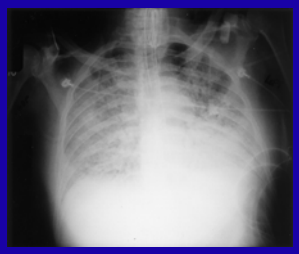
Syndrome de Détresse



Respiratoire Aigu

Table 1. Definitions of the Acute Respiratory Distress Syndrome.*

Reference	Year	Definition or Criteria	Advantages	Disadvantages
Petty and Ashbaugh[3]	1971	Severe dyspnea, tachypnea Cyanosis refractory to oxygen therapy Decreased pulmonary compliance Diffuse alveolar infiltrates on chest radiography Atelectasis, vascular congestion, hemorrhage, pulmonary edema, and hyaline membranes at autopsy	First description Summarizes clinical features well	Lacks specific criteria to identify patients systematically
Murray et al.[4]	1988	Preexisting direct or indirect lung injury Mild-to-moderate or severe lung injury Nonpulmonary organ dysfunction	Includes 4-point lung-injury scoring system Specifies clinical cause of lung injury Includes consideration of the presence or absence of systemic disease	Lung-injury score not predictive of outcome Lacks specific criteria to exclude a diagnosis of cardiogenic pulmonary edema
Bernard et al.[5]	1994	Acute onset Bilateral infiltrates on chest radiography Pulmonary-artery wedge pressure ≤18 mm Hg or the absence of clinical evidence of left atrial hypertension Acute lung injury considered to be present if PaO_2/FiO_2 is ≤300 Acute respiratory distress syndrome considered to be present if PaO_2/FiO_2 is ≤200	Simple, easy to use, especially in clinical trials Recognizes the spectrum of the clinical disorder	Does not specify cause Does not consider the presence or absence of multiorgan dysfunction Radiographic findings not specific

*PaO_2 denotes partial pressure of arterial oxygen, and FiO_2 fraction of inspired oxygen.

Ware & Matthay, 2000

Table 3. Comparison of KCLIP Cohort with Other Population-Based Cohorts in Studies of Acute Lung Injury.*

Variable	KCLIP	Scandinavia	Australia
Acute lung injury incidence (cases per 100,000 person-yr)	78.9	17.9	34
Acute lung injury cases (no.)	1113	287	168
Observation period	12 mo, 1999–2000	2 mo, 1997	2 mo, 1999
ICU beds (no.)	430	NA	253
Population denominator (millions)	1.74	11.74	2.9
APACHE II score (mean ±SD)	26.1±8.5	18.7±8	20±9
Mean age (yr)	60.6	59.8	62
Mortality from acute lung injury (%)†	38.5	41.4	32
Mortality from ARDS (%)†	41.1	41.2	34
Ratio of cases of ARDS to cases of acute lung injury (%)	74	77	64
Ratio of cases of acute lung injury to cases of acute respiratory failure (%)	26	23	NA

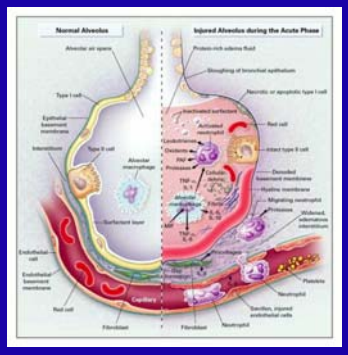
* KCLIP denotes King County Lung Injury Project, APACHE II Acute Physiology and Chronic Health Evaluation, ARDS acute respiratory distress syndrome, and NA not available.
† Mortality figures represent hospital mortality for KCLIP, 90-day mortality for Scandinavia, and 28-day mortality for Australia.

Rubenfeld et al, 2005

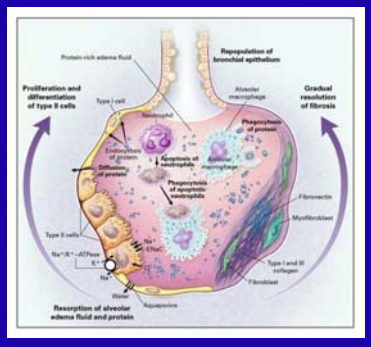
Table 2. Clinical Disorders Associated with the Development of the Acute Respiratory Distress Syndrome.

