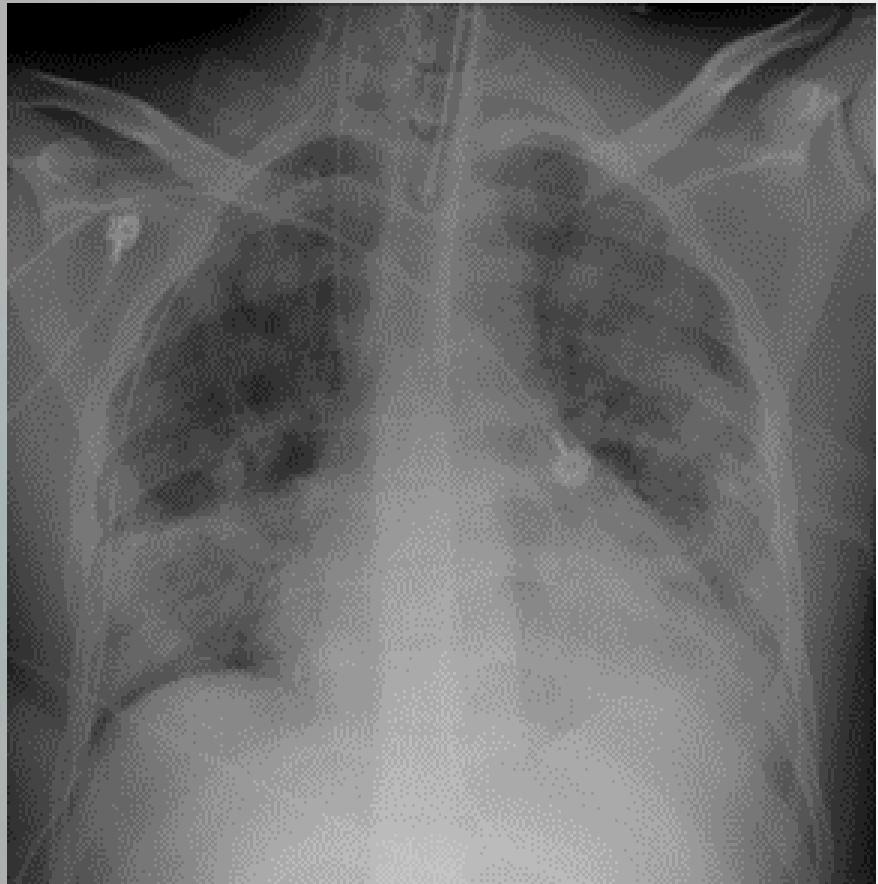


Ο ασθενής με ARDS: μακροχρόνιες επιπτώσεις

Αντωνία Κουτσούκου

ΜΕΘ, Α' Πανεπιστημιακή Πνευμονολογική Κλινική Ν. Σωτηρία

ARDS: The Berlin Definition 2012



- ▶ Οξεία έναρξη αναπνευστικής ανεπάρκειας (εντός 7 ημερών) μετά από ένα εκκλυτικό αίτιο «καταστροφικό γεγονός»
 - Αμφοτερόπλευρα διηθήματα στη Ρο θώρακος (που δεν εξηγούνται από συλλογές, όζους ή ατελεκτασίες)
 - Αναπνευστική ανεπάρκεια που δεν εξηγείται πλήρως από καρδιακή ανεπάρκεια
 - $\text{PaO}_2/\text{FiO}_2 < 300$ ($\text{PEEP} \geq 5\text{cm H}_2\text{O}$)
- ▶ $300 > \text{PaO}_2/\text{FiO}_2 \geq 200$ Ήπιο ARDS
- ▶ $200 > \text{PaO}_2/\text{FiO}_2 \geq 100$ Μέτριο ARDS
- ▶ $\text{PaO}_2/\text{FiO}_2 < 100$ Βαρύ ARDS

ARDS: Επιδημιολογία

Original Investigation | CARING FOR THE CRITICALLY ILL PATIENT

Epidemiology, Patterns of Care, and Mortality for Patients With Acute Respiratory Distress Syndrome in Intensive Care Units in 50 Countries

Giacomo Bellani, MD, PhD; John G. Laffey, MD, MA; Tài Pham, MD; Eddy Fan, MD, PhD; Laurent Brochard, MD, HDR; Andres Esteban, MD, PhD; Luciano Gattinoni, MD, FRCP; Frank van Haren, MD, PhD; Anders Larsson, MD, PhD; Daniel F. McAuley, MD, PhD; Marco Ranieri, MD; Gordon Rubenfeld, MD, MSc; B. Taylor Thompson, MD, PhD; Hermann Wrigge, MD, PhD; Arthur S. Slutsky, MD, MASc; Antonio Pesenti, MD; for the LUNG SAFE Investigators and the ESICM Trials Group

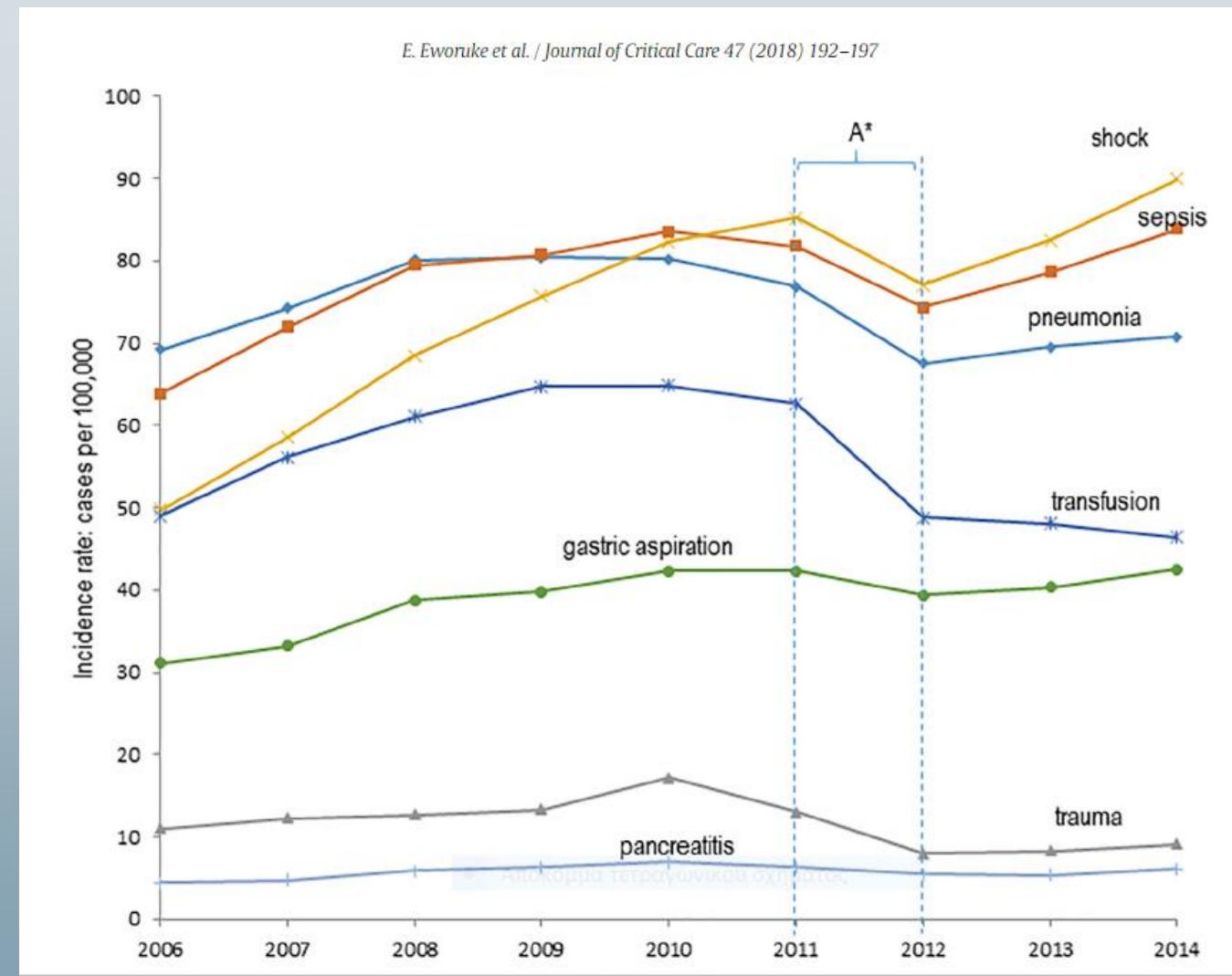
459 ICUs
50 countries, 5 continents
29144 pts (3022, ARDS, 10.4%)

ICU Incidence of ARDS

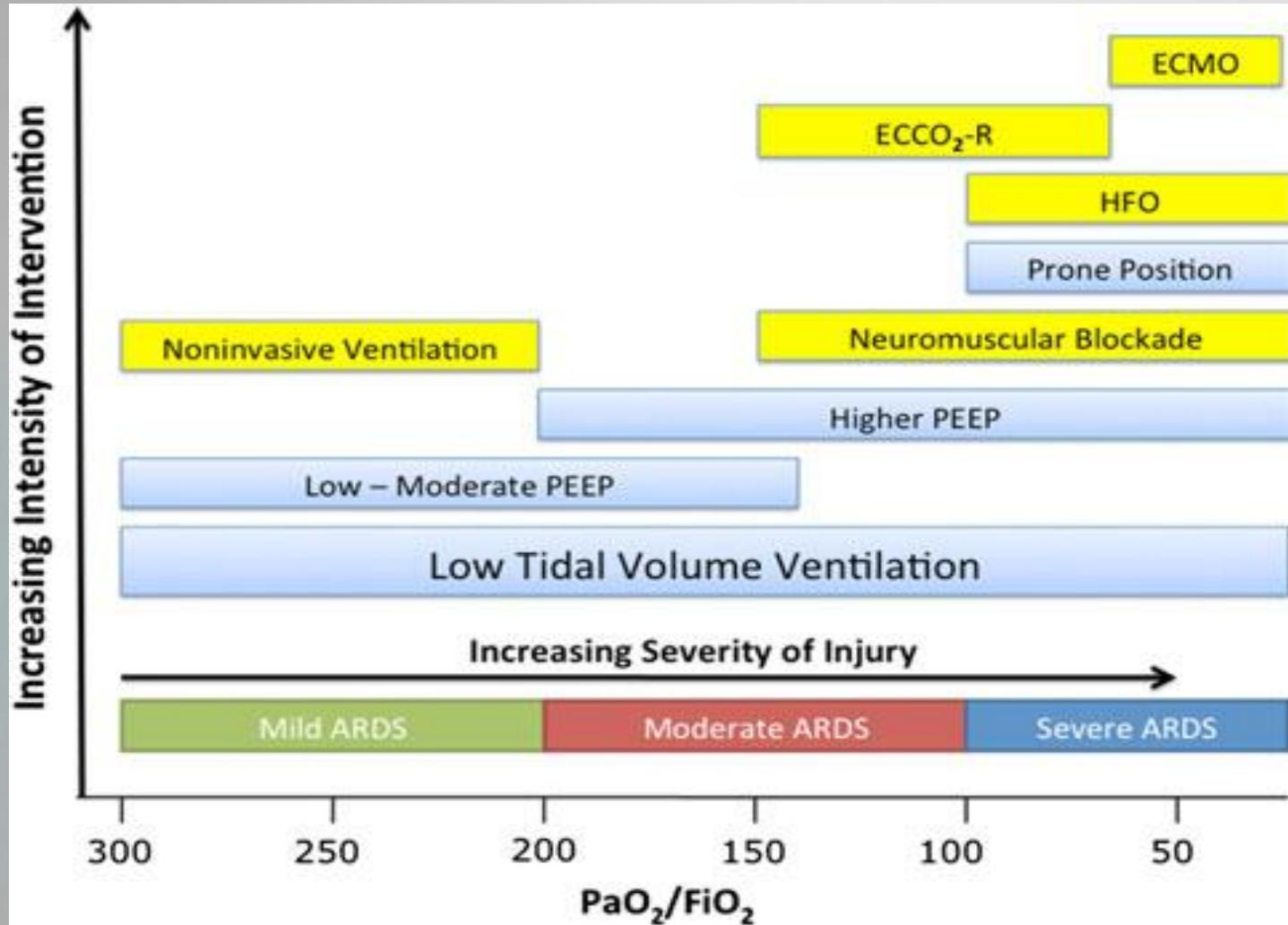
ARDS represented 10.4% (95% CI, 10.0%-10.7%) of total ICU admissions and 23.4% (95% CI, 21.7%-25.2%) of all patients requiring mechanical ventilation and constituted 0.42 cases/ICU bed over 4 weeks. There was some geographic variation,

Κλινικές καταστάσεις που οδηγούν σε ARDS

- ▶ Πνευμονία
 - ▶ Σήψη
 - ▶ Σοβαρό τραύμα
 - ▶ Εισρόφηση
 - ▶ Πνευμονική θλάση
 - ▶ Μεταγγίσεις-TRALI
 - ▶ Οξεία παγκρεατίδα
 - ▶ Εισπνοή τοξικών αερίων
 - ▶ Εγκαύματα
 - ▶ Μη-Καρδιογενές shock
 - ▶ Δηλητηριάσεις
 - ▶ Παρ 'ολίγον πνιγμός



ARDS: Θεραπευτική αντιμετώπιση

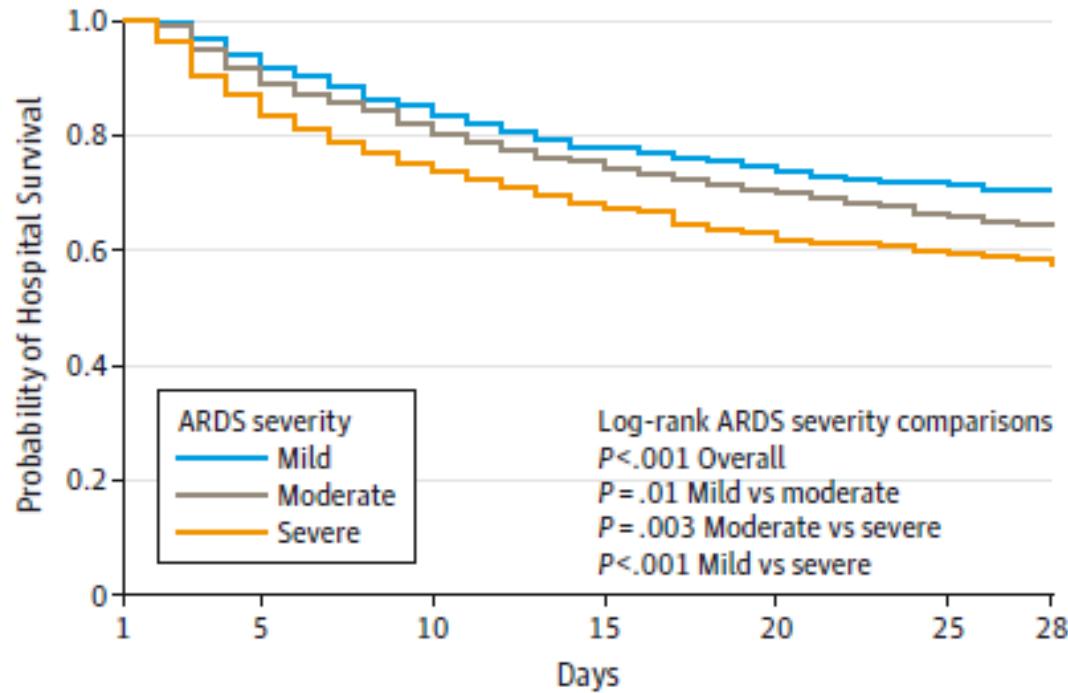


Rescue Therapies

Προστατευτικός αερισμός

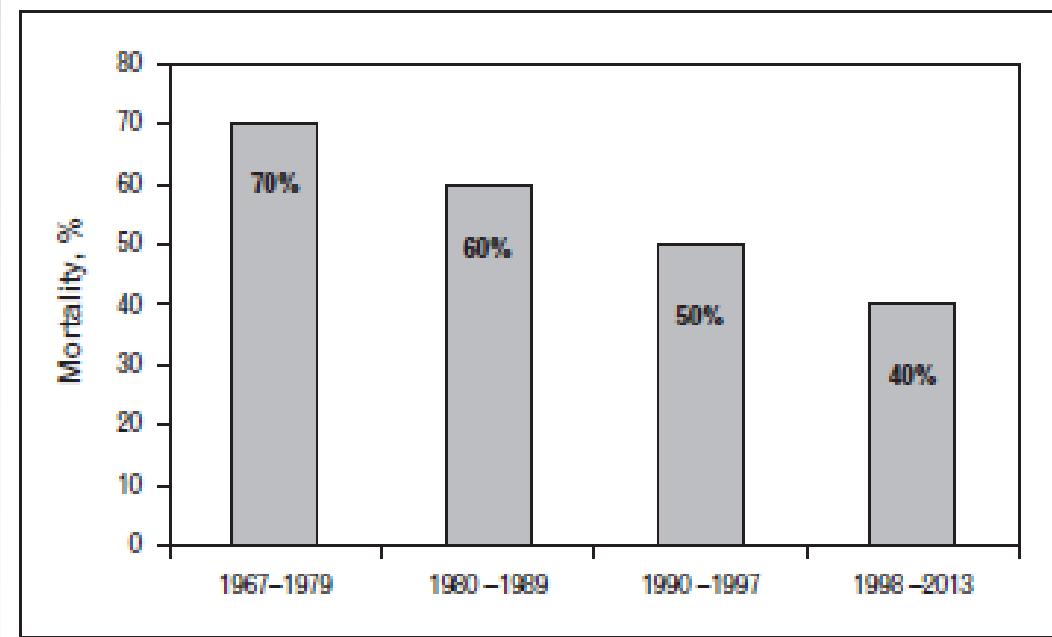
ARDS: Θνητότητα

B Probability of hospital survival by ARDS severity



No. at risk, ARDS severity							
	Mild	Moderate	Severe	Mild	Moderate	Severe	
	708	662	599	548	522	501	489
	1101	1008	892	807	752	708	688
	553	479	401	360	325	304	296

