

“

# RUOLO ED ASPETTATIVE DELLA CHIRURGIA COMPLESSA DEI TUMORI DELL'ADDOME E DEL TORACE NEL PAZIENTE ANZIANO

”

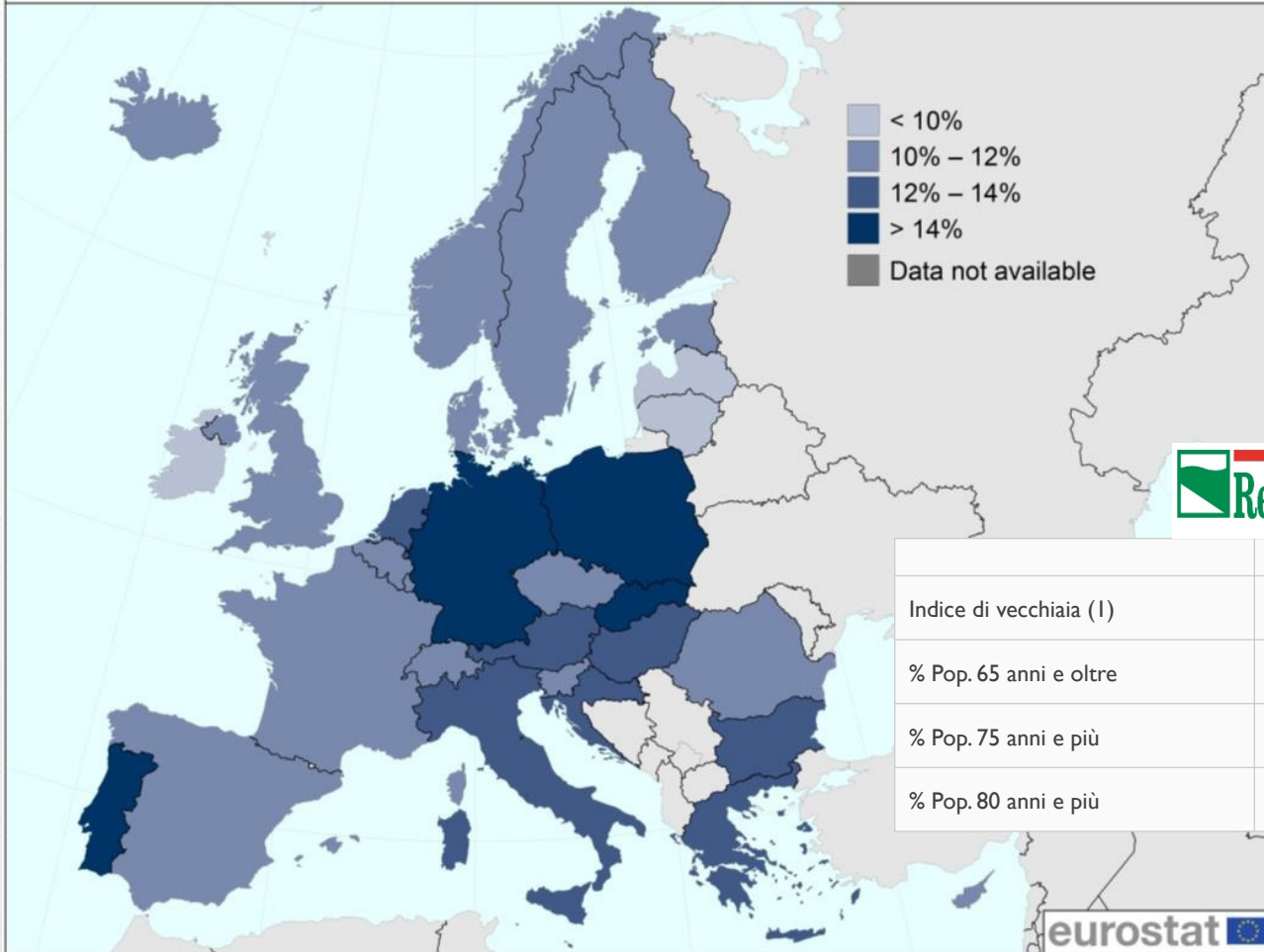
GESTIONE DELLE COMPLICANZE POSTOPERATORIE  
MAGGIORI IN TERAPIA INTENSIVA



ELISABETTA MARANGONI

DIPARTIMENTO EMERGENZA  
U.O. ANESTESIA E RIANIMAZIONE UNIVERSITARIA  
DIR: PROF. CARLO ALBERTO VOLTA

### Share of population aged 80 or over, 2080 projections



- < 10%
- 10% – 12%
- 12% – 14%
- > 14%
- Data not available



	RER	Italia
Indice di vecchiaia (I)	167,3	144,5
% Pop. 65 anni e oltre	22,3	20,3
% Pop. 75 anni e più	11,7	10,1
% Pop. 80 anni e più	7,1	6,0

eurostat

Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat

Cartography: 09/2015

## Clinical Frailty Scale\*



**1 Very Fit** – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.



**2 Well** – People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. seasonally.



**3 Managing Well** – People whose **medical problems are well controlled**, but are **not regularly active** beyond routine walking.



**4 Vulnerable** – While **not dependent** on others for daily help, often **symptoms limit activities**. A common complaint is being “slowed up”, and/or being tired during the day.



**5 Mildly Frail** – These people often have **more evident slowing**, and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.



**6 Moderately Frail** – People need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.



**7 Severely Frail** – **Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).



**8 Very Severely Frail** – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.



**9. Terminally Ill** - Approaching the end of life. This category applies to people with a **life expectancy <6 months**, who are **not otherwise evidently frail**.

### Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

\* 1. Canadian Study on Health & Aging, Revised 2008.  
2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005; 173:489-495.