Direct Lung Injury	Indirect Lung Injury
Common causes	**Common causes**
Pneumonia	Sepsis
Aspiration of gastric contents	Severe trauma with shock and multiple transfusions
Less common causes	**Less common causes**
Pulmonary contusion	Cardiopulmonary bypass
Fat emboli	Drug overdose
Near-drowning	Acute pancreatitis
Inhalational injury	Transfusions of blood products
Reperfusion pulmonary edema after lung transplantation or pulmonary embolectomy	

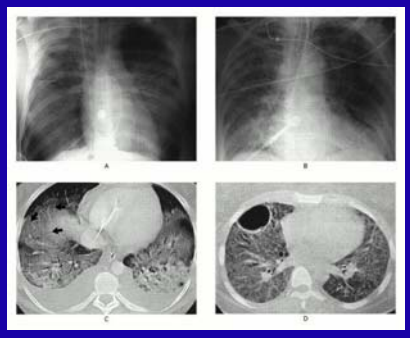
Ware & Matthay, 2000



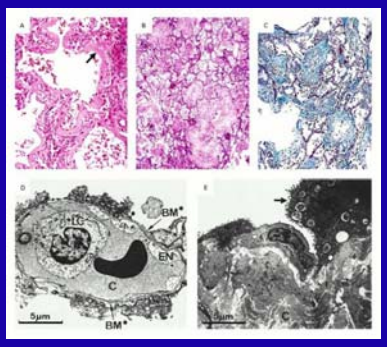
Ware & Matthay, 2000



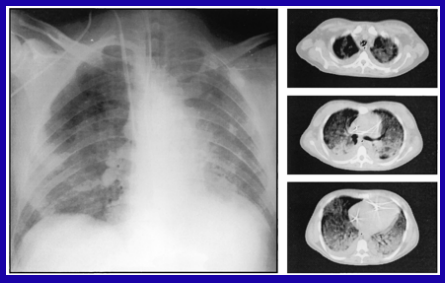
Ware & Matthay, 2000



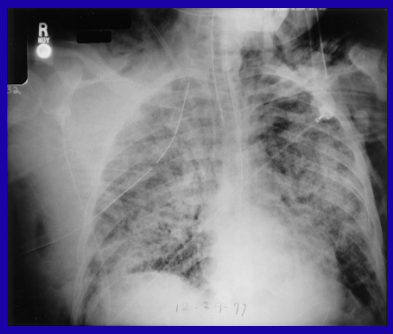
Ware & Matthay, 2000

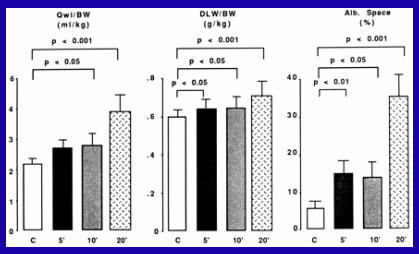