Bellani et al, JAMA 2016



Villar Curr Opin Crit Care 2014

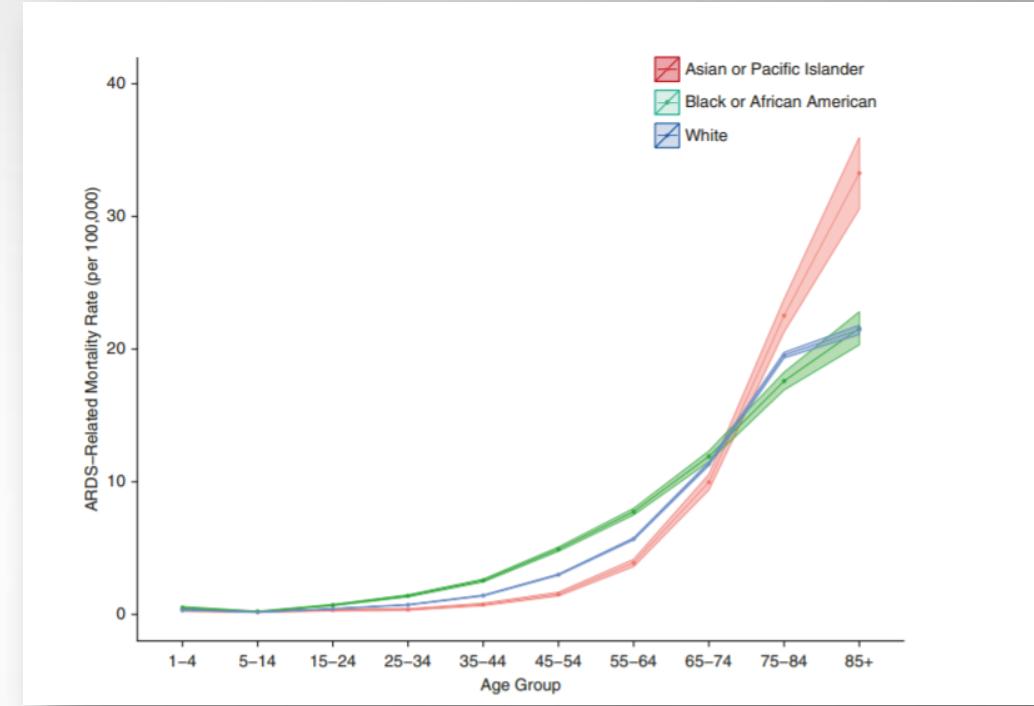
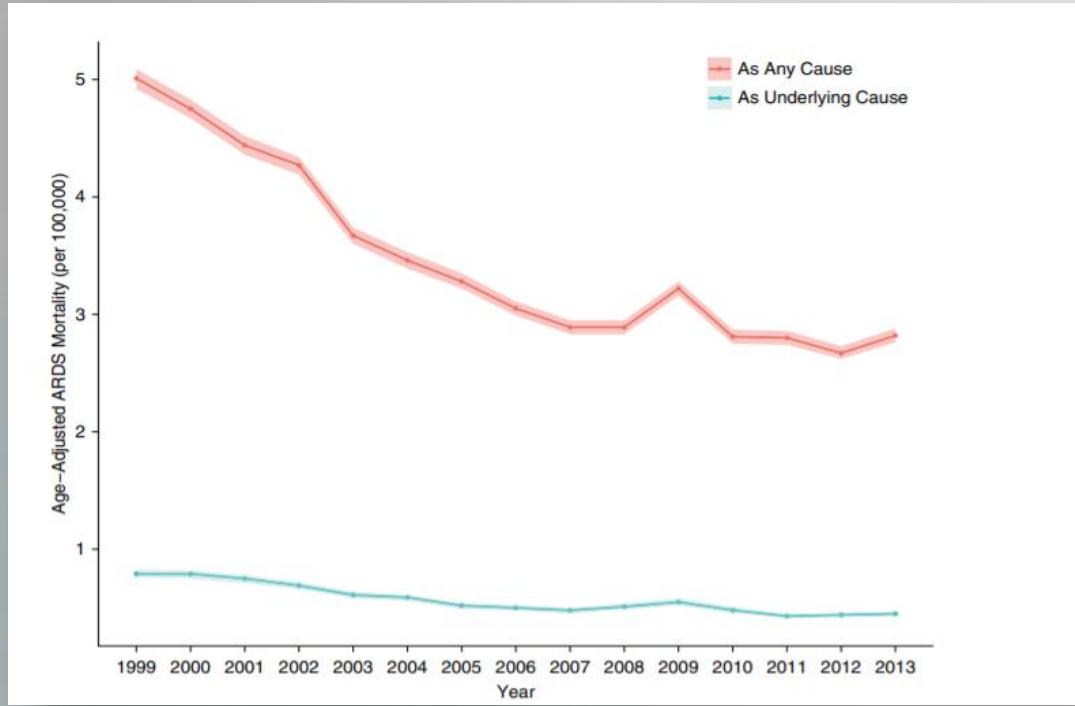
Επιβαρυντικοί παράγοντες

Χρόνια ηπατική νόσος, Εξωπνευμονική οργανική ανεπάρκεια, Μεγάλη ηλικία

ARDS: Θνητότητα

Mortality Trends of Acute Respiratory Distress Syndrome in the United States from 1999 to 2013

Shea E. Cochi^{1*}, Jordan A. Kempker^{2*}, Srinadh Annangi³, Michael R. Kramer⁴, and Greg S. Martin²



Η θνητότητα μάλλον μειώνεται τα τελευταία χρόνια λόγω:

Καλύτερων στρατηγικών μηχανικού αερισμού

Πρωιμότερης διάγνωσης-θεραπείας της σήψης

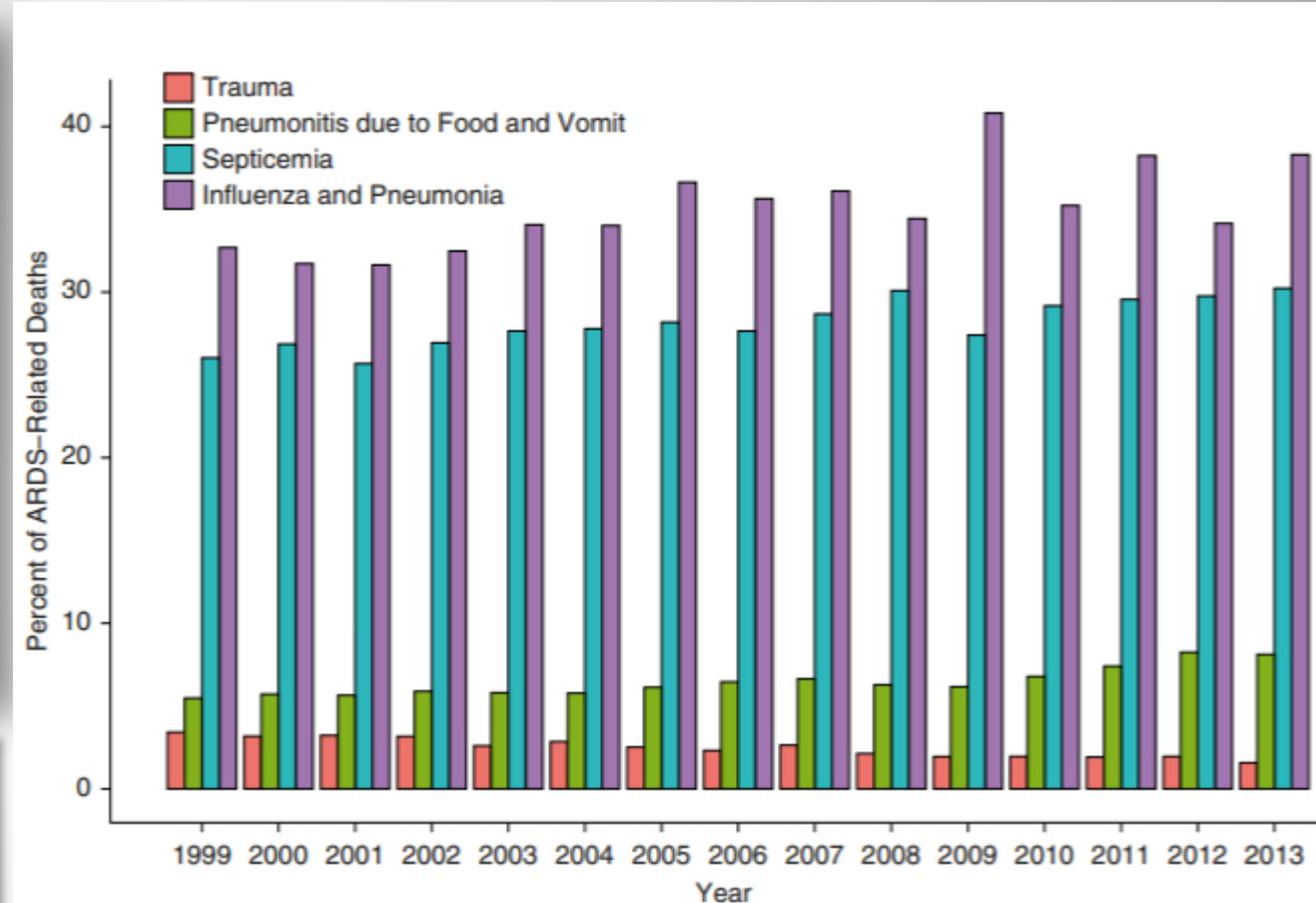
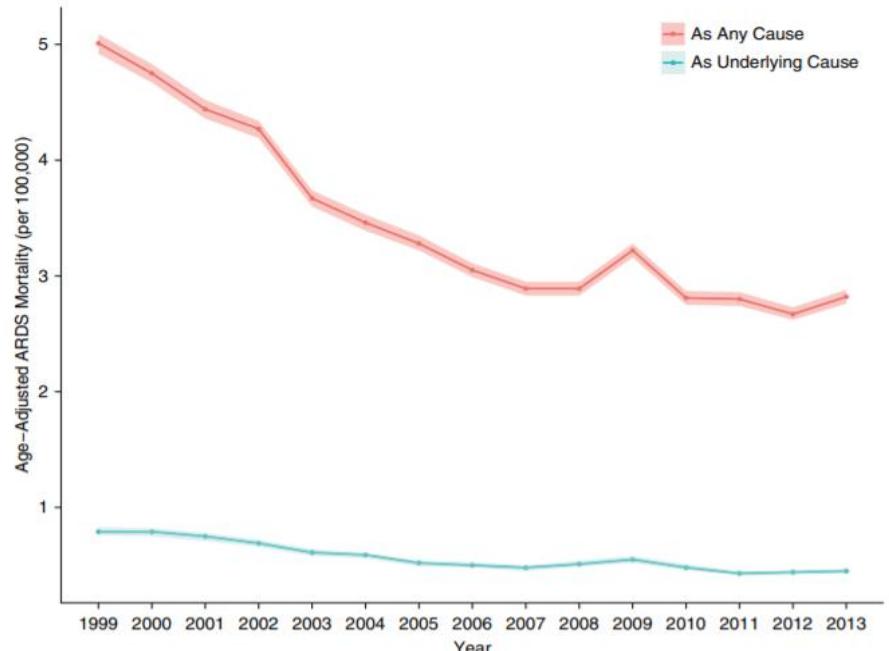
Cochi Annals ATS 2016

ARDS: Θνητότητα

Cochi Annals ATS 2016

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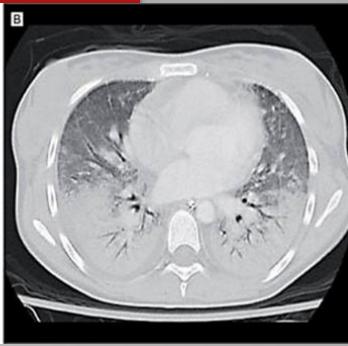
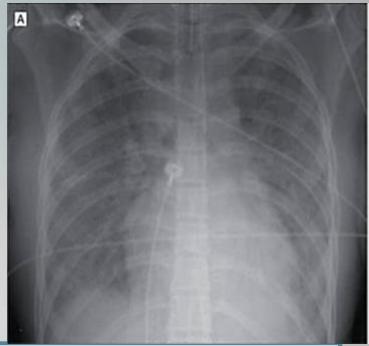


Η θνητότητα μάλλον μειώνεται τα τελευταία χρόνια λόγω:

Καλύτερων στρατηγικών μηχανικού αερισμού

Πρωτιμότερης διάγνωσης-θεραπείας της σήψης

ARDS: Μακροχρόνιες Επιπτώσεις

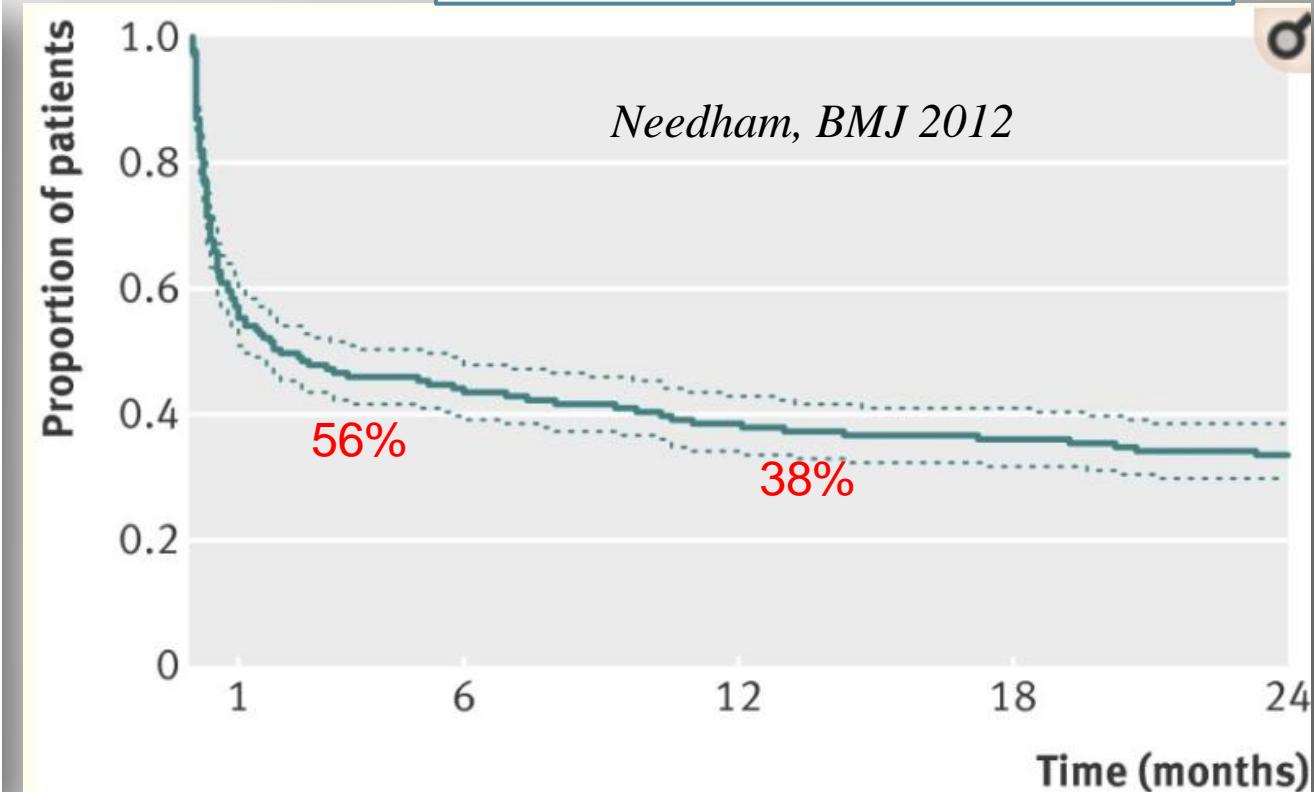
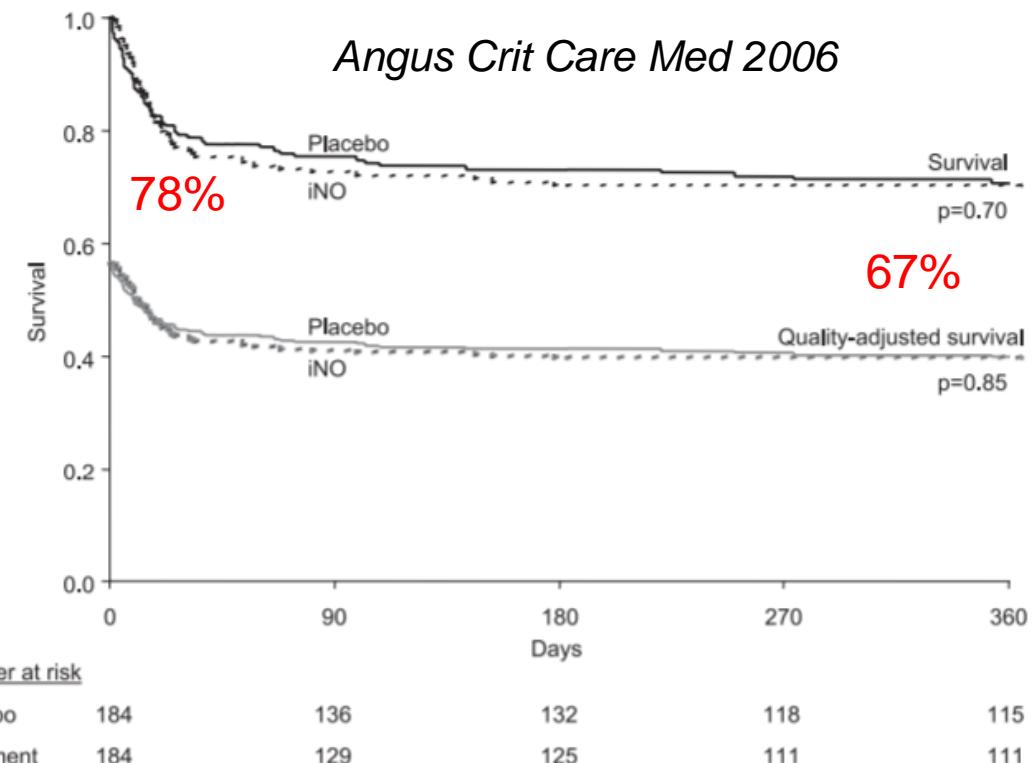


