Sédation en Réanimation

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UdA
EA 72-81
R2D2

Vichy 7 Octobre 2015

AZUREA GROUP

Conflict of interest

LFB
GSK
MSD
BAXTER
DRAGER
MAQUET
FRESENIUS-KABI
HOSPAL
GE
ASTELLAS
ABBOTT
VIASYS
ALERE
EDWARDS
PFIZER
PHILIPS
HAMILTON
MASSIMO
BBRAUN
BiRD-Corporation
ASTUTE Medical

French Ministry of Health
French Ministry of Education & research

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AZUREA GROUP

Sédation en Réanimation

Sédation en Réanimation

D’où vient-on ?

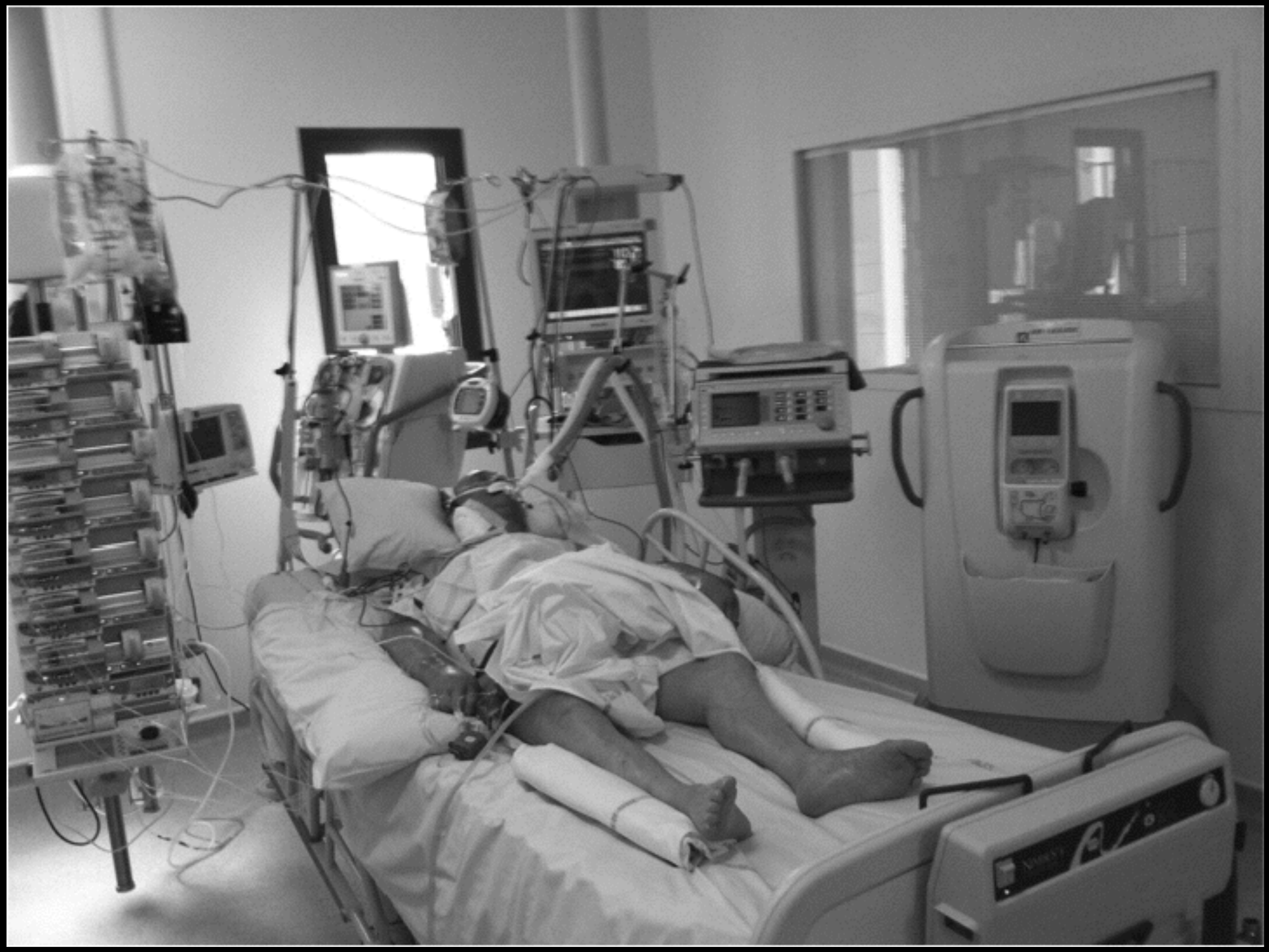
d’où vient-on ?

qu’est-ce qui a changé ?

Où pourrait-on aller ?

Celui qui ne connait pas l'histoire est condamné à la revivre.

Karl Marx



90’

Sédation profonde

Patient adapté au ventilateur

Evaluation clinique de la sédation

Seuls les patients chirurgicaux ont mal

Sédater pour favoriser le sommeil

Les médecins seuls modifient les posologies

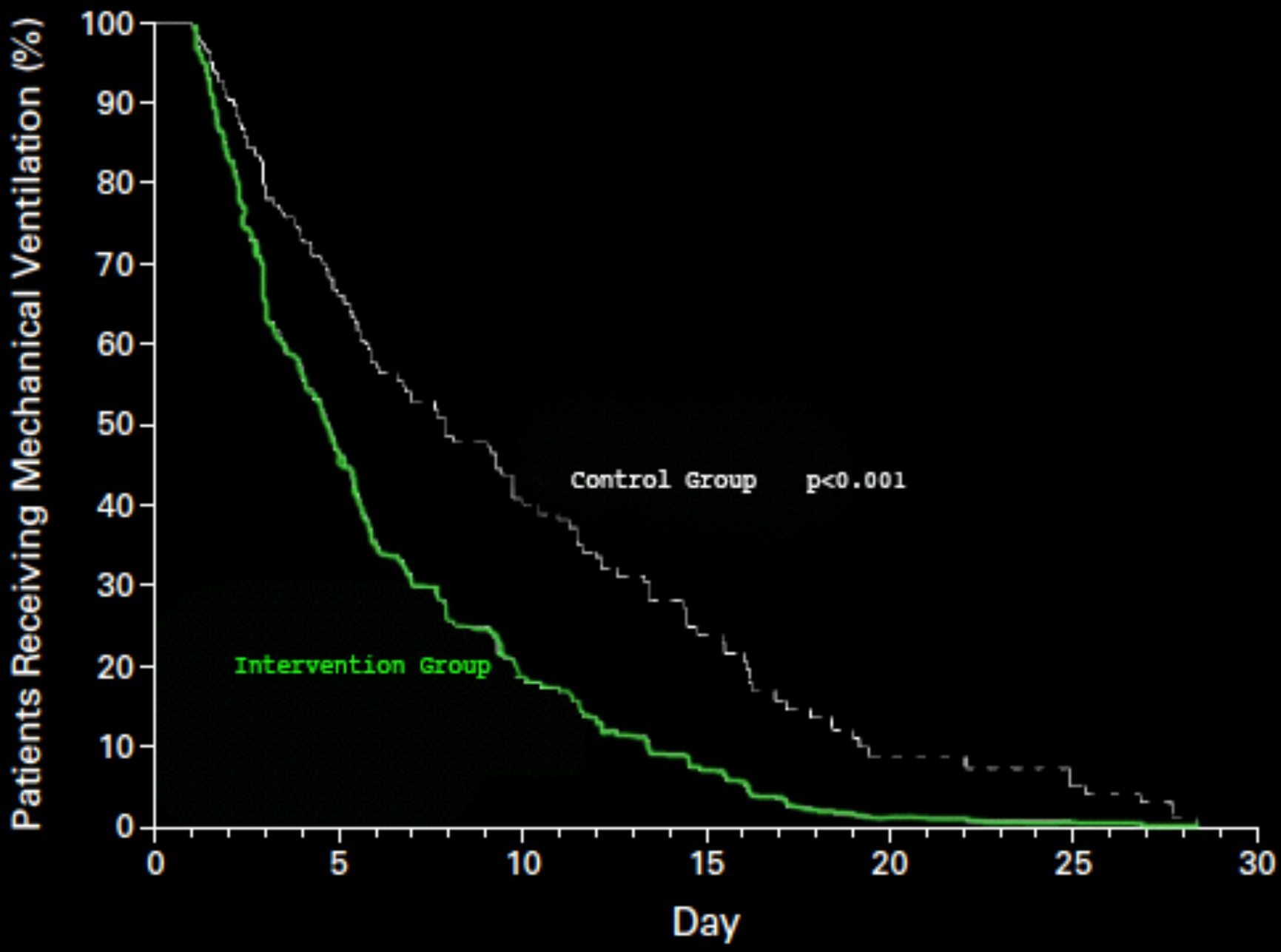
Sédation > Analgésie

Supprimer la mémorisation

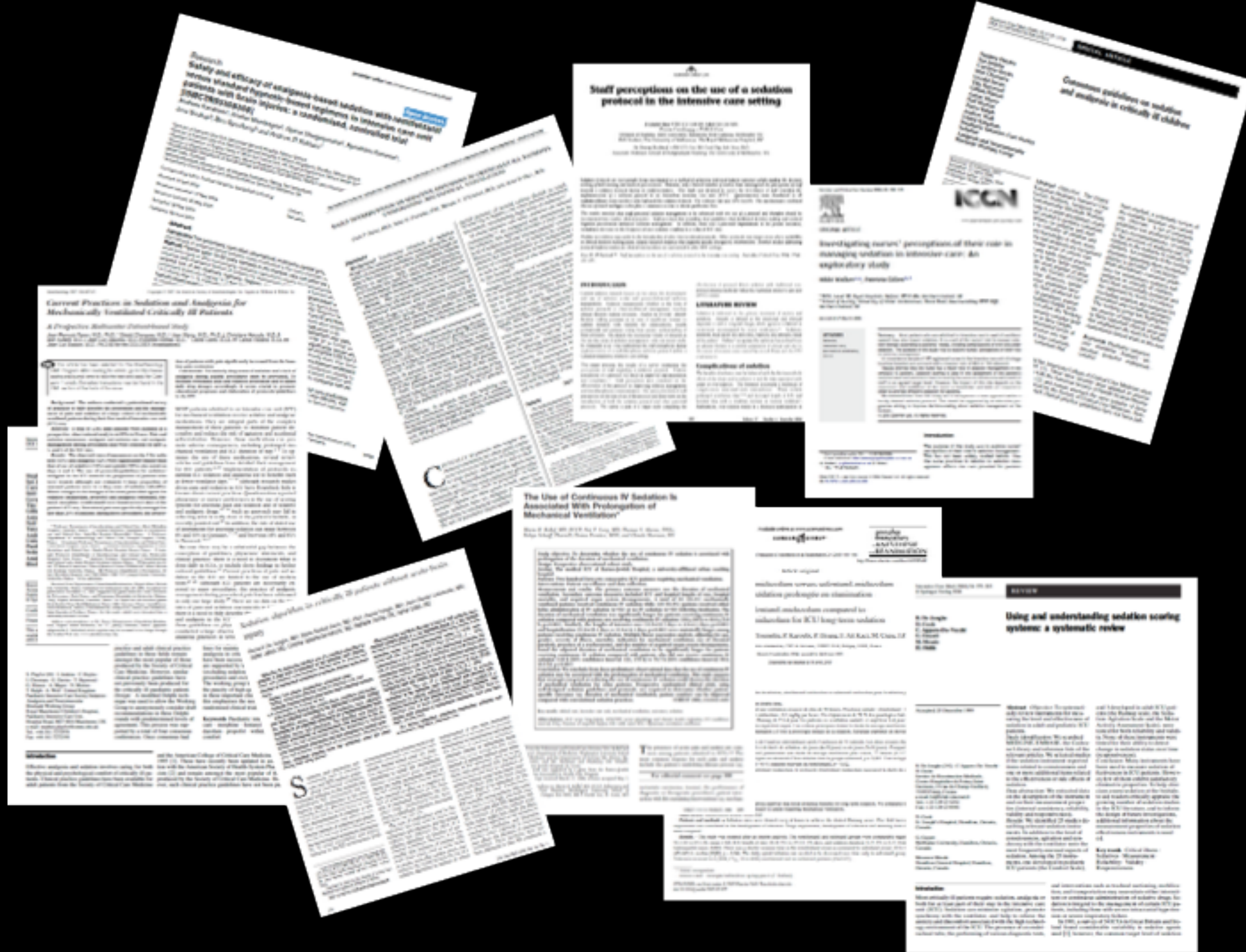

JANUARY 1, 2000
TIME
YELTSIN GOES
January 1, 2000
Welcome to a New Century
The Eiffel Tower, Paris

DAILY INTERRUPTION OF SEDATIVE INFUSIONS IN CRITICALLY ILL PATIENTS UNDERGOING MECHANICAL VENTILATION

JOHN P. KRESS, M.D., ANNE S. POHLMAN, R.N., MICHAEL F. O'CONNOR, M.D., AND JESSE B. HALL, M.D.



Kress et al. *NEJM* 2000


Safety and efficacy of analgesia-based sedation with remifentanil versus standard hypnotic-based regimens in intensive care unit patients with brain injuries: a randomised, controlled trial
Current Practices in Sedation and Analgesia for Mechanically Ventilated Critically Ill Patients
A Prospective Multicenter Patient-based Study
Staff perceptions on the use of a sedation protocol in the intensive care setting
ICCN
Investigating nurses' perceptions of their role in managing sedation in intensive care: an exploratory study
SPECIAL ARTICLE
Consensus guidelines on sedation and analgesia in critically ill children
The Use of Continuous IV Sedation Is Associated With Prolongation of Mechanical Ventilation
REVIEW
Using and understanding sedation scoring systems: a systematic review
Introduction

Sedation, analgesia, and neuromuscular blockade in sepsis: An evidence-based review

Jeffery S. Vender, MD, FCCM; Joseph W. Szokol, MD; Glenn S. Murphy, MD; Martin Nitsun, MD

Disponible en ligne sur www.sciencedirect.com

ScienceDirect

Annales Françaises d'Anesthésie et de Réanimation 27 (2008) 541–551

annales françaises d'ANESTHÉSIE ET DE RÉANIMATION

http://france.elsevier.com/direct/ANNFAR/

Texte long du jury

Sédation-analgésie en réanimation (nouveau-né exclu)☆

Sedation and analgesia in intensive care (with the exception of new-born babies)

Que retenir de la conférence de consensus ?...

Les indications d’une sédation profonde sont :

SDRA à la phase initiale
Cérébro-lésé avec HTIC

En dehors …

PAS D’INDICATION À UNE SÉDATION PROFONDE.

n= 625 patients hospitalisés

n= 67 patients sortants

n= 558 patients non sortants

n= 1 patient au bloc

n= 557 patients présents

n= 355 non sédatés

n= 202
Patients sédatés

- n= 33 pathologie neurologique
- n= 13 curarisés
- n= 24 LATA

n= 132 patients inclus pour l'analyse

Non sur-sédatés

n= 59 (45%)

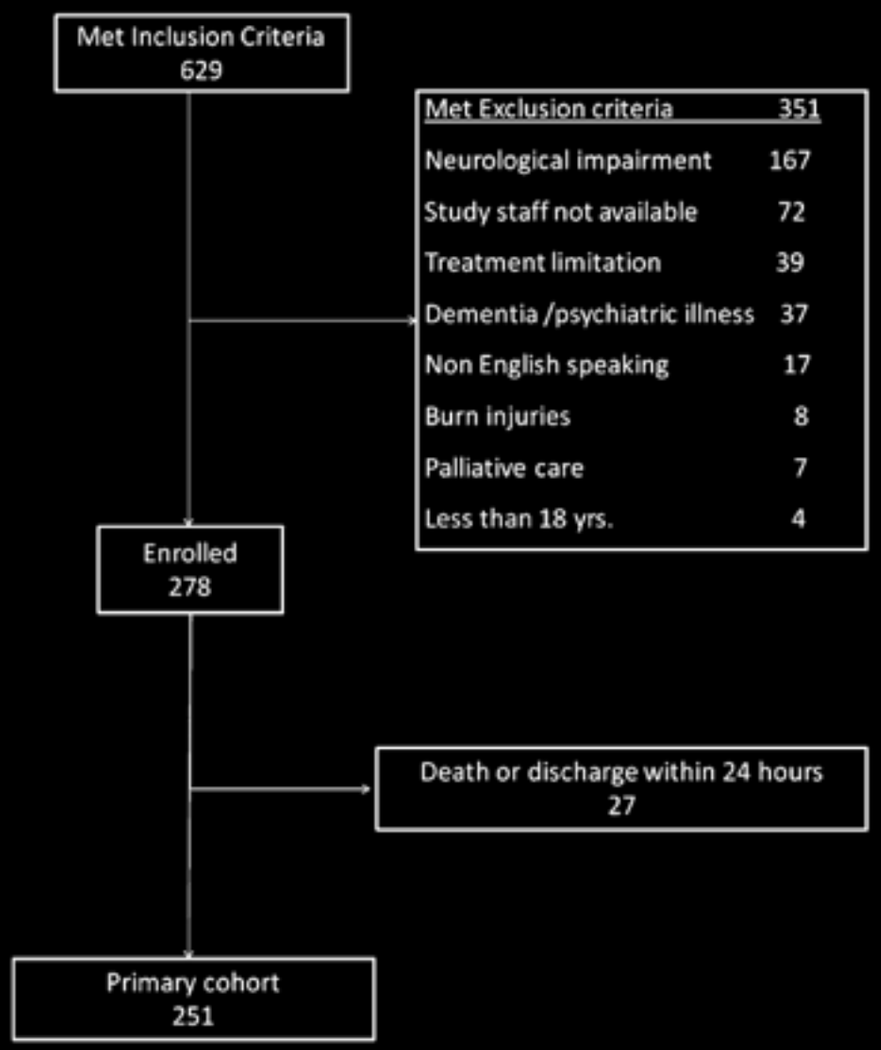
Sursédatés

n= 73 (55%)

Chanques, soumis

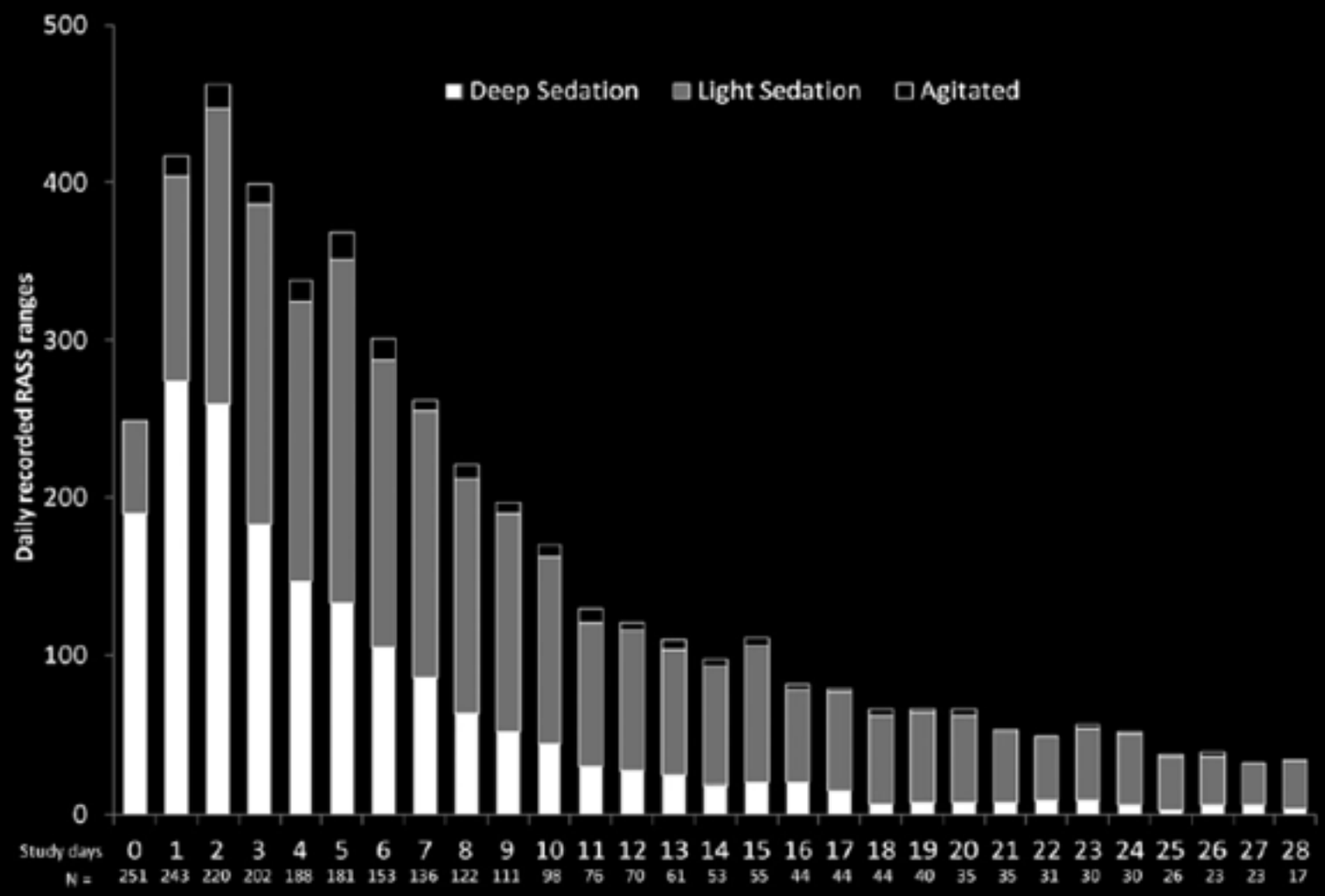
Early Intensive Care Sedation Predicts Long-Term Mortality in Ventilated Critically Ill Patients

Yahya Shehabi[1,2], Rinaldo Bellomo[3,4,5,6], Michael C. Reade[7,8], Michael Bailey[5], Frances Bass[2], Belinda Howe[5], Colin McArthur[9], Ian M. Seppelt[10], Steve Webb[11,12], and Leonie Weisbrodt[13]; Sedation Practice in Intensive Care Evaluation (SPICE) Study Investigators and the ANZICS Clinical Trials Group*



Early Intensive Care Sedation Predicts Long-Term Mortality in Ventilated Critically Ill Patients

Yahya Shehabi[1,2], Rinaldo Bellomo[3,4,5,6], Michael C. Reade[7,8], Michael Bailey[5], Frances Bass[2], Belinda Howe[5], Colin McArthur[9], Ian M. Seppelt[10], Steve Webb[11,12], and Leonie Weisbrodt[13]; Sedation Practice in Intensive Care Evaluation (SPICE) Study Investigators and the ANZICS Clinical Trials Group*



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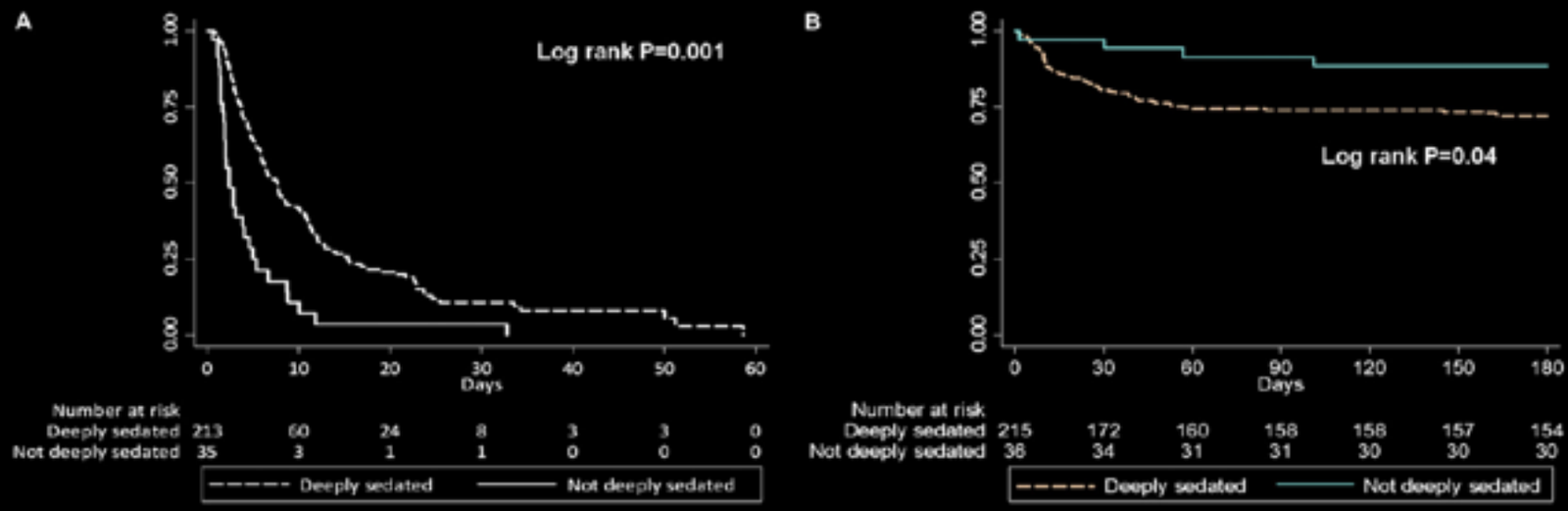


	Time to Extubation			Delirium after 48 h			180-d Mortality		
	HR	95% CI	*P* Value	HR	95% CI	*P* Value	HR	95% CI	*P* Value
RASS, −3 to −5*	0.90	0.87– 0.94	<0.001	1.05	0.99–1.11	0.10	1.08	1.01–1.16	0.027
APACHE II	0.99	0.97–1.02	0.79	1.01	0.99–1.04	0.47	1.02	0.99–1.06	0.21
Age	0.99	0.98–1.00	0.71	1.00	0.99–1.01	0.62	1.03	1.01–1.05	0.009
Male sex	0.63	0.46–0.87	0.02	1.10	0.72–1.70	0.64	1.05	0.78–2.34	0.25
Operative	0.77	0.48–1.24	0.33	0.98	0.48–2.01	0.96	1.20	0.52–2.79	0.67
Elective	1.25	0.74–2.11	0.36	0.41	0.16–1.09	0.07	1.18	0.50–2.85	0.71
Cardiac†	0.83	0.45–1.56	0.88	0.26	0.01–0.67	0.01	1.77	0.56–5.61	0.33
Respiratory†	0.48	0.30–0.77	0.01	0.65	0.34–1.25	0.20	1.43	0.47–4.38	0.53
Sepsis†	0.66	0.35–1.24	0.18	0.95	0.26–1.34	0.20	1.82	0.53–6.20	0.34
Gastrointestinal†	1.11	0.62–1.98	0.86	0.73	0.33–1.64	0.45	1.43	0.42–4.86	0.57
Vasopressors	0.69	0.49–0.97	0.02	1.33	0.82–2.18	0.25	0.68	0.36–1.28	0.23
Dialysis‡	0.59	0.36–0.95	0.03	1.70	0.96–3.01	0.07	2.45	1.31–4.56	0.005
Rural hospital	1.53	0.85–2.77	0.14	1.14	0.67–1.95	0.63	0.74	0.23–2.06	0.56
Metro hospital	1.00	0.67–1.49	0.89	1.26	0.60–2.61	0.5	1.05	0.53–2.09	0.88

En dehors de SDRA et HTiC

PAS D’INDICATION À UNE SÉDATION PROFONDE.

Nécessité d’analgésie …

SÉDATION BASÉE SUR L’ANALGÉSIE

Que retenir de la conférence de consensus ?...

Chaque service de Réanimation doit disposer d’un Protocole écrit de sédation.