Ware & Matthay, 2000

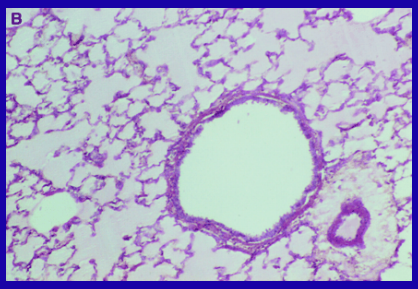


Gattinoni et al, 2001

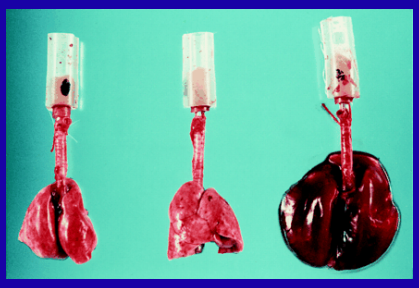




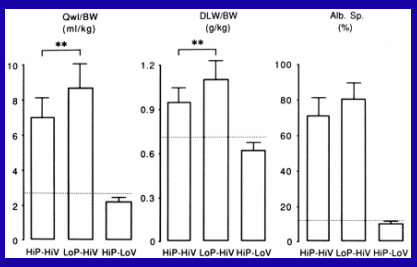
Dreyfuss et al, 1985



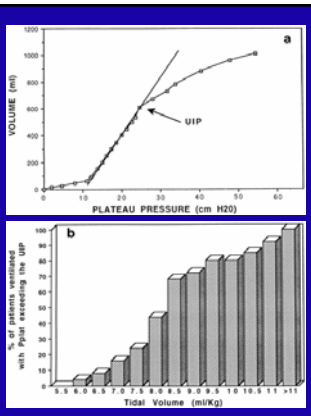
Dreyfuss et al, 1988



Dreyfuss et al, 1985



Dreyfuss et al, 1988



Roupie et al, 1995

ARDSnet

NIH NHLBI ARDS Clinical Trials Network

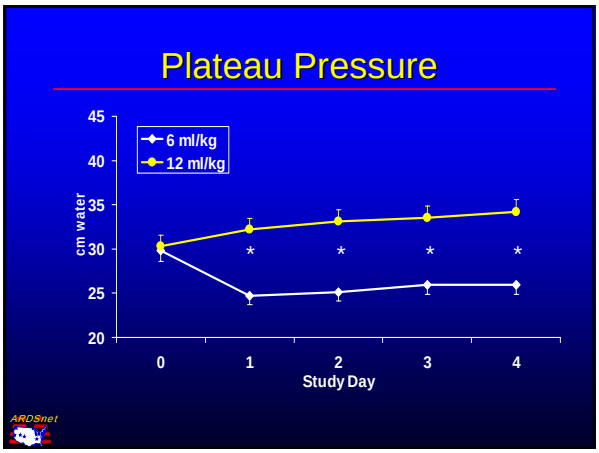
NIH NHLBI ARDS Network

Prospective, Randomized, Multi-Center Trial of 12 ml/kg Vs 6 ml/kg Tidal Volume Positive Pressure Ventilation for Treatment of Acute Lung Injury and Acute Respiratory Distress Syndrome

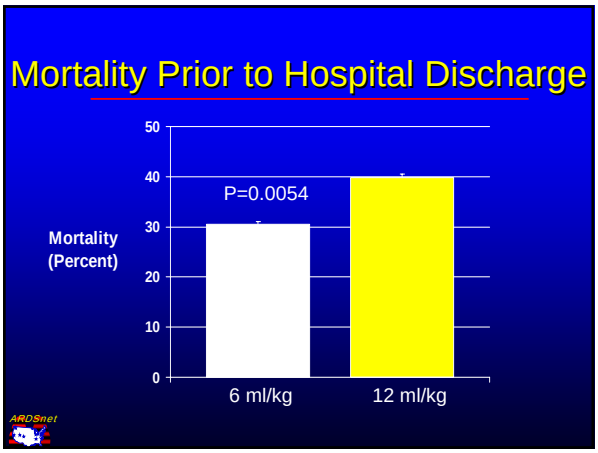
"Respiratory Management in ALI/ARDS"