- Θνητότητα
 - Αναπνευστική Λειτουργία: Λειτουργικές Δοκιμασίες, Απεικόνιση θώρακος
 - Φυσική κατάσταση
 - Νευρο-ψυχολογική επάρκεια
-
- Ποιότητα ζωής
 - Κοινωνικό κόστος
 - ❖ Φόρτος οικείων
 - ❖ Οικονομικό Κόστος

Forty-six U.S. centers.
385 Patients previously
healthy adults with ARDS

ARDS: Μακροχρόνια Θυητότητα

13 ICUs in 4 hospitals in Baltimore
485 pts



ARDS: Μακροχρόνια Θνητότητα

Of 646 patients hospitalized with ARDS, mortality at one year was substantially higher (41%) than in-hospital mortality (24%)

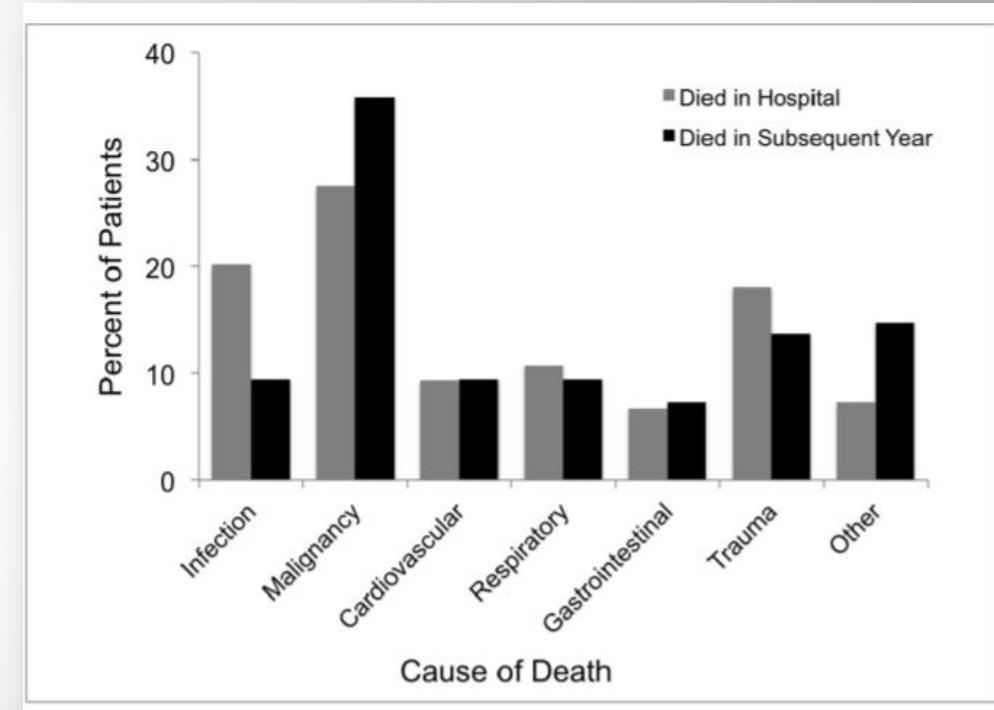
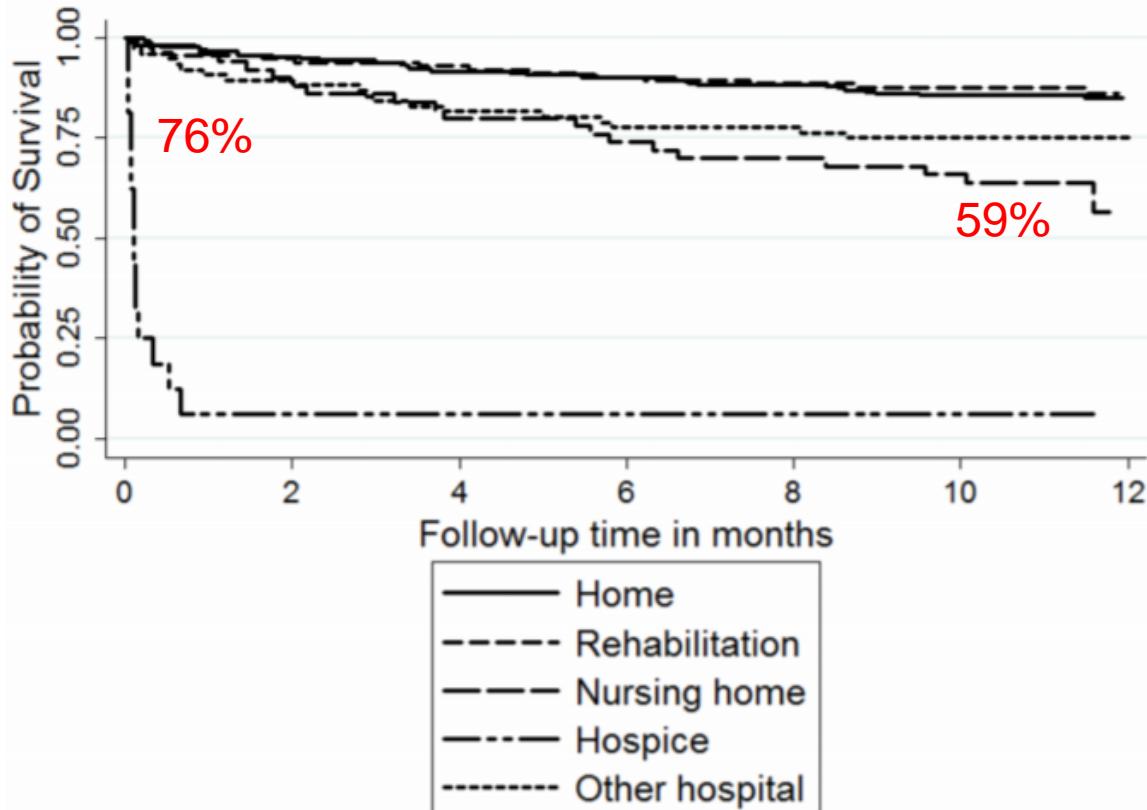
One-year mortality and predictors of death among hospital survivors of the Acute Respiratory Distress Syndrome

Chen Yu Wang, MD¹, Carolyn S. Calfee, MD MAS², Devon W. Paul, MD³, David R. Janz,

Wang et al.

Wang, ICM 2014

Page 12



ARDS: Μακροχρόνια Θυητότητα

One-year mortality and predictors of death among hospital survivors of the Acute Respiratory Distress Syndrome

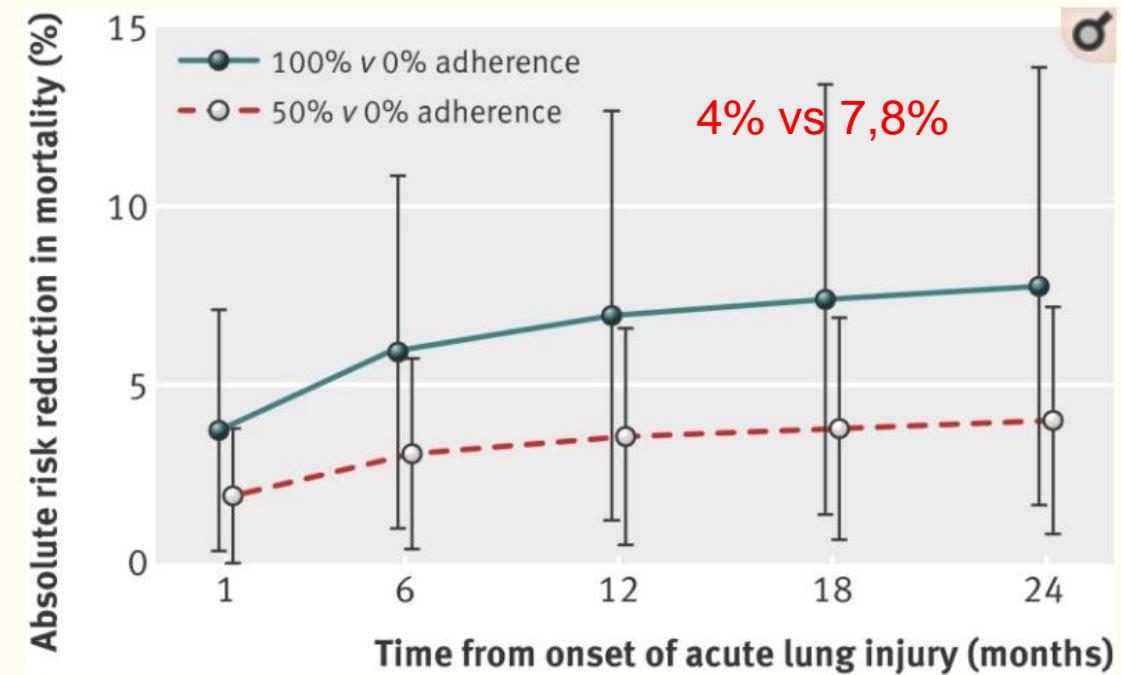
Chen Yu Wang, MD¹, Carolyn S. Calfee, MD MAS², Devon W. Paul, MD³, David R. Janz,

Table 2

Characteristics of Hospital Course among 493 patients with ALI/ARDS surviving hospitalization

	Survived hospitalization, Dead at one year N=110	Alive at one year N=383	P-value *
Time from admission to ICU in days, Median (IQR)	0 (0–3)	0 (0–1)	0.007
Length of hospital stay in days, Median (IQR)	17 (11–32)	16 (10–24)	0.09
Creatinine at discharge, Median (IQR)	1.0 (0.7–1.8)	0.8 (0.7–1.1)	0.005
Discharge location [§]			<0.001
Home	34 (31%)	196 (51%)	
Rehabilitation	15 (14%)	98 (26%)	
Nursing home	19 (17%)	31 (8%)	
Hospice	22 (20%)	1 (<1%)	
Other hospital	19 (17%)	57 (15%)	

Lung protective mechanical ventilation and two year survival in patients with acute lung injury: prospective cohort study



Wang, ICM 2014

Needham, BMJ 2012

ARDS: Μακροχρόνια Θνητότητα

Muscle Weakness and 5-Year Survival in Acute Respiratory Distress Syndrome Survivors 156 ARDS survivors, 13 ICUs

Dinglas, CCM 2017

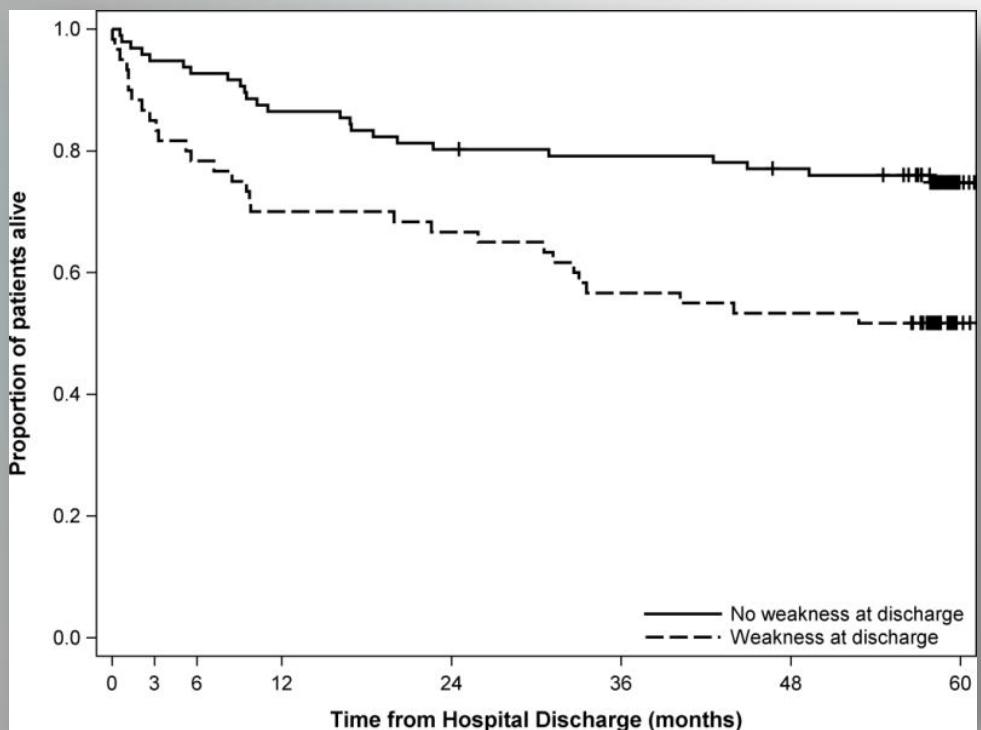


Table 3

Trajectory of muscle weakness and subsequent survival over 5-year follow-up *

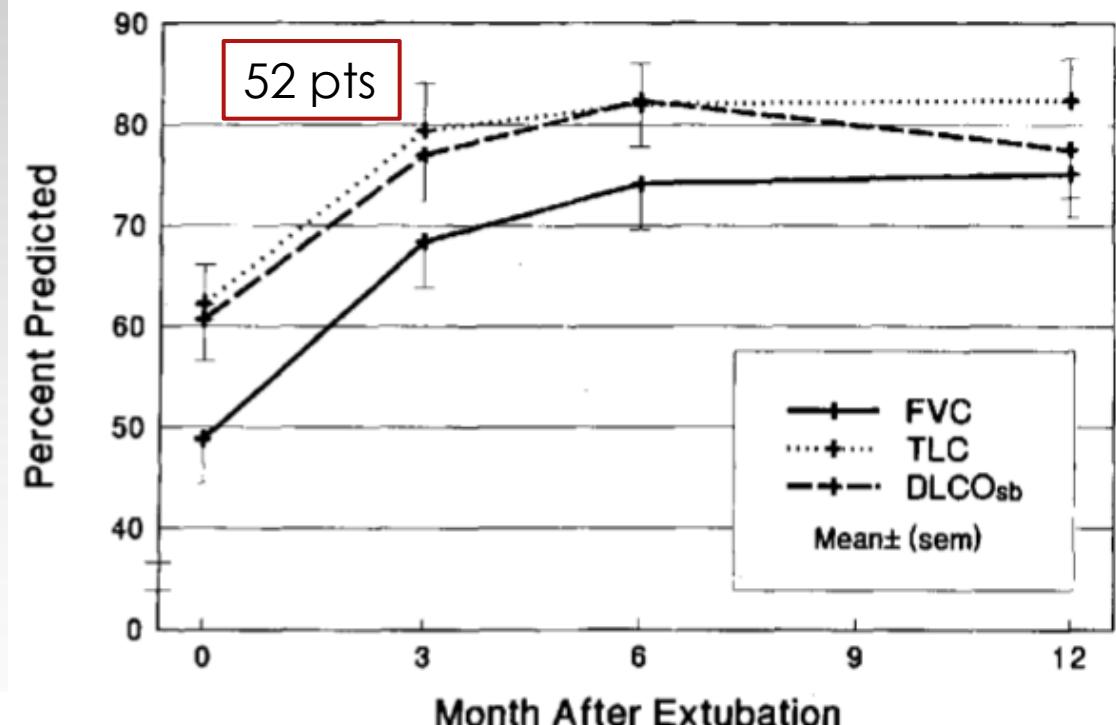
Trajectory pattern (weakness status at consecutive assessments)	No. (%) of patients **	No. (%) of consecutive assessments over 5-year follow-up	Adjusted Hazard ratio *** (95% CI)	p-value
No weakness (from No weakness to No weakness)	121 (86%)	443 (75%)	1.00	
Persisting weakness (from Weakness to Weakness)	22 (16%)	38 (7%)	3.01 (1.12 – 8.04)	0.028
Resolving weakness (from Weakness to No weakness)	63 (45%)	70 (12%)	3.14 (1.40 – 7.03)	0.005
New weakness (from No weakness to Weakness)	35 (25%)	37 (6%)	0.99 (0.22 – 4.43)	0.985