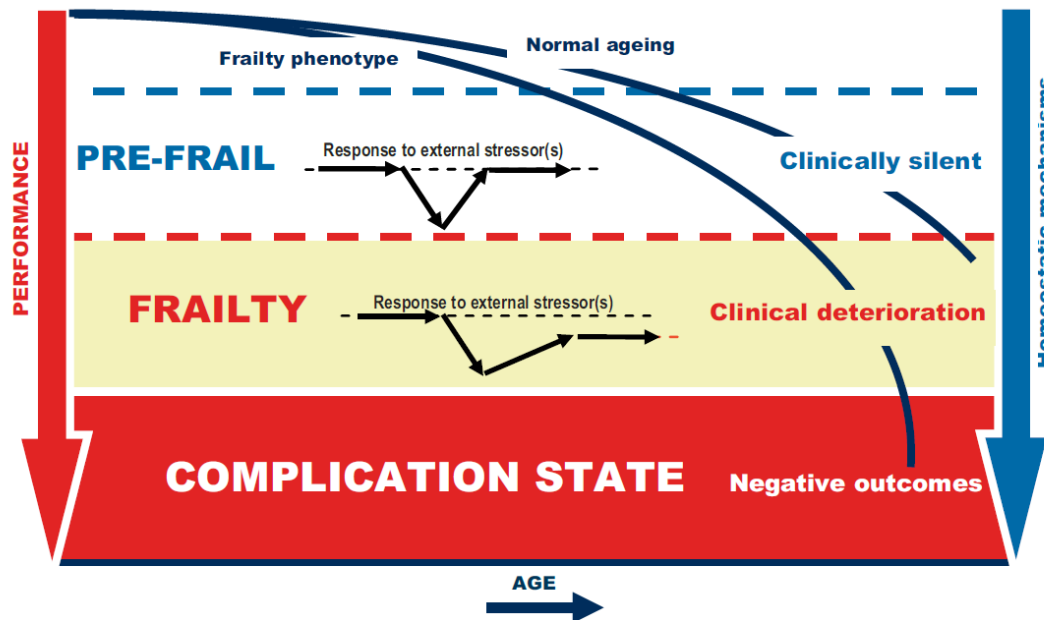
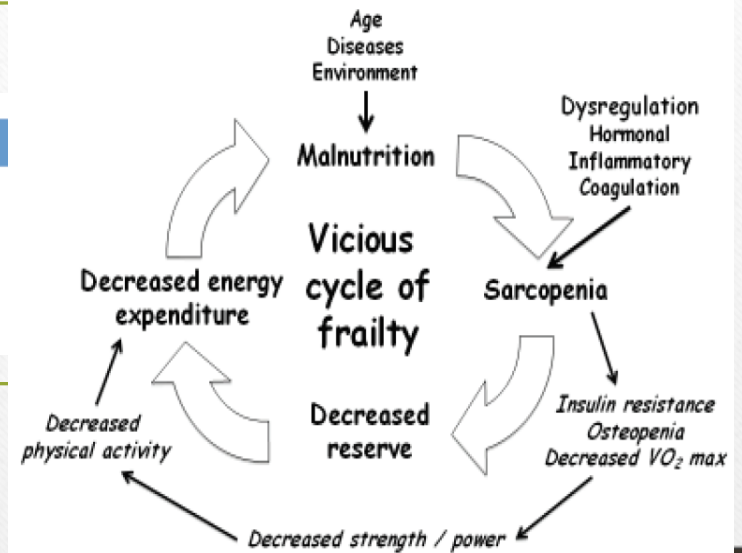
© 2007-2009. Version 1.2. All rights reserved. Geriatric Medicine Research, Dalhousie University, Halifax, Canada. Permission granted to copy for research and educational purposes only.

## VIEWPOINT

# Frailty in the critically ill: a novel concept

Robert C McDermid<sup>1</sup>, Henry T Stelfox<sup>2</sup> and Sean M Bagshaw<sup>1\*</sup>