ARDSnet

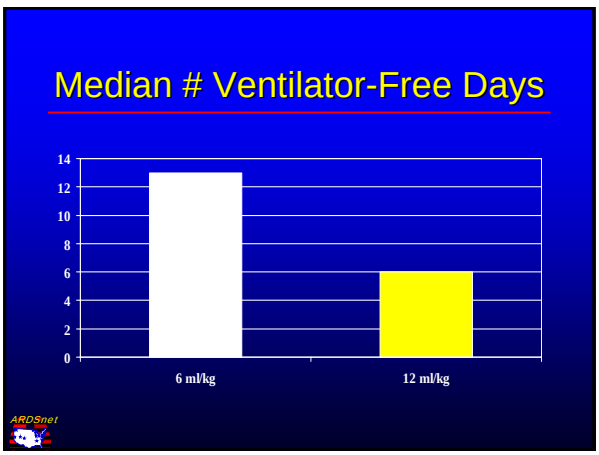
Plateau Pressure



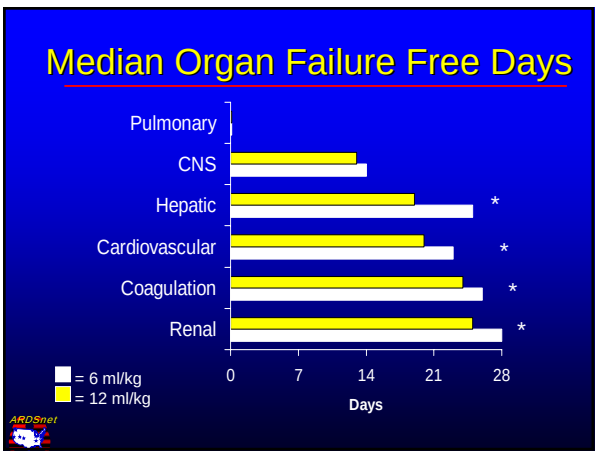
Mortality Prior to Hospital Discharge



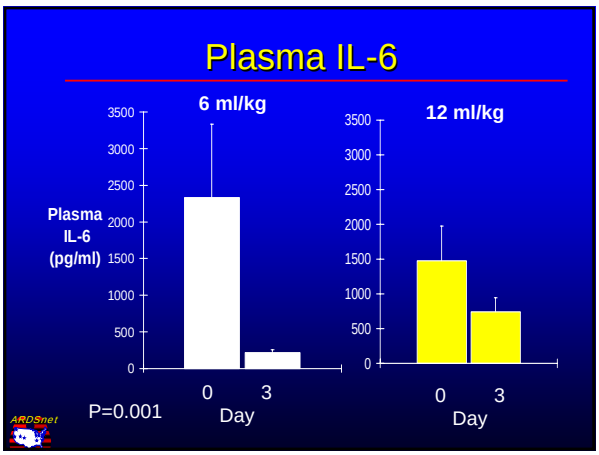
Median # Ventilator-Free Days

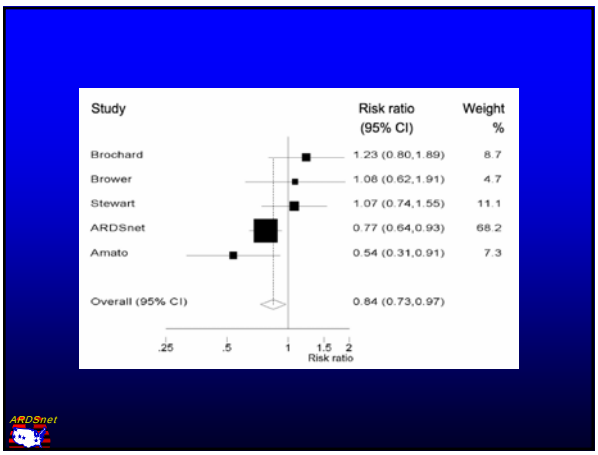


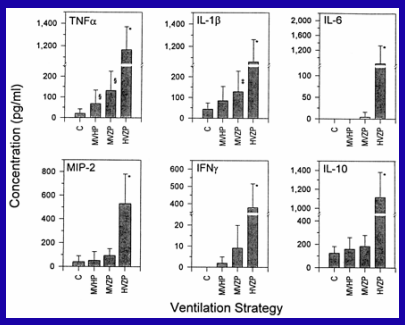
Median Organ Failure Free Days



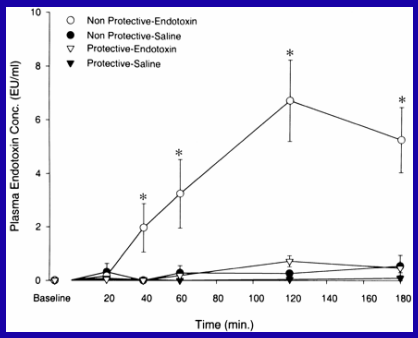
Plasma IL-6



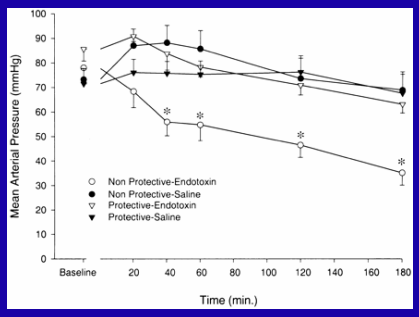




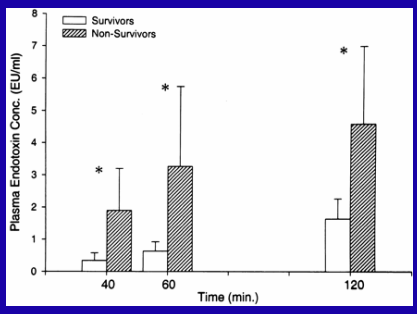
Tremblay et al, 1997