Abbreviations: ICU, intensive care unit; CI, confidence interval

ARDS: Μακροχρόνιες Επιπτώσεις

Αναπνευστική Λειτουργία
Λειτουργικές Δοκιμασίες

Cheung, AJRCCM 2006



Cheung, Tansey, Tomlinson, et al.: ARDS Long-term Outcomes and Costs

109 pts

541

TABLE 2. ONE- AND TWO-YEAR CLINICAL OUTCOMES AND HEALTH-RELATED QUALITY OF LIFE IN SURVIVORS OF ACUTE RESPIRATORY DISTRESS SYNDROME

Clinical Outcome	One Year			Two Years		
	Median	Percent Predicted	IQR	Median	Percent Predicted	IQR
Meters walked in 6 min*	422	66%	277–510	416	68%	285–496
Pulmonary function†						
FVC, % predicted	85%	—	71–98%	86%	—	71–100%
FEV ₁ , % predicted	86%	—	74–100%	87%	—	75–99%
Total lung capacity,‡ % predicted	95%	—	81–103%	94%	—	84–108%
Residual volume,‡ % predicted	105%	—	90–116%	96%	—	78–118%
Carbon monoxide diffusion capacity,‡ % predicted	72%	—	61–86%	78%	—	63–89%

McHugh, AJRCCM 1994

ARDS:Μακροχρόνιες επιπτώσεις

Αναπνευστική Λειτουργία: Λειτουργικές Δοκιμασίες

Table 4. Results of lung spirometry

At 12 months, the percentages of patients with <80% predicted FEV₁ and FVC were 64.4% and 49.2%, respectively

Mon	Mean	SD	Range	Mean	SD	Range	Mean	SD	Range	Ratio
73 pts	3	2.92	4.00	74.10	2.24	3.19	71.02	0.77	0.77	
		0.89	0.97	17.90	0.75	0.79	17.41	0.13	0.13	
		1.32–5.54	2.32–6.19	28.21–115.52	0.89–3.98	1.71–5.01	30.66–108.90	0.35–1.0	0.35–1.0	
		3.08	3.99	77.61	2.39	3.19	74.40	0.77	0.77	
		0.96	0.93	19.21	0.80	0.77	18.33	0.11	0.11	
		1.25–5.59	2.32–6.19	29.98–126.23	0.96–4.02	1.71–5.01	33.33–112.02	0.43–0.99	0.43–0.99	
12	3	3.15	4.00	78.63	2.36	3.19	73.37	0.75	0.75	
		1.04	0.93	19.48	0.89	0.76	19.05	0.10	0.10	
		1.22–5.86	2.32–6.19	29.26–121.56	1.09–5.04	1.71–5.01	39.46–119.43	0.45–0.98	0.45–0.98	

SD, standard deviation; Fvc, forced vital capacity; FEV₁, forced expiratory volume; PRED, predicted; % PRED, percentage of predicted value.

ARDS: Μακροχρόνιες Επιπτώσεις

Herridge, NEJM 2011



- **Toronto Study**
- 4 ΜΕΘ
- 109 ασθενείς με ARDS που επεβίωσαν
- Εκτιμήθηκαν 3, 6, 12 μήνες, 2,3,4,5 έτη
- Λειτουργικές δοκιμασίες
- Φυσική κατάσταση: 6MWD
- Πνευματική κατάσταση
- Ποιότητα ζωής: SF-36

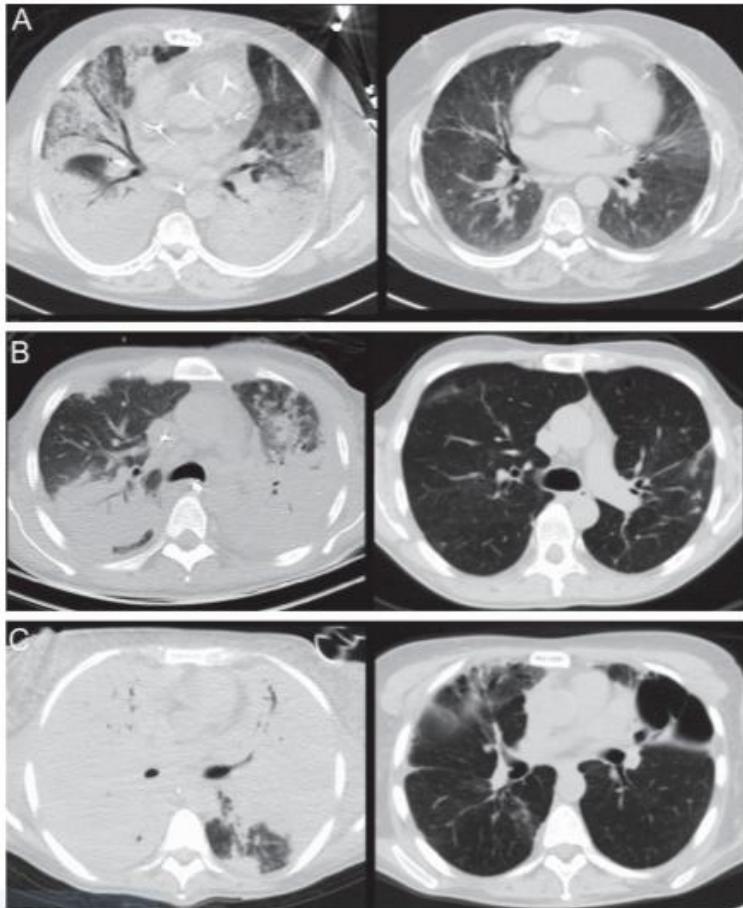
Αναπνευστική Λειτουργία:
Λειτουργικές Δοκιμασίες

Table 2. Clinical Outcomes from 1 Year to 5 Years in Survivors of ARDS.

Clinical Outcomes	At 1 Year (N=83)	At 2 Years (N=69)	At 3 Years (N=71)	At 4 Years (N=63)	At 5 Years (N=64)
Pulmonary function — % of predicted†					
Forced vital capacity					
Median	85	86	76	84	84
Interquartile range	71–98	71–100	67–98	70–100	72–101
Forced expiratory volume in 1 sec					
Median	86	87	79	85	83
Interquartile range	74–100	75–99	66–97	68–98	69–98
Total lung capacity‡					
Median	95	94	93	92	94
Interquartile range	81–103	84–108	78–107	79–104	78–105
Residual volume‡					
Median	105	96	101	96	96
Interquartile range	90–116	78–118	80–116	80–110	73–108
Carbon monoxide diffusion capacity‡					
Median	72	78	77	82	80
Interquartile range	61–86	63–89	63–93	68–94	70–86

ARDS-Μακροχρόνιες επιπτώσεις: Η απεικόνιση

LONG-TERM OUTCOMES IN ARDS

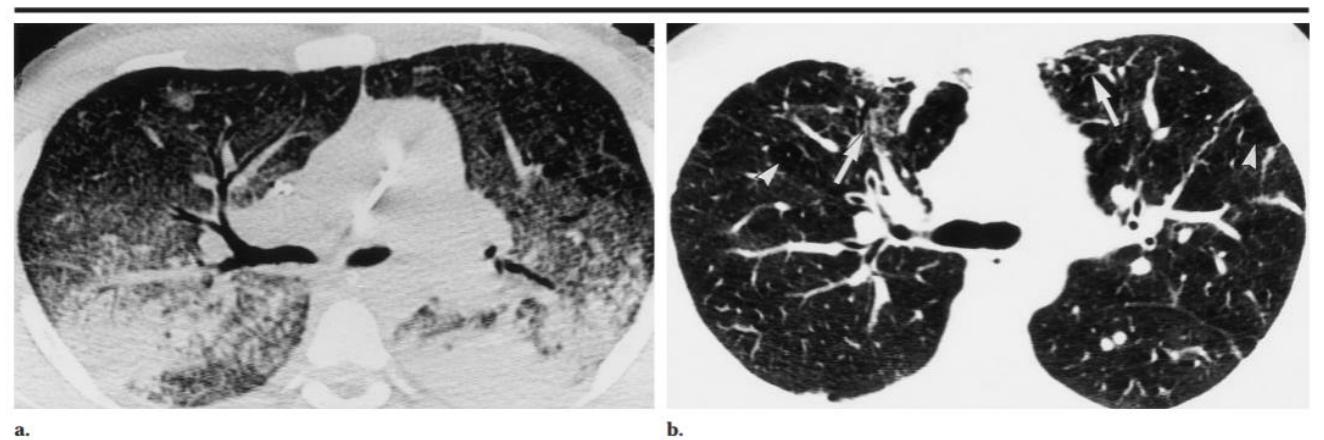


Desai SR, Radiology 1999

27 patients with ARDS

Thin-section CT scans were obtained during the acute illness and at follow-up in.

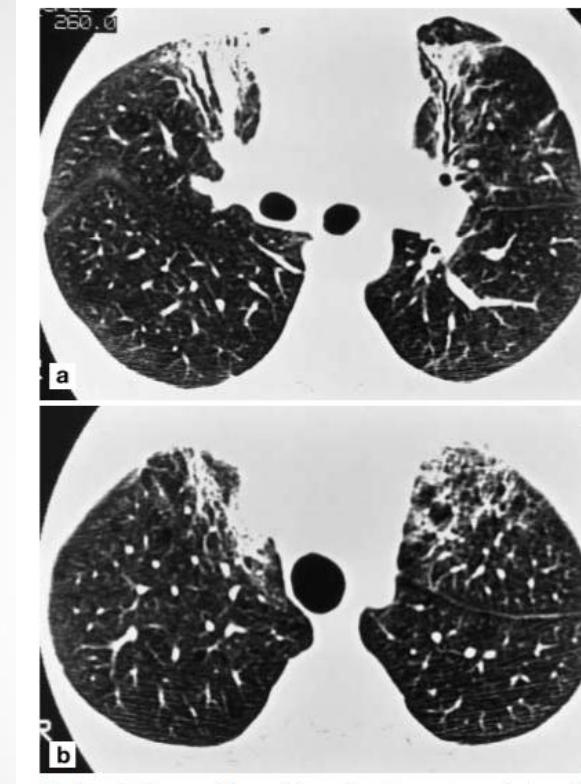
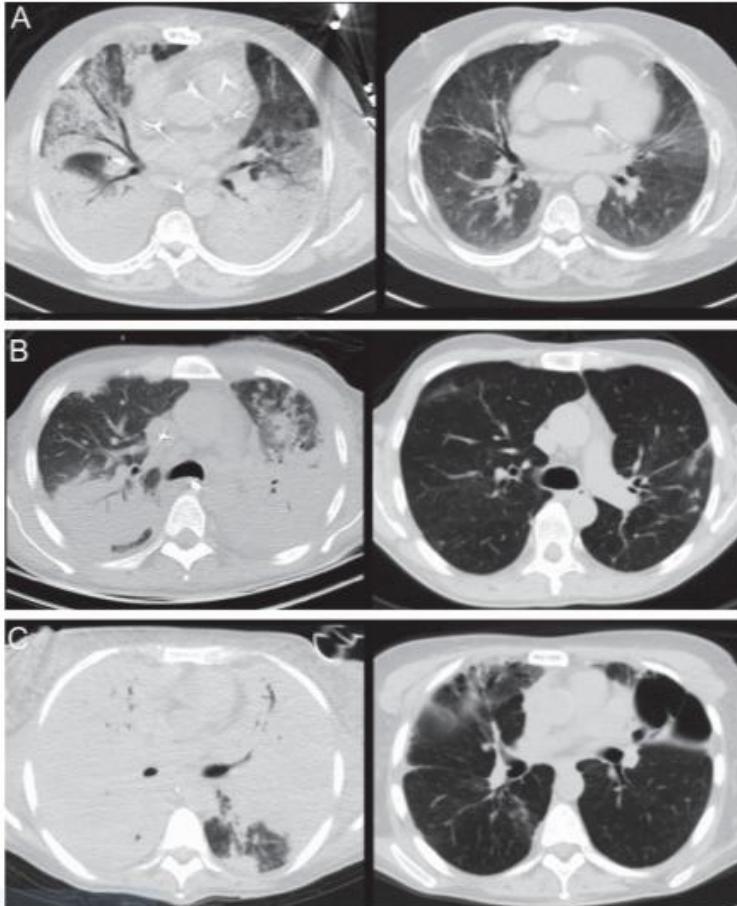
At follow-up CT, a reticular pattern was the most prevalent (23 patients [85%]) and extensive CT abnormality, with a striking anterior distribution (more anterior distribution than posterior distribution)



Chiumello, Respir Care 2016

ARDS-μακροχρόνιες επιπτώσεις: Η απεικόνιση

LONG-TERM OUTCOMES IN ARDS



Nobauer-Huhmann Eur Radiol 2001

15 ARDS pts
HRCT scan 6-10 months after ARDS
Changes resembling pulmonary fibrosis were found in 13/15 pts

Chiumello, Respir Care 2016

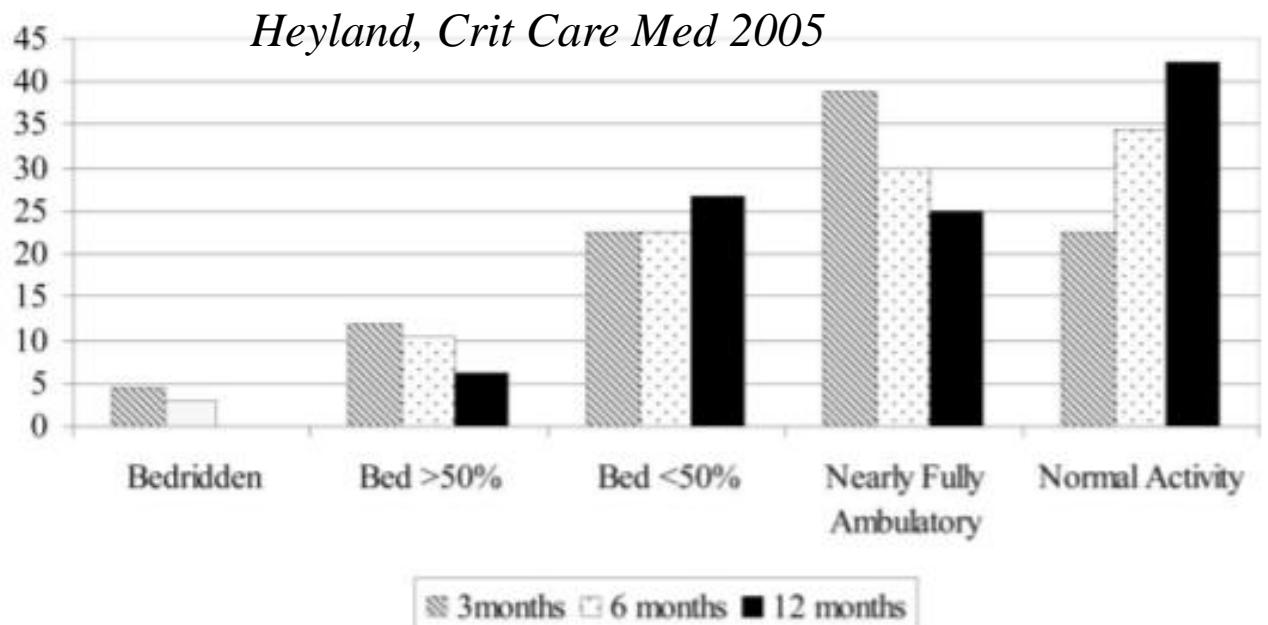
ARDS- Μακροχρόνιες επιπτώσεις: Η φυσική κατάσταση

73 survivors of ARDS were enrolled in a 12-month follow-up study

Responses (%) to the question “How would you describe your performance during your everyday life?”