Critical Care 2011



RESPIRATORIE

NEUROLOGICHE

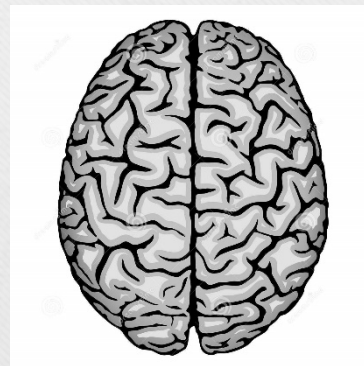
SETTICHE

CARDIOLOGICHE

RENALI

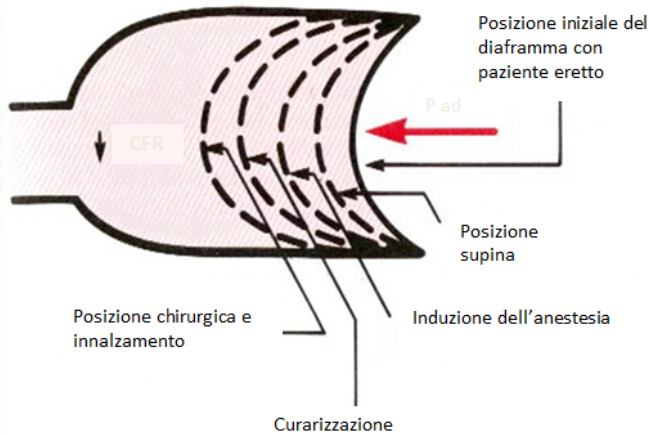
EPATICHE

Metaboliche...idroelettrolitiche

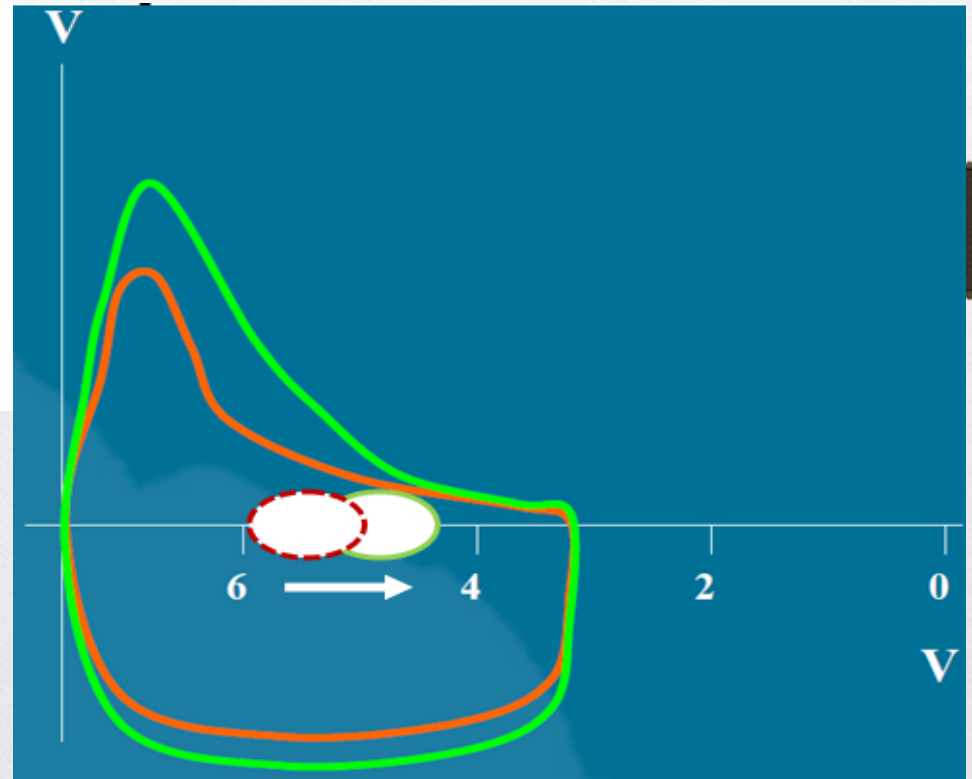


# Effetti dell'anestesia sulla funzione respiratoria

Progressivo innalzamento del diaframma in direzione cefalica



FRC ↓ 20%



## Qualche rilevanza clinica?

### Chiusura ciclica ed intermittente delle piccole vie aeree

- Con l'aumentare dell'età, c'è una progressiva riduzione del flusso espiratorio massimo a basso volume polmonare e quindi gli anziani sviluppano più EFL

---
- Il fumo peggiora ulteriormente il MEF
- La riduzione marcata del flusso espiratorio, può inficiare la tosse e la rimozione delle secrezioni  
Alvisi V et al., 2012
- Infiammazione: che può portare ad infezioni polmonari  
Hedenstierna, 2012
- Chiusura continua: riassorbimento di gas al di là del punto di chiusura che porta ad atelettasie  
Hedenstierna et al., 2010
- Atelettasie: shunt e ipossiemia. Rappresentano una condizione predisponente per infezioni e complicanze respiratorie postoperatorie van Kaam AH et al., 2004

# Expiratory Flow Limitation as a Risk Factor for Pulmonary Complications After Major Abdominal Surgery

Savino Spadaro, MD,\* Gaetano Caramori, MD,† Chiara Rizzuto, MD,\* Francesco Mojoli, MD,‡ Gianluca Zani, MD,\* Riccardo Ragazzi, MD,\* Giorgia Valpiani, StatD,§ Francesca Dalla Corte, MD,\* Elisabetta Marangoni, MD,\* and Carlo Alberto Volta, MD\*

**Table 3. Association Between Baseline Characteristics of Patients and Development of PPCs According to Logistic Regression Analysis Adjusted for Potential Confounders**

	Univariate Analysis			Multivariate Analysis		
	Crude Odds Ratio	95% CI	P	Adjusted Odds Ratio	95% CI	P
EFL (reference: absence)						
Presence	5.1	2.9–8.9	<.0001	4.2	2.3–7.6	<.0001
Age (years; reference: <65 y)						
≥65	2.5	1.4–4.5	.001	2.1	1.1–4.1	.023
ASA (reference: <3)						
≥3	2.4	1.4–4.3	.002	1.9	1.0–3.6	.059
MRC (reference: <3)						
≥3	3.5	2.0–6.0	<.0001	2.6	1.4–4.8	.002
Length of surgery (reference: <240 min)						
>240 min	2.2	1.2–4.0	.010	1.9	1.0–3.7	.059
Sex (reference: male)						
Female	1.2	0.7–2.0	.545			
Smoking history (reference: absence)						
Presence	0.8	0.5–1.3	.372			
Preoperative SpO <sub>2</sub> (reference: SpO <sub>2</sub> >96%)						
≤96%	1.8	1.0–3.3	.055			
Lung disease (reference: absence)						
Presence	1.2	0.6–2.4	.549			

# Fattori di rischio per lo sviluppo di EFL perioperatoria

	Multivariate analysis		
	Adjusted Odds Ratio	95% CI	P
Età ≥ 65	2.3	0.9–5.6	0.077
ASA ≥ 3	0.4	0.2–0.9	0.048
BMI ≥ 30	6.0	2.4–14.3	<0.0001
Durata dell'intervento ≥ 180 min	0.3	0.1–0.7	0.006
SpO <sub>2</sub> preoperatoria ≤ 96 %	1.3	0.5–3.5	0.600
BPCO	5.9	2.2–15.3	<0.0001
Bilancio fluidico	3.0	2.3–3.9	<0.0001

## **Expiratory Flow Limitation as a Risk Factor for Pulmonary Complications After Major Abdominal Surgery**

Savino Spadaro, MD,\* Gaetano Caramori, MD,† Chiara Rizzuto, MD,\* Francesco Mojoli, MD,‡ Gianluca Zani, MD,\* Riccardo Ragazzi, MD,\* Giorgia Valpiani, StatD,§ Francesca Dalla Corte, MD,\* Elisabetta Marangoni, MD,\* and Carlo Alberto Volta, MD\*

« i pazienti che presentano EFL durante l'intervento chirurgico devono essere gestiti con maggiore cautela.

Si deve prevenire l'ipossia postoperatoria, la ritenzione delle secrezioni e le infezioni respiratorie....».



## Expiratory flow limitation is the main predictor of pulmonary complications after major abdominal surgery

Running Title: Flow limitation and pulmonary complications.

Spadaro Savino MD<sup>1</sup>, Caramori MD<sup>2</sup>, Rizzuto Chiara MD<sup>1</sup>, Mojoli Francesco MD<sup>3</sup>, Zani Gianluca MD<sup>1</sup>, Ragazzi Riccardo, MD<sup>1</sup>, Valpiani Giorgia PhD<sup>4</sup>, Dalla Corte Francesca, MD<sup>1</sup>, Marangoni Elisabetta MD<sup>1</sup>, Volta Carlo A, MD<sup>1</sup>.