Protocoles écrits pour

- 85% protocole de contrôle strict de la glycémie
- 44% protocole de prise en charge du choc septique
- 47% protocole de sevrage de la VM

Do you have a sedation guideline?	
Yes	148 (80%)
No	37

Reischreiter *crit care* 2008

30% des services ont un protocole écrit de sédation

84% des personnes interrogées pensent qu'un protocole pourrait améliorer la sédation dans leur service.

Constantin et al. *AFAR* 2010

Impact d’un protocole de sédation

	n=	Type d'étude	Protocole	DDV	DMS
Brook et al. CCM 99	321	RCT	*presc. méd. vs. protocole*	4.9 VS 2.3 j	7.5 VS 5.7
Kress et al. NEJM 00	128	RCT	Protocol vs DI	7.3 VS 4.9 j	9.9 VS 6.4 j
Brattebo et al. BMJ 02	**285**	Before-After	*presc. méd. vs. protocole*	7.4 VS 5.3 j	9.3 VS 8.3 j
De Jonghe CCM 05	102	Before-After	*presc. méd. vs. protocole*	10.3 VS 4.4 j	15 VS 8 j
Elliott ICM 06	322	Before-Afetr	Presc. Med VS protocole	4.8 vs 5.6 j	7.1 VS 8.2 j
Quenot et al. CCM 07	423	Before-After	Presc. Med VS protocol	8 VS 4.2 j	11 VS 5 j
De Wit CC 08	74	RCT	DI VS protocol	6.7 VS 3.9 j	15 VS 8 j
Arias-Ribeira CCM	356	Before-after	*presc. méd. vs. protocole*	↘ Sevrage	↗ « Ventialtor free Days »
Bucknall CCM 08	312	RCT	Protocol vs Press Med	79 VS 58 h	94 VS 88 h

CARING FOR THE CRITICALLY ILL PATIENT

ONLINE FIRST

Daily Sedation Interruption in Mechanically Ventilated Critically Ill Patients Cared for With a Sedation Protocol

A Randomized Controlled Trial

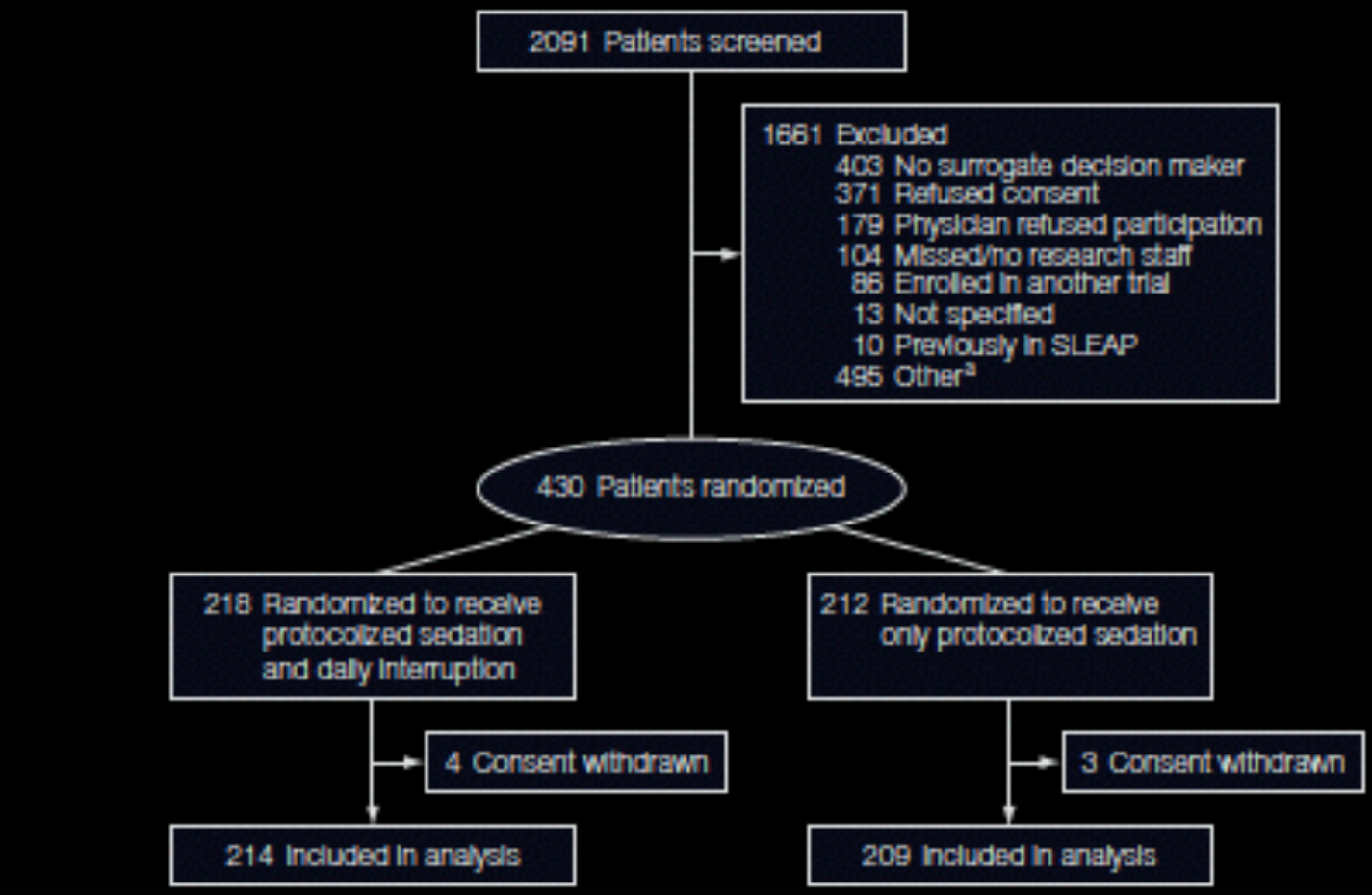
Sangeeta Mehta, MD
Lisa Burry, PharmD
Deborah Cook, MD
Dean Fergusson, PhD
Marilyn Steinberg, RN

Context Protocolized sedation and daily sedative interruption are 2 strategies to minimize sedation and reduce the duration of mechanical ventilation and intensive care unit (ICU) stay. We hypothesized that combining these strategies would augment the benefits.

Objective To compare protocolized sedation with protocolized sedation plus daily sedation interruption in critically ill patients.

Mehta, JAMA 2012

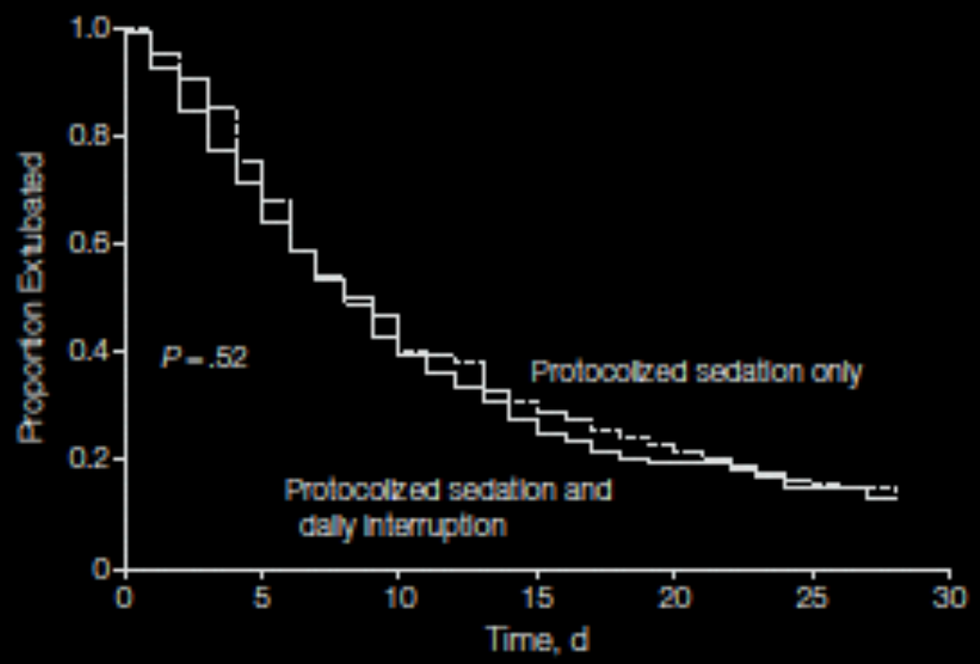
Figure 1. Flow of Patients in the Trial



[a] Other includes 362 patients receiving propofol, 39 with open abdomen or chest, 33 needing ongoing deep sedation (because of a plan to return to the operating room, severe agitation, chronic pain, precarious airway, or hemodynamic instability), and 23 receiving high-frequency ventilation. For the remainder, please see the supplemental eAppendix.

Mehta, JAMA 2012

Figure 2. Kaplan-Meier Curves for Time to Successful Extubation



No. at risk						
Protocolized sedation only	209	146	72	49	34	23
Protocolized sedation and daily interruption	214	140	81	42	28	16

P value calculated from log-rank statistic

Mehta, JAMA 2012

Table 3. Benzodiazepine and Opioid Administration[a]

	Protocolized Sedation and Interruption (n = 214)	Protocolized Sedation (n = 209)	Measure of Effect, Mean Difference (95% CI)	*P* Value
Midazolam equivalents				
Total dose/patient, mg	1087 (4297) 222 (50 to 734)	1038 (4592) 237 (57 to 599)	48.4 (–804.4 to 901.2)	.91
Dose/patient/d, mg	102 (326) 8 (0 to 86)	82 (287) 0 (0 to 50)	19.23 (2.37 to 37.07)	.04
Dose/patient/d, infusion, mg	101 (325) 6 (0 to 86)	82 (287) 0 (0 to 50)	19.22 (1.92 to 36.53)	.03
Dose/patient/d, bolus, mg	0.99 (5.9) 0 (0 to 0)	0.49 (2.65) 0 (0 to 0)	0.50 (0.23 to 0.76)	<.001
Infusion, d	5.73 (6.42) 4 (2 to 7)	5.58 (5.91) 4 (2 to 7)	0.15 (–1.04 to 1.33)	.81
Boluses/d, No.	0.253 (1.145) 0 (0 to 0)	0.177 (0.808) 0 (0 to 0)	0.077 (0.020 to 0.134)	.007
Fentanyl equivalents				
Total dose/patient, µg	18 997 (59 928) 5286 (1512 to 16 437)	13 532 (23 219) 5936 (2056 to 15 236)	5464.6 (–3236.0 to 14 165.2)	.22
Dose/patient/d, µg	1780 (4135) 550 (50 to 1850)	1070 (2066) 260 (0 to 1400)	709.3 (522.0 to 897.7)	<.001
Dose/patient/d, infusion, µg	1664 (4070) 420 (0 to 1725)	984 (2002) 80 (0 to 1260)	679.7 (495.3 to 864.1)	<.001
Dose/patient/d bolus, µg	116 (215) 0 (0 to 100)	86 (169) 40 (0 to 150)	30.13 (19.15 to 41.11)	<.001
Infusion, d	6.44 (6.86) 5 (2 to 9)	6.61 (6.20) 5 (3 to 9)	–0.17 (–1.42 to 1.09)	.79
Boluses/d, No.	2.18 (2.87) 1 (0 to 4)	1.79 (2.67) 0 (0 to 3)	0.395 (0.239 to 0.551)	<.001

Conversion factors: For conversion of lorazepam to midazolam, 1 mg midazolam=0.5 mg lorazepam. For conversion of opioids to fentanyl equivalents, 10 mg morphine=2 mg hydromorphone=0.1 mg fentanyl.

[a]Doses are presented as mean (SD) in the first row and median (interquartile range) in the second row.

Mehta, JAMA 2012

Table 3 Factors independently associated with number of days of physical restraints

Data point	Univariable	Multivariable
	IRR[a] (95% CI)	IRR[a] (95% CI)
Patient characteristics		
Age	1.01 (0.99-1.04)	1.00 (0.98-1.03)
Male sex	0.87 (0.37-2.06)	0.73 (0.35-1.54)
Psychiatric condition[b]	1.13 (0.35-3.67)	1.27 (0.42-3.84)
Cognitive impairment (dementia)	0.17 (0.01-2.86)	0.28 (0.02-3.40)
Prior psychotropic drug use[c]	0.60 (0.26-1.41)	0.45 (0.19-1.06)
Smoking or alcohol consumption, habitual drug use	1.68 (0.71-3.98)	1.55 (0.73-3.27)
Patient category		
Surgical	1	1
Medical	1.48 (0.58-3.78)	1.74 (0.72-4.22)
Other	0.58 (0.19-1.72)	0.61 (0.24-1.56)
APACHE II score	0.97 (0.92-1.02)	0.97 (0.92-1.02)
Treatment characteristics		
Medication use per mechanical ventilation days		
Benzodiazepines (10 mg increments[d])	1.11 (1.05 – 1.17)	1.07 (1.01-1.13)
Propofol (10 mg increments)	1.00 (1.00 – 1.01)	0.99 (0.99-1.00)
Opioids(10 mg increments[e])	1.05 (1.00 – 1.01)	1.00 (0.99-1.10)
Daily sedation interruption	9.64 (4.23-21.94)	3.44 (1.46-8.10)
Sedation administration		
Intermittent use only	1	1
Continuous infusion only	3.35 (0.93-12.16)	0.87 (0.23-3.22)
Both	23.47 (5.97-92.27)	3.50 (0.88-13.89)
Antipsychotic prescription	45.10 (18.56-109.62)	15.67 (6.62-37.12)

Luke crit care 2014 (in press)

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Etudes Australiennes
Infirmières de réanimation
Ratio 1/1
Pas de preuve du suivi du protocole

Qu’est-ce qu’un protocole de sédation ?

Formation

Choisir des molécules

Elaborer un algorithme

Evaluer la vigilance et l’analgésie

Evaluer la vigilance et l’analgésie

Evaluation

34 % des services évaluent la sédation et l’analgésie

Constantin AFAR 2010

Sedation scoring practice

Question	Number of units (%)
Do you use a sedation score?	
Yes	16 (88.1%)
No	19

Reischreiter *crit care* 2008

Evaluer

Outils Cliniques

OUTILS D'EVALUATION DE LA SEDATION

Vigilance **Douleur**

1974 Ramsay

1992 _____ COMFORT _____

1999 Riker (SAS), MAAS

2001 Payen (BPS)

2002 Richmond (RASS)

2003 _____ De Jonghe (ATICE) _____

Ramsay Scale

Awake levels

- 1 patient anxious or agitated or both
- 2 patient co-operative, orientated and tranquil
- 3 patient responds to commands only

Asleep levels

- 4 a brisk response
- 5 a sluggish response
- 6 no response

- to a light glabellar tap
  or
- loud auditory stimulus

Ramsay, BMJ 1974

Echelle de sédation-agitation de Richmond (RASS)		
Score	**Terme**	**Description**
+4	**Combatif**	Combatif, danger immédiat envers l'équipe
+3	**Très agité**	Tire, arrache tuyaux et cathéters et/ou agressif envers l'équipe
+2	**Agité**	Mouvements fréquents sans but précis et/ou désadaptation au respirateur
+1	**Ne tient pas en place**	Anxieux ou craintif, mais mouvements orientés, peu fréquents, non vigoureux, non agressifs
0	**Eveillé et calme**	
-1	**Somnolent**	Pas complètement conscient mais reste éveillé avec contact visuel à l'appel (>10s)
-2	**Sédation légère**	Reste éveillé brièvement avec contact visuel à l'appel (<10s)
-3	**Sédation modérée**	N'importe quel mouvement à l'appel (Ex. ouverture des yeux), mais pas de contact visuel
-4	**Sédation profonde**	Aucun mouvement à l'appel, n'importe quel mouvement à la stimulation physique (friction nociceptive de l'épaule ou du sternum)
-5	**Non réveillable**	Aucun mouvement ni à l'appel, ni à la stimulation physique (friction non nociceptive de l'épaule ou du sternum)

Ely, JAMA 2003

Score d' « Adaptation to Intensive Care Environnement » (ATICE)									
Domaine conscience				***Domaine tolérance***					
Eveil (gradué de 0 à 5)		**Compréhension** (somme des réponses cotées 1)		**Calme** (gradué de 0 à 3)		**Adaptation au respirateur** (somme des éléments cotés 1)		**Relaxation de la face** (graduée de 0 à 3)	
Yeux fermés, aucune mimique	**0**	«Ouvrez (ou fermez) les yeux»	**1 pt**	Agitation majeure, dangereuse pour le patient	**0**	Pas de blocage de la phase inspiratoire du respirateur par le patient	**1 pt**	Grimace permanente	**0**
Yeux fermés, mimique lors de la stimulation douloureuse forte	**1**	«Ouvrez la bouche»	**1 pt**	Agitation non calmée par les commandes verbales	**1**	Pas de polypnée > 30	**1 pt**	Grimace provoquée sévère	**1**
Ouverture des yeux après stimulation douloureuse forte	**2**	«Regardez par ici»	**1 pt**	Agitation calmée aux commandes verbales	**2**	Pas de toux	**1 pt**	Grimace provoquée modérée	**2**
Ouverture des yeux après stimulation douloureuse légère	**3**	«Faites oui avec la tête»	**1 pt**	Calme	**3**	Pas de tirage	**1 pt**	Visage relaxé	**3**
Ouverture des yeux après stimulation verbale	**4**	«Fermez les yeux et ouvrez la bouche»	**1 pt**						
Ouverture des yeux spontanée	**5**								

De Jonghe, Crit Care Med 2003

Evaluation de la douleur

Groupe AZURÉA

60 services de Réanimation : 572 patients évalués

30 % d’évaluation de la douleur

Evaluer la douleur

Patient (ventilé) communicant

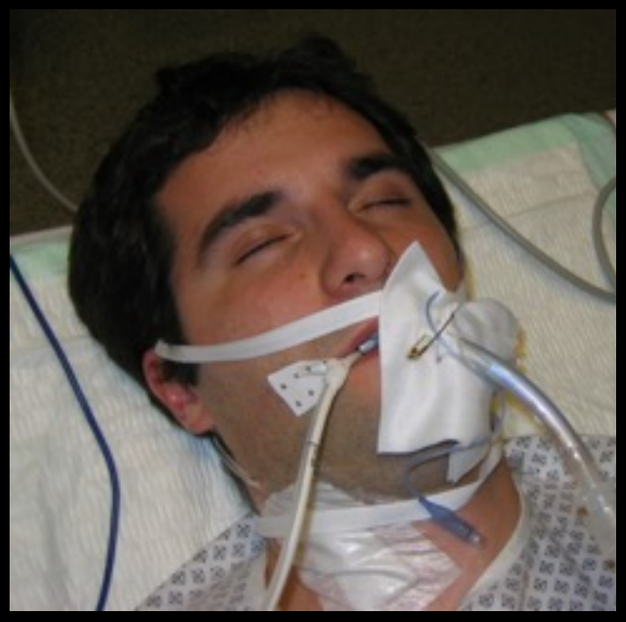
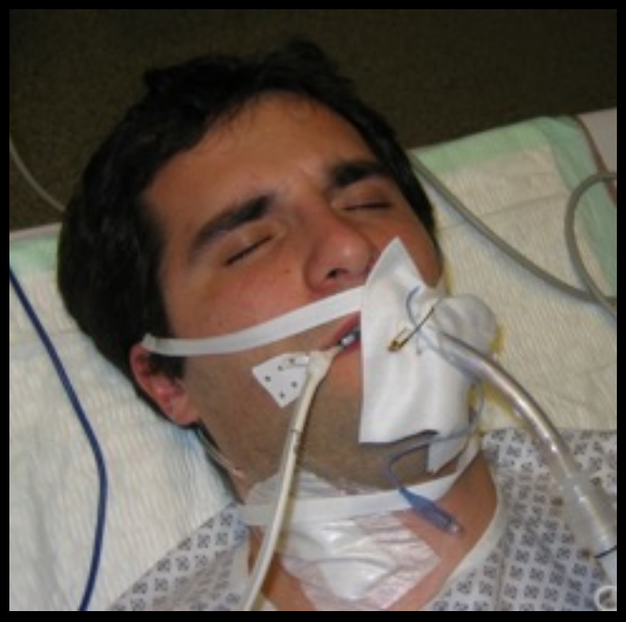
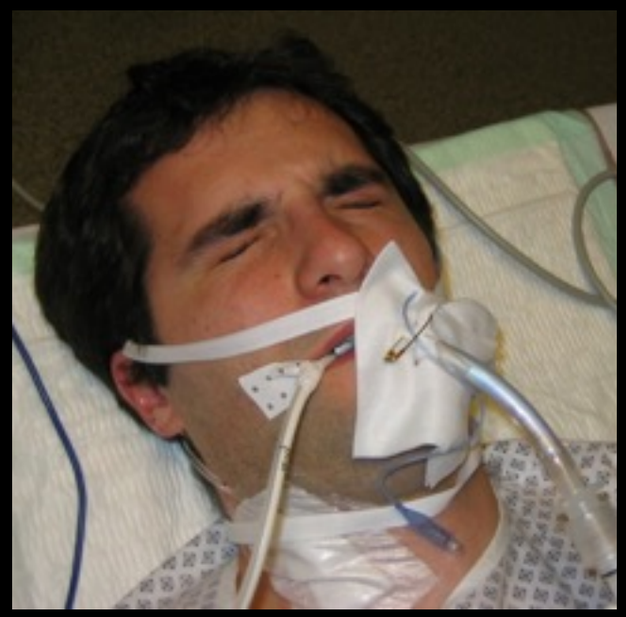
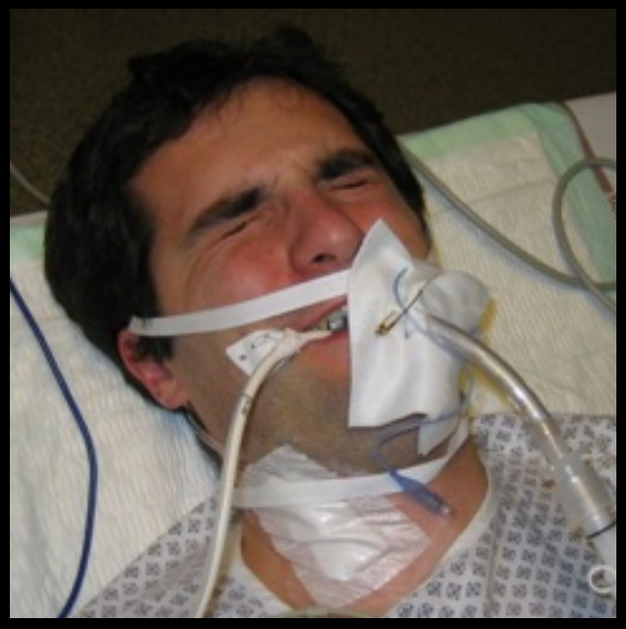
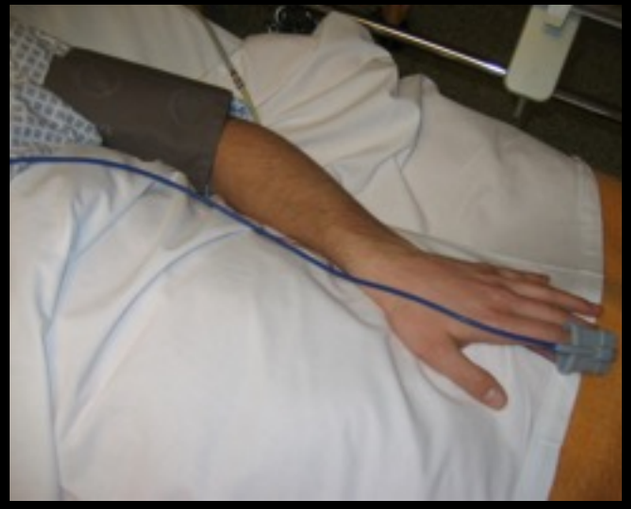
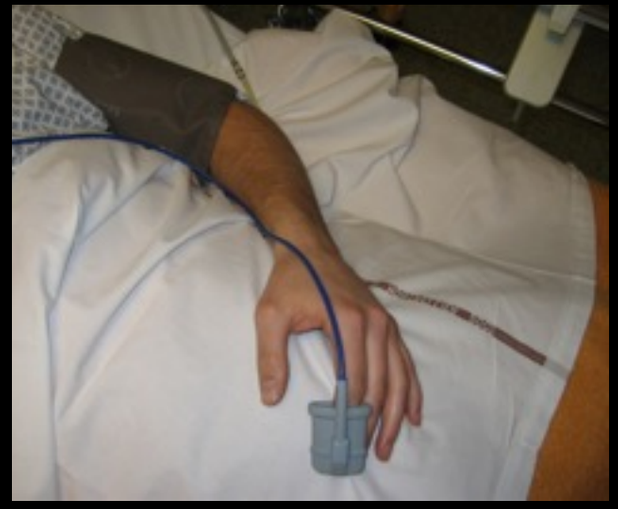
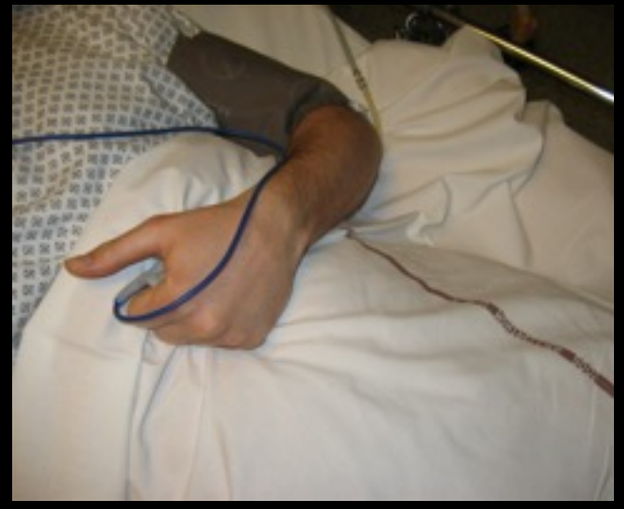
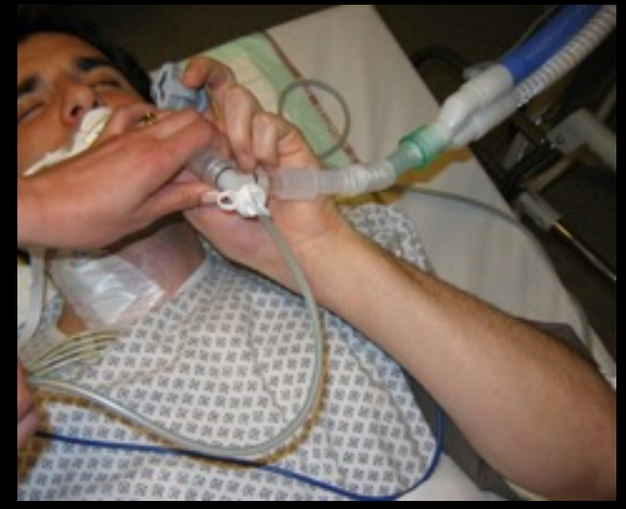
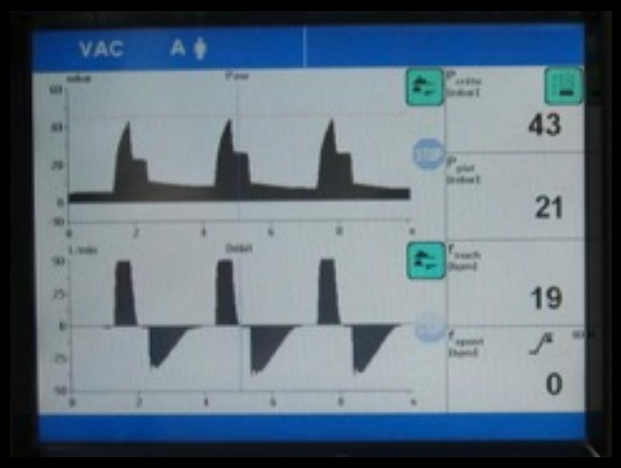
Patient (ventilé) non communicant