Herridge, NEJM 2011



ARDS- Μακροχρόνιες επιπτώσεις: Η φυσική κατάσταση

- Muscle strength,
- 6-minute-walk distance,
- Short Form [SF]-36 Physical Function score

PF - Φυσική λειτουργία

RP - Περιορισμοί των ρόλων λόγω σωματικών προβλημάτων υγείας

BP - Ο σωματικός πόνος

SF - Κοινωνική λειτουργία

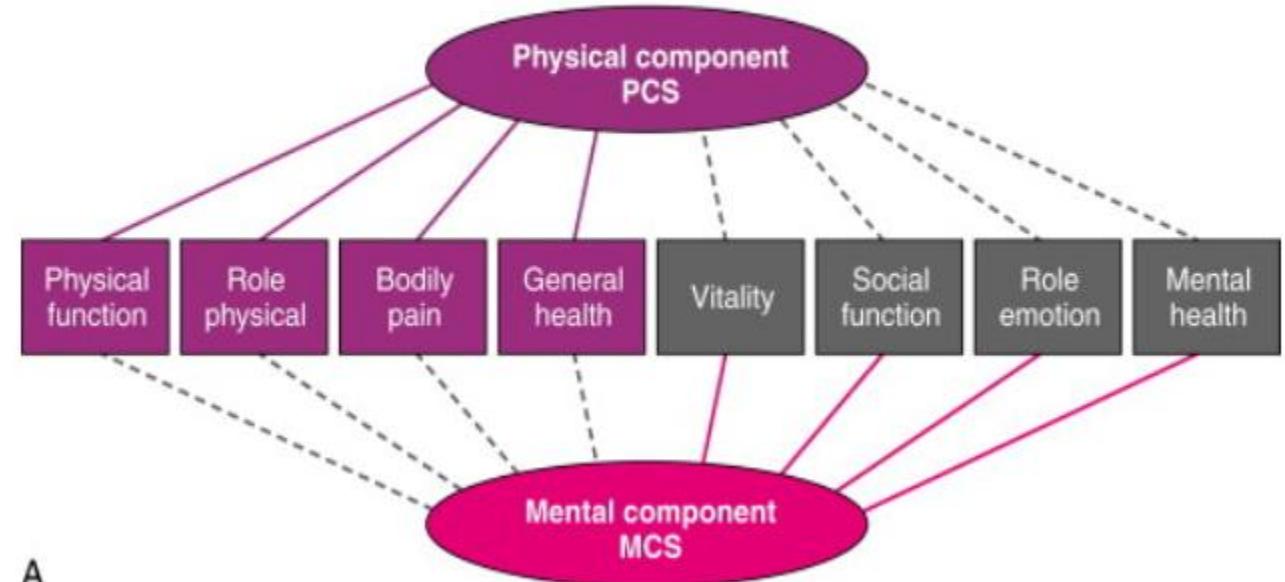
MH - Γενική ψυχική υγεία, που καλύπτει την ψυχολογική δυσφορία και την ευημερία

RE - Περιορισμοί των ρόλων λόγω συναισθηματικών προβλημάτων

VT - Ζωτικότητα, ενέργεια ή κόπωση

GH - Γενικές αντιλήψεις για την υγεία

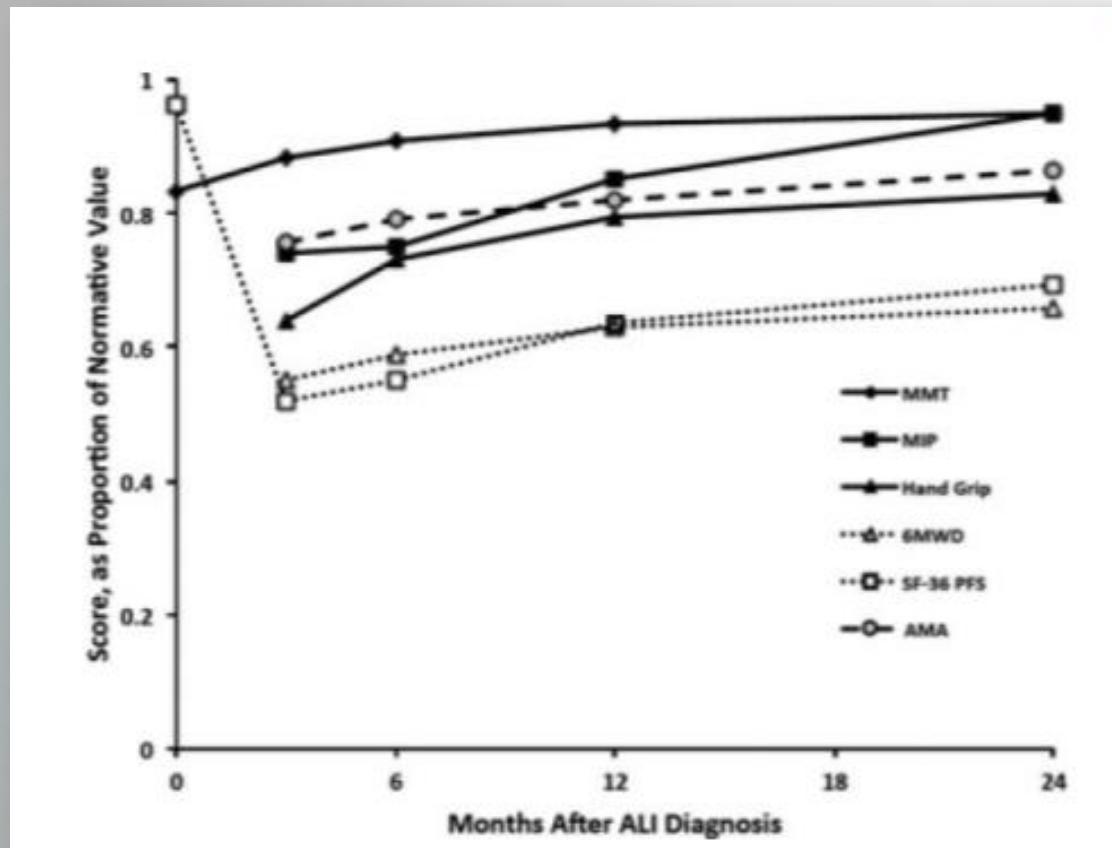
SF-36: 2 Component Model to Derive PCS, MCS



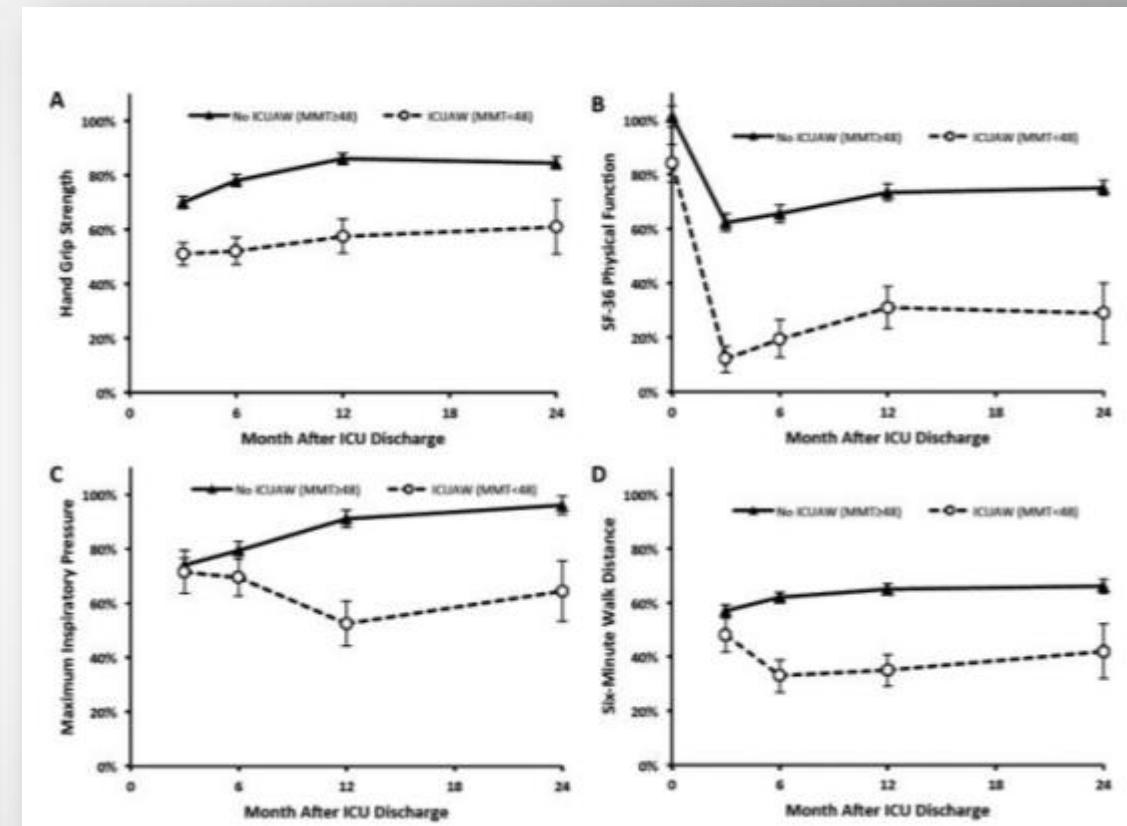
Physical Complications in Acute Lung Injury Survivors: A 2-Year Longitudinal Prospective Study

Eddy Fan, MD, PhD, David W. Dowdy, MD, PhD, Elizabeth Colantuoni, PhD, Pedro A.

Fan, Crit Care Med 2014



13 intensive care units from 4 academic teaching hospitals
222 survivors of acute lung injury



ARDS- Μακροχρόνιες επιπτώσεις: Η φυσική κατάσταση

Needham, AJRCCM 2014

203 survivors of ALI enrolled from 12 hospitals participating in the ARDS Network randomized trials

Table 2: Summary of Physical Outcomes and Correlations with All Physical Measures at 6 Months

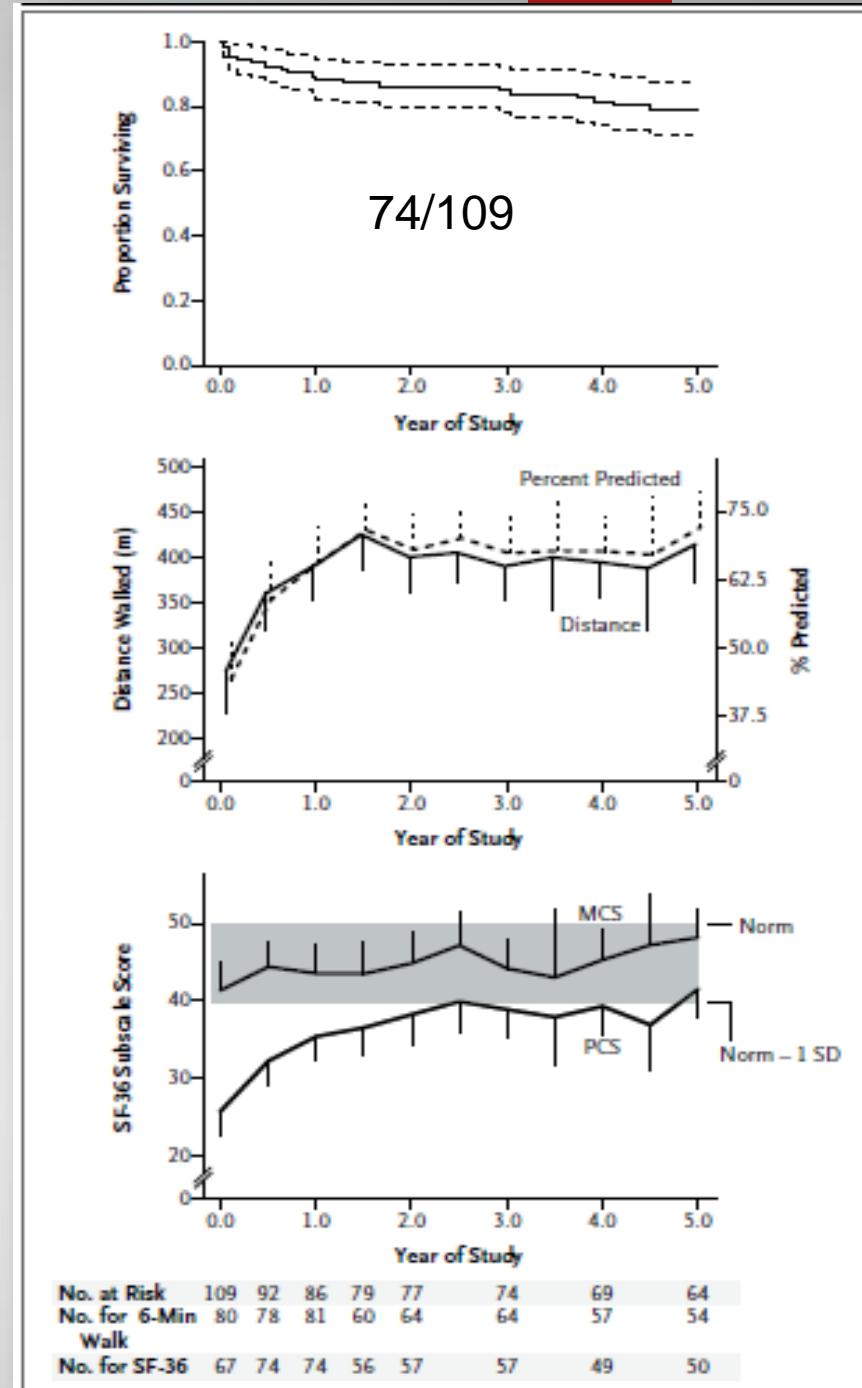
Physical Outcome	Strength (% of Maximum MMT Score) (n = 191)*	6-Minute-Walk Test (% Predicted) (n = 183)*	SF-36 Physical Function (% Predicted) (n = 200)*
6-month, mean (SD)	92 (8)†	64 (22)‡	61 (36)
12-month, mean (SD)	93 (9)†	67 (26)‡	67 (37)
Correlation (P value) of measure at 6-mo§			
Arm muscle area, % predicted§	0.11 (0.177)	-0.06 (0.483)	-0.04 (0.643)
Strength, % of maximum MMT score	1.00 (0)	0.32 (<0.001)	0.44 (<0.001)
Hand grip strength, % predicted	0.40 (<0.001)	0.28 (<0.001)	0.32 (<0.001)
Maximal inspiratory pressure, % predicted	0.14 (0.079)	0.40 (<0.001)	0.35 (<0.001)
4-meter timed walk speed, m/s	0.38 (<0.001)	0.52 (<0.001)	0.56 (<0.001)
6-minute-walk test, % predicted	0.32 (<0.001)	1.00 (0)	0.54 (<0.001)
SF-36 Physical Function, % predicted	0.44 (<0.001)	0.54 (<0.001)	1.00 (0)

ARDS: Μακροχρόνιες επιπτώσεις



Toronto Study

- 4 ΜΕΘ
- 109 ασθενείς με ARDS που επεβίωσαν
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- Φυσική κατάσταση: 6MWD
- Πνευματική κατάσταση
- Ποιότητα ζωής: SF-36



ARDS: Μακροχρόνιες επιπτώσεις

Η επίδραση της αναπνευστικής λειτουργίας

TABLE 5. CORRELATIONS BETWEEN PULMONARY FUNCTION TESTS AND
QUALITY OF LIFE

	FVC	FEV ₁	FEV ₁ /FVC	Dl _{CO}	TLC	Air Trapping	Pa _{O₂}	Pa _{CO₂}
SF-36								
Physical	0.41 [†]	0.42 [†]	-0.02	0.44 [†]	0.42 [†]	-0.28*	0.28*	-0.13
Role-physical	0.26*	0.28*	0.03	0.23*	0.33 [†]	-0.07	0.30*	0.01
Bodily pain	0.25*	0.21	0.08	0.04	0.20*	0.00	0.08	0.02
General health	0.30*	0.30 [†]	0.01	0.17	0.43 [†]	0.01	0.10	-0.13
Vitality	0.19	0.19	-0.03	0.11	0.35 [†]	-0.04	0.05	0.03
Social functioning	0.36 [†]	0.37 [†]	0.00	0.20	0.46 [†]	0.03	0.14	-0.04
Role-emotional	0.18	0.20	0.08	0.08	0.35 [†]	0.10	0.19	-0.09
Mental health	0.20	0.19	-0.01	0.07	0.23	0.07	0.18	-0.10
SIP								
Physical SIP	-0.44 [†]	-0.37 [†]	0.14	-0.36 [†]	-0.36 [†]	0.25	-0.27*	0.22
Psychosocial SIP	-0.14	-0.08	0.13	-0.17	-0.30	-0.14	-0.25	0.29*
Total SIP	-0.35 [†]	-0.28*	0.12	-0.32*	-0.43 [†]	0.07	-0.34*	0.32

Table 5. Month-12 correlations between various pulmonary parameters and quality-of-life measures

	FEV ₁	Fvc	FEV ₁ /Fvc	SGRQ Symptom	SGRQ Activities
SF-36					
Physical function	0.601 ^b	0.548 ^b	0.342 ^a	-0.502 ^b	
Role physical	0.501 ^b	0.479 ^b	0.235	-0.409 ^b	
Bodily pain	0.415 [†]	0.499 [†]	0.020	0.500 [†]	0.672 [†]
General health	0.534 ^b	0.482 ^b	0.330 ^a	-0.599 ^b	-0.705 ^b
Vitality	0.403 ^b	0.358 ^b	0.314 ^a	-0.646 ^b	-0.632 ^b
Social functioning	0.526 ^b	0.492 ^b	0.265	-0.543 ^b	-0.727 ^b
Role emotional	0.143	0.160	0.058	-0.463 ^b	-0.408 ^b
Mental health	0.207	0.216	0.064	-0.520 ^b	-0.439 ^b
PCS	0.595 ^b	0.556 ^b	0.280 ^a	-0.472 ^b	-0.761 ^b
MCS	0.071	0.071	0.067	-0.488 ^b	-0.346 ^b

66 pts in a randomized clinical trial of high versus low tidal volume mechanical ventilation at 1 year after their recovery
Orme. AJRCCM 2003

Οι περισσότερες μελέτες αναφέρουν ότι η διαταραχή της πνευμονικής λειτουργίας δεν εξηγεί την επιβάρυνση της φυσικής κατάστασης