**Table 2:** Different categories of postoperative pulmonary complications (PPCs) in patients with and without expiratory flow limitation.

PPCs, n (%)	Not EFL (n=229)	EFL (n=101)	p
Hypoxaemia	18 (8)	14 (14)	0.89
Acute respiratory failure	2 (1)	11 (11)	< 0.001
Bronchospasm	2 (1)	2 (2)	0.72
Respiratory infection	7 (3)	10 (10)	0.01
Pneumonia	0	5 (5)	0.001

## Airway closure: nothing good during anesthesia

G. HEDENSTIERNA

Department of Clinical Physiology, Uppsala University, Uppsala, Sweden

---

### AIRWAY CLOSURE

tory flow limitation might be a way to titrate a PEEP level to prevent cyclic airway closure. It is a good start of making the ventilation of an anesthetized patient more individualized.

## Respiratory mechanics at different PEEP levels during general anesthesia in the elderly: a pilot study

E. MARANGONI<sup>1</sup>, V. ALVISI<sup>1</sup>, R. RAGAZZI<sup>1</sup>, F. MOJOLI<sup>2</sup>, R. ALVISI<sup>1</sup>  
G. CARAMORI<sup>3</sup>, L. ASTOLFI<sup>1</sup>, C. A. VOLTA<sup>1</sup>

	Group ZEEP	Group PEEP
Day before surgery	4	3
After anaesthesia induction	4	4
End of anesthesia	7	1
Total	15	8

TABLE IV.—*Respiratory mechanics parameters at the beginning and the end of surgery. Values are mean±SD.*

	Group ZEEP		Group PEEP	
	Beginning	End	Beginning	End
Cqst,rs (ml/cmH <sub>2</sub> O)	44±2.5	37±1.6 * <sup>^</sup>	46±3.3	46±3.7 <sup>^</sup>
Rmin,rs (cmH <sub>2</sub> O*l/s)	5.7±2.3	6.4±2.5 *	5.9±3.5	5.9±3.9
ΔV' (l/s)	0.1±0.01	0.06±0.01 * <sup>^</sup>	0.09±0.04	0.09±0.02 <sup>^</sup>

\*P<0.05: comparison with baseline values

<sup>^</sup>P<0.05: comparison between the two groups

Cqst,rs: quasi static compliance of the respiratory system

Rmin,rs: airflow resistance of the respiratory system

ΔV': difference in flow at 50% of the expired volume

# Limitazione del flusso espiratorio in terapia intensiva ed associazione con il bilancio fluidico

Spadaro S<sup>1</sup>, Rizzuto C<sup>1</sup>, Dalla Corte F<sup>1</sup>, Bignami E<sup>2</sup>, Volta CA<sup>1</sup>.

<sup>1</sup> Department of Morphology, Surgery and Experimental Medicine. Section of Anaesthesia and Intensive Care, University of Ferrara, Ferrara, Italy

<sup>2</sup> Anesthesia and Intensive Care Unit, San Raffaele Scientific Institute, University Vita Salute San Raffaele, Milan, Italy

Tra i 112 pazienti arruolati, 53 (52%) non hanno presentato EFL durante la degenza (NoEFL), 33 (30%) presentavano EFL già all'ingresso (EFL), mentre 20 (18%) hanno sviluppato EFL entro le prime 72 ore di ricovero (EFLin).

**Tabella 2 – Caratteristiche di meccanica respiratoria all'ammissione**

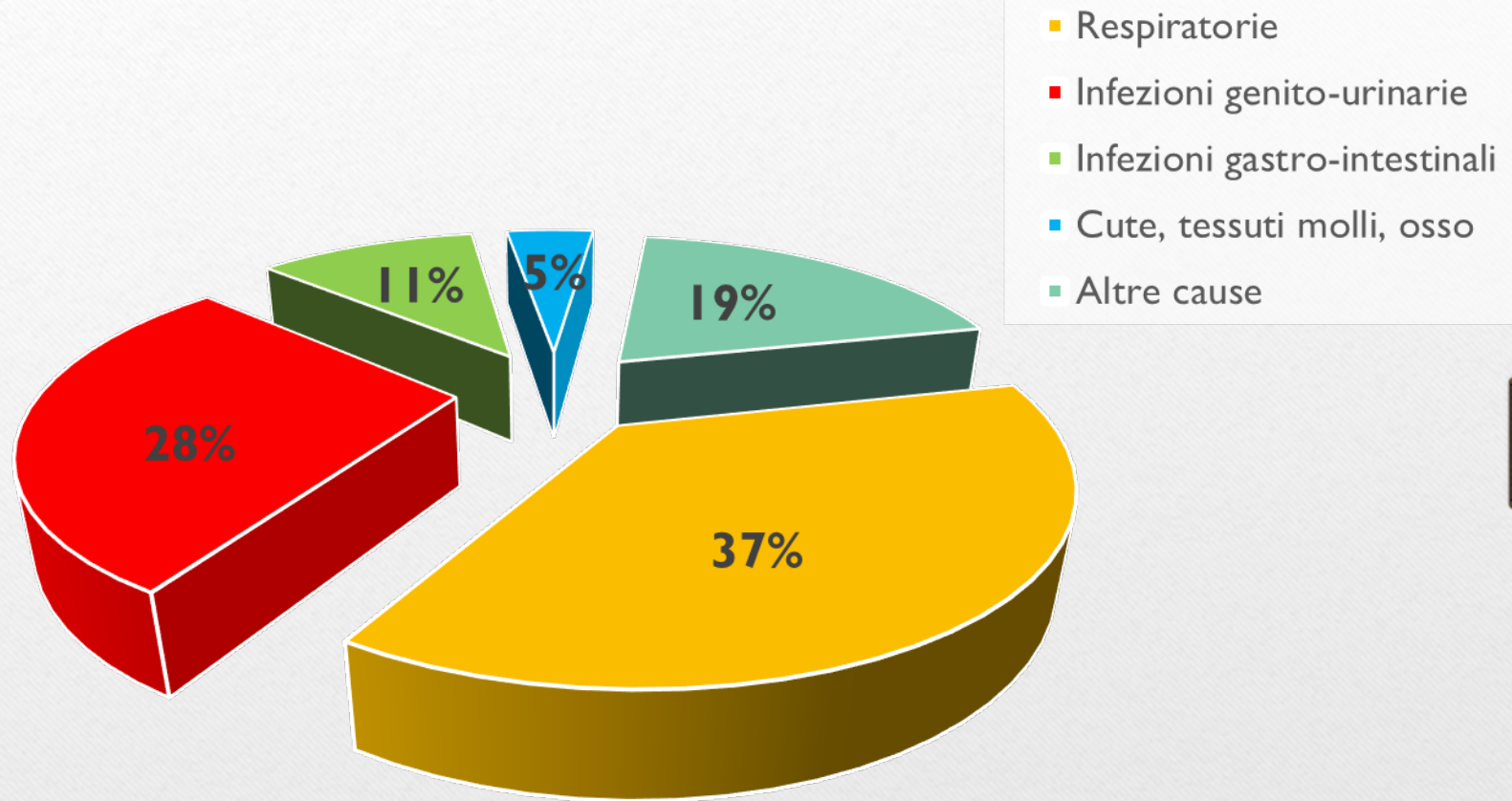
	No EFL (n = 59)	EFL (n = 33)	EFL in (n = 20)	<i>p-value</i>
<b>Cstat</b> , ml/cmH <sub>2</sub> O	51 [43 – 66]	46 [34 – 56]	41 [34 – 56]	0.045
<b>Rtot</b> , cmH <sub>2</sub> O/l/s	16 ± 5 *	21 ± 6	17 ± 5	0.001
<b>P/F ratio</b>	264 [177 – 384] *	168 [123 – 260]	236 [159 – 291]	0.005
<b>PEEP<sub>i</sub></b> , cmH <sub>2</sub> O	1 [0 – 2] *, #	6 [4 – 8] #	3 [1 – 4]	< 0.0001
<b>Driving Pressure</b> , cmH <sub>2</sub> O	9 [7 – 11]	11 [8 – 13]	12 [9 – 13]	< 0.0001