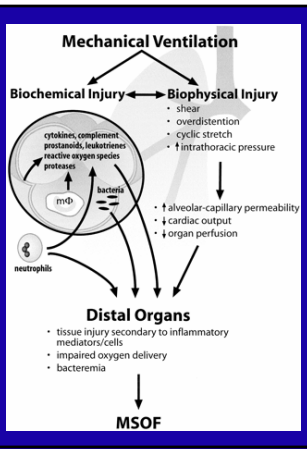
Murphy et al, 2000

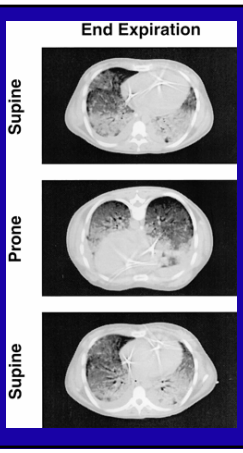


Murphy et al, 2000

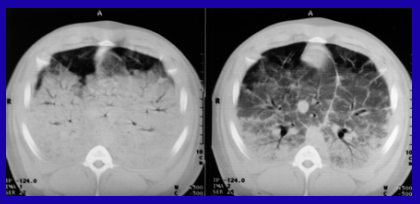


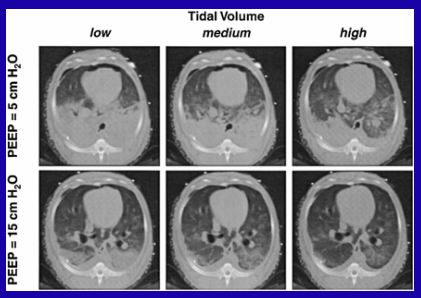
Murphy et al, 2000



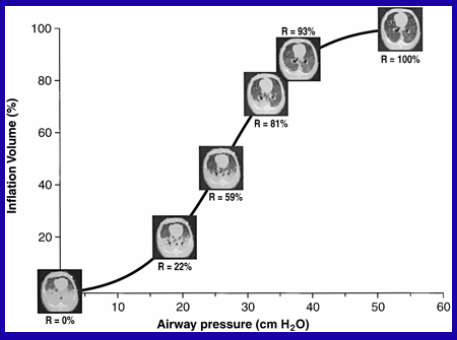


Gattinoni et al, 2001





Pelosi et al, 2001

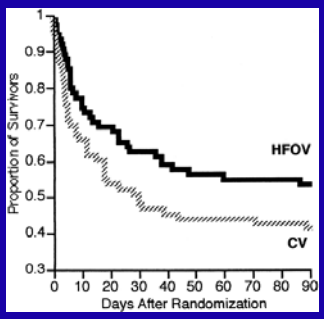


Pelosi et al, 2001

Table 3. History of Alternative Ventilatory Strategies for Acute Lung Injury and the Acute Respiratory Distress Syndrome.