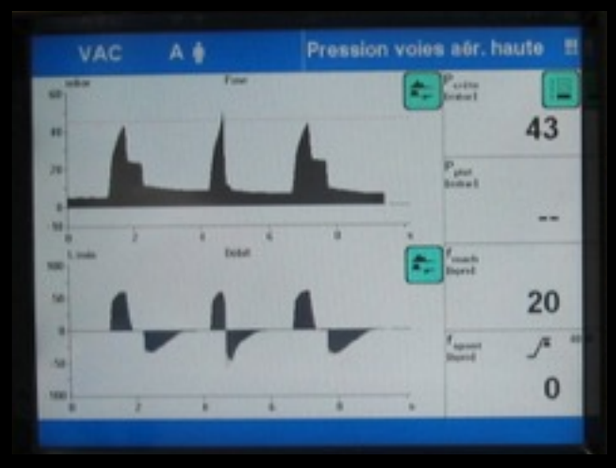
Patient (ventilé)

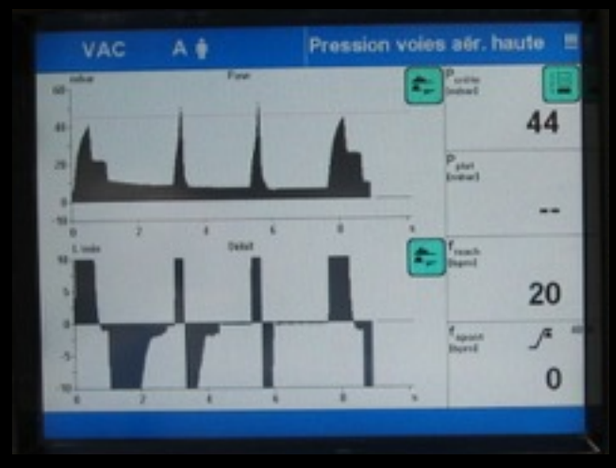
BPS / ATICE

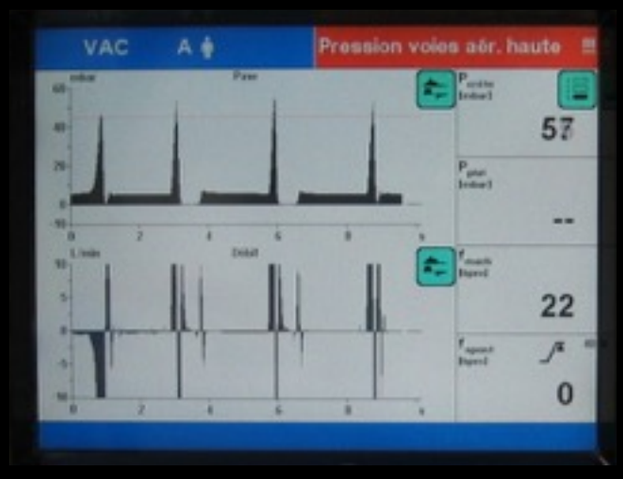
Score comportemental de douleur (BPS)

1 2 3 4

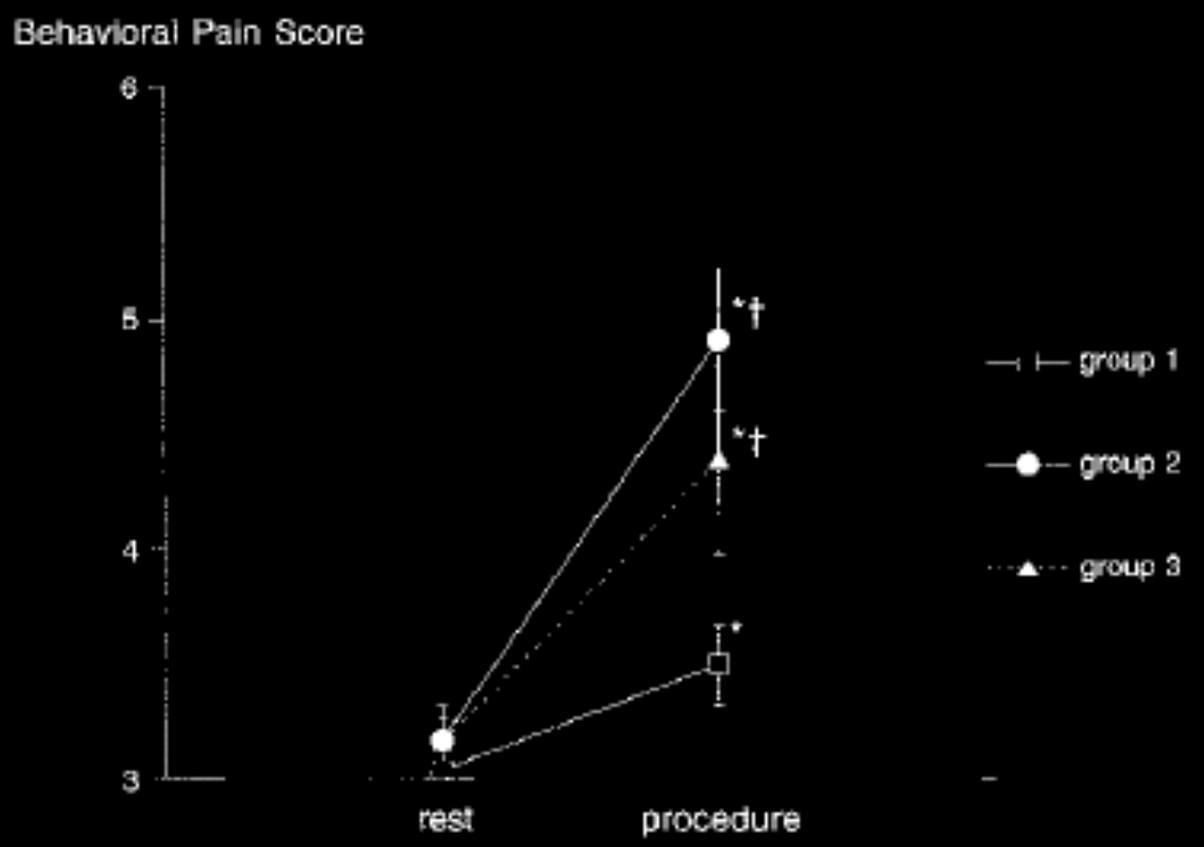






Assessing pain in critically ill sedated patients by using a behavioral pain scale

Jean-Francois Payen, MD, PhD; Olivier Bru, MD; Jean-Luc Bosson, MD, PhD; Anna Lagrasta, RN; Eric Novel, PT; Isabelle Deschaux, RN; Pierre Lavagne, MD; Claude Jacquot, MD



Evaluer la douleur

Patient (ventilé) communicant

Patient (ventilé) non communicant

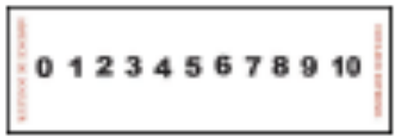
Patient (ventilé) communicant

Pas de score comportemental

Patient (ventilé) communicant

Auto-évaluation

Est-ce que vous avez mal ?

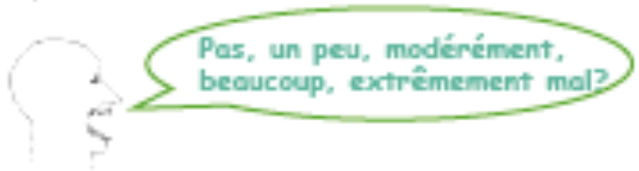


1. échelle numérique 0-10 visuelle en grand format (EVN)

5. échelle visuelle analogique verticale (EVA-V) numérisée de 0 (pas) à 100 mm (douleur max)

2. échelle numérique 0-10 administrée oralement (ENO)

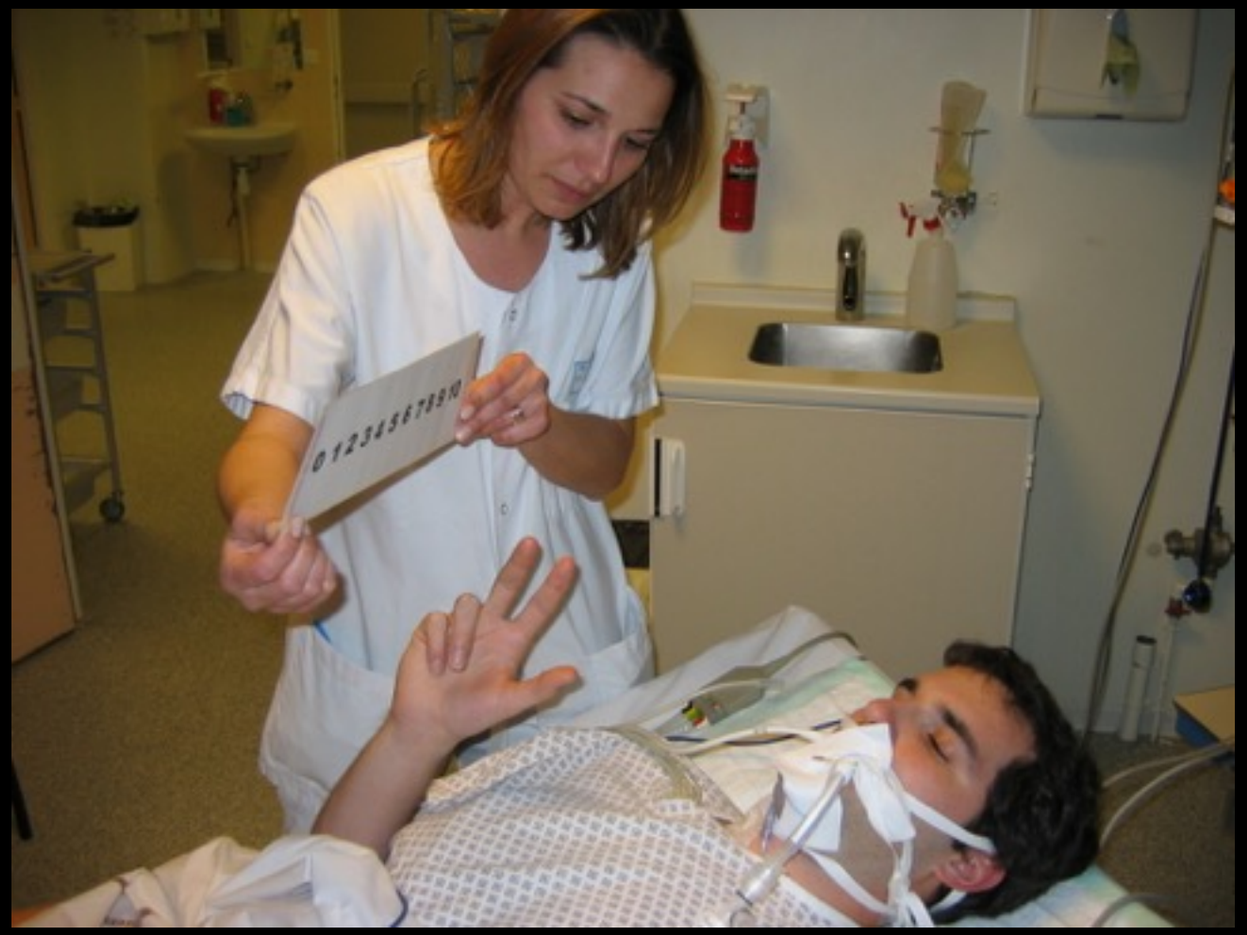
4. échelle visuelle analogique horizontale (EVA-H) numérisée de 0 (pas) à 100 mm (douleur max)

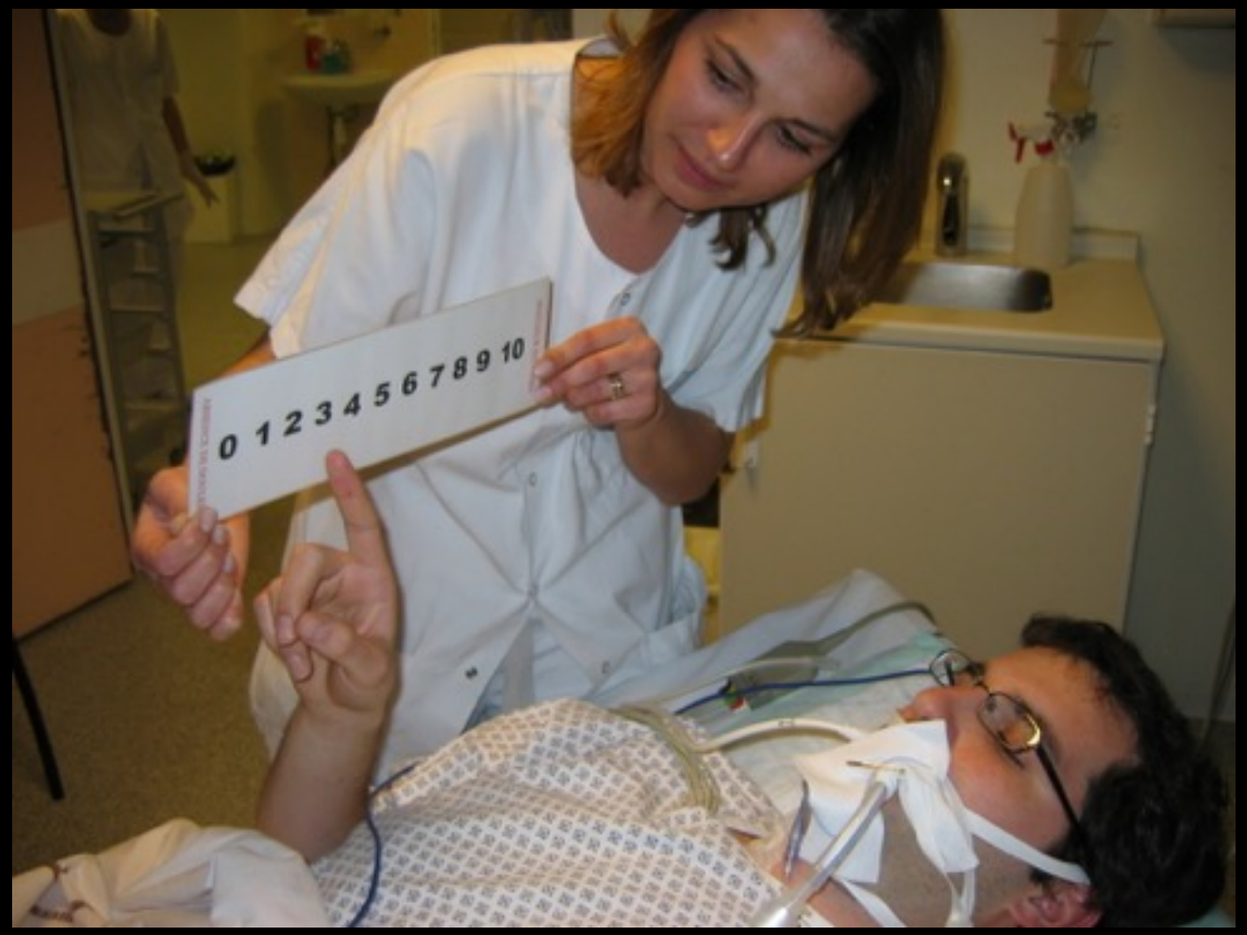


3. échelle verbale simple (EVS) (numérisée de 1= pas mal à 5= extrêmement mal)

Chanques, Pain 2010

Evaluation de la douleur chez un patient communiquant





Elaborer un algorithme

Evaluer la vigilance et l’analgésie

Elaborer un algorithme

- Objectifs d'un algorithme :
  - Adapter la sédation à la demande
  - Autonomiser les soignants
  - Sécuriser les soignants
  - Garantir la prise en charge de la douleur

Elaborer un algorithme

- Adapter la sédation à la demande :

+4
+3
+2
+1

↑ agitation

↓ adaptation au ventilateur

↑ consommation en O2

0
- 1
- 2
- 3
- 4
- 5

Demandes variables dans le nycthémère

↑ durée de ventilation

↑ durée de séjour

complications de decubitus

Elaborer un algorithme

- Adapter la sédation à la demande :

+4
+3
+2
+1

↑ agitation

↓ adaptation au ventilateur

↑ consommation en O2

0 — **Adaptations de la sédation uniquement médicale : 57%**

- 1 — **Adaptation des posologies : 1/j [0-8]**

- 2
- 3
- 4
- 5

↑ durée de ventilation

↑ durée de séjour

complications de decubitus

Leone, CCM 2012

Nécessité d’un algorithme

Choisir des molécules

Elaborer un algorithme

Evaluer la vigilance et l’analgésie

Que retenir de la conférence de consensus ?...

…Peu importe les molécules, l'important est d'évaluer la sédation, l'analgésie et de disposer d'un algorithme…

Choisir des molécules

Elaborer un algorithme

Evaluer la vigilance et l'analgésie

30% des services ont un protocole écrit de sédation

34 % des services évaluent la sédation et l’analgésie

Constantin AFAR 2010

2007

30% des services ont un protocole écrit de sédation

34 % des services évaluent la sédation et l’analgésie

Constantin AFAR 2010

2009

52%

~~30%~~ des services ont un protocole écrit de sédation

~~34 %~~ des services évaluent la sédation et l’analgésie

80%

En cours d’écriture !!!

Audit AZUREA

33% des services ont un protocole écrit de sédation

80 % des **patients** : évaluation la sédation et l'analgésie au moins /4h

Chanques, soumis

2011

Annals of Intensive Care 2013, **3**:24
http://www.annalsofintensivecare.com/content/3/1/24

Annals of Intensive Care
a SpringerOpen Journal

RESEARCH Open Access

Sedation in French intensive care units: a survey of clinical practice

The SRLF Trial Group

Intensivists reporting the use of a scale	Sedation scale		Pain scale in non-communicating patients during potentially painful procedures		Pain scale in communicating patients during potentially painful procedures	
Scale, no. of intensivists (%)	Ramsay scale	50%	BPS	80%	Analogous scale	98%
	RASS	38%	Locally-designed scale	9%	BPS	9%
	ATICE Scale	8%	Other*	12%	Other*	6%
	SAS	4%				
	Other	9%				
Assessment, no. of intensivists (%)						
By nurses mostly	91%		93%		90%	
By doctors mostly	1%		1%		0%	
By both nurses and doctors	8%		7%		10%	
Frequency, no. of intensivists (%)						
At least every 4 hr	73%					
At least every 12 hr	16%					
At least once a day	10%					

Annals of Intensive Care 2013, **3**:24
http://www.annalsofintensivecare.com/content/3/1/24

Annals of Intensive Care
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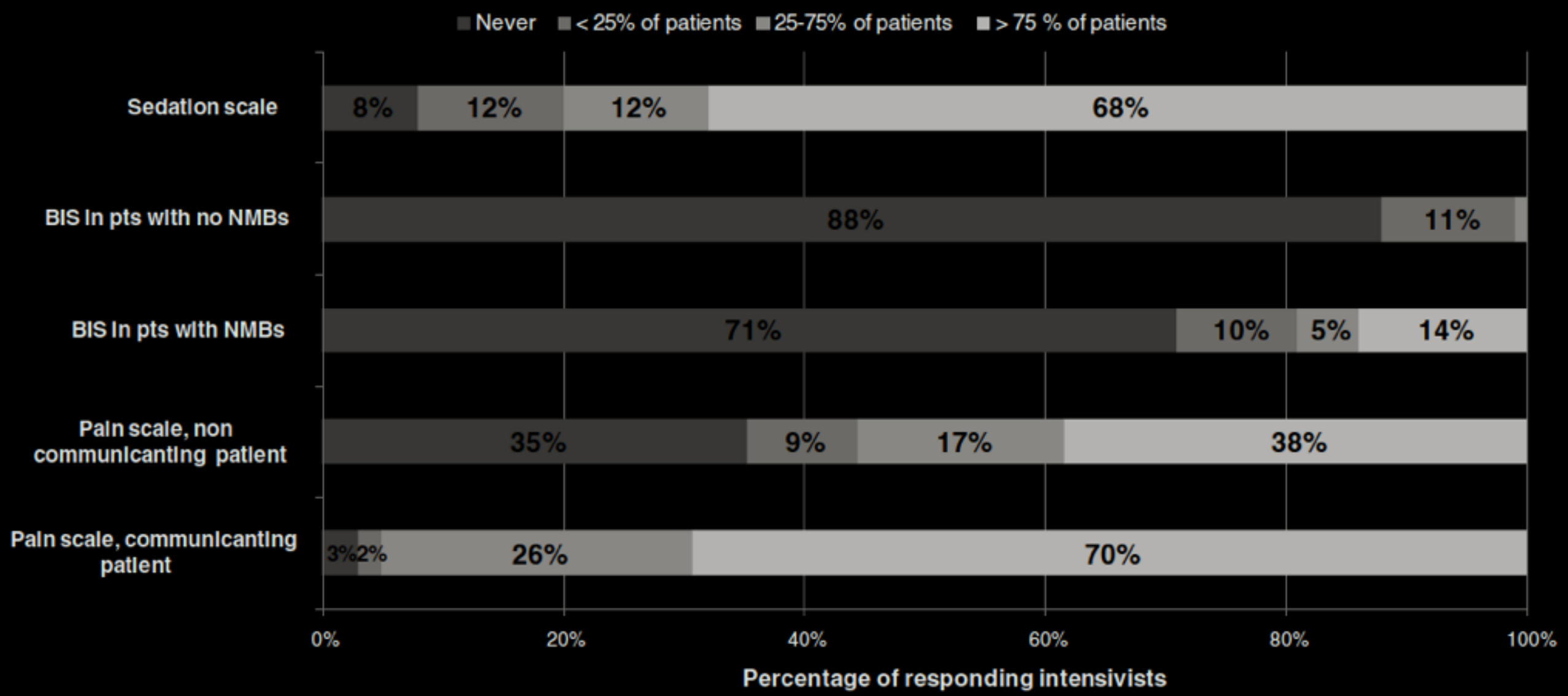

Annals of Intensive Care 2013, **3**:24
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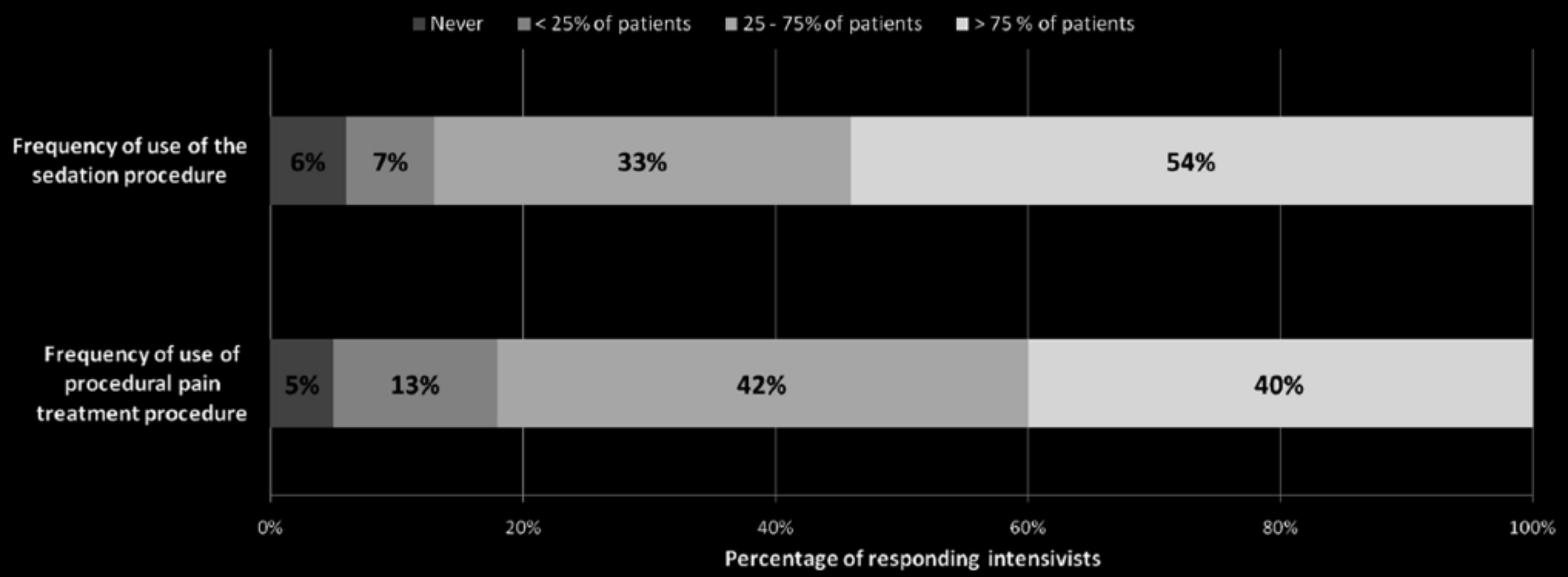