73 pts, as part of a phase III randomized, multicenter trial

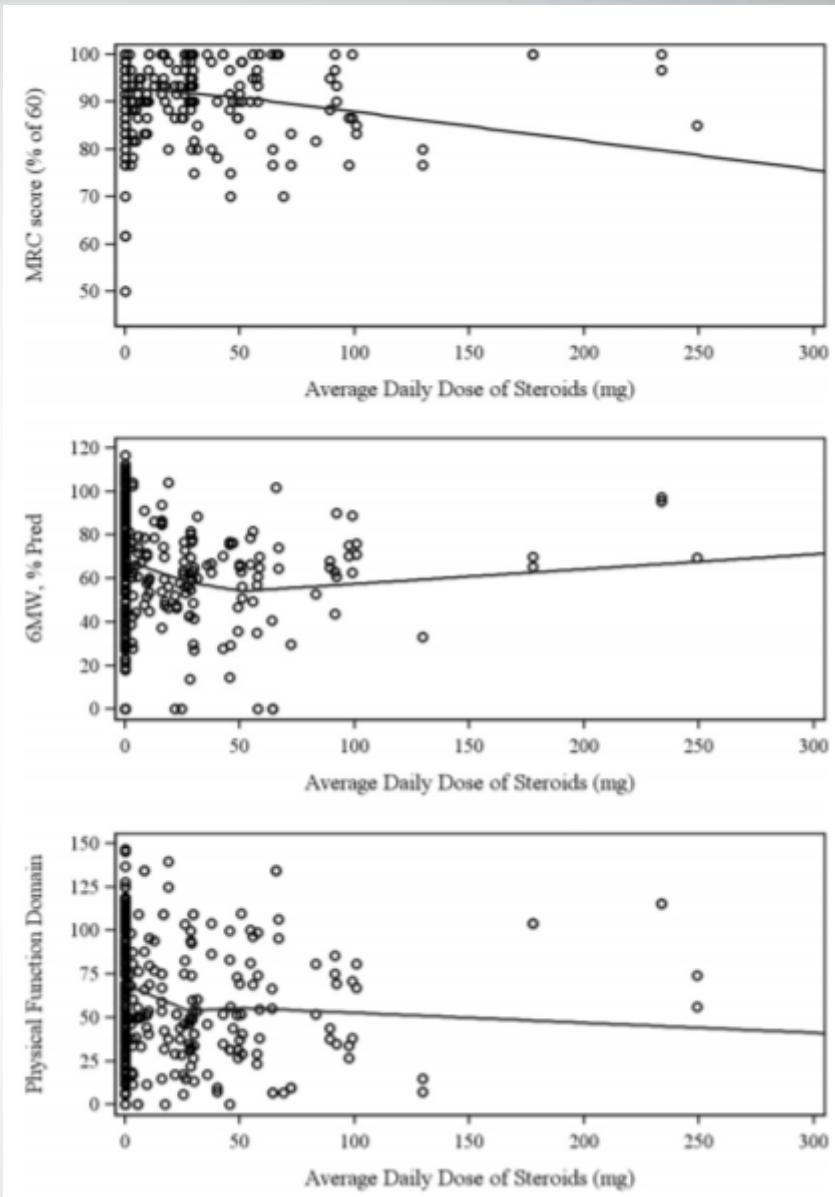
Heyland, Crit Care Med 2005

ARDS: Μακροχρόνιες επιπτώσεις

Η επίδραση της φαρμακευτικής αγωγής

203 survivors of ALI enrolled from 12 hospitals participating in the ARDS Network randomized trials

Needham, AJRCCM 2014



ARDS: Μακροχρόνιες επιπτώσεις

Η επίδραση του είδους της αναπνευστικής υποστήριξης

D. Chiumello
P. Taccone
V. Berto
A. Marino
G. Migliara
M. Lazzarini
L. Gattinoni

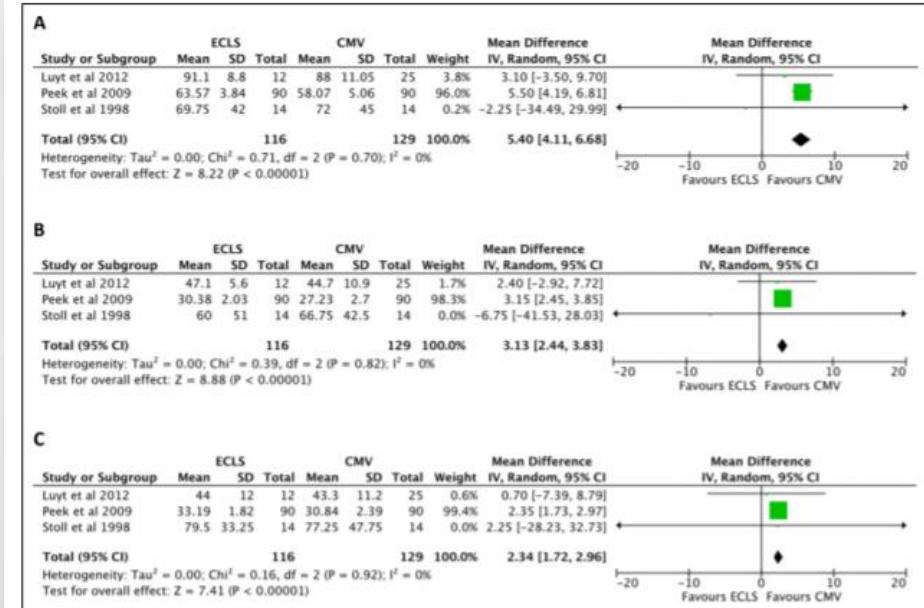
Long-term outcomes in survivors of acute respiratory distress syndrome ventilated in supine or prone position

Table 4 Short Form-36 Questionnaire and St. George's Respiratory Questionnaire at 12-month follow-up evaluation

	Whole population (n = 26)		Treatment effect			
	Normal expected value ^a	Measured value	p-Value	Prone group (n = 13)	Supine group (n = 13)	
Short Form-36^b						
Physical functioning	84 [72–91]	75 [40–90]	0.01	75 [50–90] (74.8)	80 [40–90] (83.8)	0.95
Role physical	73 [66–85]	75 [25–100]	0.08	75 [50–100] (72.6)	75 [25–100] (72.5)	0.75
Bodily pain	74 [68–82]	72 [42–100]	0.34	72 [42–100] (74.8)	61 [42–84] (73.6)	0.57
General health	62 [55–69]	70 [40–87]	0.89	72 [40–87] (58.6)	67 [42–77] (61.7)	0.89
Vitality	63 [59–65]	73 [55–85]	0.08	65 [45–85] (59.3)	75 [55–80] (63.9)	0.98
Social functioning	76 [75–78]	75 [63–88]	0.83	75 [50–88] (75.8)	75 [75–87.5] (78.3)	0.79
Role emotional	74 [66–78]	100 [33–100]	0.42	100 [33–100] (73.5)	100 [33–100] (73.5)	0.95
Mental health	65 [63–69]	72 [56–88]	0.41	72 [64–76] (64.7)	68 [56–88] (69.4)	0.83
St. George's Respiratory Questionnaire^c						
Symptoms	12	15.4 [10.4–24.5]	N/A	15.1 [10.3–26.9] (12)	15.6 [10.8–21.4] (12)	0.83
Activity	9	35.7 [0.0–54.2]	N/A	30.3 [10.3–26.9] (9)	41.2 [0.0–56.3] (9)	1.00
Impacts	2	16.3 [4.0–32.9]	N/A	6.7 [4.0–32.7] (2)	22.2 [14.4–32.9] (2)	0.42
Total	6	25.3 [7.7–41.0]	N/A	13.3 [7.7–39.5] (6)	25.4 [10.3–42.7] (6)	0.72

Long-Term Quality of Life After Extracorporeal Membrane Oxygenation in ARDS Survivors: Systematic Review and Meta-Analysis

SF-36



Chiumello, ICM 2012

Wilcox, JICM 2017

ARDS- Μακροχρόνιες επιπτώσεις

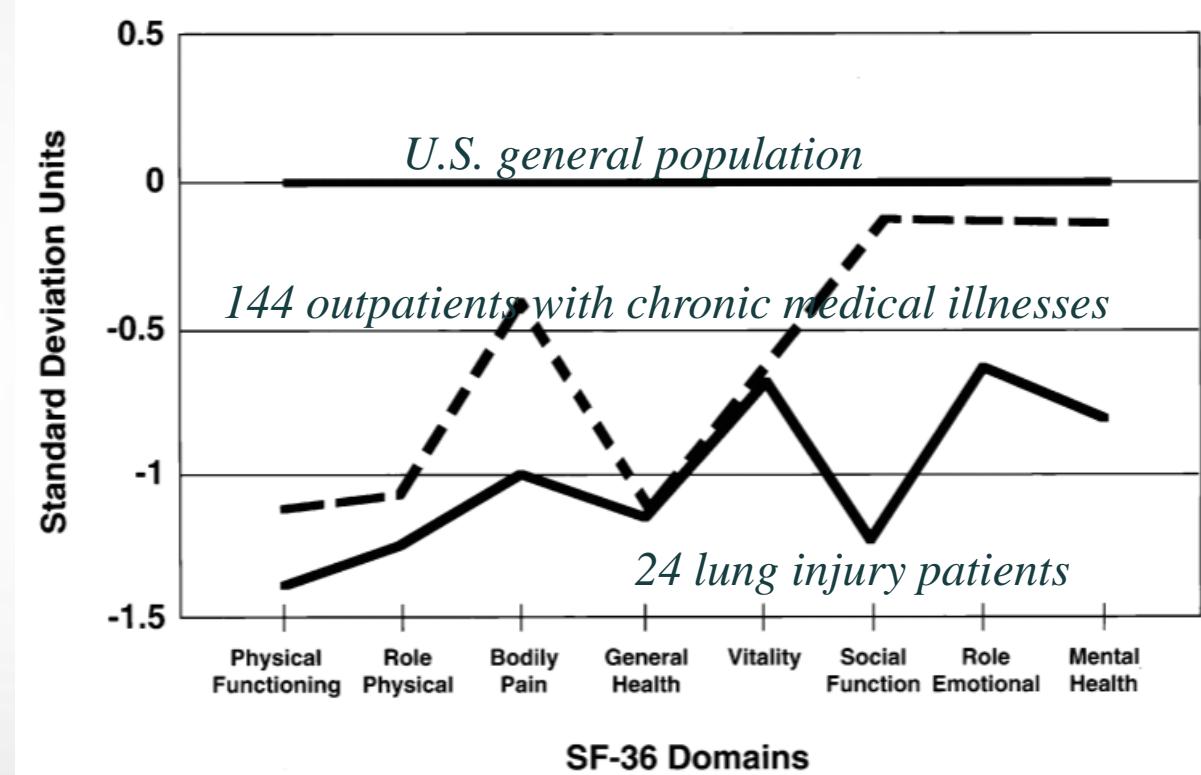
Reduced Quality of Life in Survivors of Acute Respiratory Distress Syndrome Compared With Critically Ill Control Patients

Table 2. Short Form 36 and St George's Respiratory Questionnaire Results for Acute Respiratory Distress Syndrome (ARDS) Survivors and Critically Ill or Injured Controls Matched for Severity of Illness*

	Population Controls†	All ARDS Cases (n = 77)	Matched ARDS Cases (n = 73)	Matched Controls (n = 73)
Short Form 36‡				
Physical functioning	84 ± 23	61 ± 25	62 ± 25	84 ± 17
Role-physical	81 ± 34	33 ± 33	34 ± 34	58 ± 32
Bodily pain	75 ± 24	53 ± 25	54 ± 25	68 ± 20
General health	72 ± 20	49 ± 21	50 ± 20	65 ± 19
Vitality	61 ± 21	49 ± 20	50 ± 19	64 ± 14
Social functioning	83 ± 23	60 ± 27	61 ± 27	78 ± 18
Role-emotional	81 ± 33	64 ± 41	66 ± 40	72 ± 36
Mental health	75 ± 18	64 ± 18	64 ± 18	75 ± 15
St George's Respiratory Questionnaire§				
Symptoms	12	45 ± 22	45 ± 22	26 ± 21
Activity	9	39 ± 23	39 ± 23	18 ± 17
Impacts	2	15 ± 16	15 ± 17	6 ± 9
Total¶	6	27 ± 17	27 ± 18	13 ± 11

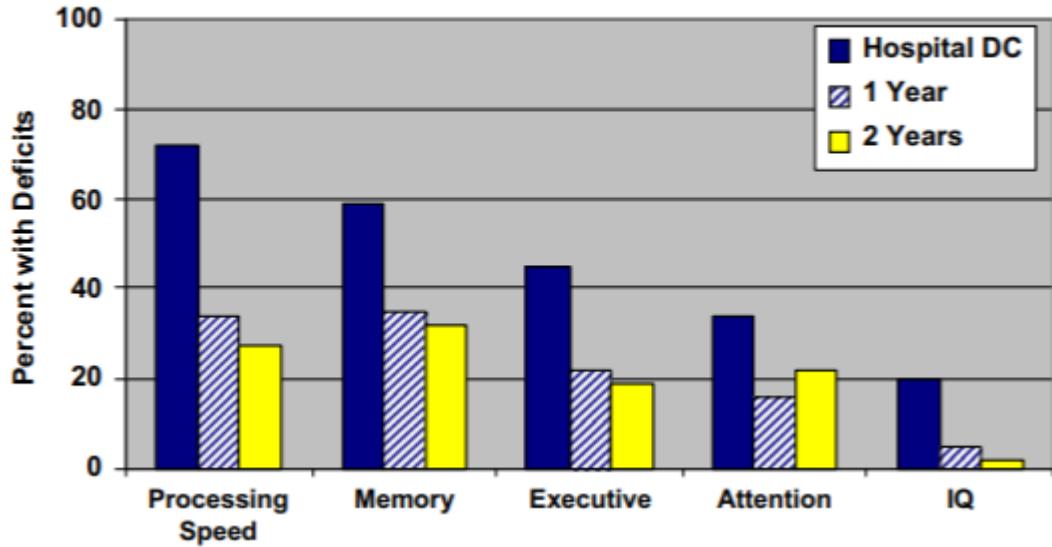
Davidson, JAMA 1999

6-41 months after ALI
Weinert CR, AJRCCM, 1997



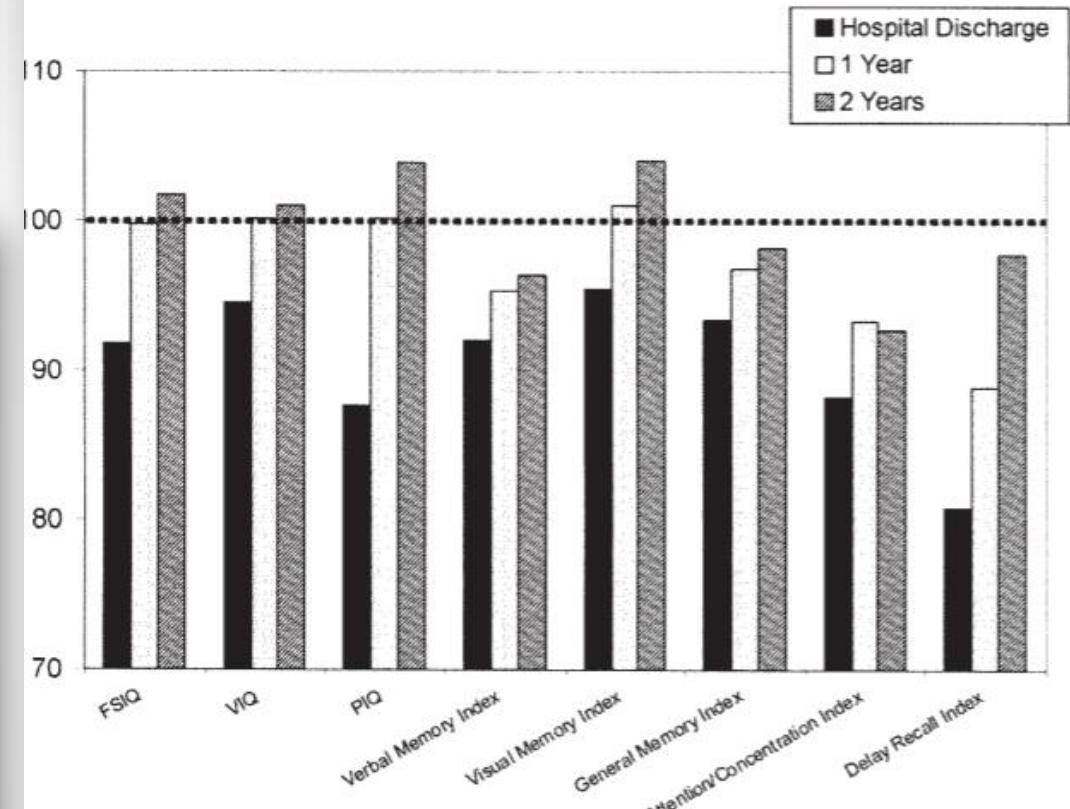
ARDS: Μακροχρόνιες επιπτώσεις Νευρο-γνωσιακές διαταραχές

Prevalence of cognitive impairment in ARDS survivors ranges from 70 to 100 % at hospital discharge, 46–80 % at 1 year, 20–47 % at 2 years, and 20 % at 5 years