Ventilatory Strategy	Year	Type of Study	No. of Patients	Findings	Study
High levels of positive end-expiratory pressure	1975	Observational	28	High incidence of pneumothorax	Kirby et al.[84]
Extracorporeal membrane oxygenation	1979	Phase 3 multicenter trial	90	No benefit	Zapol et al.[85]
High-frequency jet ventilation	1983	Phase 3 single-center trial	309	No benefit	Carlon et al.[86]
Prophylactic positive end-expiratory pressure (8 cm of water)	1984	Phase 3 single-center trial	92	No benefit in patients at risk for the acute respiratory distress syndrome	Pepe et al.[56]
Pressure-controlled inverse-ratio ventilation	1994	Observational	9	Inconclusive, needs further study	Lessard et al.[87]
Extracorporeal removal of carbon dioxide	1994	Phase 3 single-center trial	40	No benefit	Morris et al.[88]
Liquid ventilation	1996	Observational	10	Probably safe, needs further study	Hirschl et al.[89]
High-frequency oscillatory ventilation	1997	Observational	17	Probably safe, needs further study	Fort et al.[90]
Prone positioning during ventilation	1997	Observational	13	Inconclusive, needs further study	Mure et al.[91]
Prone positioning during ventilation	2000	Observational	39	Inconclusive, needs further study	Nakos et al.[92]
"Open-lung" approach	1998	Phase 3 single-center trial	53	Decreased 28-day mortality but not in-hospital mortality (as compared with conventional ventilation)	Amato et al.[93]
Low tidal volumes	1998	Phase 3	120	No benefit in patients at risk for the acute respiratory distress syndrome	Stewart et al.[108]
Low tidal volumes	1998	Phase 3	116	No benefit	Brochard et al.[95]
Low tidal volumes	2000	Phase 3	861	Decreased mortality by 22 percent (as compared with traditional tidal volumes)	Acute Respiratory Distress Syndrome Network[96]

Ware & Matthay, 2000



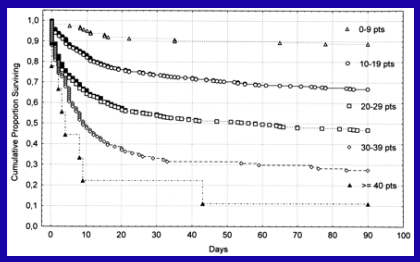
Derdak et al, 2000

Table 4. Results of Clinical Trials of Pharmacologic Treatment for Acute Lung Injury and the Acute Respiratory Distress Syndrome.

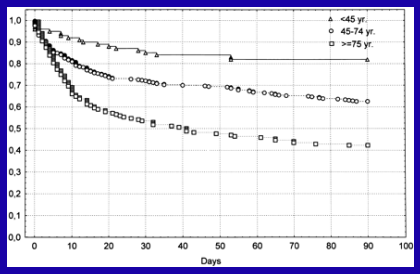
Treatment	Year	Type of Study	No. of Patients	Findings	Study
Glucocorticoids (during the acute phase)	1987	Phase 3	87	No benefit	Bernard et al.[126]
Glucocorticoids (during the acute phase)	1988	Phase 3	59	No benefit	Luce et al.[127]
Alprostadil					
Intravenous	1989	Phase 3	100	No benefit	Bone et al.[128]
Liposomal	1999	Phase 3	350	Stopped for lack of efficacy	Abraham et al.[129]
Surfactant	1996	Phase 3	725	No benefit; new preparations and methods of delivery now being studied	Anzueto et al.[130]
Glucocorticoids during the fibrosing alveolitis phase	1998	Phase 3	24	Decreased mortality, but study was small	Meduri et al.[131]
Inhaled nitric oxide	1998	Phase 2	177	No benefit	Dellinger et al.[132]
Inhaled nitric oxide	1999	Phase 3	203	No benefit	Payen et al.[133]
Ketoconazole	2000	Phase 2	234	No benefit	NIH Acute Respiratory Distress Syndrome Network[134]
Procysteine	1998	Phase 3	214	Stopped for lack of efficacy	Bernard G: unpublished data
Lisofylline	1999	Phase 2–3	235	Stopped for lack of efficacy	Unpublished data

*NIH denotes National Institutes of Health.

