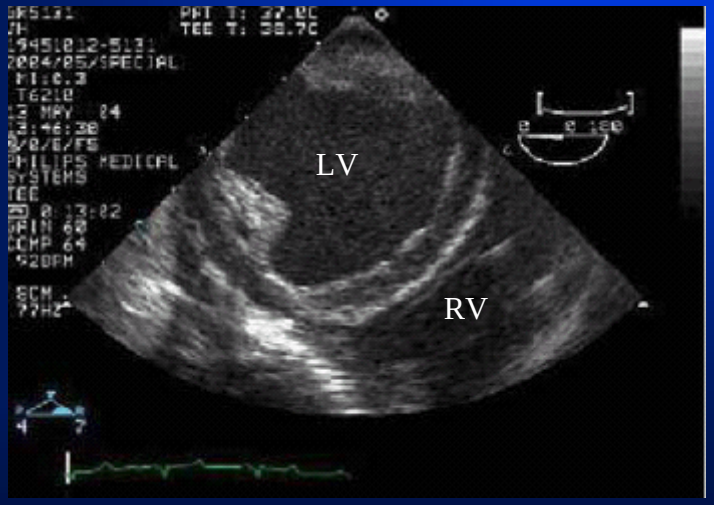
TOLERANCE DES MANŒUVRES DE RECRUTEMENT

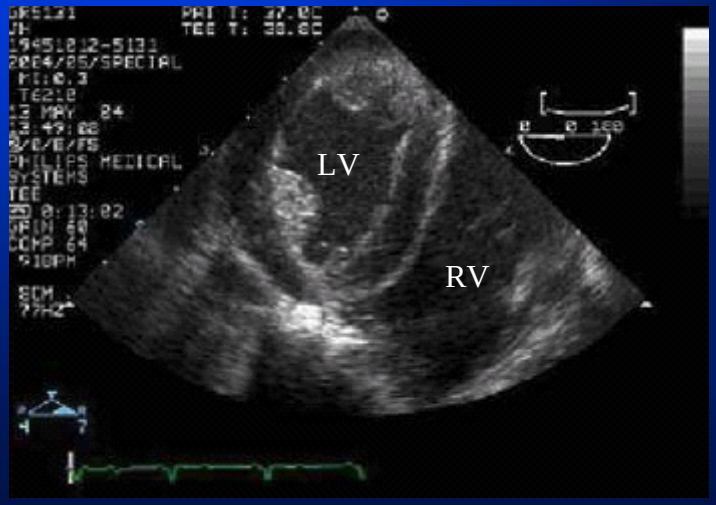
Jonas Nielsen
Manja Nilsson
Filip Fredén
Jan Hultman
Ulrica Alström
Jesper Kjærgaard
Göran Hedenstierna
Anders Larsson

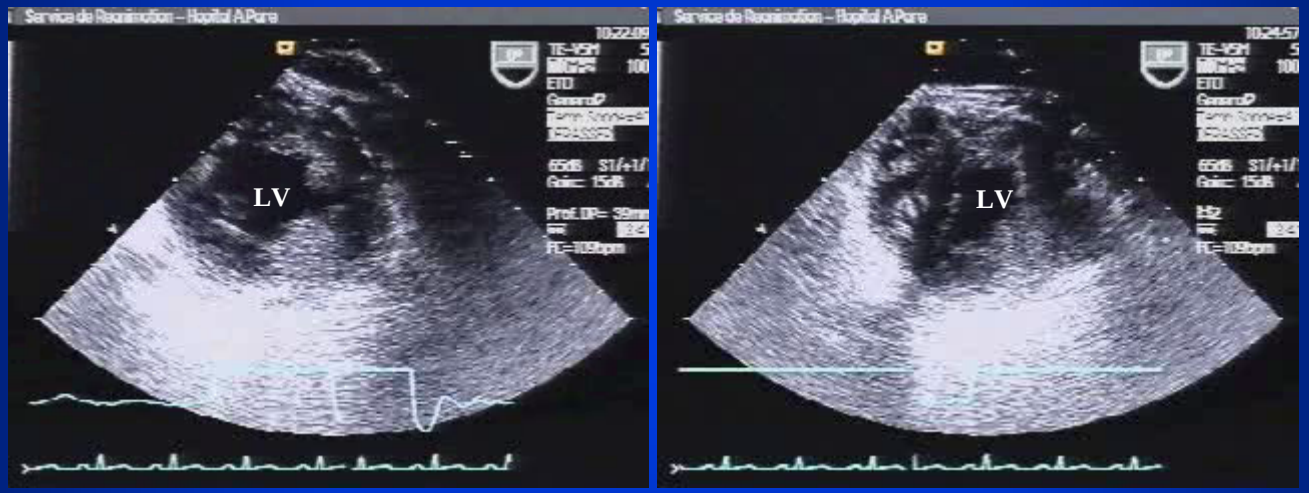
Central hemodynamics during lung recruitment maneuvers at hypovolemia, normovolemia and hypervolemia. A study by echocardiography and continuous pulmonary artery flow measurements in lung-injured pigs