\* p < 0.05 confronto con EFL, # p < 0.05 confronto con EFLin

# CONCLUSIONI

- La presenza di EFL è un predittore di complicanze polmonari postoperatorie
- Particolare attenzione dovrebbe essere riservata ai pazienti con EFL.
- L'uso della PEEP intraoperatoria dovrebbe garantire una minore incidenza di EFL
- Tra i fattori legati alla nostra pratica, la fluidoterapia perioperatoria sembra incidere in modo significativo allo sviluppo di EFL

# Cause di sepsi in pazienti > 65 anni



Martin et al. Critical Care Med 2006

# Fattori di aumentato rischio per sepsi

## Stato funzionale alterato:

- Atrofia da disuso
- Sarcopenia
- Differente risposta agli ormoni trofici
- Disturbi Neurologici
- Alterato metabolismo proteico



**Comorbidità** (Cancro, diabete, obesità etc)  
Polifarmacoterapia

## Malnutrizione

- Inattività
- Inadeguato introito calorico
- Limitazioni funzionali
- Demenza, depressione
- Cattiva dentizione
- Potus

## Incrementato rischio di colonizzazione da Gram –

Ricorrenti ospedalizzazioni  
Lungo degenze  
Resistenza antibiotica  
Cateterizzazioni urinarie, tracheostomie, CVC

## Deficit endocrinologici

Ipotiroidismo, ipogonadismo, ipoadrenalismo

# DELIRIUM

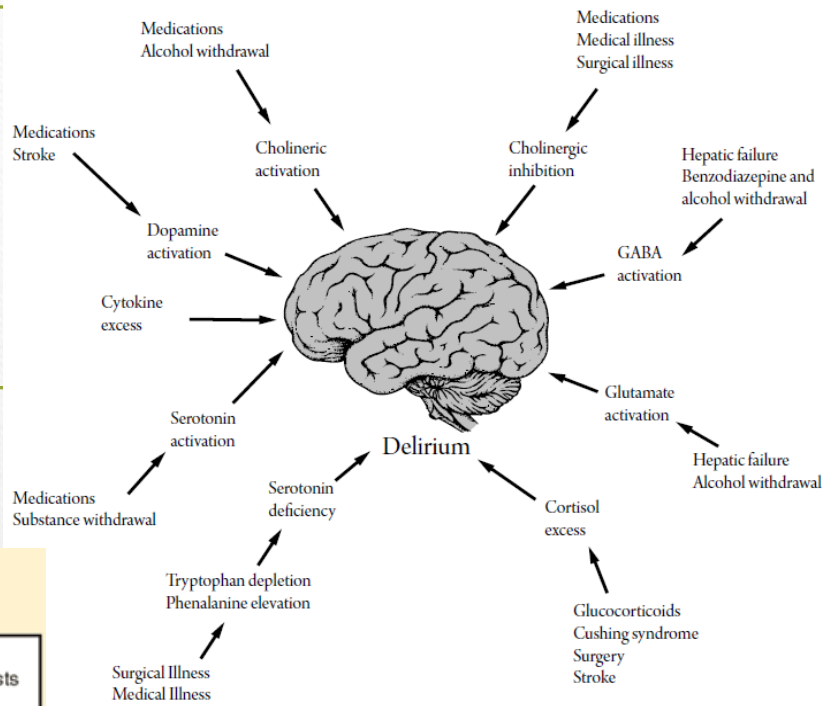
---

*Il delirium viene definito come un disturbo acuto , transitorio, globale, organico delle funzioni nervose superiori che comporta perdita dell'attenzione e alterazione dello stato di coscienza*

Brown TM, Boyle MF Delirium BMJ 2002; 325:644-7



*De lira → Fuori dal solco*



**↓ACH = Neuronal Excitability**

- Anticholinergic drugs
- Age/dementia
- Hypoxia
- Anemia
- Hypotension
- Poor nutrition
- Infection
- Surgery
- Alzheimer's disease

**↑DA = ↓Release of ACH**

- Drugs: dopamine agonists
- Infection
- Surgery
- Age/dementia

**Mechanisms of Delirium Neurotransmitters**

**↑Cortisol & Beta-Endorphins**

- Exogenous glucocorticoids
- Disruption of circadian rhythm

**↓GABA = Neuronal Excitability**

- Benzodiazepines
- Alcohol withdrawal

**↑Serotonin**

- Antidepressants
- Infection
- Hepatic encephalopathy

ACH: acetylcholine; DA: dopamine;  
 GABA: gamma-aminobutyric acid.  
 Source: References 1, 7-11.