2011

LE CHANGEMENT,

C'EST MAINTENANT

2015

www.sfar.org

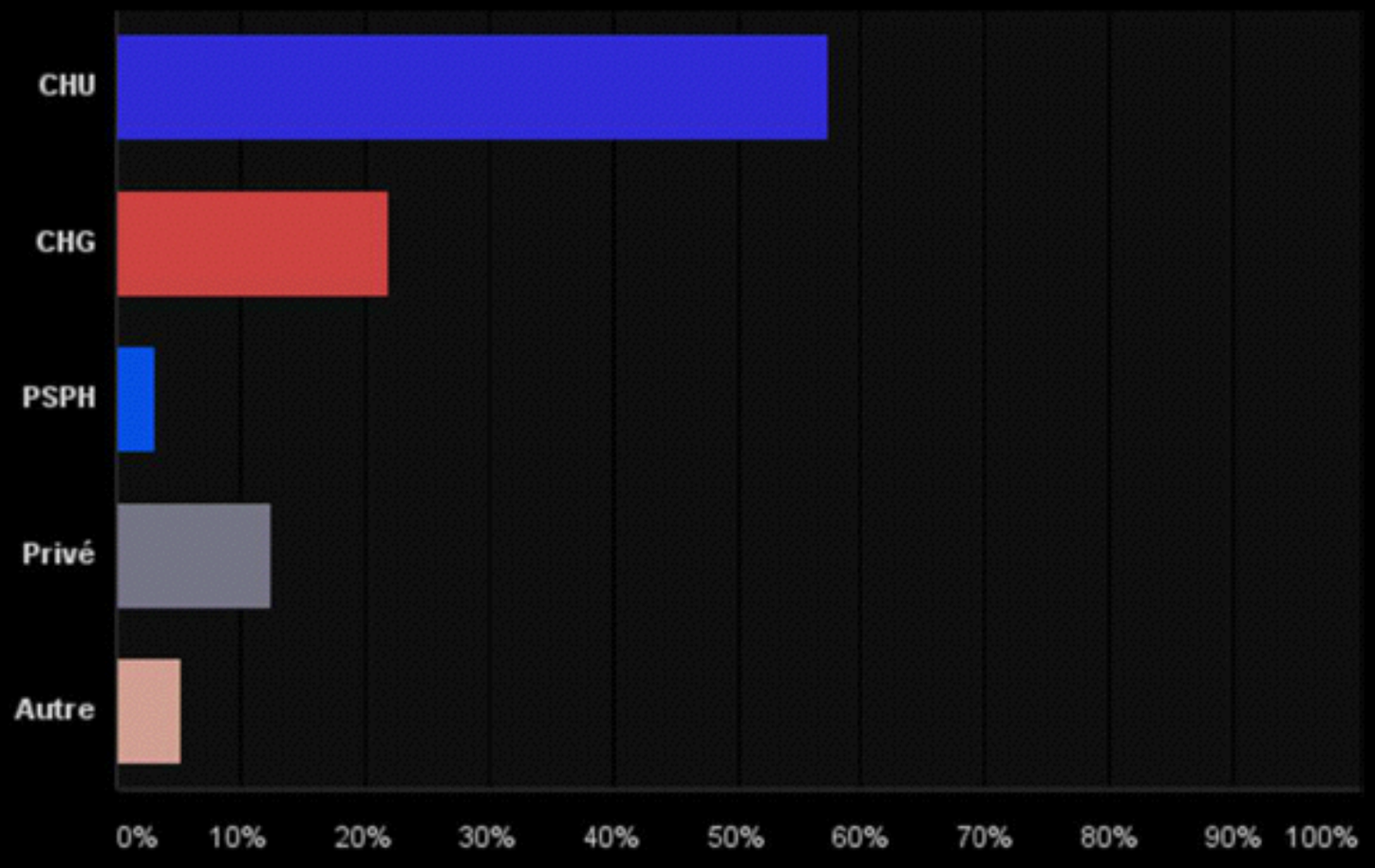
Enquête déclarative

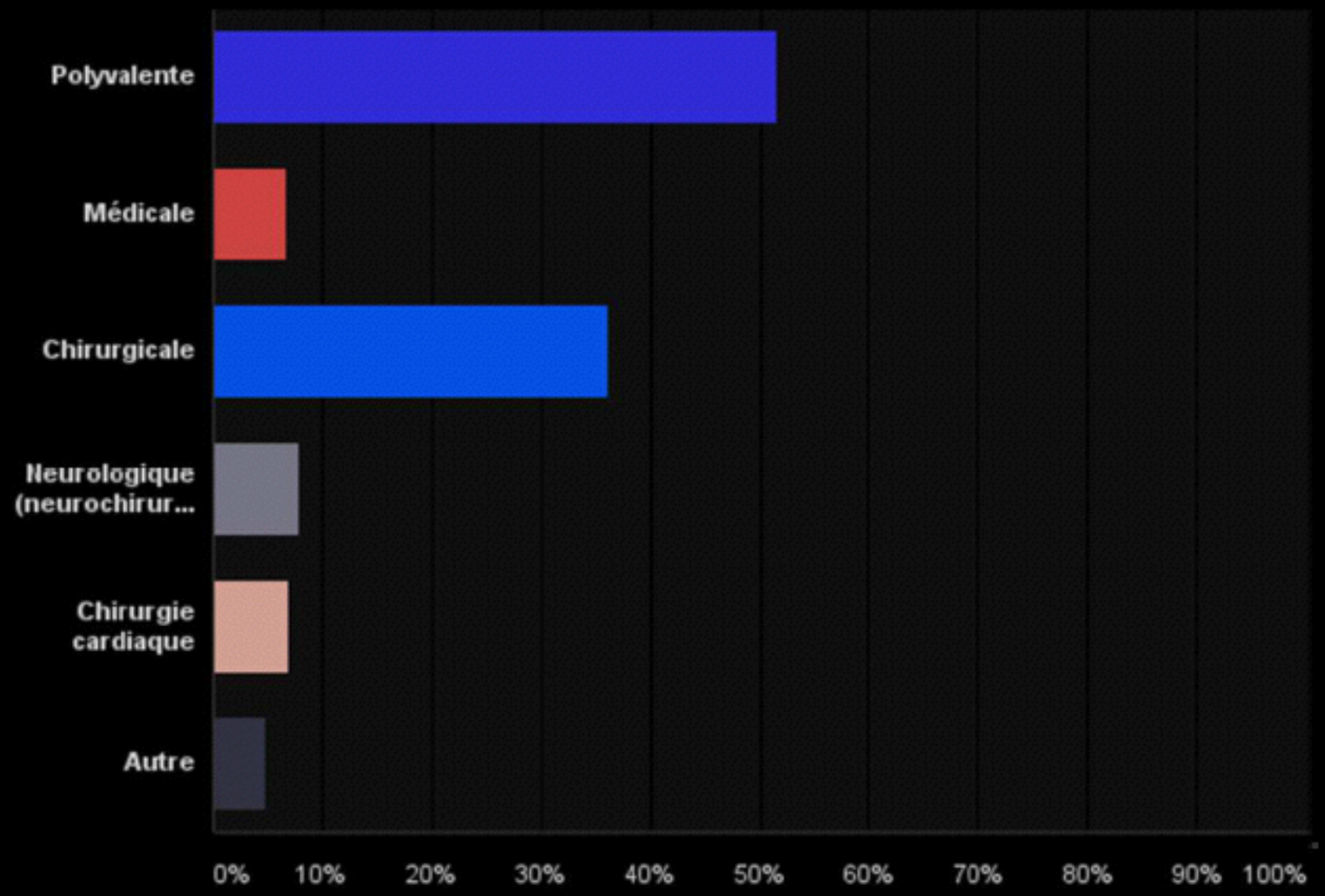
Mantz
Payen
Constantin
De Jonghe
Chanques
Bruder
…

2015

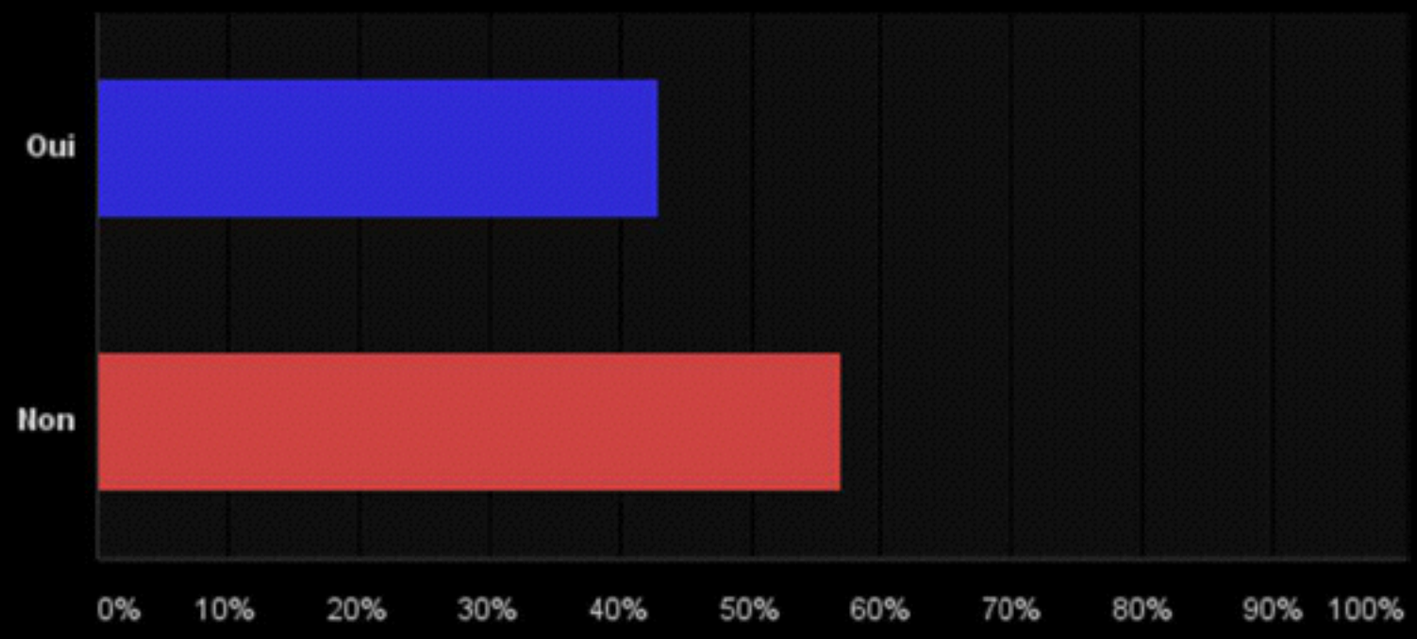
Enquête déclarative

320 réponses

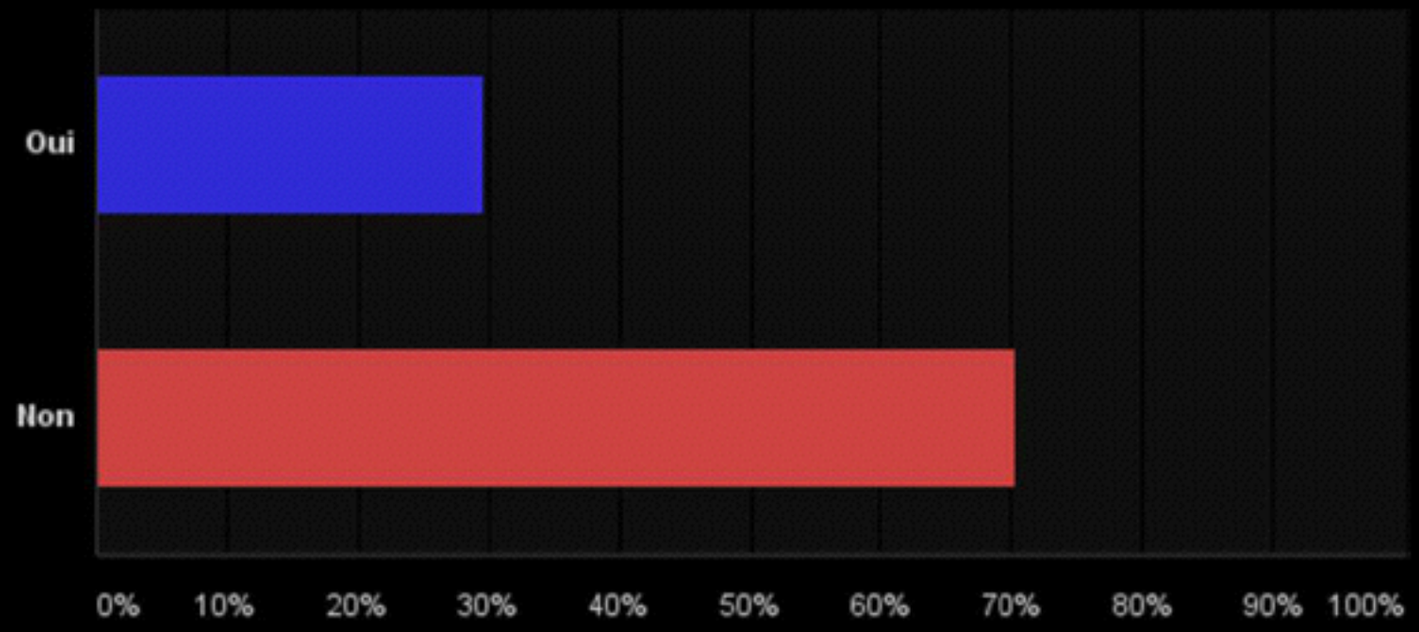

CHU
CHG
PSPH
Privé
Autre
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%


Polyvalente
Médicale
Chirurgicale
Neurologique (neurochirur...
Chirurgie cardiaque
Autre
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

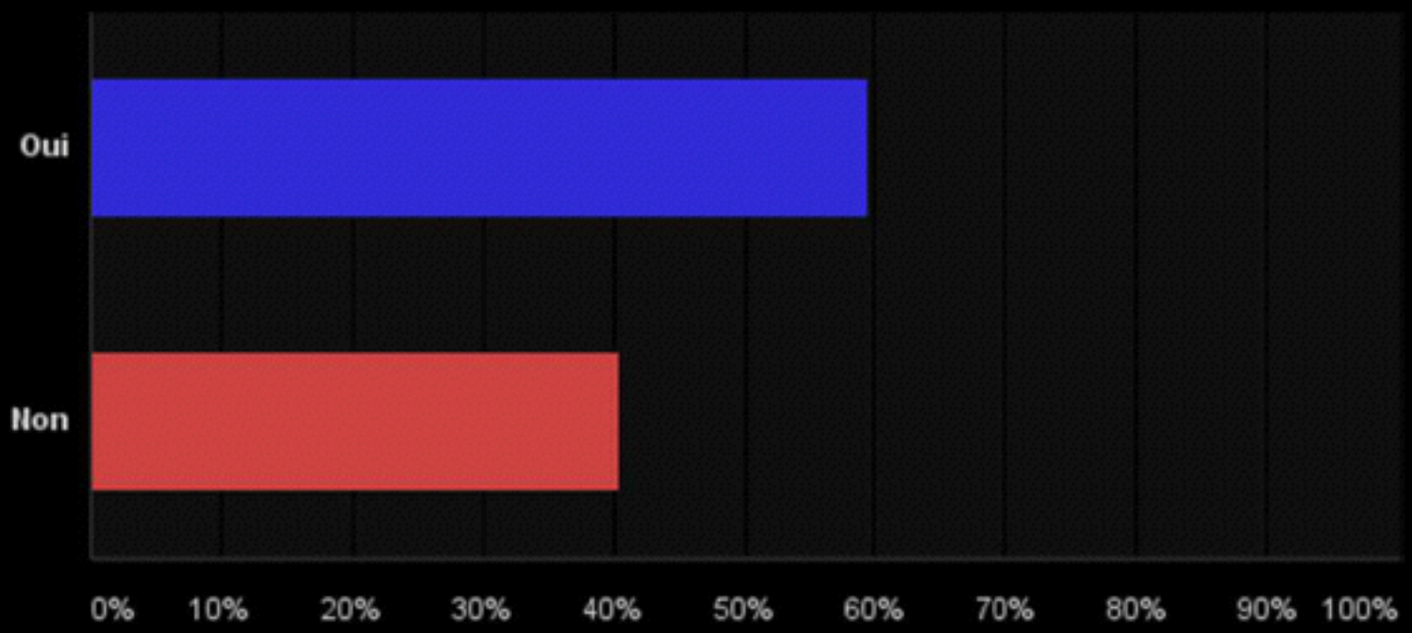
Avez-vous un médecin référent sédation ?



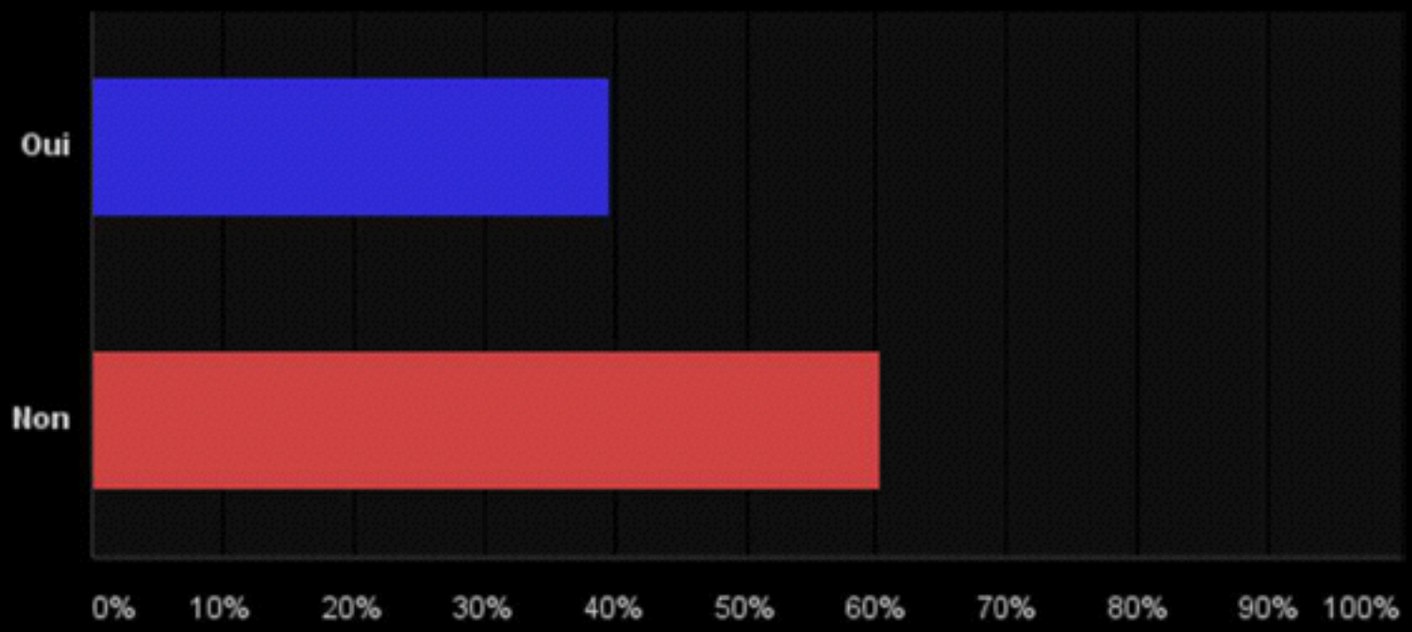
Avez-vous un IDE référent sédation ?



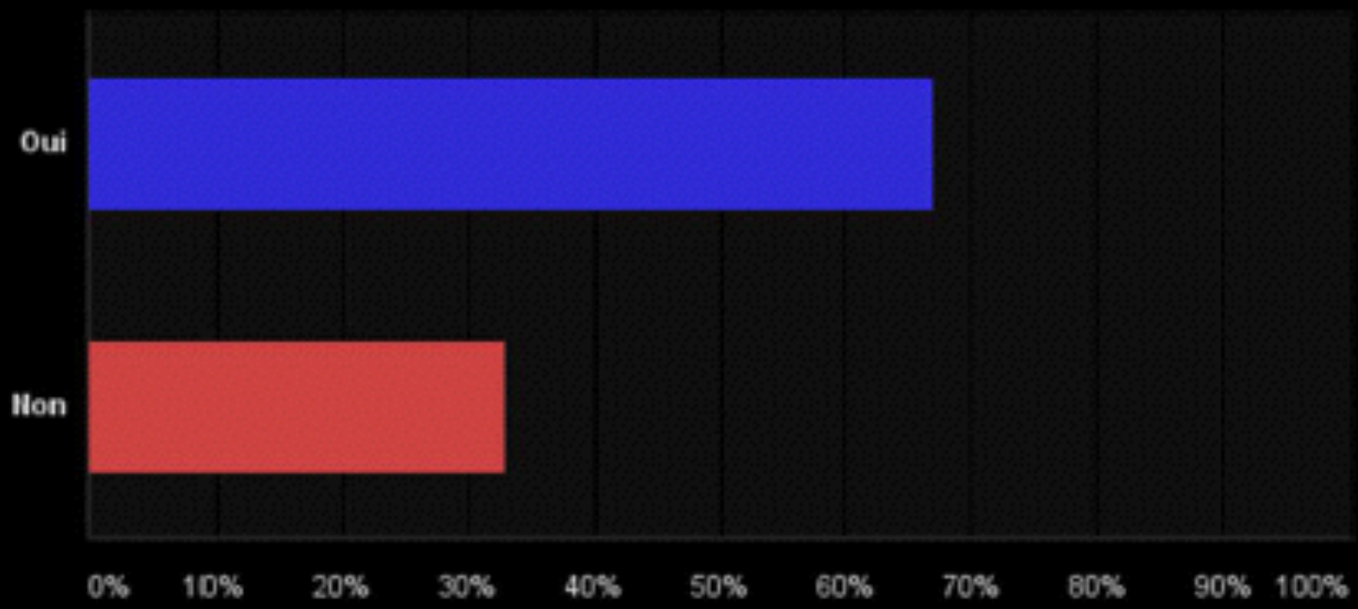
Avez-vous un Protocole de sédation ?



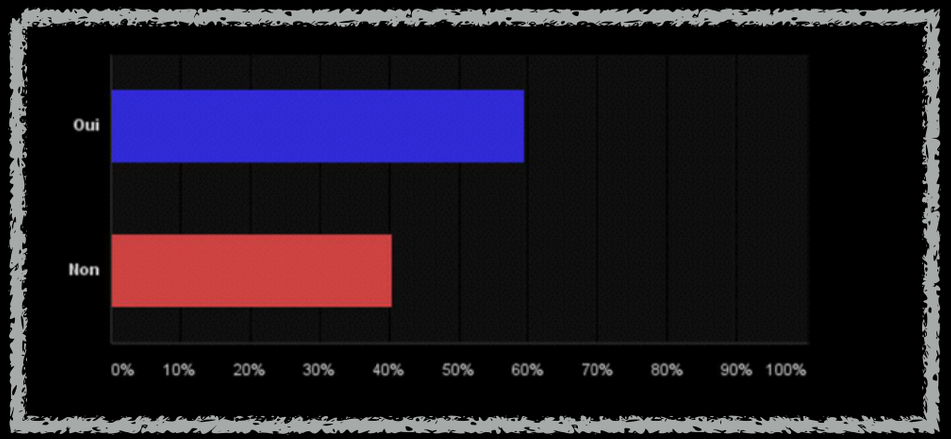
Si un algorithme existe, a-t-il été modifié dans les 2 ans ?



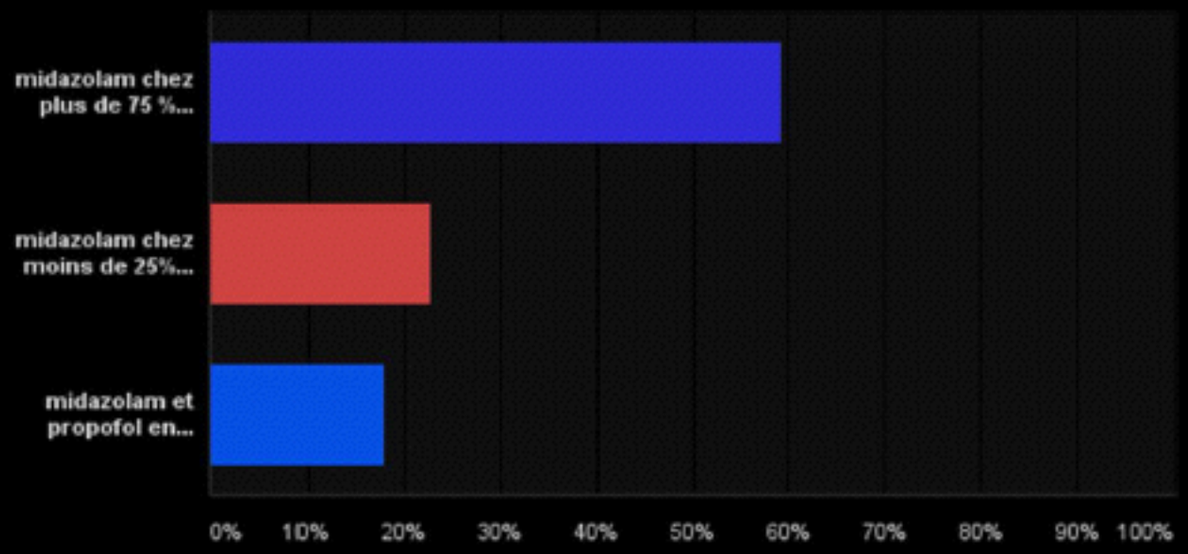
Les IDE adaptent-elles la sédation



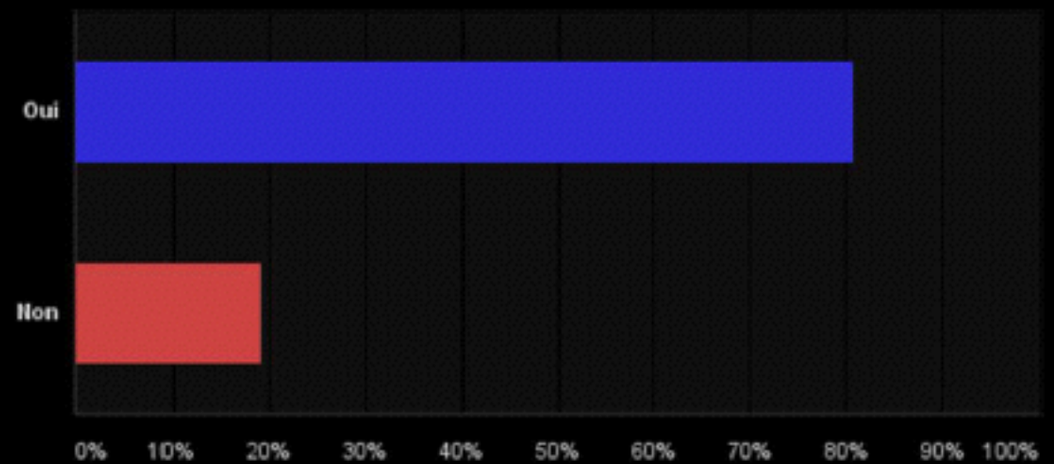
protocole ?



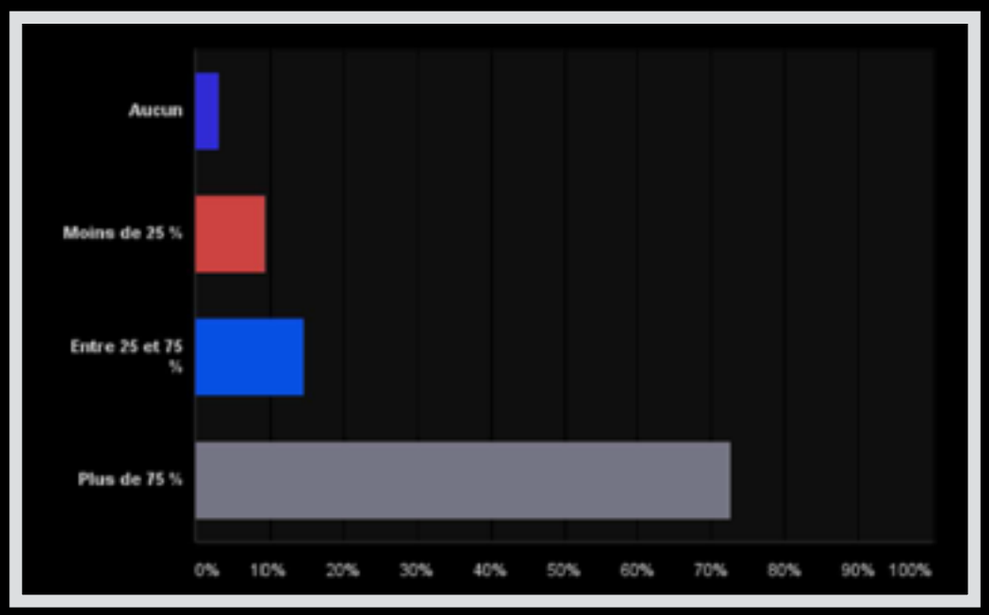
Quelles hypnotiques utilisez-vous ?



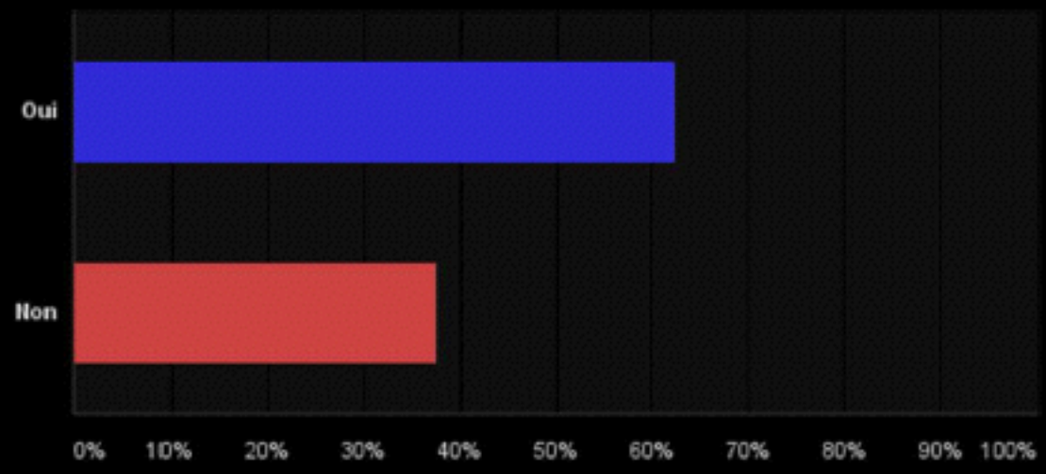
Une échelle est-elle utilisée ?