ICM 2006









A **B**

Vieillard-Baron ICM 2006

CHOISIR LA BONNE AMINE EN CAS DE DEFAILLANCE DU VD

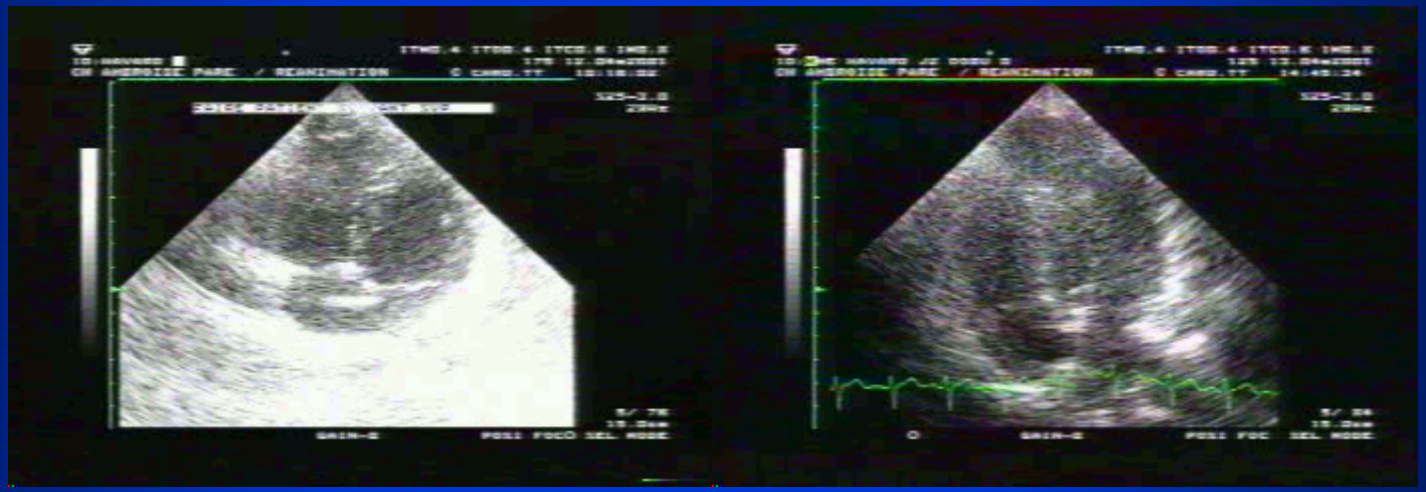
OPTION 1
FCT SYSTOLIQUE VG
NORMAL

D1

D1
under mechanical ventilation

D1
NE infusion

OPTION 2
FONCTION SYSTOLIQUE VG ALTEREE



D1

D1
Dobu 5

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www.pifo.uvsq.fr/rea-apr.htm

Echocardiography in intensive care

Pr F. Jardin - Pr A. Vieillard-Baron
Medical Intensive Care Unit - Ambroise Paré
Dr A. Beauchet
Medical Informatic - Ambroise Paré

UFR de Médecine PIFO
Hôpital Ambroise Paré

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Introduction ▸ Introduction

Summary

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Introduction

Monday, 03 January 2005

In the late 1980s, the Medical Intensive Care Unit of the Ambroise Paré Hospital abandoned right cardiac catheterization as a diagnostic and monitoring tool for acute circulatory and respiratory failure in intensive care.

Instead we now always use transthoracic and transesophageal echocardiography in which we have acquired great expertise and experience and which we use for the diagnostic and therapeutic management of patients presenting severe sepsis, massive pulmonary embolism, or acute respiratory distress syndrome.

Professor Antoine Vieillard-Baron and Dr Alain Beauchet, in collaboration with Professor François Jardin, **have designed this website for intensivists and intensivists trained in anesthesiology who wish to start using echocardiography in intensive care or to upgrade their use of it**.

By presenting real clinical cases and video clips, all recorded in our unit, this website constitutes a genuine tool for ongoing medical training. We shall discuss and present for each disease considered the most frequently used echocardiographic indices that we have defined in recent years.

Rather than describe the practicalities of performing echocardiography, which are clearly important but can only be learned at the bedside, we instead strive to describe the spirit in which echocardiography should be used in intensive care. **Visitors to the site will realize that this spirit differs greatly from that of echocardiography done by a cardiologist not working in intensive care.**

Done

Démarrer | Site actuellem... | 11:03