# Le dimensioni del problema

## Non diagnosticato 30-65%

---

- Chirurgia generale 10-15%
- Cardiochirurgia 25-35%
- Lungodegenza 40%
- Chirurgia anziano 50%
- Terapia intensiva 70%
- VAM 80%



DEGENZA OSPEDALIERA



MORTALITA'



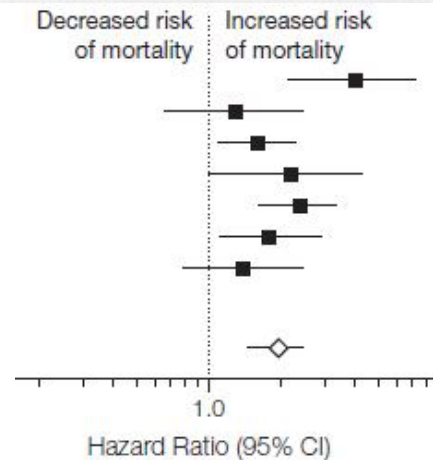
ISTITUZIONALIZZAZIONE



COSTI

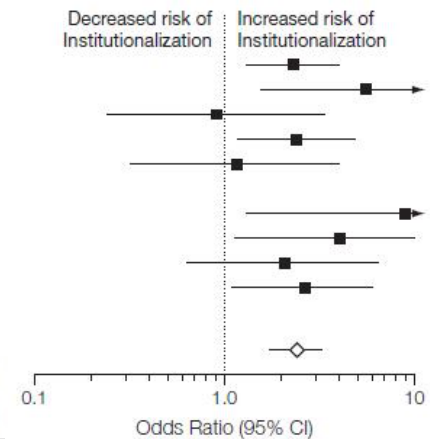
Mortality

- González et al,<sup>45</sup> 2009
  - Furlaneto and Garcez-Leme,<sup>41</sup> 2007
  - Leslie et al,<sup>52</sup> 2005
  - McCusker et al,<sup>6</sup> 2002
  - Nightingale et al,<sup>60</sup> 2001
  - Rockwood et al,<sup>65</sup> 1999
  - Francis and Kapoor,<sup>40</sup> 1992
- Heterogeneity:  $I^2 = 44.0\%$ ;  $P = .10$   
 Random-effects model:  $P < .001$