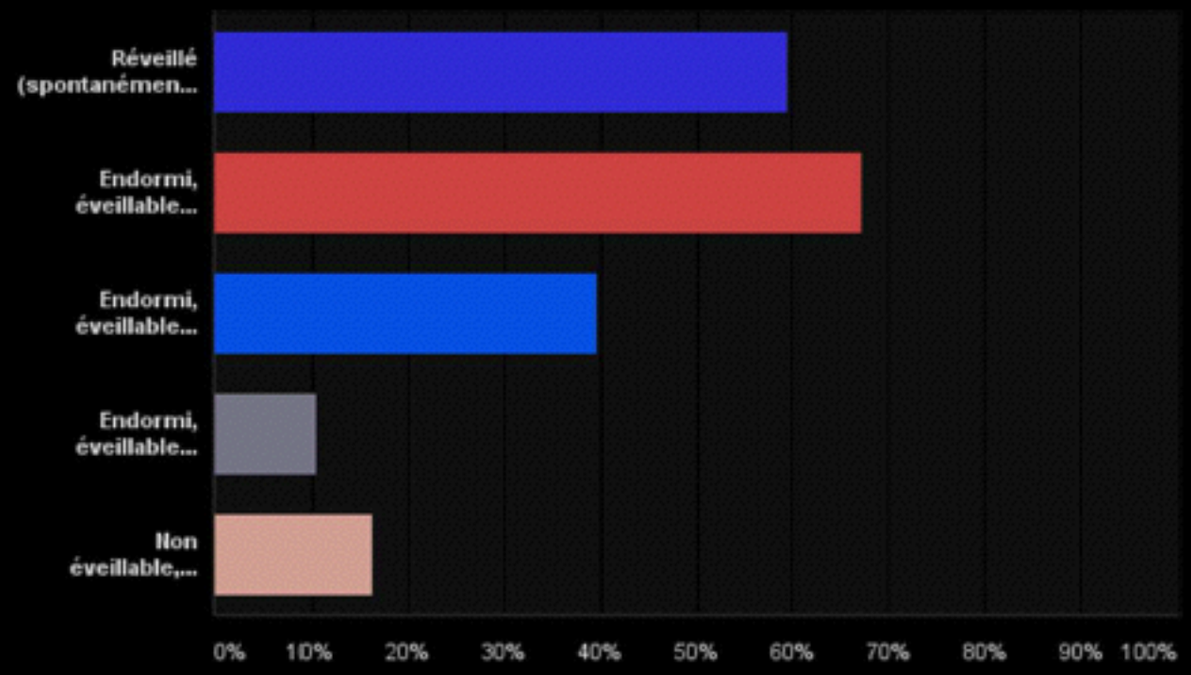
utilisée chez quel %age de patients



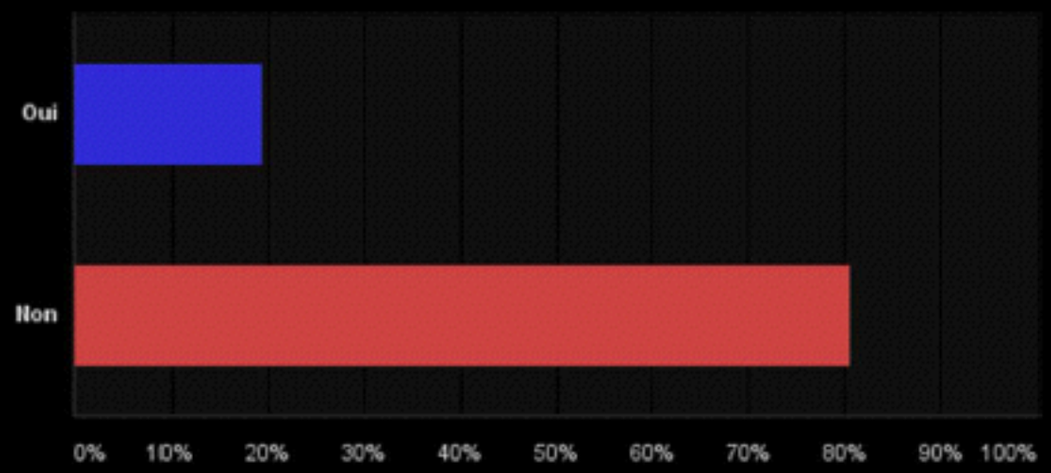
Un objectif est-il prescrit quotidiennement ?



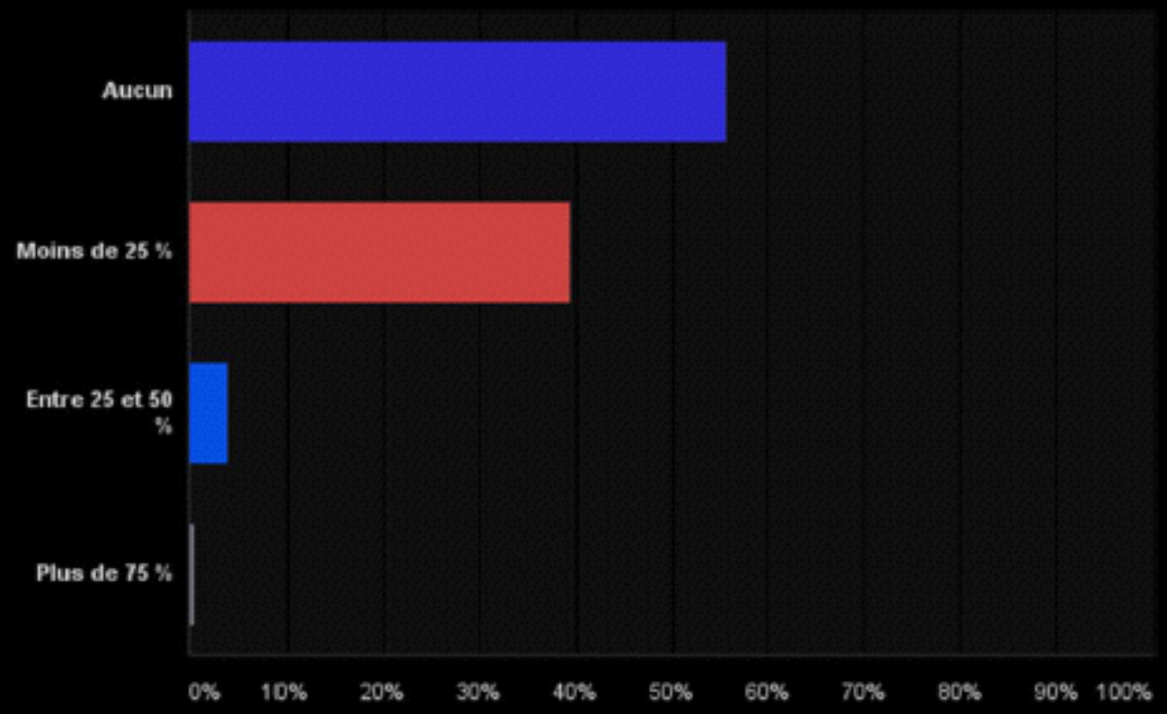
Si oui quel est-il ?



Existe-t-il un arrêt quotidien de la sédation ?



Sédatez-vous les patients sous VNI ?



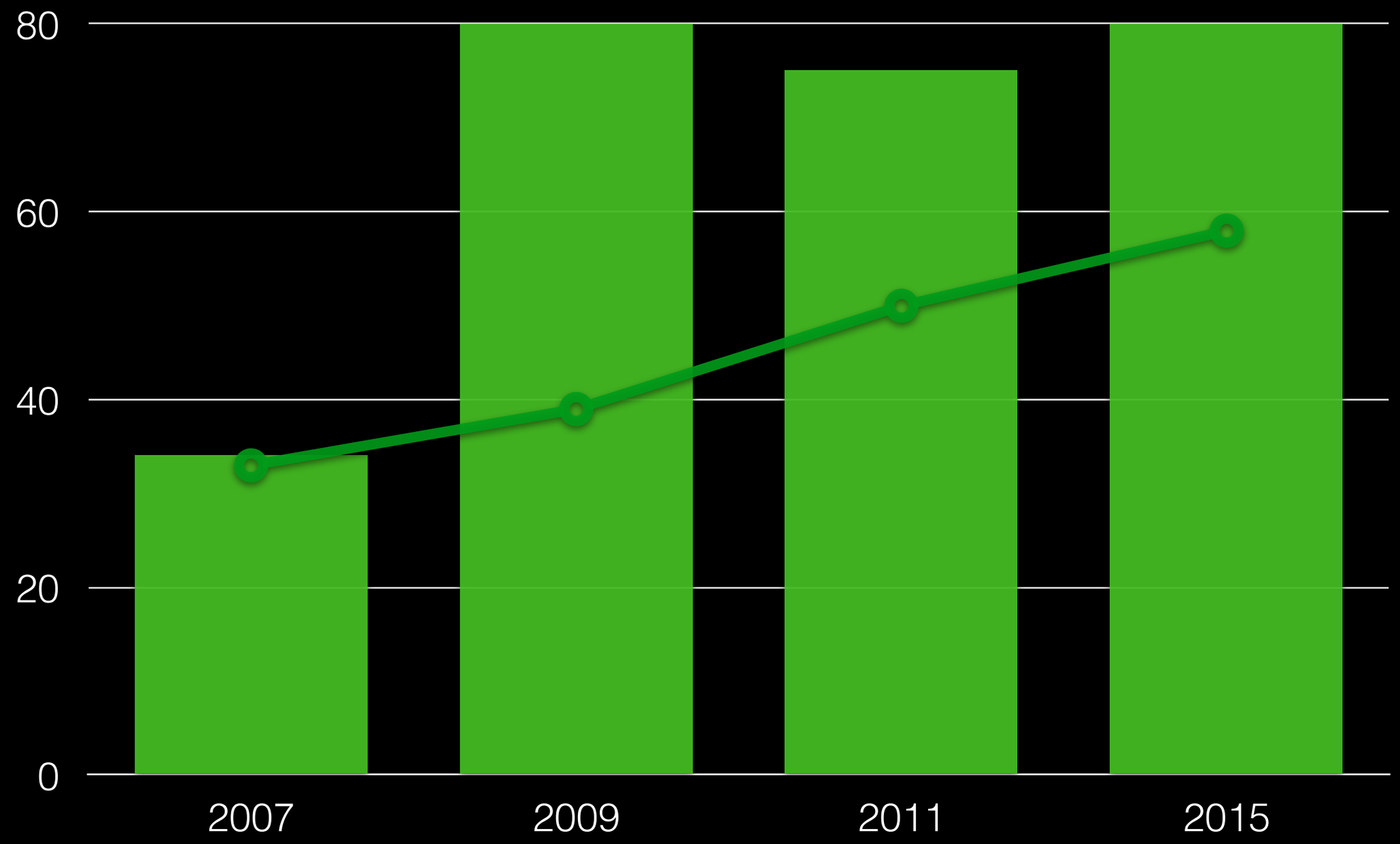
2007 : 29% des services ont un protocole écrit de sédation

2009 : 33% des services ont un protocole écrit de sédation

2011 : 50% des services ont un protocole écrit de sédation

2015 : 58% des services ont un protocole écrit de sédation

<50% renforcement de l’analgésie aux soins



Choisir les bonnes molécules

Elaborer un algorithme

Evaluer la vigilance et l’analgésie

Disponible en ligne sur www.sciencedirect.com

ScienceDirect

Annales Françaises d'Anesthésie et de Réanimation 27 (2008) 541–551

annales françaises d'ANESTHÉSIE ET DE RÉANIMATION

http://france.elsevier.com/direct/ANNFAR/

Texte long du jury

Sédation-analgésie en réanimation (nouveau-né exclu)☆

Sedation and analgesia in intensive care (with the exception of new-born babies)

Special Article

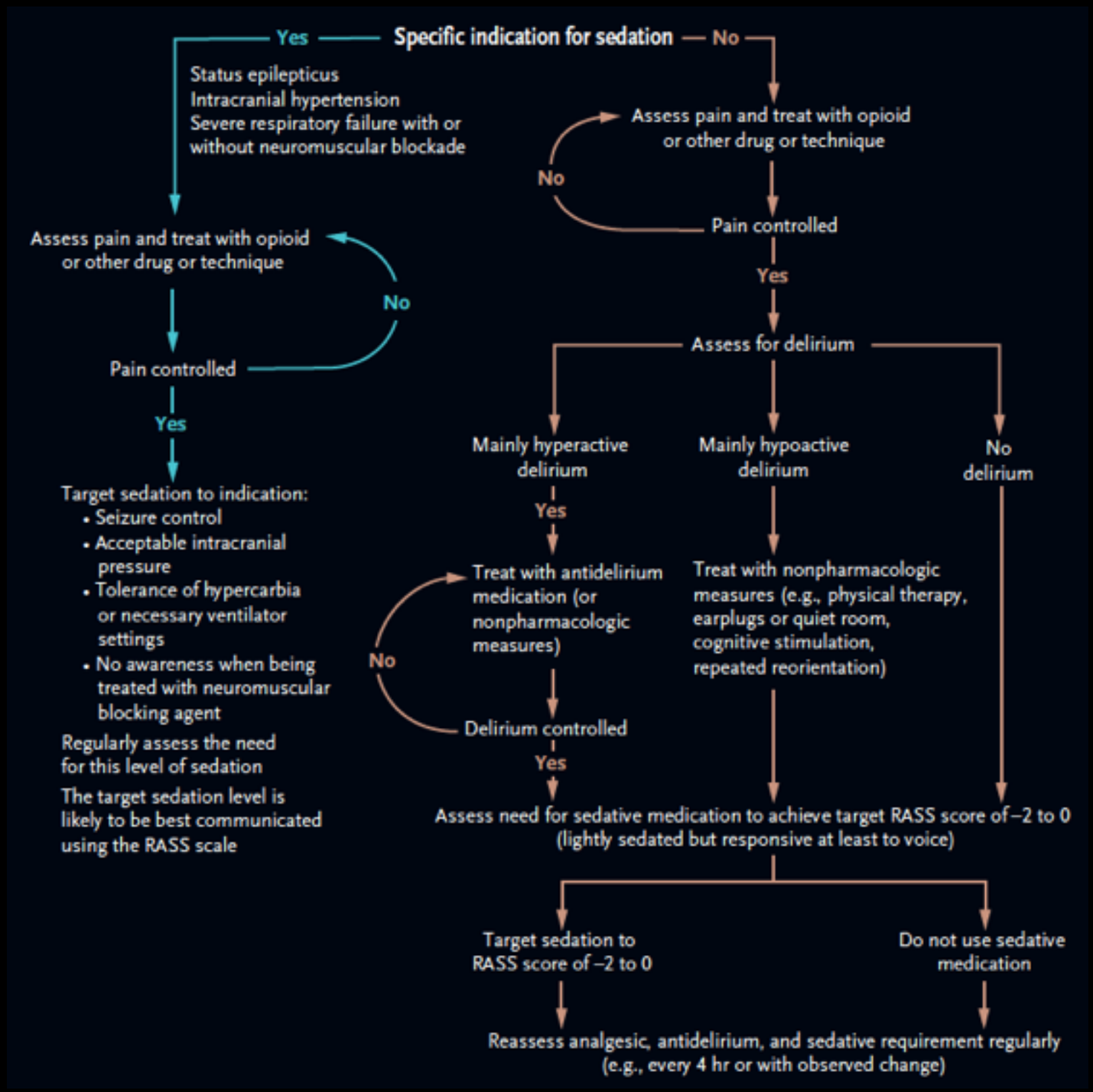
Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium in Adult Patients in the Intensive Care Unit

Assess and Treat	Statements and Recommendations
PAIN	• Pain assessment should be routinely performed in all ICU patients (1B). • Self report is preferred over the use of behavioral pain scales to assess pain in ICU patients who are able to communicate (B). • The BPS and CPOT are the most valid and reliable behavioral pain scales for use in ICU patients who cannot communicate (B). • Vital signs should not be used alone to assess pain, but they may be used adjunctively for pain assessments (2C). • Preemptively treat chest tube removal with either analgesics and/or non-pharmacologic therapy (1C). • Suggest preemptively treating other types of procedural pain with analgesic and/or non-pharmacologic therapy (2C). • Use opioids as first line therapy for treatment of non-neuropathic pain (1C). • Suggest using non-opioid analgesics in conjunction with opioids to reduce opioid requirements and opioid-related side effects (2C). • Use gabapentin or carbamazepine, in addition to intravenous opioids, for treatment of neuropathic pain (1A). • Use thoracic epidural for postoperative analgesia in abdominal aortic surgery patients (1B). • Suggest thoracic epidural analgesia be used for patients with traumatic rib fractures (2B).

Assess and Treat	Statements and Recommendations
AGITATION	• Depth and quality of sedation should be routinely assessed in all ICU patients (1B). • The RASS and SAS are the most valid and reliable scales for assessing quality and depth of sedation in ICU patients (B). • Suggest using objective measures of brain function to adjunctively monitor sedation in patients receiving neuromuscular blocking agents (2B). • Use EEG monitoring either to monitor non-convulsive seizure activity in ICU patients at risk for seizures, or to titrate electrosuppressive medication to achieve burst suppression in ICU patients with elevated intracranial pressure (1A). • Target the lightest possible level of sedation and/or use daily sedative interruption (1B). • Use sedation protocols and checklists to facilitate ICU sedation management (1B). • Suggest using analgesia-first sedation for intubated and mechanically ventilated ICU patients (2B). • Suggest using non-benzodiazepines for sedation (either propofol or dexmedetomidine) rather than benzodiazepines (either midazolam or lorazepam) in mechanically ventilated adult ICU patients (2B).

Assess and Treat	Statements and Recommendations
DELIRIUM	• Delirium assessment should be routinely performed in all ICU patients (1B). • The CAM-ICU and ICDSC delirium monitoring tools are the most valid and reliable scales to assess delirium in ICU patients (A). • Mobilize ICU patients early when feasible to reduce the incidence and duration of delirium, and to improve functional outcomes (1B). • Promote sleep in ICU patients by controlling light and noise, clustering patient care activities, and decreasing stimuli at night (1C). • Avoid using rivastigmine to reduce the duration of delirium in ICU patients (1B). • Suggest avoiding the use of antipsychotics in patients who are at risk for torsades de pointes (2B). • Suggest not using benzodiazepines in ICU patients with delirium unrelated to ETOH/benzodiazepine withdrawal (2B).

Only few patients need deep sedation



Reade, *Nejm* 2014

ARDS
Septic shock
Unstable
…

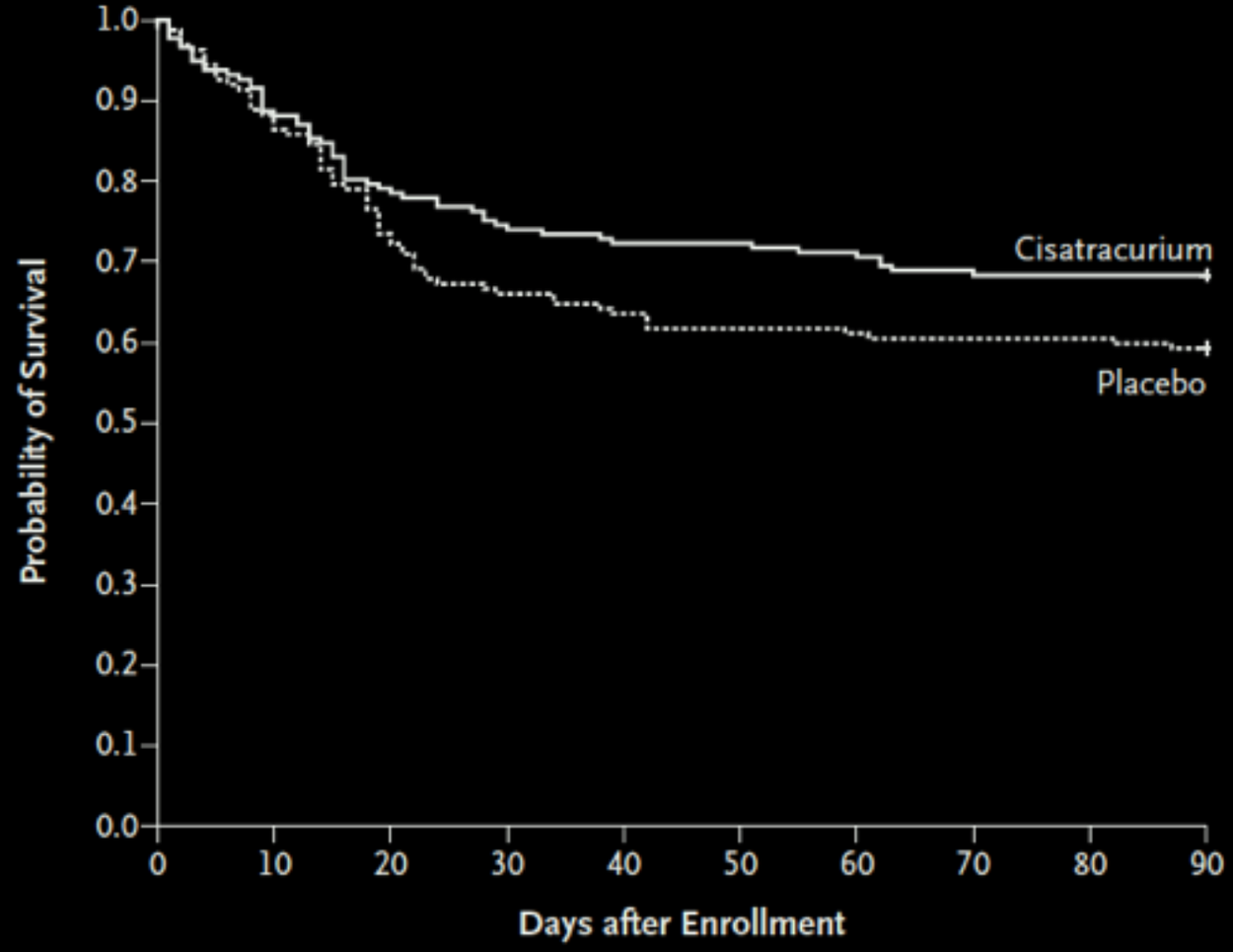
Few patients need deep sedation

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 SEPTEMBER 16, 2010 VOL. 363 NO. 12

Neuromuscular Blockers in Early Acute Respiratory Distress Syndrome

Laurent Papazian, M.D., Ph.D., Jean-Marie Forel, M.D., Arnaud Gacouin, M.D., Christine Penot-Ragon, Pharm.D., Gilles Perrin, M.D., Anderson Loundou, Ph.D., Samir Jaber, M.D., Ph.D., Jean-Michel Arnal, M.D., Didier Perez, M.D., Jean-Marie Seghboyan, M.D., Jean-Michel Constantin, M.D., Ph.D., Pierre Courant, M.D., Jean-Yves Lefrant, M.D., Ph.D., Claude Guérin, M.D., Ph.D., Gwenaël Prat, M.D., Sophie Morange, M.D., and Antoine Roch, M.D., Ph.D., for the ACURASYS Study Investigators*



The NEW ENGLAND JOURNAL of MEDICINE

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Neuromuscular Blockers in Early Acute Respiratory Distress Syndrome

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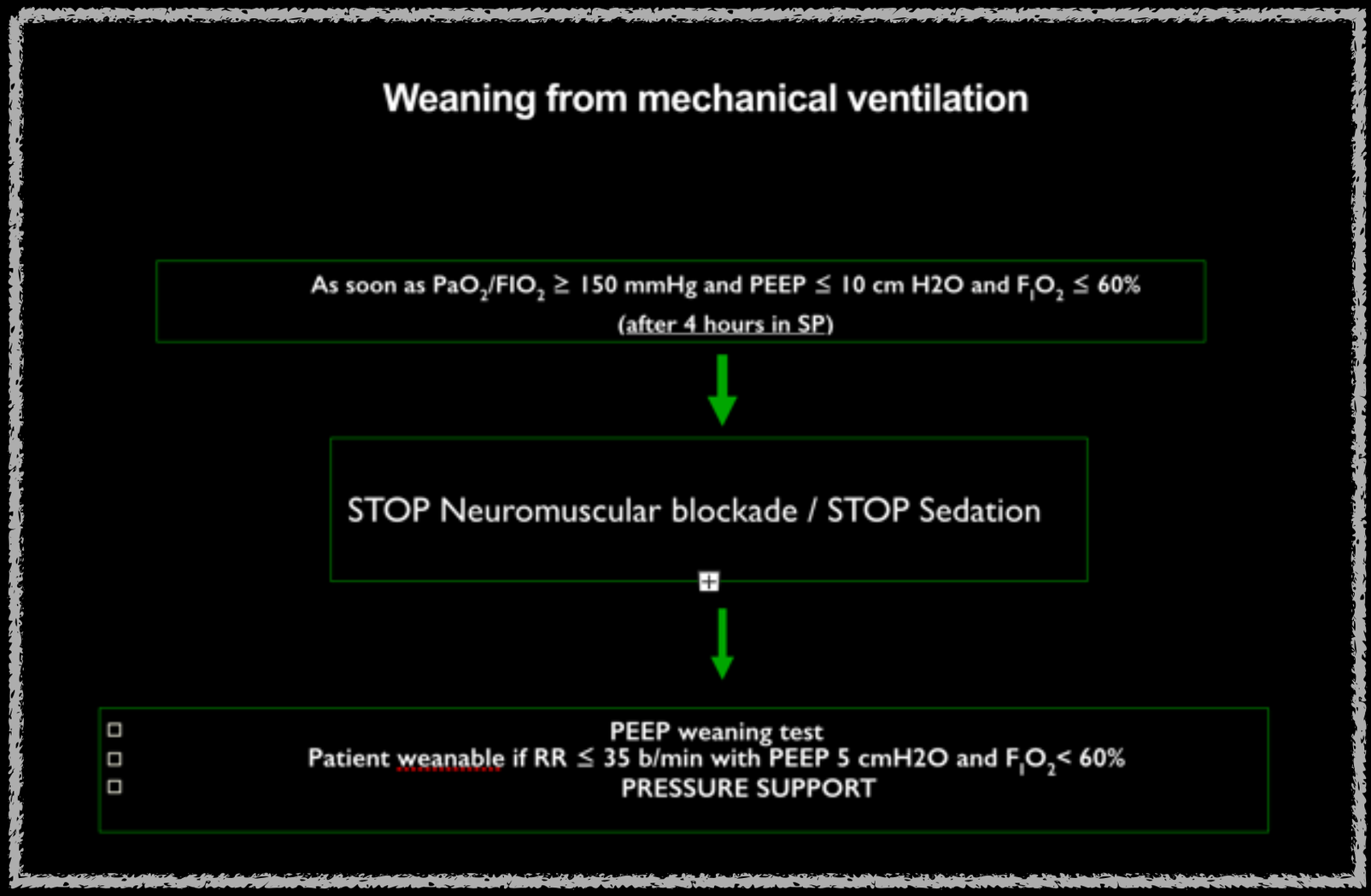