Ware & Matthay, 2000



Luhr et al, 1999



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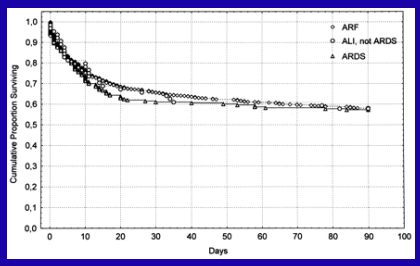

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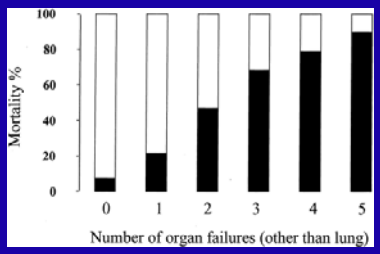
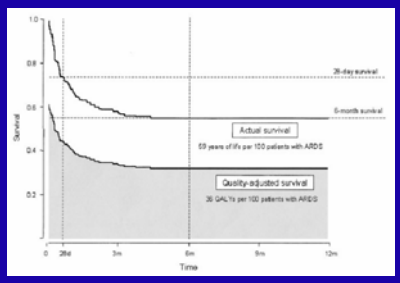
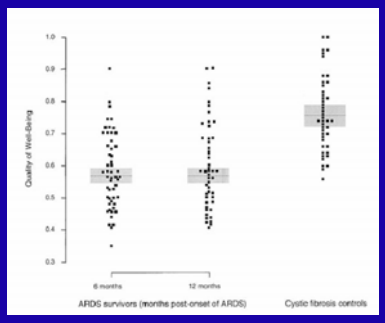


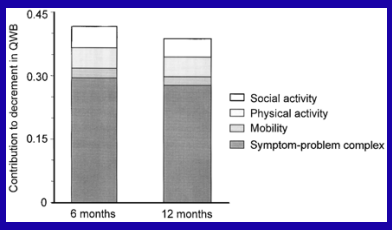
Vincent et al, 2002



Angus et al, 2001



Angus et al, 2001



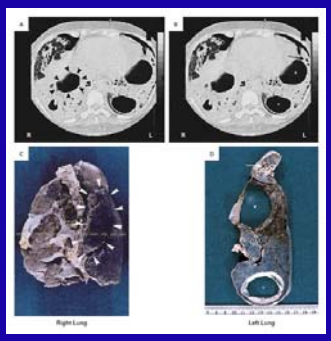
Angus et al, 2001

TABLE 2. SYMPTOMS AT 6 AND 12 mo*

Symptom Groups	Proportion of Patients Expressing Symptom (%) 6 mo	12 mo
Probably related to ARDS	47	43
Lower respiratory tract	43	40
Hoarseness/dysphonia	20	5
Possibly related to ARDS	67	78
Depression, anxiety, or insomnia	57	46
Constitutional	44	38
Cognitive	32	21
Upper respiratory tract	28	19
Unlikely to be related to ARDS	80	73
Musculoskeletal	69	71
Neurological	44	32
Gastrointestinal	21	23
Ear and dental	24	16
Dermatological	15	25

* We classified all symptoms as probably, possibly, or unlikely to be related to ARDS using dual independent review with very good interrater agreement (kappa statistic: 0.86).

Angus et al, 2001



Tobin, 2001

Et quoi maintenant?

- Comment déterminer un V_T et PEEP idéal? Courbes P-V automatisées?
- Quelle(s) technique(s) de recruitement doit-on utiliser?
- Ventilation haute fréquence/oscillation?
- Quel est l'impact de la toxicité à l 'oxygène dans l 'ARDS?