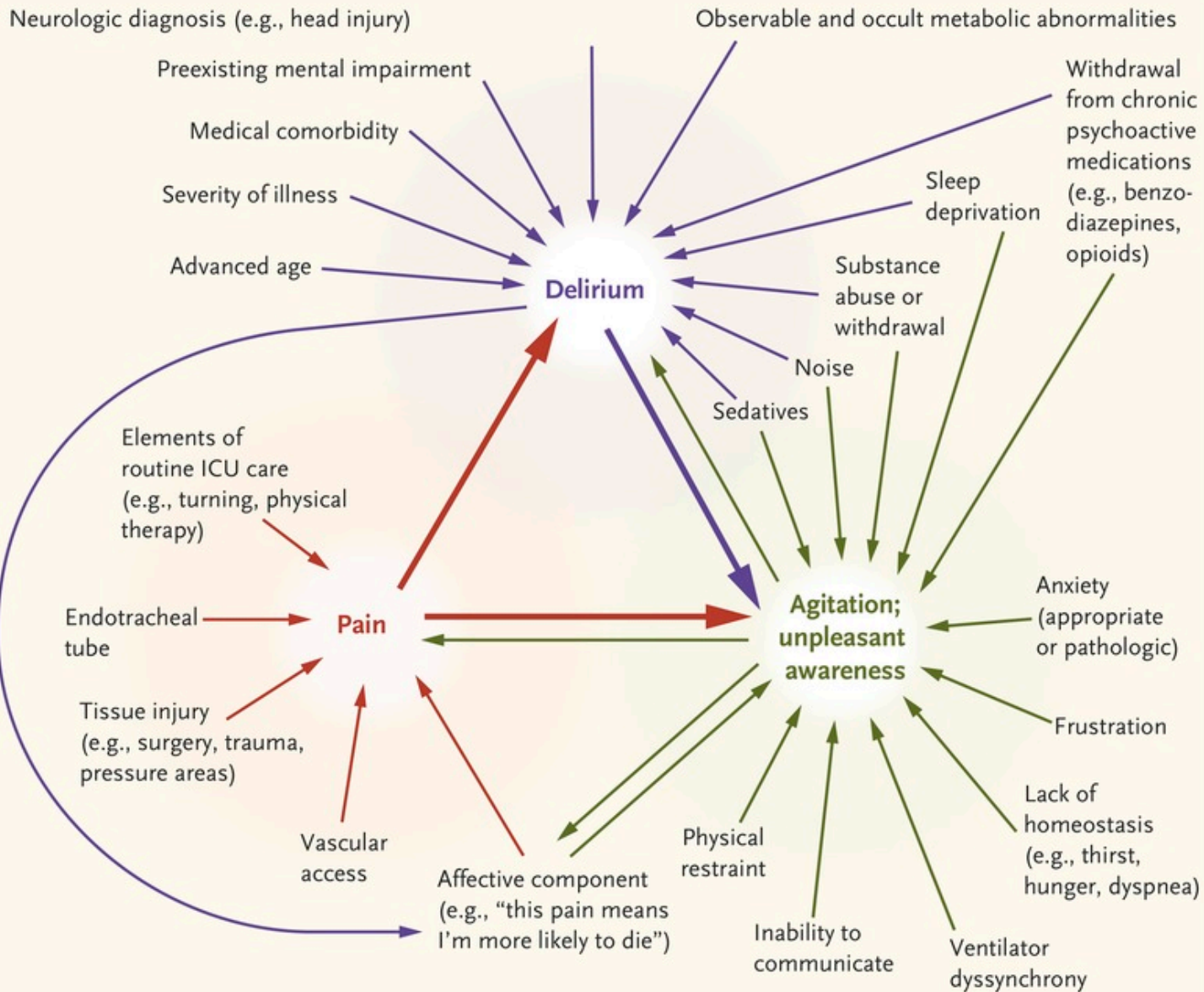
Institutionalization

- Bellelli et al,<sup>30</sup> 2008
  - Bickel et al,<sup>32</sup> 2008
  - Giusti et al,<sup>43</sup> 2006
  - Pitkala et al,<sup>63</sup> 2005
  - McCusker et al,<sup>6</sup> 2002
  - Inouye et al,<sup>7</sup> 1998
  - Chicago
  - Cleveland
  - Yale
  - Francis and Kapoor,<sup>40</sup> 1992
- Heterogeneity:  $I^2 = 0\%$ ;  $P = .48$   
 Random-effects model:  $P < .001$



## FATTORI DI RISCHIO

	Unmodifiable/Unpreventable Risk Factors	Potentially Modifiable/Preventable Risk Factors
Baseline risk factors	Age APOE-4 genotype History of hypertension Preexisting cognitive impairment History of alcohol use History of tobacco use History of depression	Sensory deprivation (ie, hearing or vision impairment)
Acute illness-related risk factors	High severity of illness Respiratory disease Medical illness (vs surgical) Need for mechanical ventilation Number of infusing medications Elevated inflammatory biomarkers High LNAA metabolite levels	Anemia Acidosis Hypotension Infection/sepsis Metabolic disturbances (eg, hypocalcemia, hyponatremia, azotemia, transaminitis, hyperamylasemia, hyperbilirubinemia) Fever
Hospital-related risk factors	Lack of daylight Isolation	Lack of visitors Sedatives/analgesics (eg, benzodiazepines and opiates) Immobility Bladder catheters Vascular catheters Gastric tubes Sleep deprivation



## CAUSE

# Farmaci e Sostanze

### *Psicotropi*

- Fenotiazinici
- Clozapina
- Litio
- Triciclici
- Trazodone
- Anticonvulsivanti
- Fenobarbital
- Fenitoina
- Valproato
- Carbamazepina

### *Altri farmaci del SNC*

- Farmaci antiparkinson
- Sedativi ipnotici
- Anticolinergici
- Antistaminici Cimetidina
- Disulfiram
- Alcaloidi della segale cornuta
- Metildopa

### *Cardiovascolare agenti*

- I beta-bloccanti
- Clonidina
- Digossina

### *Gli agenti anti-infettivi*

- Acyclovir
- Amphotericine B
- Cefalexina
- Cloroquina
- Isoniazide
- Rifampicina

### *Citotossici antineoplastici*

### *Farmaci anti-infiammatori*

- Salicilato
- Steroidi

### **Droghe**

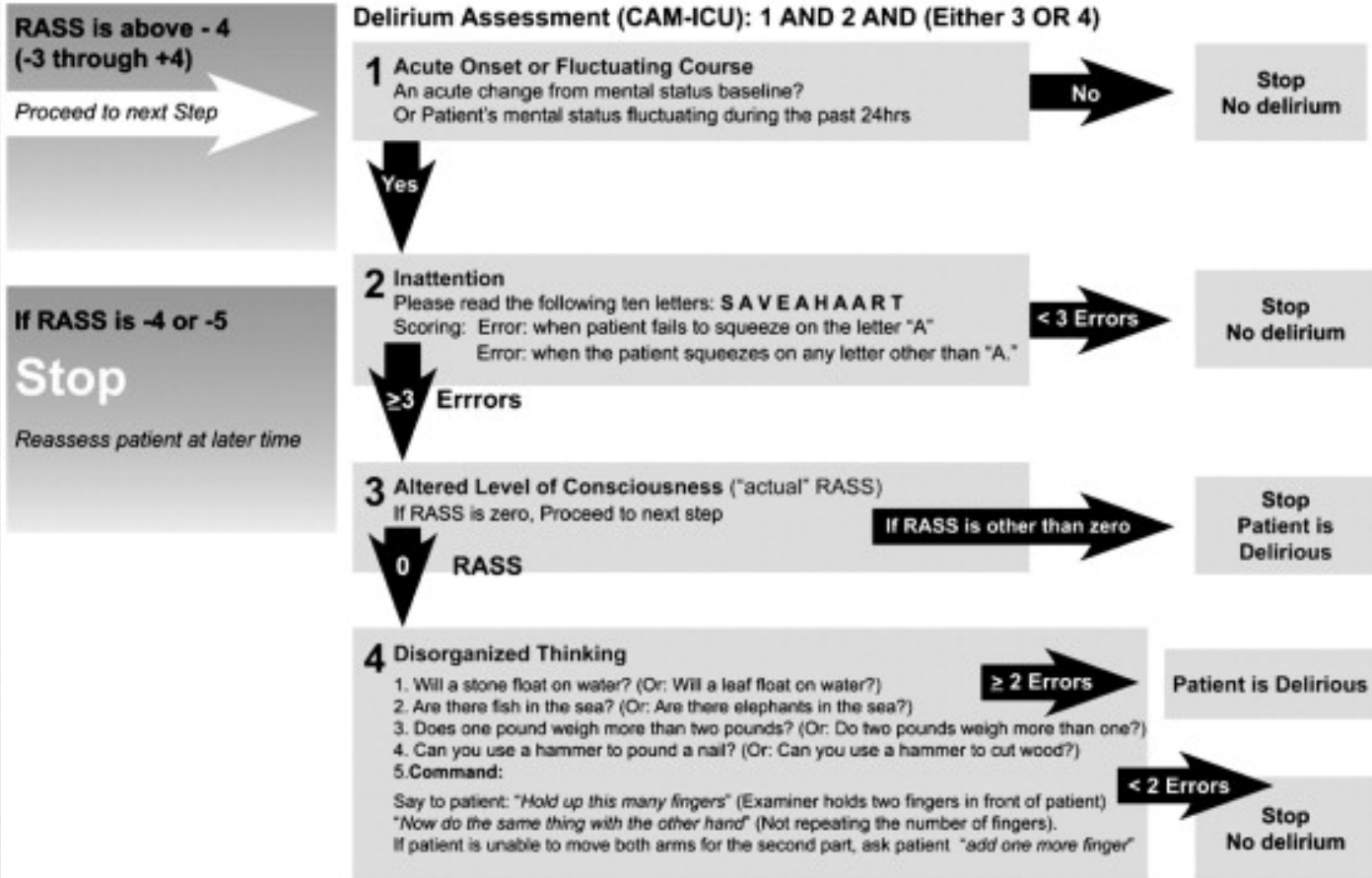
- Alcol
- Caffeina
- Allucinogeni
- Anfetamine
- Cocaina
- Meperidina, altri narcotici