Hopkins RO, , AJRCCM 2005
Herridge, Crit Care Clin 2011

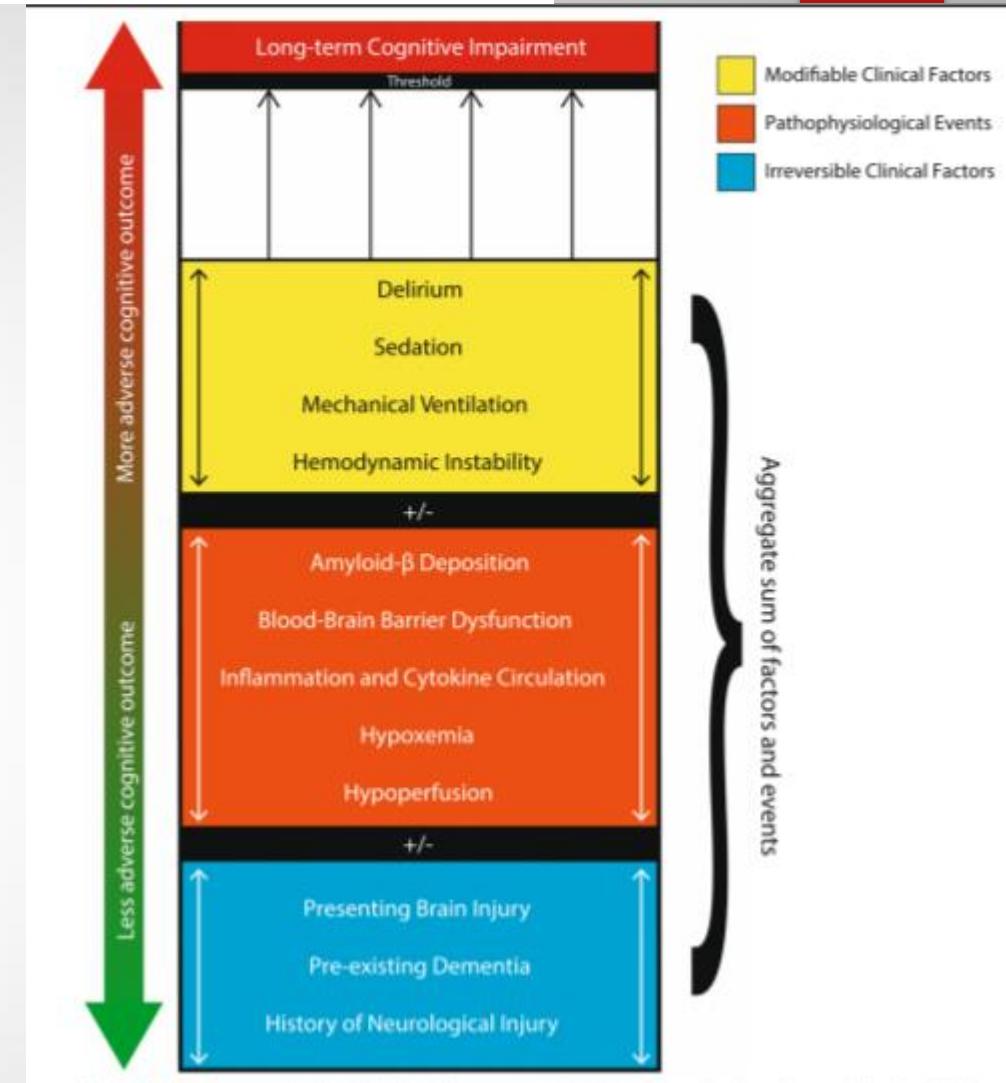
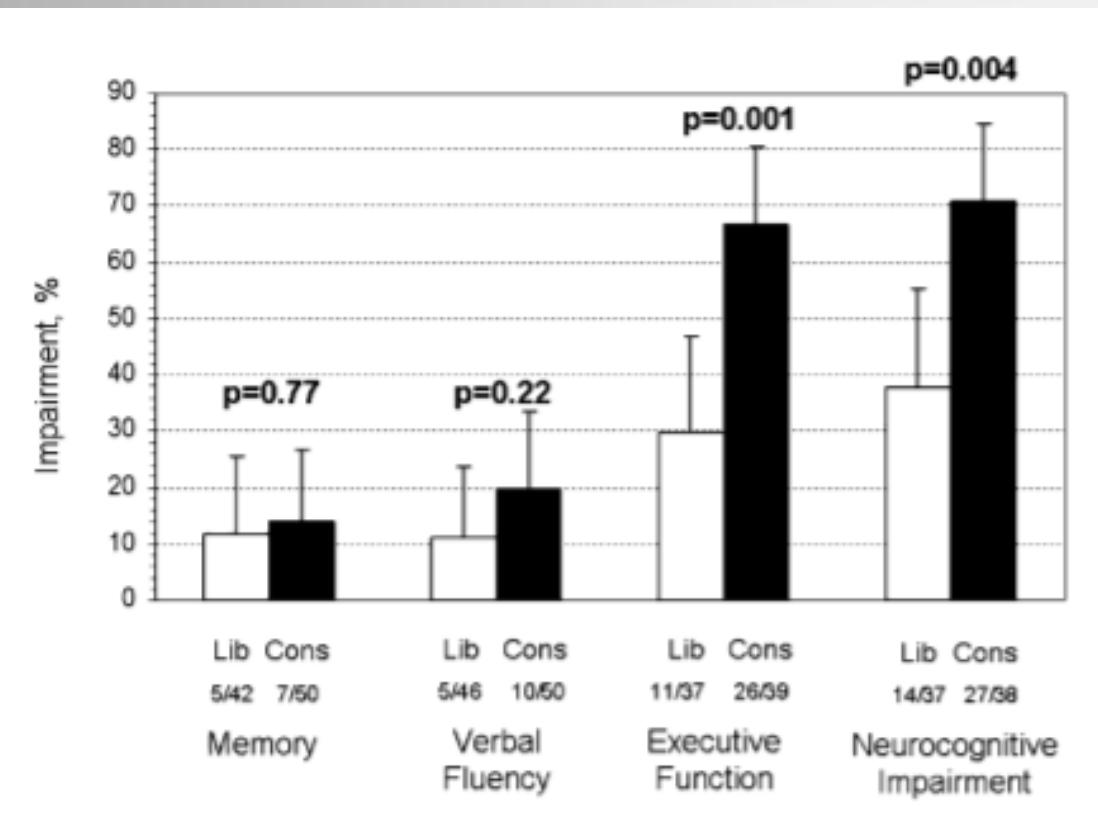
Intelligence and memory scores for patients with ARDS



Hopkins RO, AJRCCM 2005

The Adult Respiratory Distress Syndrome Cognitive Outcomes Study

Long-Term Neuropsychological Function in Survivors of Acute Lung Injury



Mikkelsen, AJRCCM 2012

Sasannejad, CC 2019

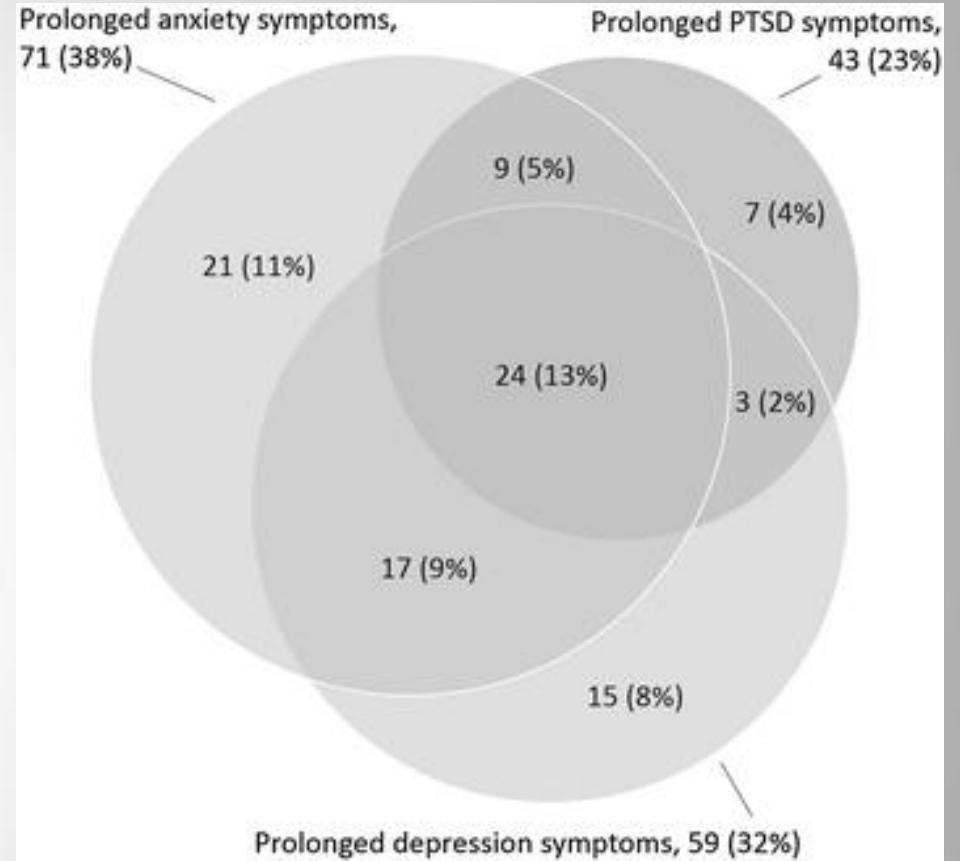
ARDS: Μακροχρόνιες επιπτώσεις

Ψυχιατρικές Διαταραχές



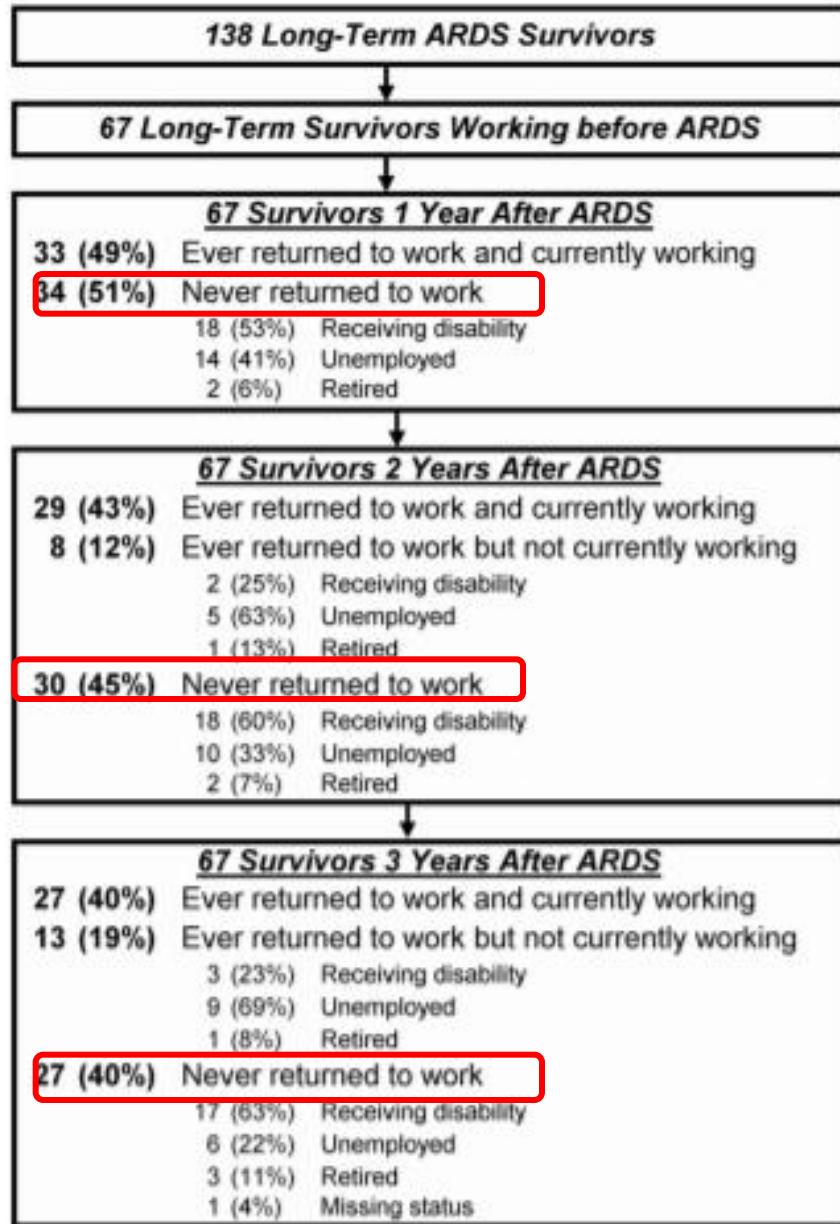
Bienvenu, ICM, 2018,

- 13 medical and surgical intensive care units in four hospitals,
- 186 pts, follow-up at 3, 6, 12, 24, 36, 48, and 60 months post-ARDS
- Anxiety
- Depression,
- Posttraumatic stress disorder (PTSD)



ARDS: Μακροχρόνιες επιπτώσεις

Επιστροφή στην δουλειά



HHS Public Access

Author manuscript

Thorax. Author manuscript; available in PMC 2019 February 01.

Published in final edited form as:

Thorax. 2018 February ; 73(2): 125–133. doi:10.1136/thoraxjnl-2017-210217.

Return to work and lost earnings after acute respiratory distress syndrome: a 5-year prospective, longitudinal study of long-term survivors

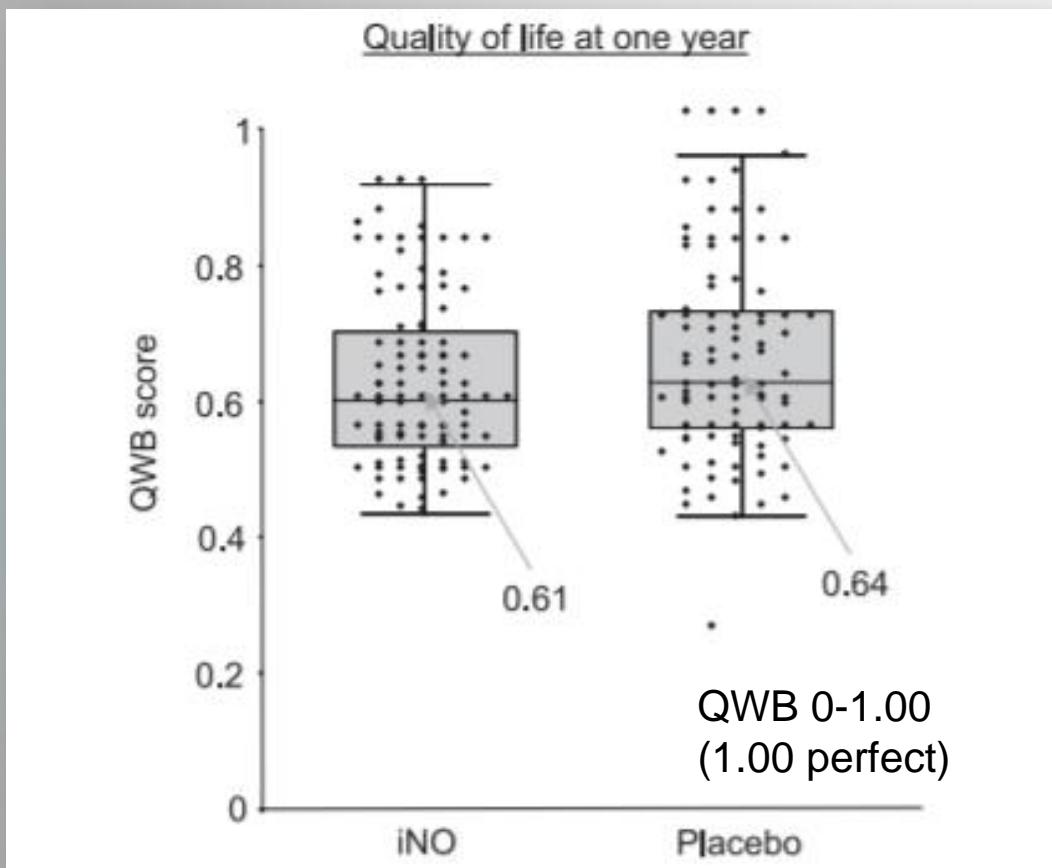
Multivariable predictors of returning to work within 5 years of ARDS*

Characteristic	HR (95% CI)	p Value
Model 1: baseline variables		
Age at ARDS diagnosis, per year ≤40 years	0.99 (0.95 to 1.04)	0.79
Age at ARDS diagnosis, per year >40 years	0.97 (0.93 to 1.02)	0.28
Charlson Comorbidity Index, per point	0.75 (0.56 to 0.99)	0.05
Functional Comorbidity Index, per point	0.93 (0.72 to 1.20)	0.55
Model 2: ICU and discharge variables		
Mechanical ventilation, per day ≤5 days	0.66 (0.54 to 0.81)	<0.001
Mechanical ventilation, per day >5 days	1.02 (0.99 to 1.05)	0.22
Discharge to rehabilitation or other healthcare facility	0.41 (0.21 to 0.78)	0.01
Model 3: final multivariable model		
Charlson Comorbidity Index, per point	0.77 (0.59 to 0.99)	0.04
Mechanical ventilation, per day ≤5 days	0.67 (0.55 to 0.82)	<0.001
Mechanical ventilation, per day >5 days	1.02 (0.99 to 1.05)	0.20
Discharge to rehabilitation or other healthcare facility	0.49 (0.26 to 0.93)	0.03