Patients need deep sedation

Short period of time

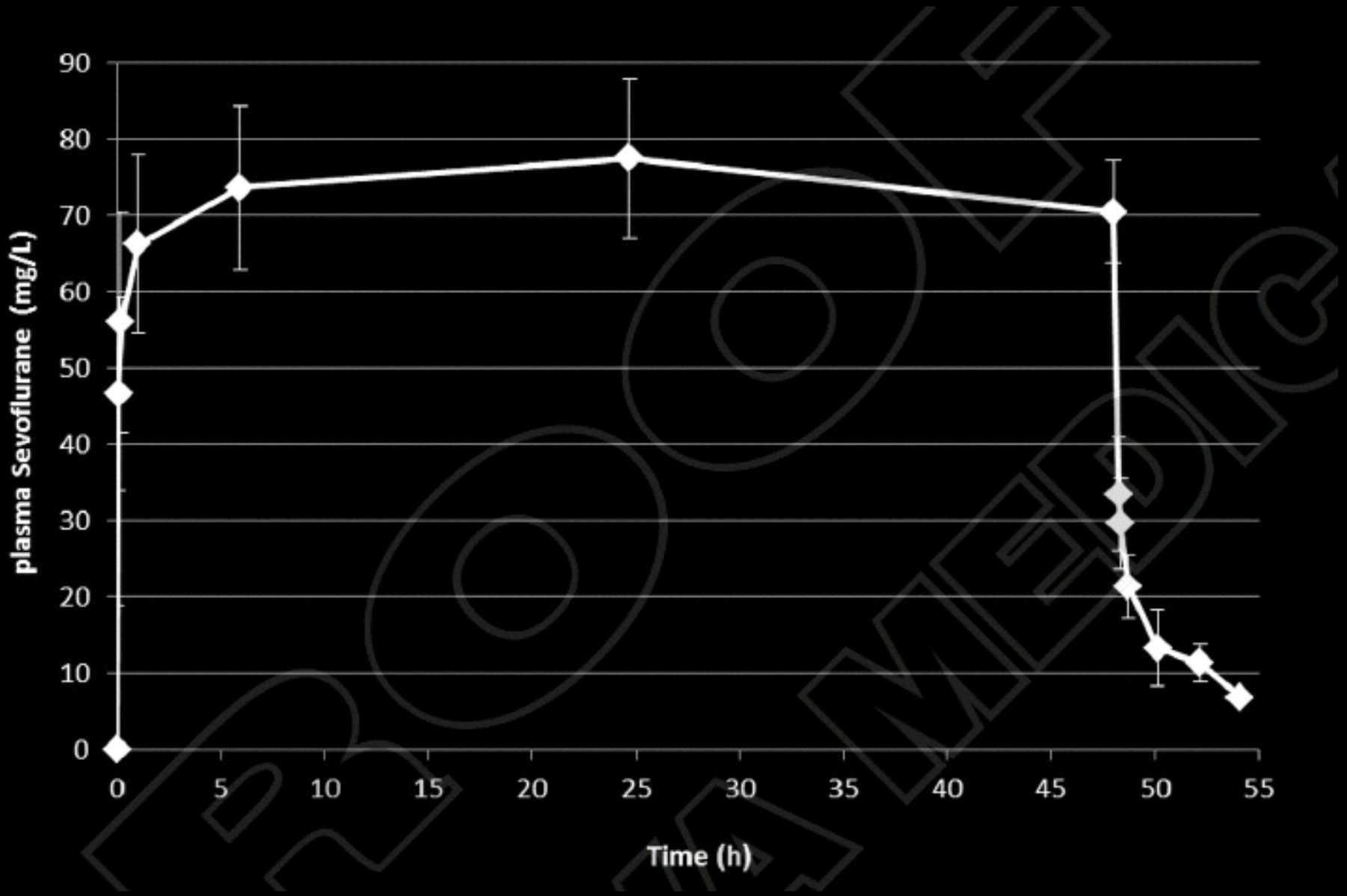
Avoid benzodiazepines

Avoid drugs with accumulation

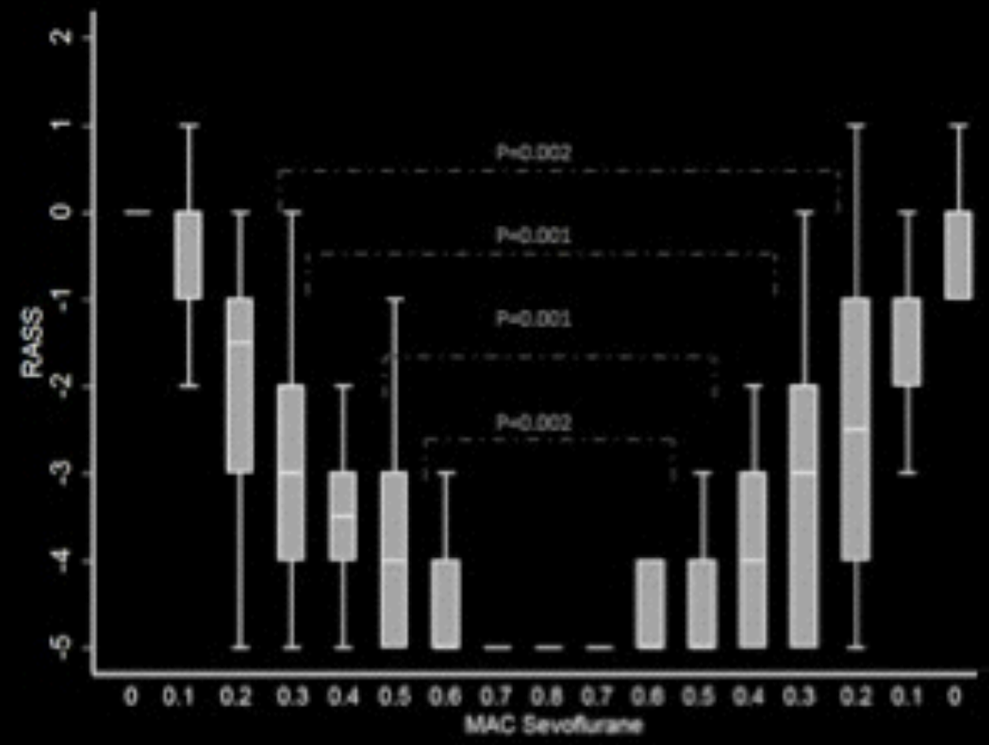
Deep sedation
Wake-up asap

A place for Inhalational sedation ?

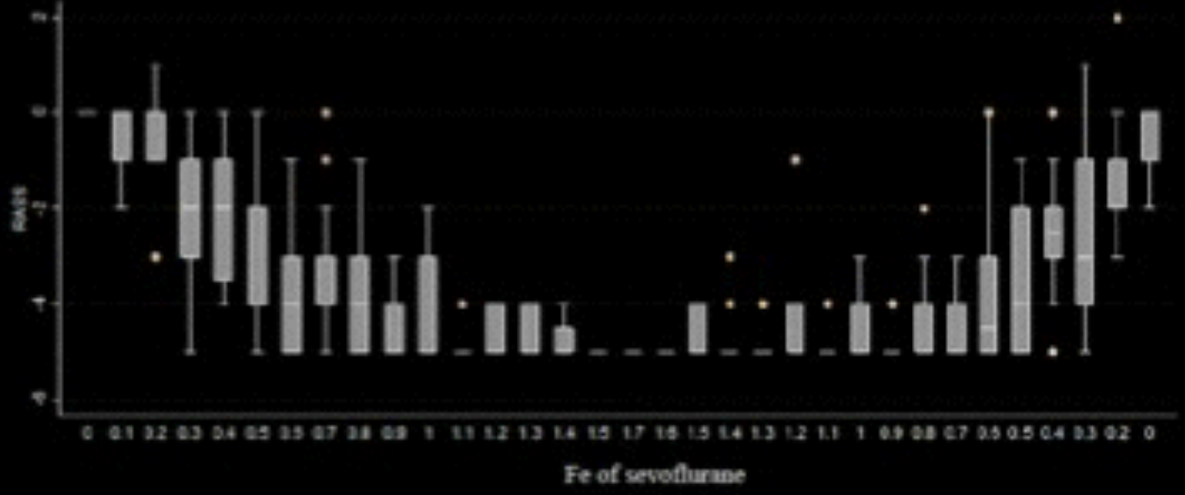
Sevoflurane



Perbet, Minerva 2013



Distribution de l'échelle de RASS pour chaque palier de CAM

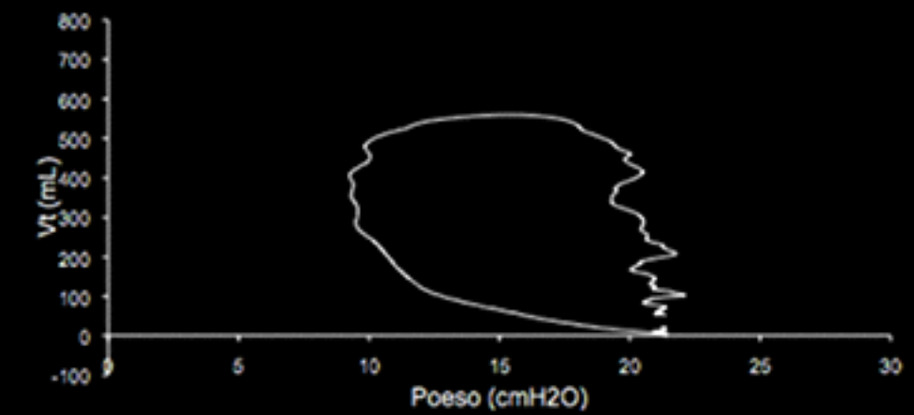


Distribution de l'échelle de RASS pour chaque palier de FeSevo

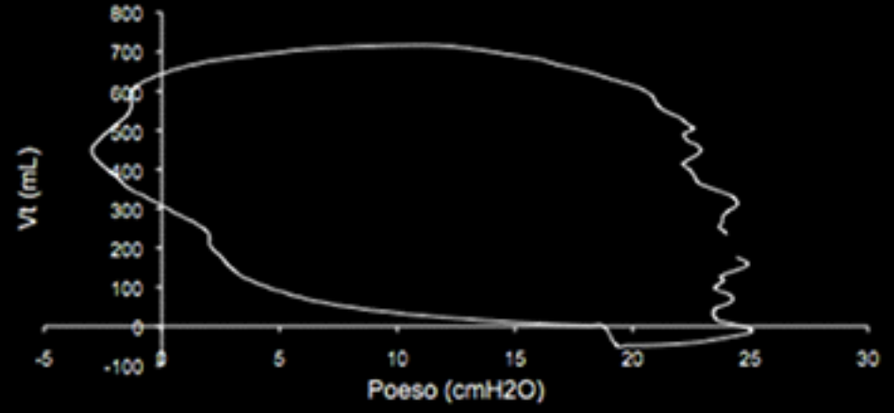
Pressure support ventilation

Sevoflurane

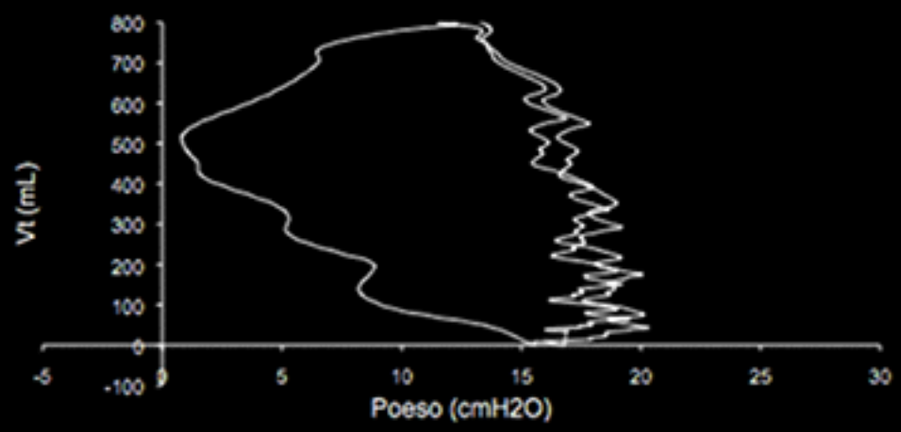
BASELINE



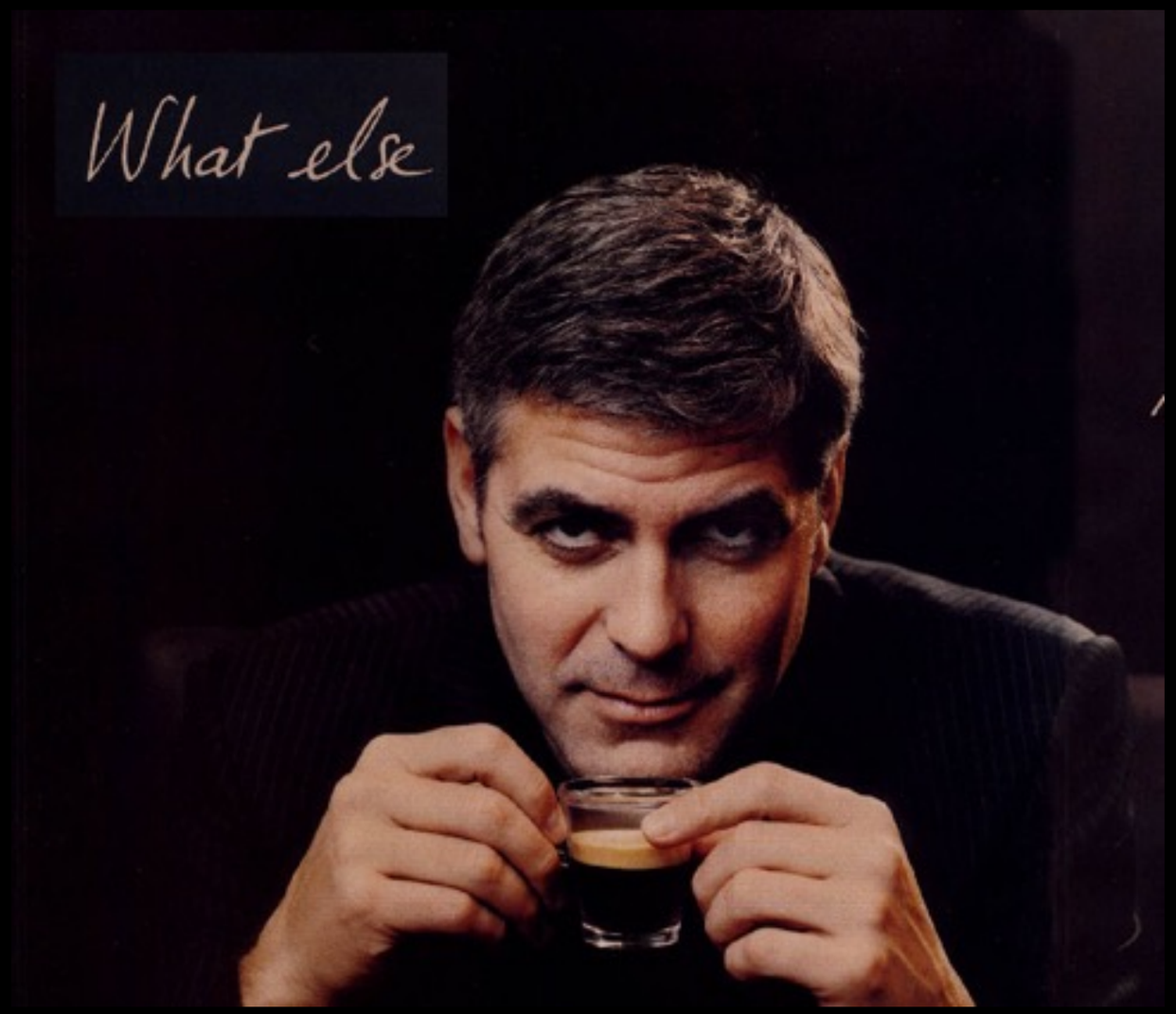
ACD®



ACD®-SEVO

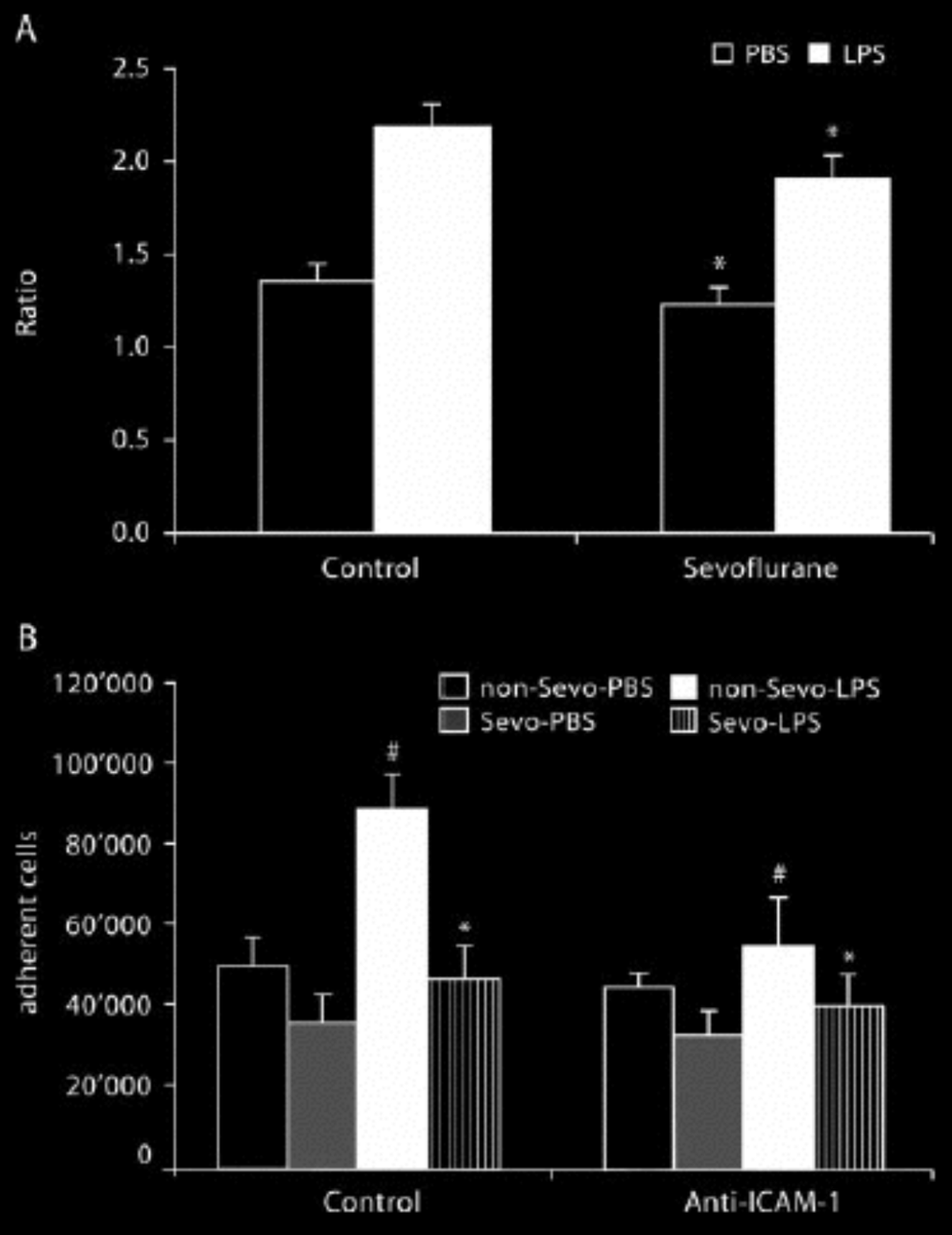


Chabanne, Anesthesio 2014


What else

The Immunomodulatory Effect of Sevoflurane in Endotoxin-Injured Alveolar Epithelial Cells

Suter AA 2007



Clinical & Experimental Immunology
The Journal of Translational Immunology

Clinical and Experimental Immunology ORIGINAL ARTICLE doi:10.1111/j.1365-2249.2012.04562.x

Sevoflurane reduces severity of acute lung injury possibly by impairing formation of alveolar oedema

<u>Type II lung cell (*in vitro*)</u>

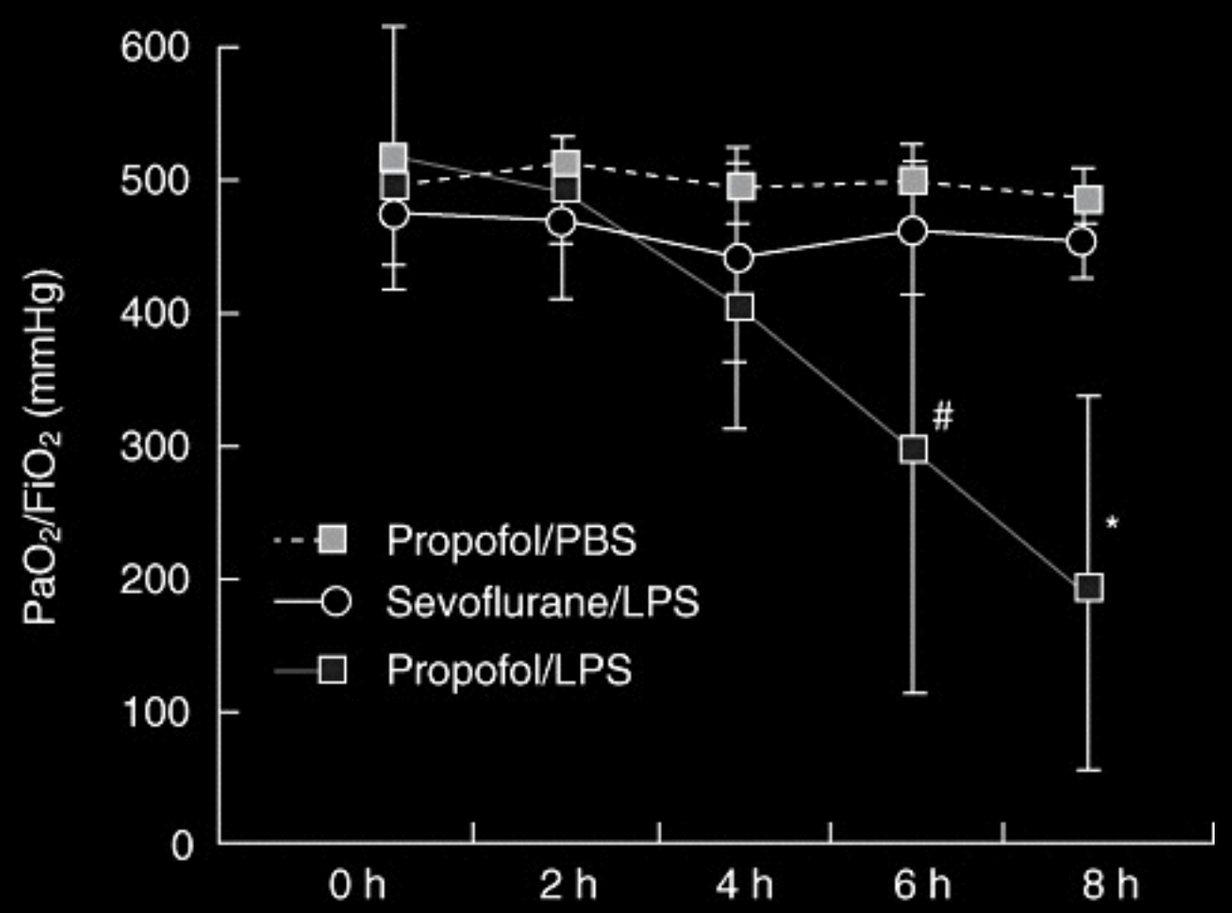
Sevoflurane restaure eNAC et Na/K+ ATPase

ARDS mice moel <u>(*in vivo*)</u>

Increase PaO2/FiO2 ratio

Decrease lung oedema

In vivo:
blood oxygenation



in humans ?

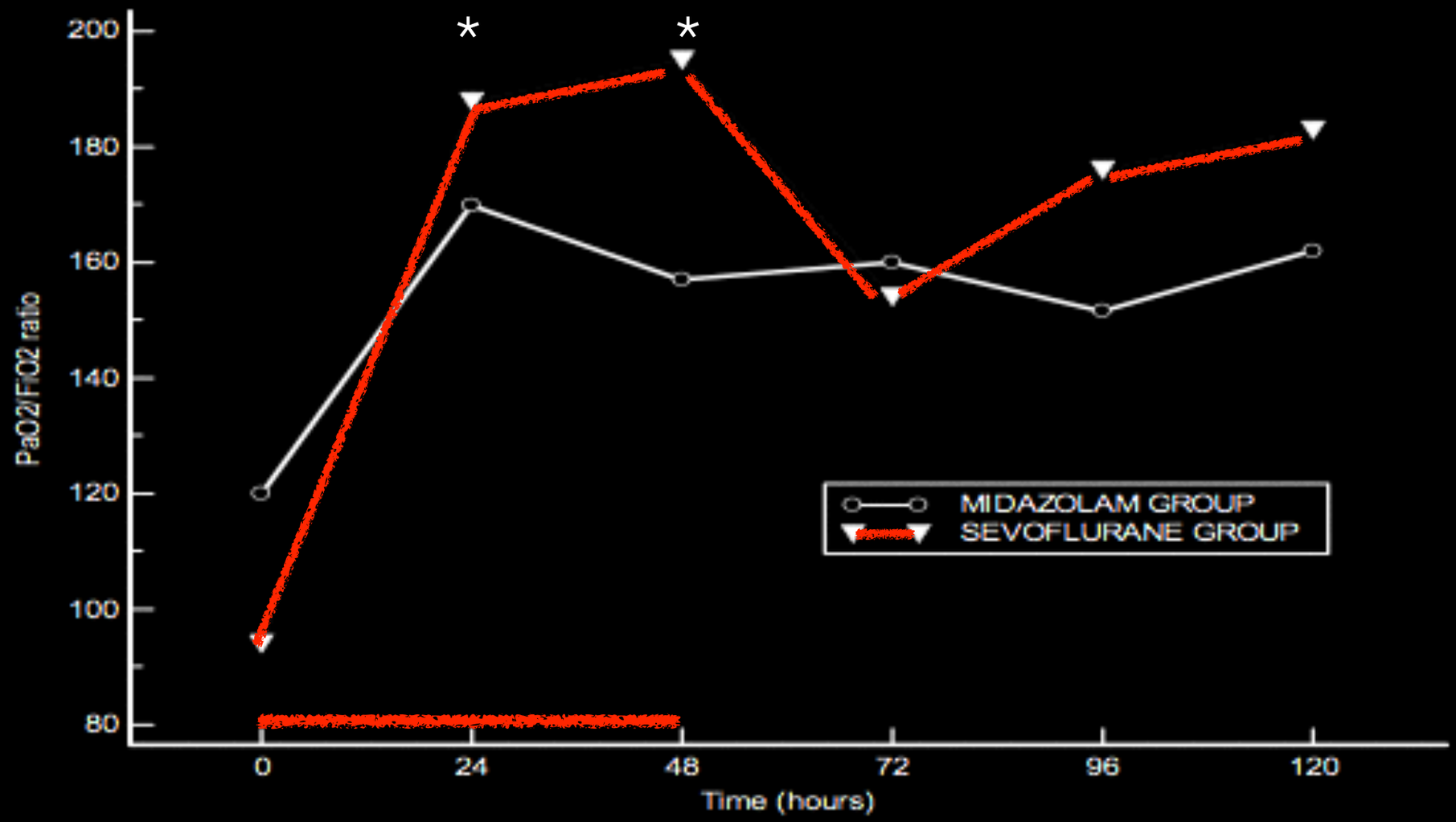
Methods

50 patients (25 each arms)