### **Sindrome da astinenza**

- Alcol
- Benzodiazepine
- Barbiturici

# DIAGNOSI: CAM-ICU

## Confusion Assessment Method in the ICU



# CAM-ICU

**Punto 1:** Alterazione acuta o fluttuazione dello stato mentale

e

**Punto 2:** Disattenzione

e

**Punto 3:** Alterato livello di coscienza

oppure

**Punto 4:** Pensiero disorganizzato

= presenza di **DELIRIUM**

# The New England Journal of Medicine

© Copyright, 1999, by the Massachusetts Medical Society

VOLUME 340

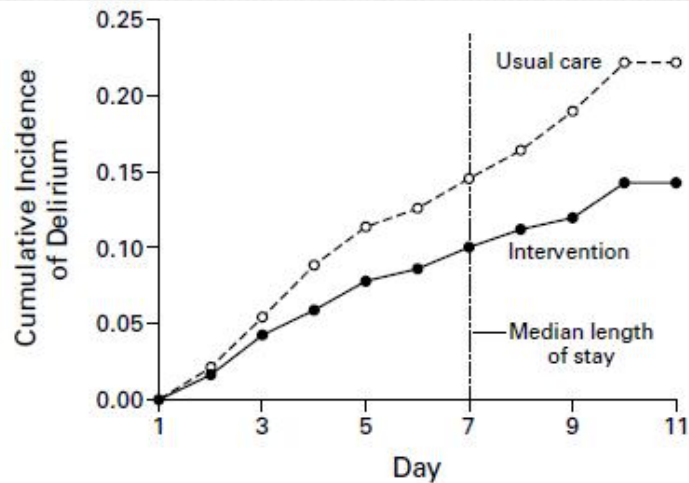
MARCH 4, 1999

NUMBER 9



## A MULTICOMPONENT INTERVENTION TO PREVENT DELIRIUM IN HOSPITALIZED OLDER PATIENTS

SHARON K. INOUE, M.D., M.P.H., SIDNEY T. BOGARDUS, JR., M.D., PETER A. CHARPENTIER, M.P.H.,  
LINDA LEO-SUMMERS, M.P.H., DENISE ACAMPORA, M.P.H., THEODORE R. HOLFORD, Ph.D., AND LEO M. COONEY, JR., M.D.



Deficit cognitivo

Immobilità

Deprivazione sonno

Deficit visivo

Deficit uditivo

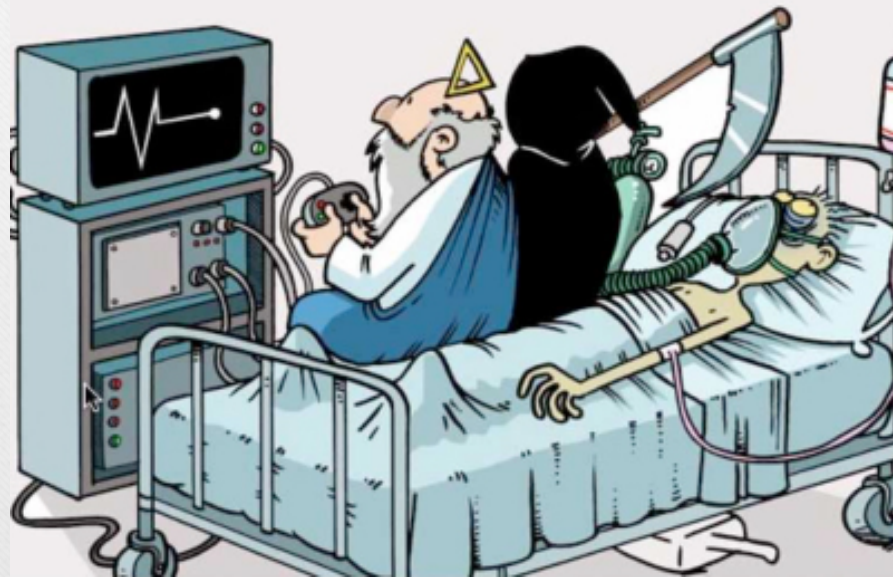
Disidratazione

## Chirurgia addominale maggiore pazienti ricoverati in TI 2013-2017

	<b>N.</b>	<b>SAPS II</b>	<b>Degenza TI</b>	<b>Degenza H</b>
Pz <75 aa	124	23	4.07±4.7 (3)	13.8±11.5 (10)
Pz ≥ 75 aa	129	30	4.47±7.7 (2)	13.9±12 (10.5)

	<b>Mortalità TI</b>	<b>Mortalità H</b>	<b>Mortalità I anno</b>
Pz < 75 aa	7 (5.4%)	7 (5.4%)	14 (10.9%)
Pz ≥ 75 aa	5 (4%)	13 (10.4%)	26 (20.9%)

*Il successo della rianimazione non va misurato solo con le statistiche di sopravvivenza, come se ogni morte fosse un fallimento medico  
Deve essere misurato dalla qualità delle vite conservate o ripristinate, dalla qualità della morte di coloro per i quali è preferibile morire e dalla qualità delle relazioni umane coinvolte in ogni morte  
(Dunstan GJ 1985)*



**GRAZIE PER L'ATTENZIONE**