ARDS: Μακροχρόνιες επιπτώσεις Ποιότητα ζωής

Ποιότητα ζωής

Καθορίζεται από την ικανότητά μας να λειτουργούμε,
να σκεφτόμαστε και να θεωρούμε ότι η ζωή μας αξίζει



Health-Related Quality of Life



Forty-six U.S. centers. 385 previously healthy adults with ARDS

Angus, AJRCCM 2006

ARDS: Μακροχρόνιες επιπτώσεις : Ποιότητα ζωής



Ποιότητα ζωής:

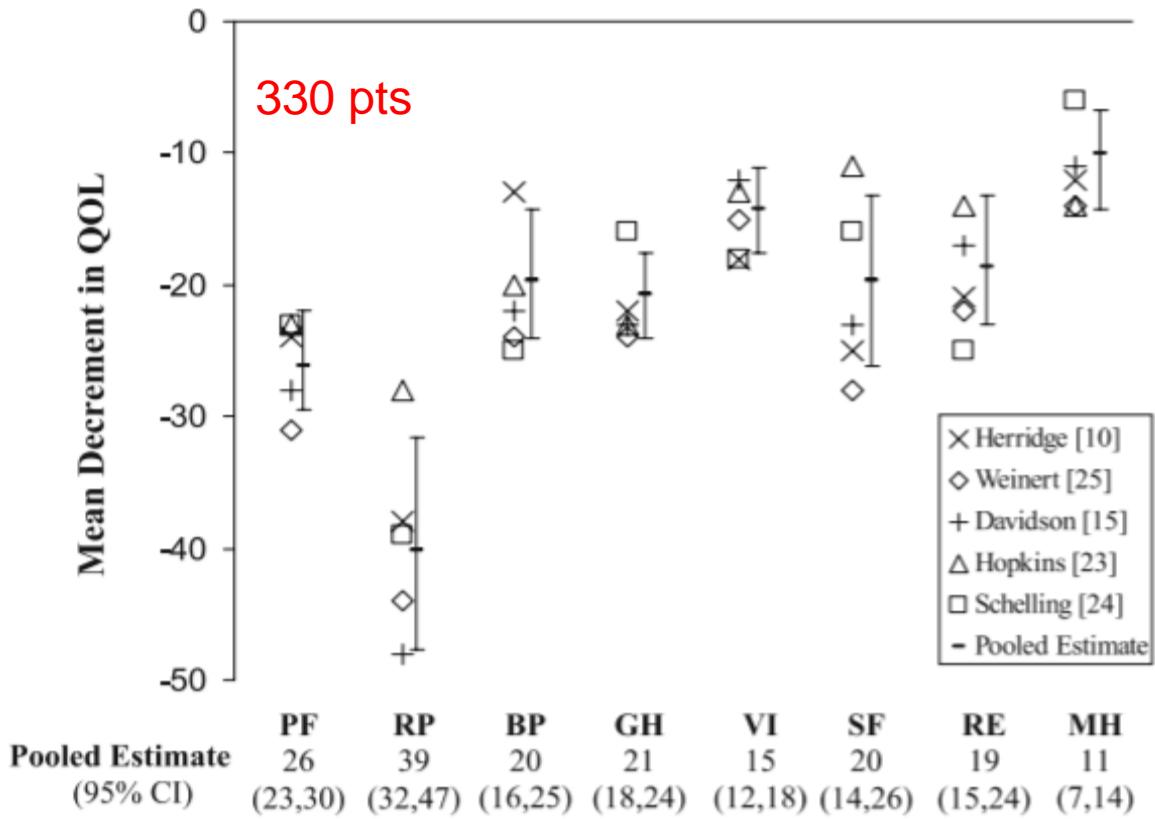
Εκτιμά το πώς η νόσος και οι θεραπείες της σχετίζονται με τη φυσική, κοινωνική, συναισθηματική και νευρο-ψυχολογική λειτουργικότητα του ατόμου

Intensive Care Med (2006) 32:1115–1124
DOI 10.1007/s00134-006-0217-3

SYSTEMATIC REVIEW

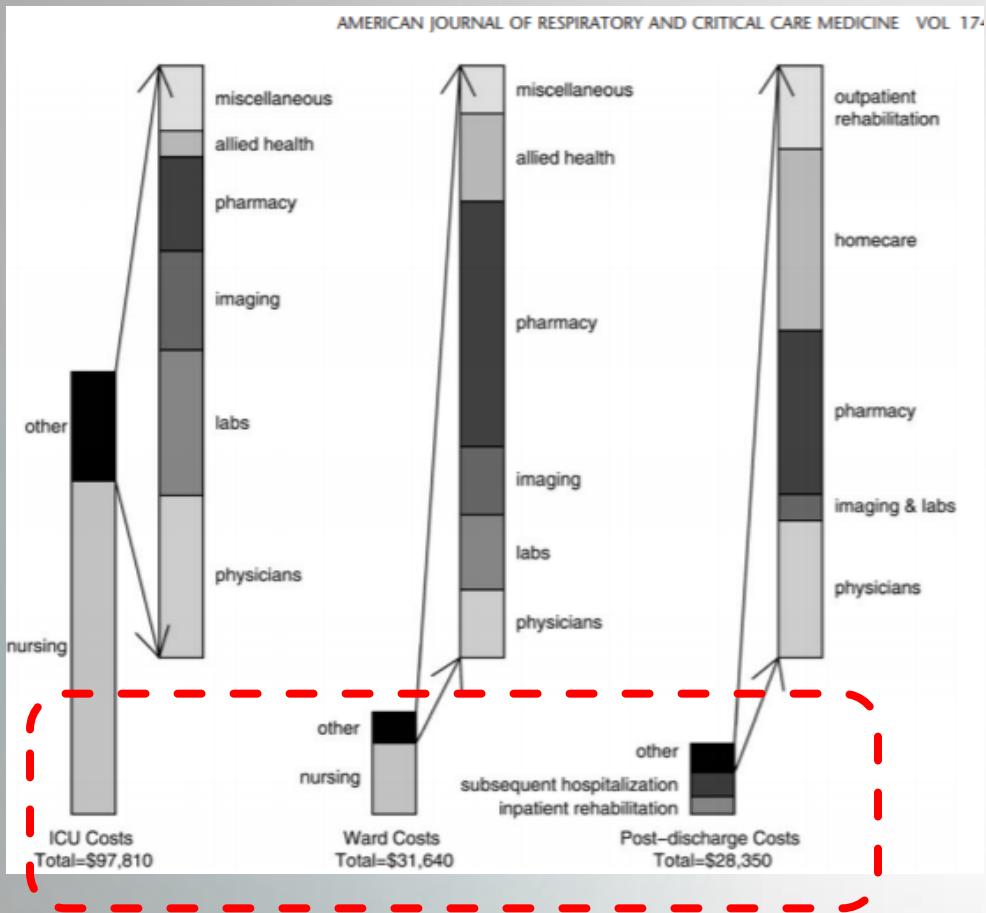
David W. Dowdy
Mark P. Eid
Cheryl R. Dennison
Pedro A. Mendez-Tellez

Quality of life after acute respiratory distress syndrome: a meta-analysis



ARDS: Μακροχρόνιες επιπτώσεις

Οικονομικό Κόστος



Cheung, AJRCCM 2006

Table 2. (Continued.)

Clinical Outcomes	At 1 Year (N=83)	At 2 Years (N=69)	At 3 Years (N=71)	At 4 Years (N=63)	At 5 Years (N=64)
Median SF-36 score 					
Physical functioning	60	70	70	75	75
Role, physical	25	50	100	75	88
Bodily pain	62	62	72	74	74
General health	52	62	55	59	62
Vitality	55	55	50	50	55
Social functioning	63	75	75	69	75
Role, emotional	100	100	100	100	100
Mental health	72	76	72	76	76
Mean costs after initial hospitalization — Canadian \$**					
Medication costs	1,441	1,652	2,288	2,713	2,152
Rehospitalization costs	11,875	3,727	2,217	1,945	2,700
Outpatient costs	8,993	4,506	1,558	1,091	714
Total	22,309	9,885	6,063	5,749	5,566

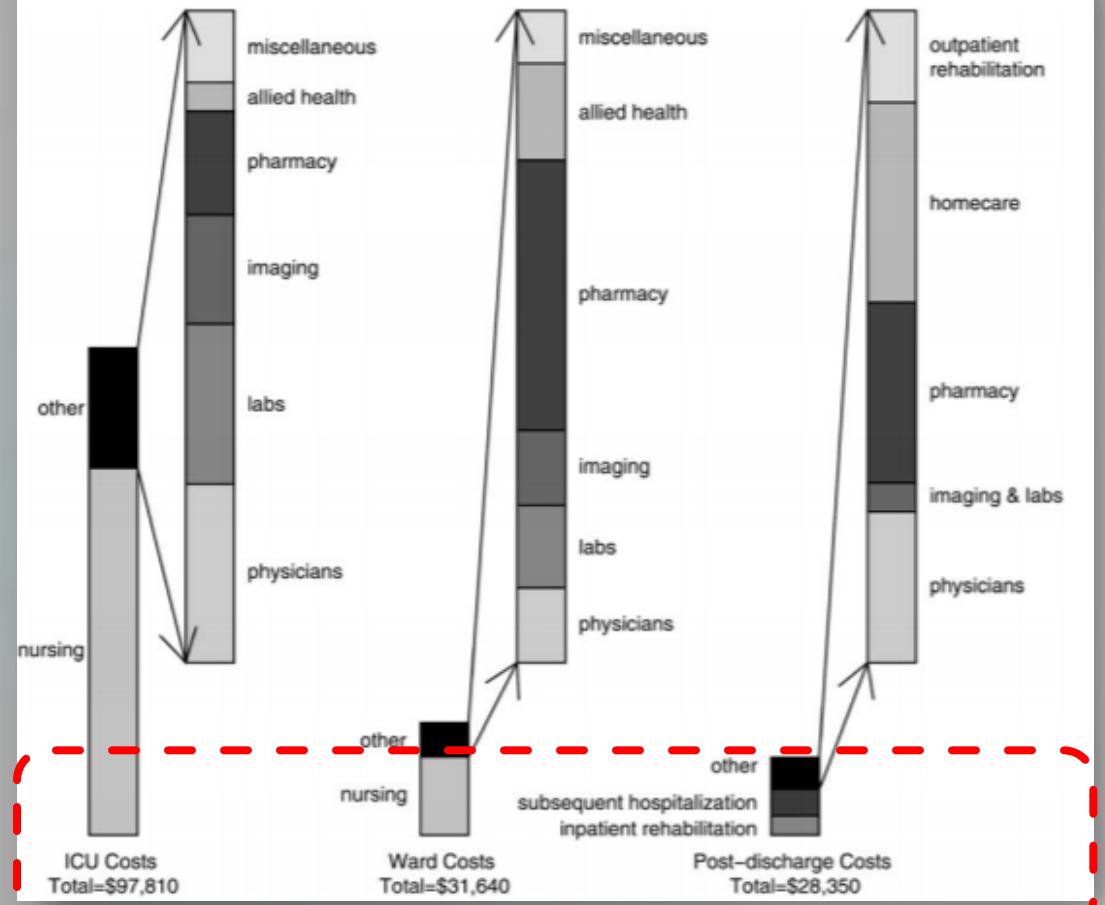
Herridge, NEJM 2011

ARDS: Μακροχρόνιες επιπτώσεις

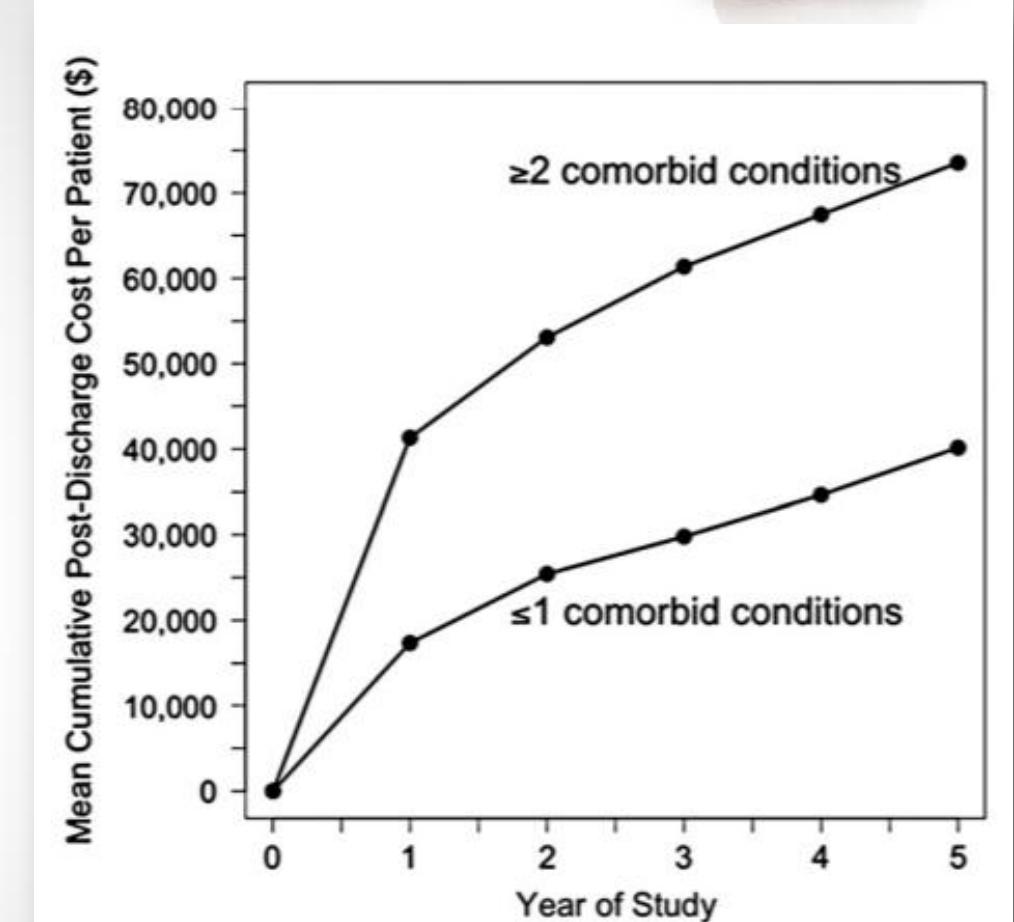
Οικονομικό Κόστος



AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE VOL 174



Cheung, AJRCCM 2006



Herridge, NEJM 2011

ARDS: Μακροχρόνιες επιπτώσεις

To φορτίο των συγγενών

Well-being in informal caregivers of survivors of acute respiratory distress syndrome*

Cameron, Crit Care Med 2006

Table 4. Comparison of informal caregiver quality of life to population values

Quality of Life Domain	
Physical functioning	
Caregivers ^a	55 (28–80)
Population norm ^b	89
Role physical	
Caregivers ^a	67 (0–100)
Population norm ^b	84
Bodily pain	
Caregivers ^a	62 (32–100)
Population norm ^b	75
General health	
Caregivers ^a	52 (35–72)
Population norm ^b	77
Vitality	
Caregivers ^a	50 (30–70)
Population norm ^b	66
Social functioning	
Caregivers ^a	75 (38–100)
Population norm ^b	86
Role emotional	
Caregivers	67 (0–100)
Population norm ^b	84
Mental health	
Caregivers ^a	76 (47–88)
Population norm ^b	78

*Median (interquartile range); ^bpopulation norm median.

50 caregivers providing assistance approximately 2 yrs after hospitalization returned their survey

Table 3. Multivariate regression analyses examining informal caregiver emotional distress and psychological well-being

	SE B	Beta	p Value
Intercept			
Personal gain	0.98		
Mastery	0.74	0.40	.075
Social support	0.14	0.07	.052
Beck Depression Inventory	-0.16	0.10	-0.20
			.121

Our caregivers' level of emotional distress (31.9%) was higher than a national sample of American women (24%) and lower than caregivers to recently institutionalized individuals with Alzheimer's disease

Ο ασθενής με ARDS: Μακροχρόνιες επιπτώσεις



Long-term outcome after the acute respiratory distress syndrome: different from general critical illness?

Thomas Bein^a, Steffen Weber-Carstens^b, and Christian Apfelbacher^c

ARDS:

- Ευάλωτο πνευμονικό παρέγχυμα
- Ο μηχανικός αερισμός μπορεί να είναι πιο βλαπτικός
- Η υποξυγοναίμια, χαρακτηριστικό του ARDS μπορεί να εχει αρνητικές μακροχρόνιες επιπτώσεις
- Οι *rescue therapies* (ECMO, prone position, muscle relaxation sedation) μπορεί να επηρεάζουν την μακροχρόνια έκβαση

ARDS:

αποτελεί μια ανομοιογενή ομάδα

- αίτια
- συμπτώματα,
- κλινική πορεία
- και δεν μπορεί να θεωρηθεί ως ασθένεια με ενιαία εξέλιξη και έκβαση

28^ο

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Ευχαριστώ