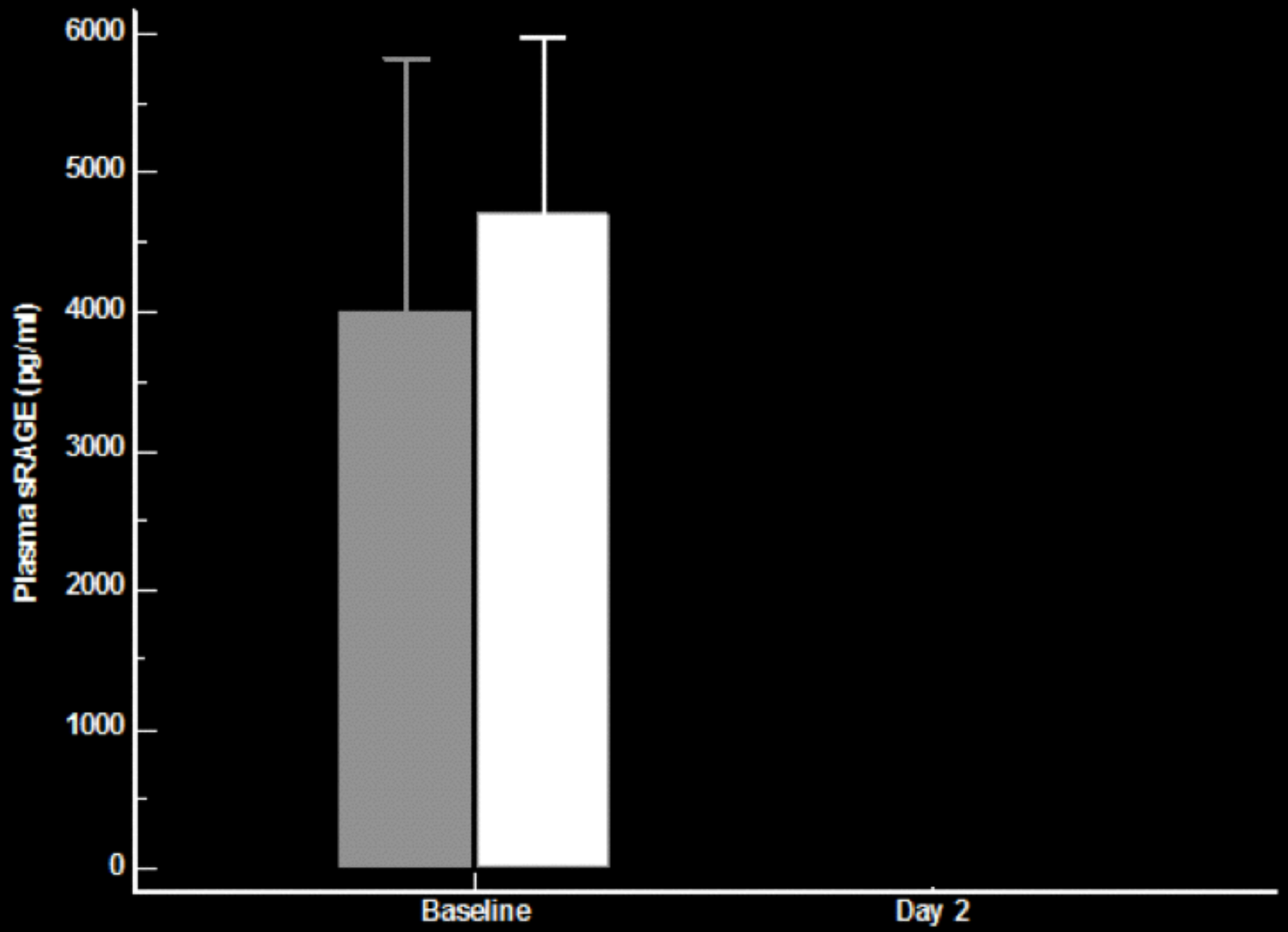
Cis-atracurium during 48 hours

Midazolam versus Sevoflurane

- **Rapports $Pa0_2/FiO_2$**



sRAGE plasmatique à H48



Specific indication for sedation

Yes

Status epilepticus
Intracranial hypertension
Severe respiratory failure with or without neuromuscular blockade

Assess pain and treat with opioid or other drug or technique

No

Pain controlled

Yes

Target sedation to indication:

- Seizure control
- Acceptable intracranial pressure
- Tolerance of hypercarbia or necessary ventilator settings
- No awareness when being treated with neuromuscular blocking agent

Regularly assess the need for this level of sedation

The target sedation level is likely to be best communicated using the RASS scale

No

Assess pain and treat with opioid or other drug or technique

No

Pain controlled

Yes

Assess for delirium

Mainly hyperactive delirium	Mainly hypoactive delirium	No delirium
Yes		
Treat with antidelirium medication (or nonpharmacologic measures)	Treat with nonpharmacologic measures (e.g., physical therapy, earplugs or quiet room, cognitive stimulation, repeated reorientation)	
No		
Delirium controlled		
Yes		

Assess need for sedative medication to achieve target RASS score of −2 to 0 (lightly sedated but responsive at least to voice)

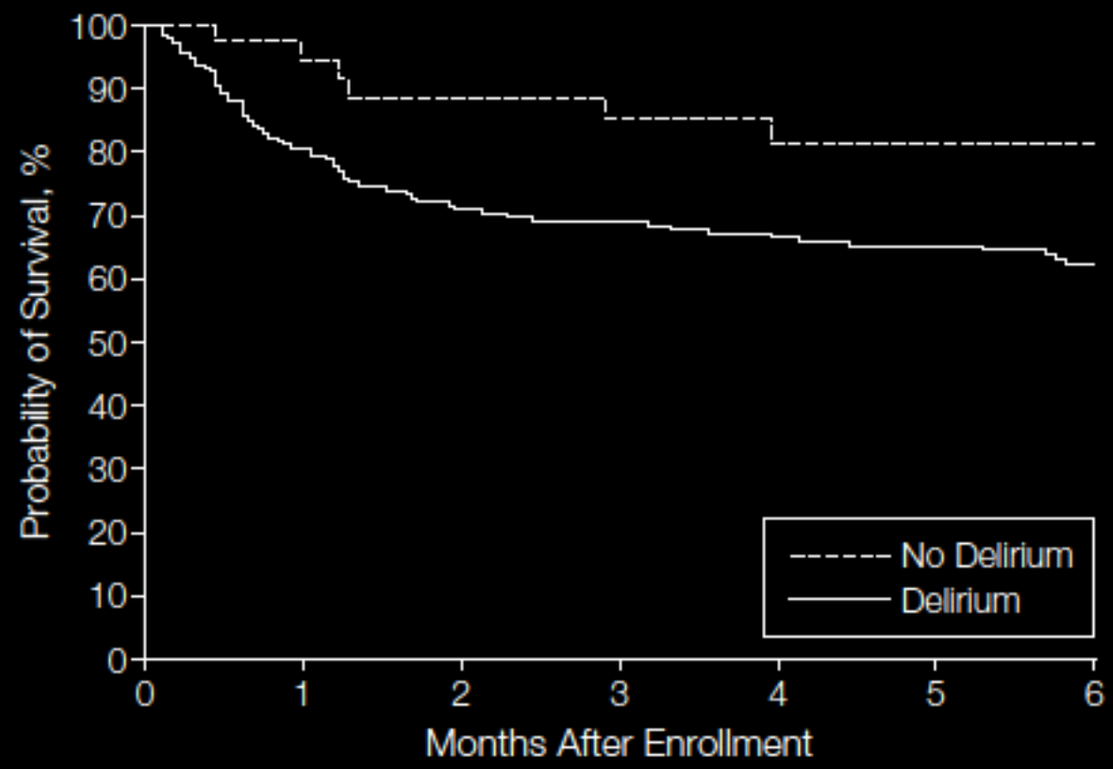
Target sedation to RASS score of −2 to 0	Do not use sedative medication

Reassess analgesic, antidelirium, and sedative requirement regularly (e.g., every 4 hr or with observed change)

Delirium as a Predictor of Mortality in Mechanically Ventilated Patients in the Intensive Care Unit

E. Wesley Ely, MD, MPH

JAMA 2004

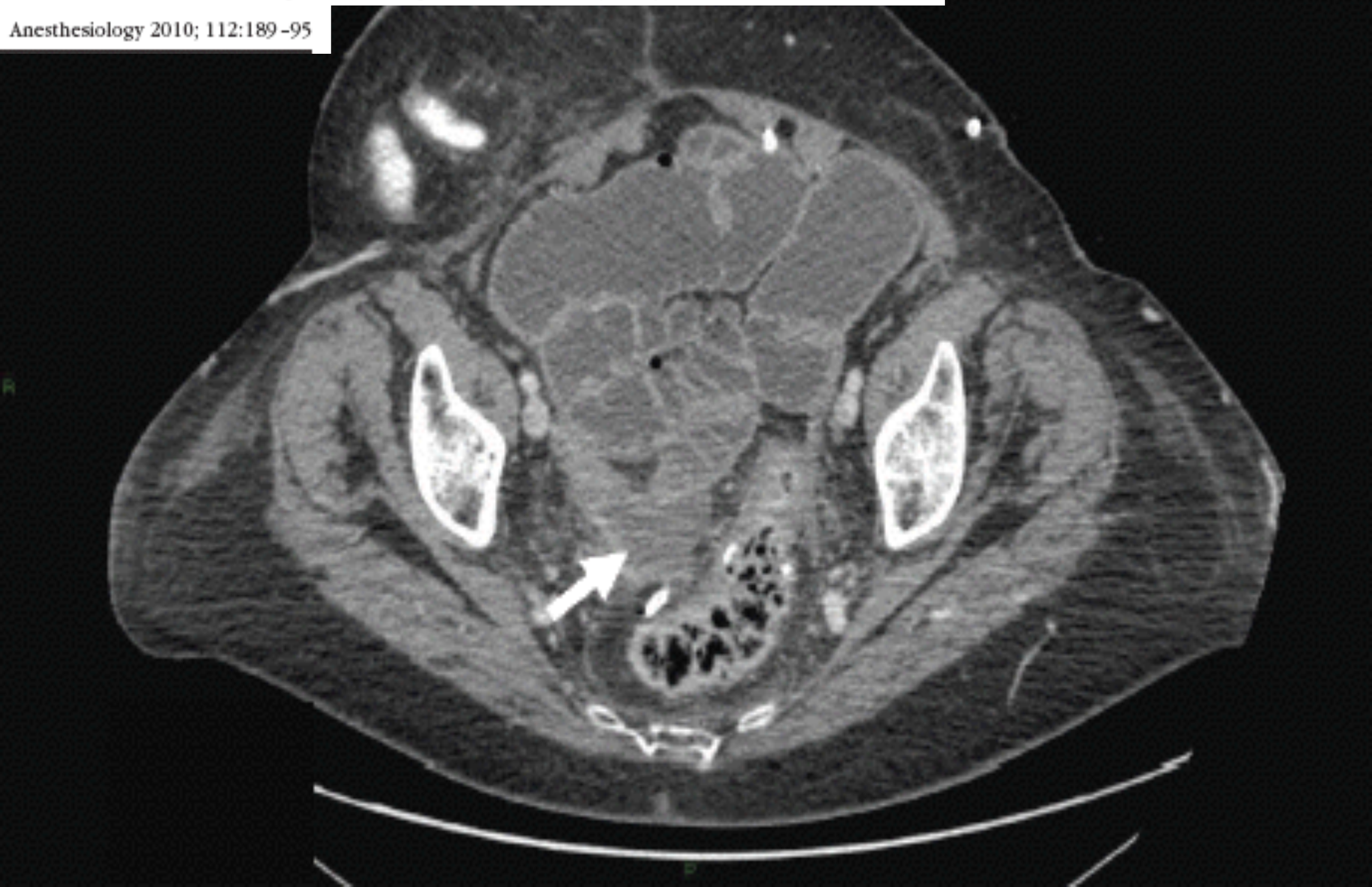


No. at Risk							
No Delirium	41	34	28	25	22	21	19
Delirium	183	138	116	111	104	98	88

Case Scenario: Postoperative Delirium in Elderly Surgical Patients

Jean Mantz, M.D., Ph.D.,* Hugh C. Hemmings, Jr., M.D., Ph.D.,† Jacques Boddaert, M.D., Ph.D.‡

Anesthesiology 2010; 112:189–95



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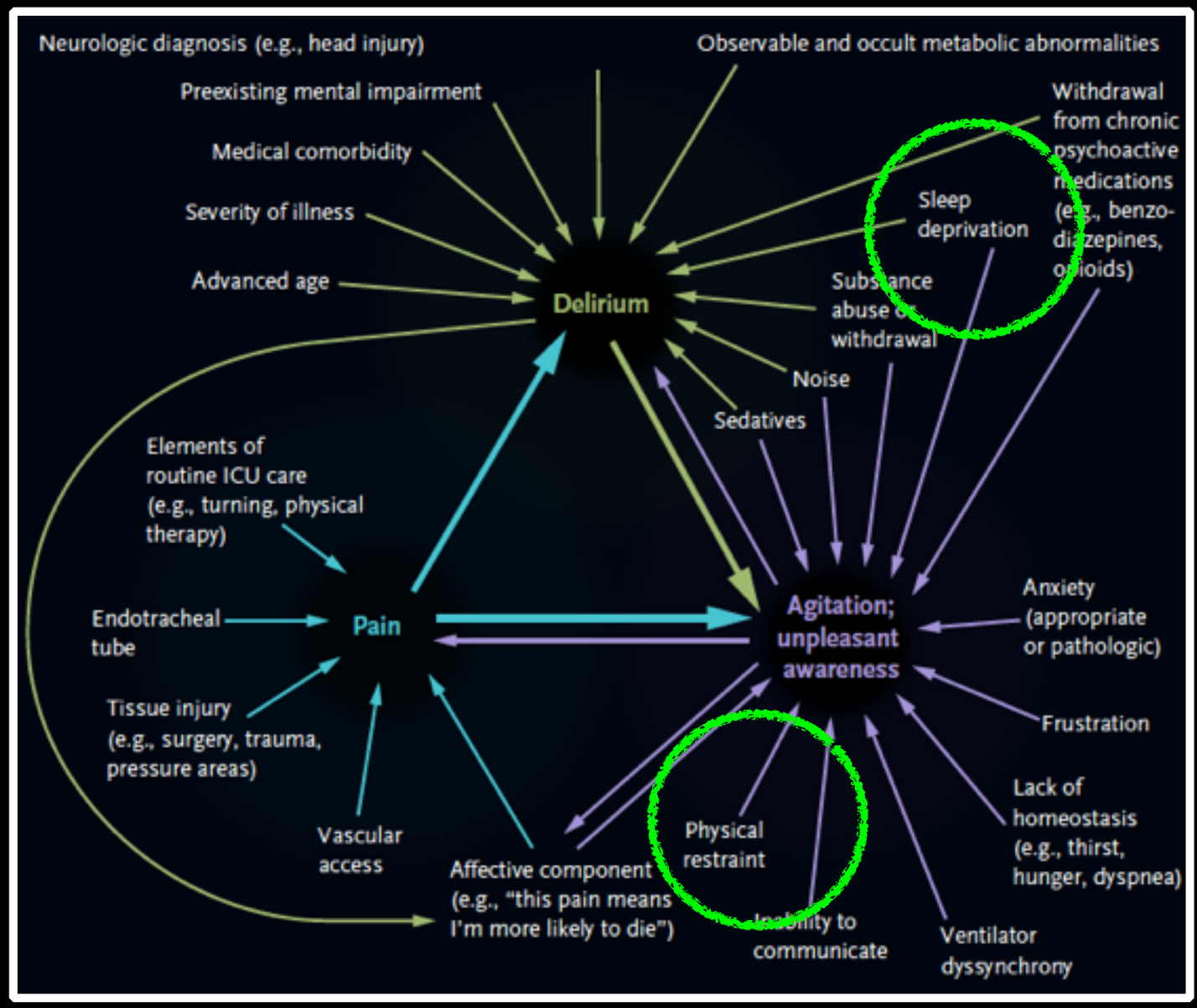
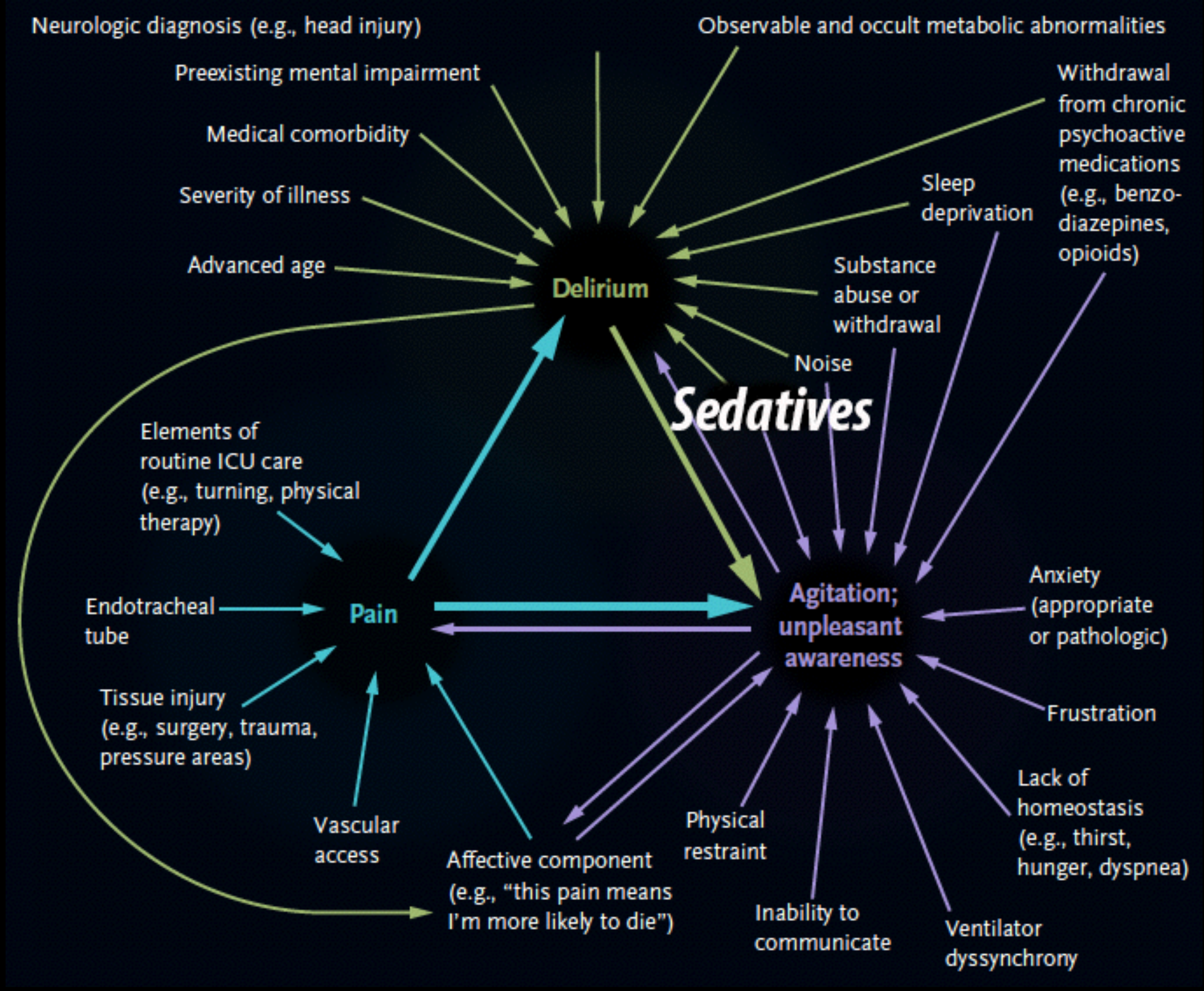
http://www.icudelirium.org/delirium/monitoring.html



Reade et al. *Nejm* 2014



Reade et al. *Nejm* 2014

Sédation coopérative

Sédation coopérative

Quelle Molécule ?

Dexmédétomidine

Sédation coopérative

Quelle Molécule ?

NO Sédation

A protocol of no sedation for critically ill patients receiving mechanical ventilation: a randomised trial

Thomas Strøm, Torben Martinussen, Palle Toft

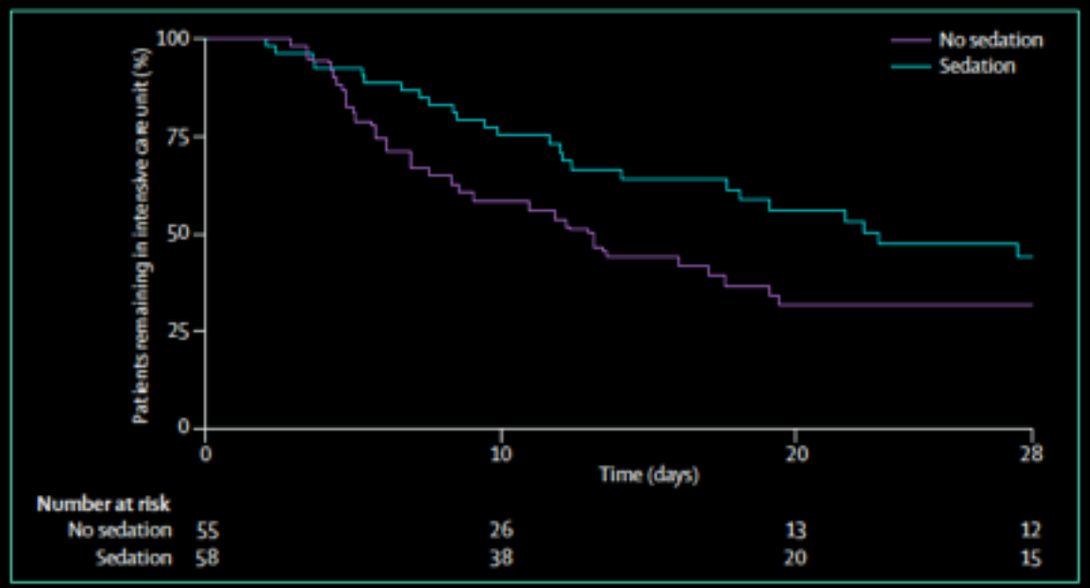


Figure 2: Kaplan-Meier plot of length of stay in the intensive care unit and number at risk from admission to 28 days

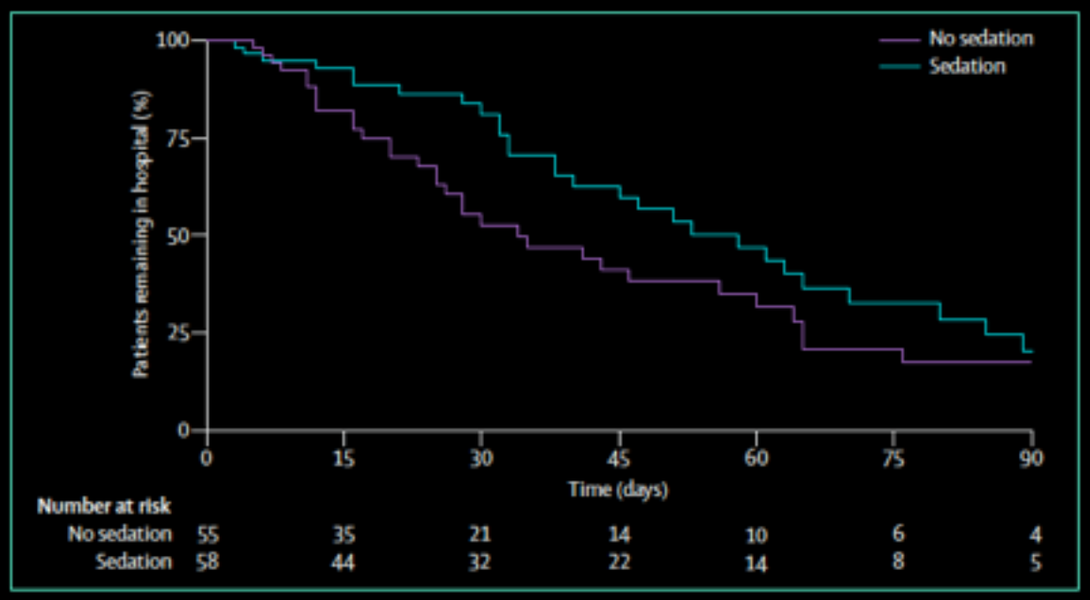
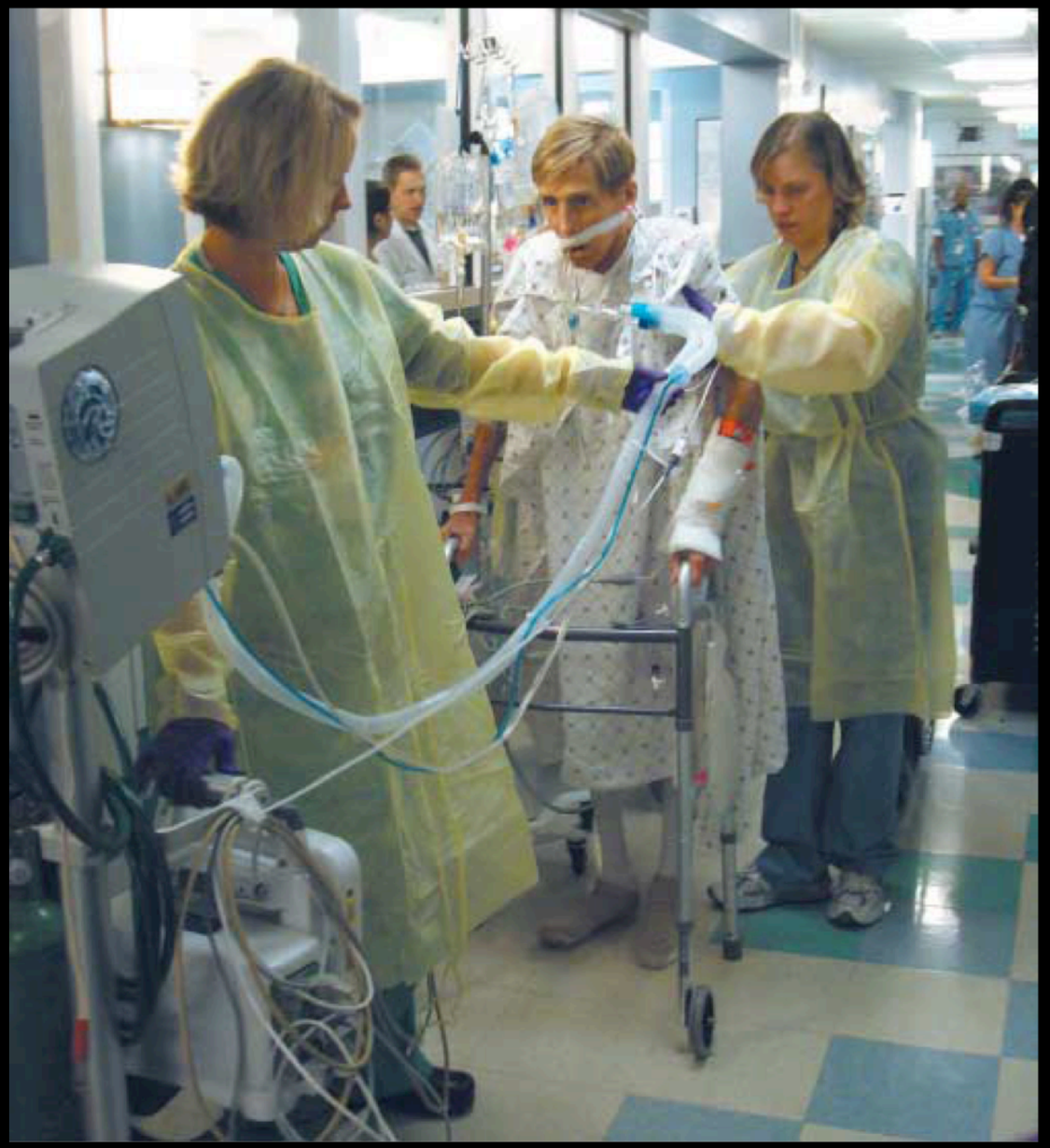


Figure 3: Kaplan-Meier plot of length of stay in hospital and number at risk from admission to 90 days

Lancet 2010

Réhabilitation précoce en Réanimation



"All the News That's Fit to Print"

The New York Times

Washington Edition

Today, a mix of sun and clou highs in low 40s. Tonight, par cloudy, lows around 30. Tomorro thickening clouds, colder late, hig in low 40s. Weather map, Page

VOL. CLVIII .... No. 54,553 © 2009 The New York Times MONDAY, JANUARY 12, 2009 $1.5

New Idea to Cut I.C.U. Trauma: Get Patients Up, Tubes and All

By GINA KOLATA

For years, doctors thought they had done their jobs if patients came out of an intensive care unit alive.

Now, though, researchers say they are alarmed by what they are finding as they track patients for months or years after an I.C.U. stay. Patients, even young ones, can be weak for years. Some have difficulty thinking and concentrating or have post-traumatic stress disorder and terrible memories of nightmares they had while heavily sedated.

While patients may be suffering lingering effects from illnesses that brought them to the I.C.U., researchers are increasingly convinced that spending days, weeks or months on life support in the units can elicit unexpected, long-lasting effects.

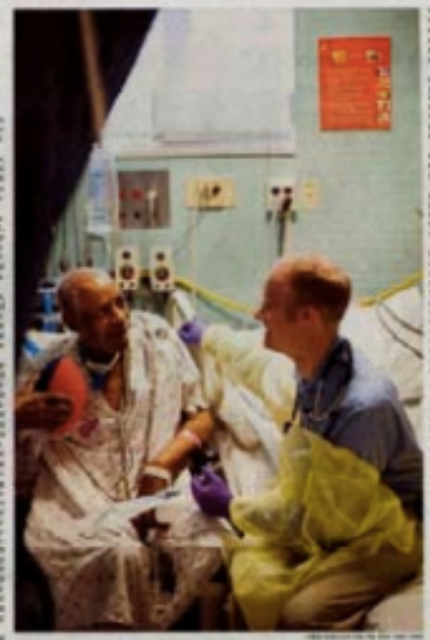
So now some I.C.U.'s are trying what seems like a radical solution: reducing sedation levels and getting patients up and walking even though they are gravely ill, complete with feeding tubes, intravenous lines and tethers to ventilators.

Even a few days in an I.C.U. can be physically devastating immediately afterward, said Dr. Naeem Ali of Ohio State Universi-

Continued on Page A11

New Approach to Cut Trauma From I.C.U.: Get Patients Walking

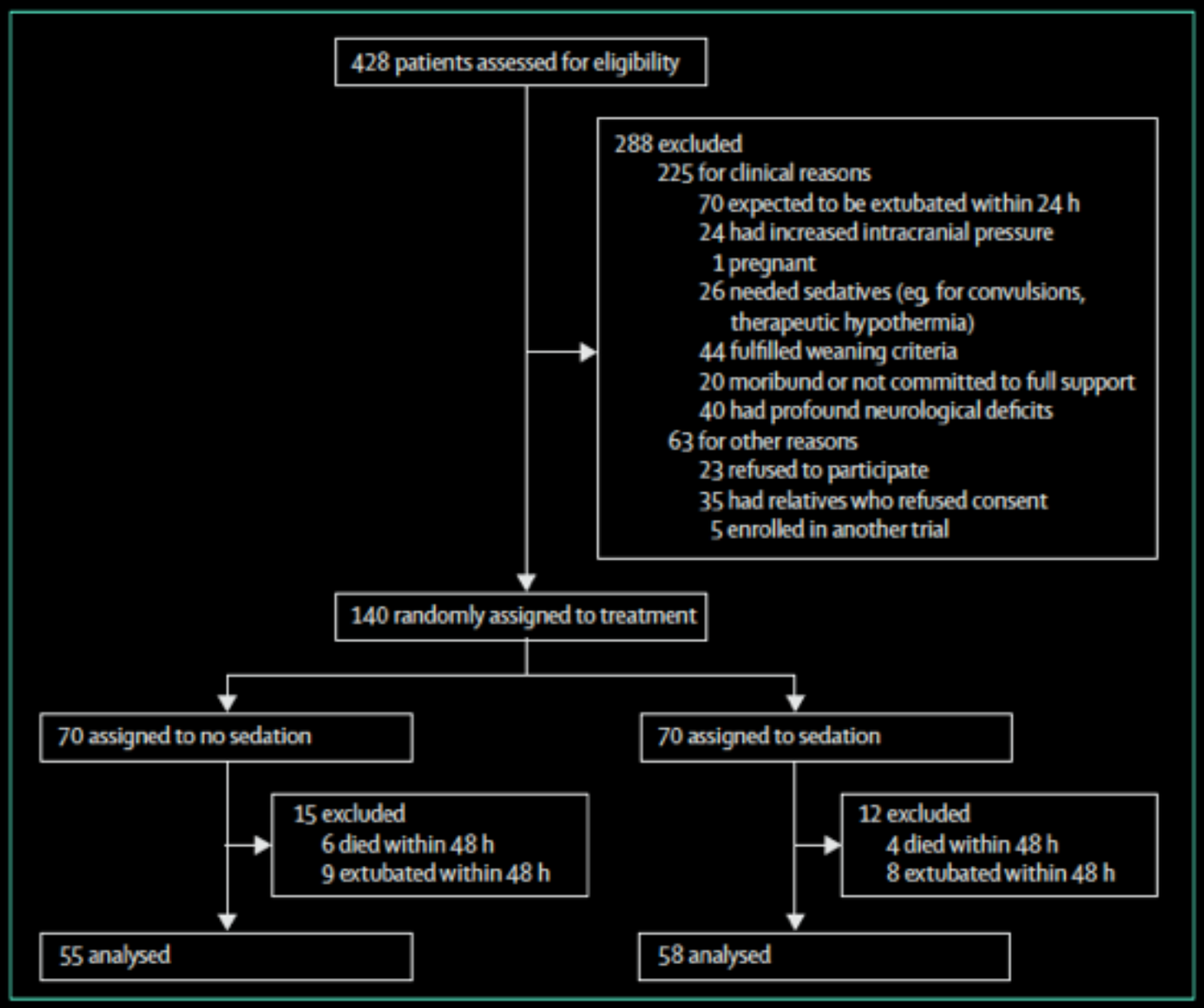
Alarming findings in the tracking of patients for years.




Sédation ?

A protocol of no sedation for critically ill patients receiving mechanical ventilation: a randomised trial

Thomas Strøm, Torben Martinussen, Palle Toft



Lancet 2010

A protocol of no sedation for critically ill patients receiving mechanical ventilation: a randomised trial

Thomas Strøm, Torben Martinussen, Palle Toft

	No sedation (n=55)
Days without mechanical ventilation (from intubation to day 28)	13·8 (11·0); 18·0 (0–2
Length of stay (days)	
Intensive care unit	13·1 (5
Hospital	-
Mortality	
Intensive care unit	
Hospital	
Drug doses (mg/kg)‖	
Propofol (per h of infusion)**	
Midazolam (per h of infusion	<0·0001
Morphine (per h of m	0·39
Haloperidol (r	0·0140
Tracheo	0·98
V	(12%) 0·85

Data a d for baseline variables: age, sex, weight, acute physiology and chro n-failure assessment (SOFA) at day 1. †Calculated from multiple linear regr ys (figure 2). §Calculated from Cox regression analysis. ¶Calculated for the first 30 d portion of bodyweight (kg). **Maximum dose during 48 h of treatment.

Table 2: Outcom

Morphine 8mg/h
Propofol 30%

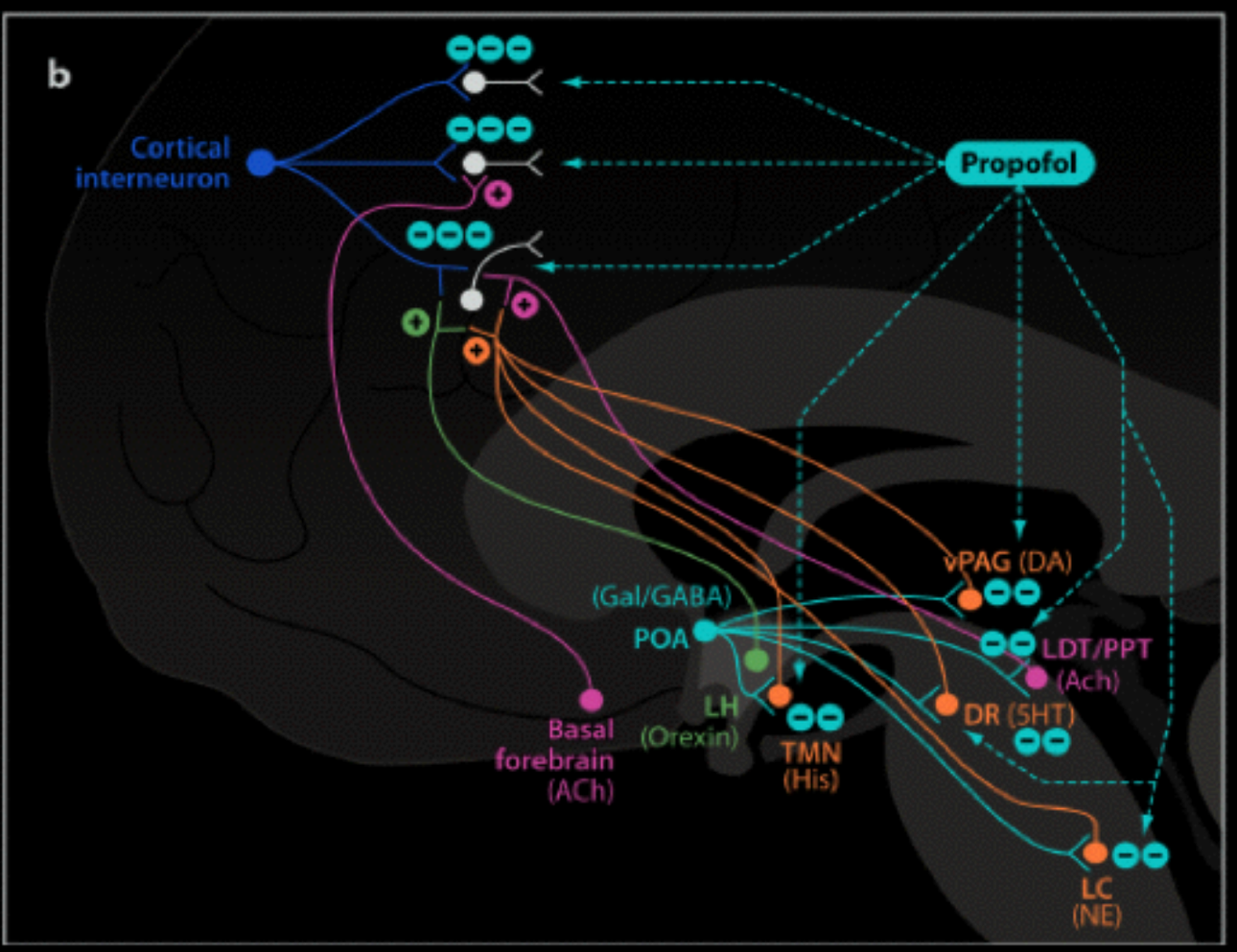
Lancet 2010

Il faut sédater les patients

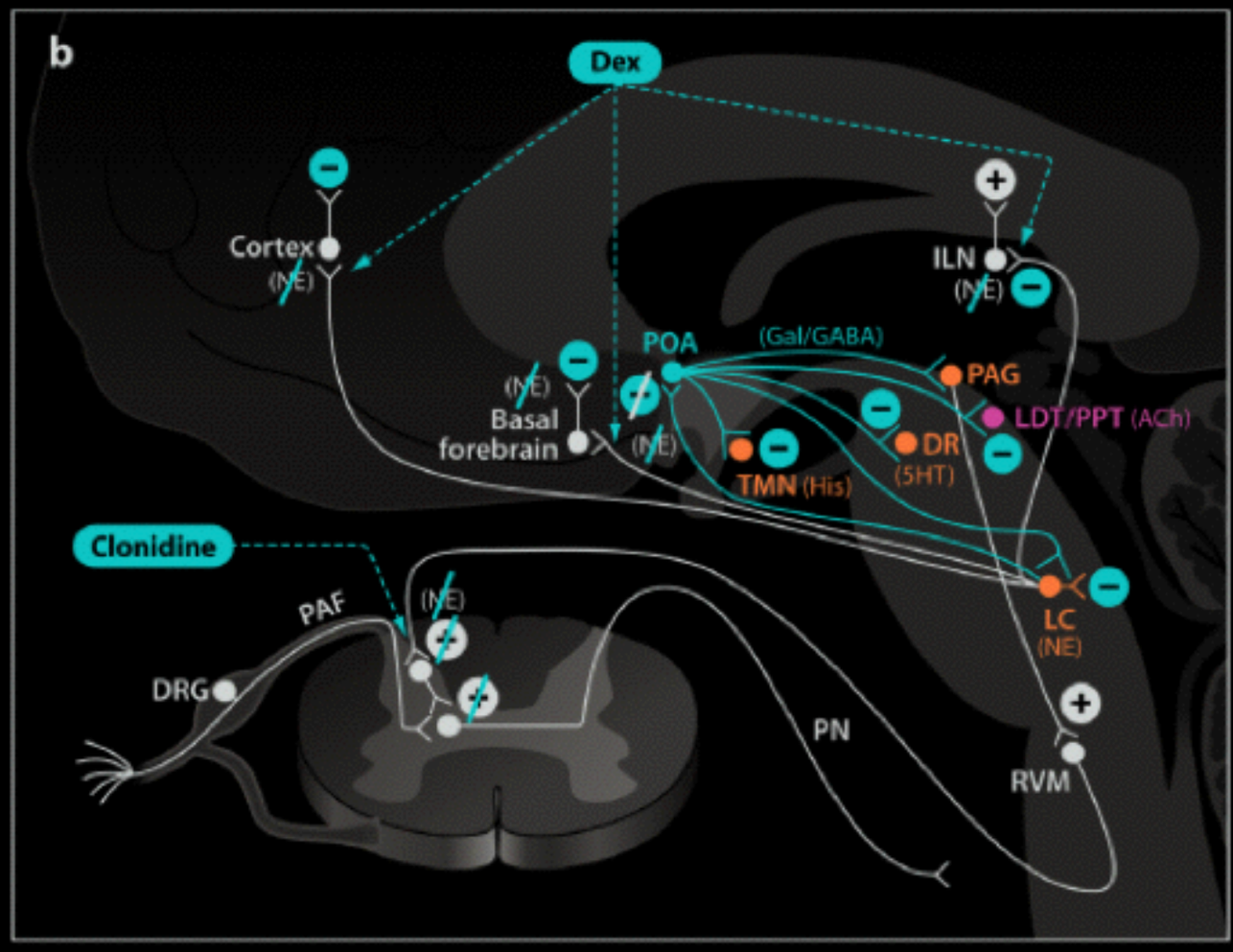
Sédation légère

Sédation Coopérative

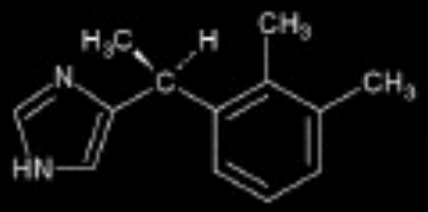
Dexmédétomidine



GABA



α2 agoniste



Propriétés pharmacologiques

- Agoniste des récepteurs α2-adrénergiques (affinité x 8/ clonidine): inhibition de la libération de noradrénaline (locus coeruleus)
- Effet sédatif, anxiolytique et analgésique **indépendant du récepteur GABA**
- Effet sympatholytique: ↓PA ↓FC
- Efficace dans le syndrome de sevrage morphinique
- **Pas de dépression respiratoire**
- Liaison protéines 94 %; Métabolisme hépatique (CYP450)-élimination rénale (métabolites)

Pharmacocinétique

Pharmacocinétique linéaire; $t_{1/2}\alpha$=6 min; Vd=118 L $t_{1/2}$= 2 h

Pas d'influence de l'âge et du sexe

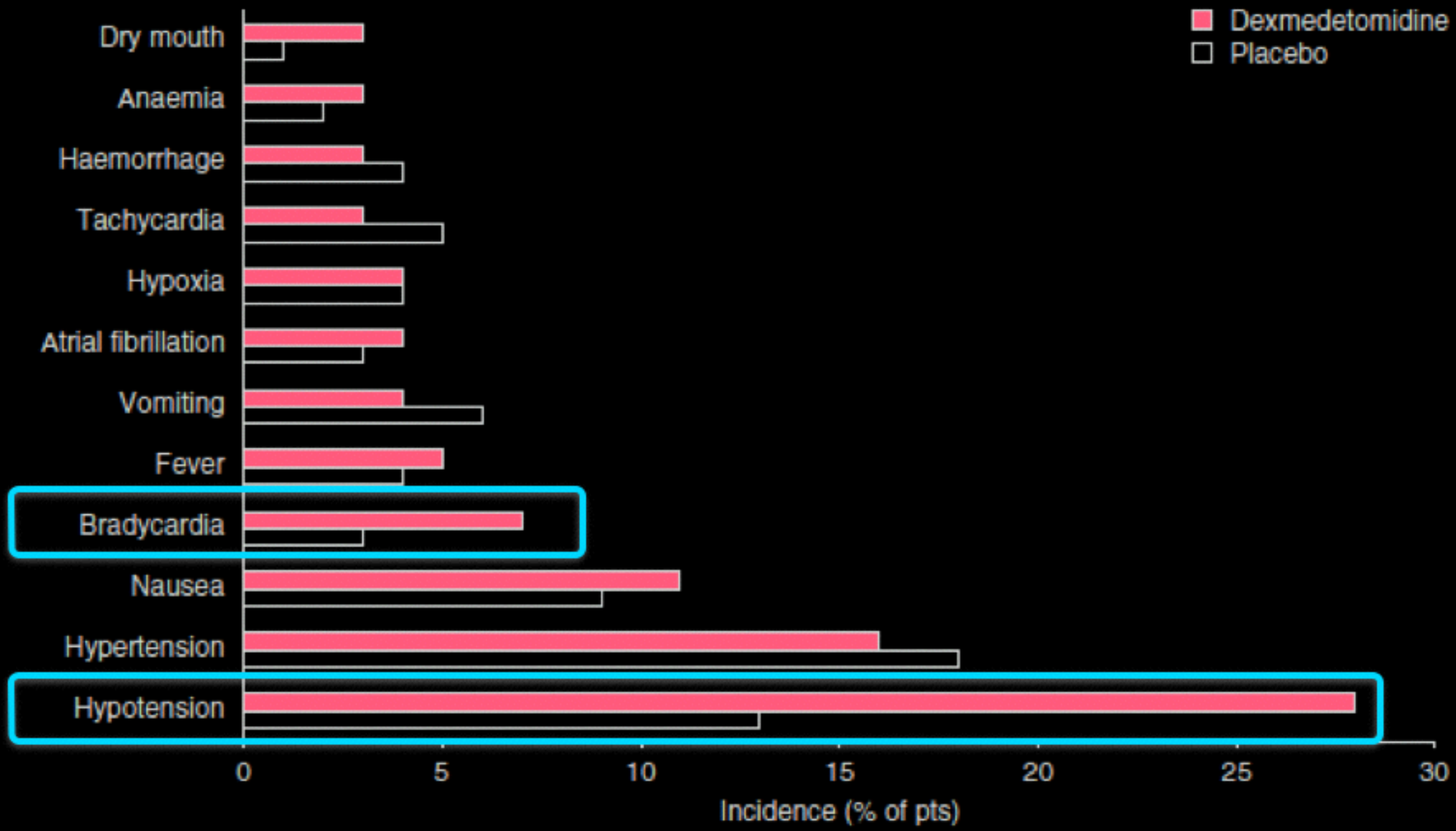
Pas de modification de la ½ vie en cas d'insuffisance rénale sévère

Diminution de la clairance en cas d'insuffisance hépatique

Pas d'interaction médicamenteuse significative

Dose: *Pas de bolus*; 0,2 à 1,4 µg/kg/heure

Effets secondaires



SM Hoy et al. Drugs 2011

Contre-indications

- Hypersensibilité à la substance active
- Bloc cardiaque avancé (niveau 2 ou 3) sauf si pacemaker.
- Hypotension non-contrôlée.
- Pathologies cérébrovasculaires aiguës.

Population à risque

- Sujets agés: Aucun ajustement de la dose n'est nécessaire chez le sujet âgé.

- Insuffisants rénaux: Aucun ajustement de la dose n'est nécessaire.

- Insuffisants hépatiques: Dexdor est métabolisé au niveau hépatique et devrait être utilisé avec précaution chez les insuffisant hépatique.

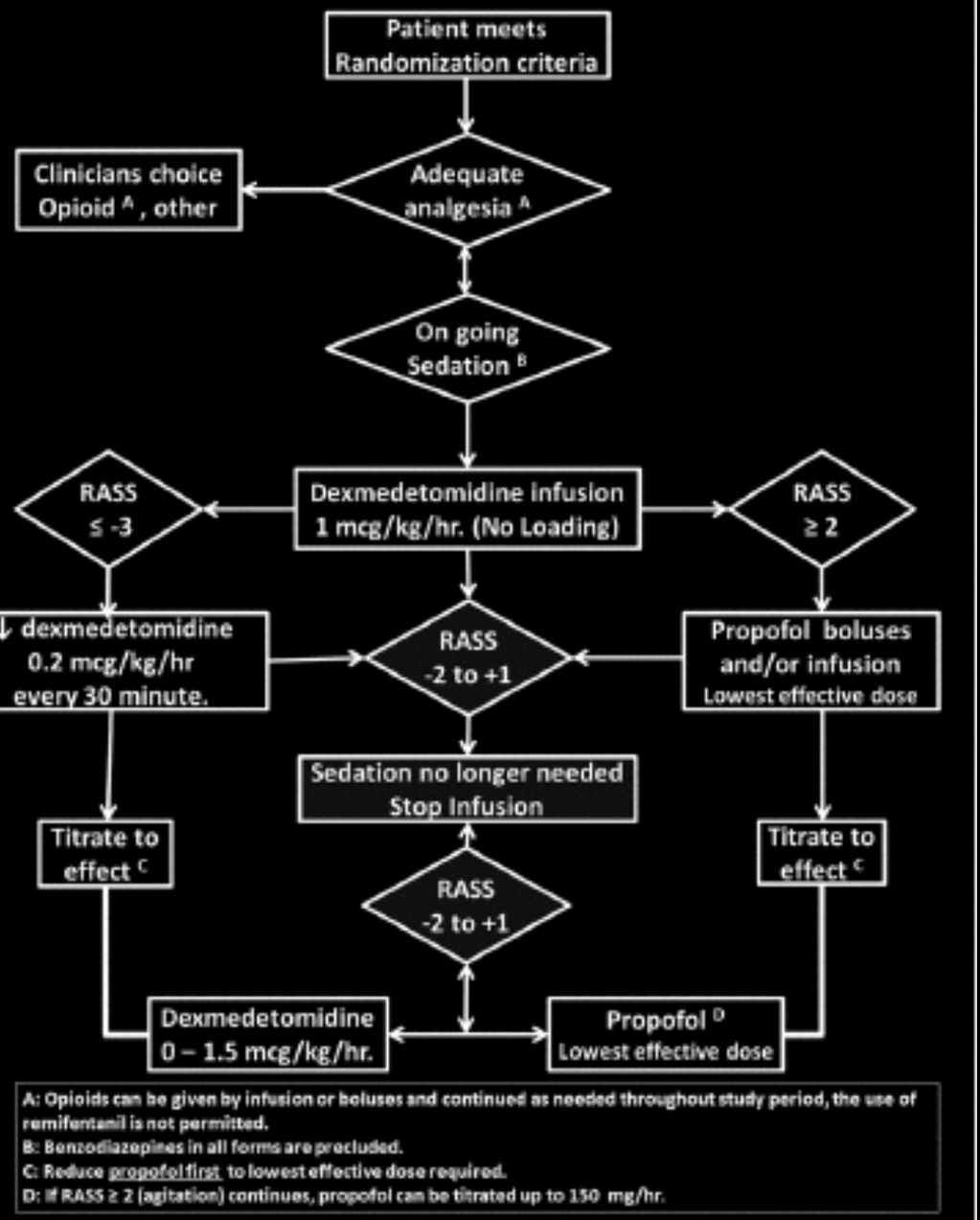
Indications ?

Mieux ?

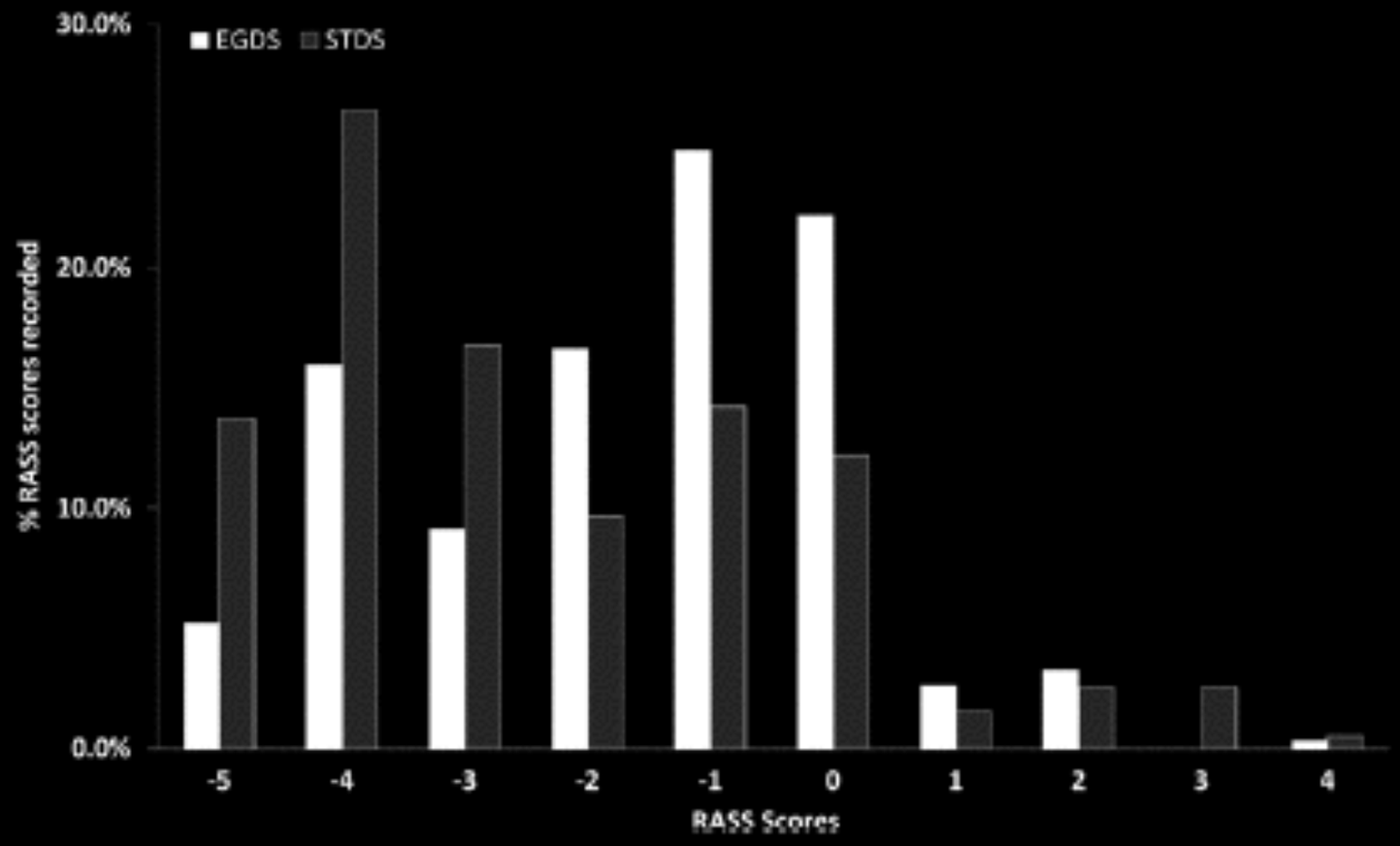
Est-ce que la Dexmédétomidine favorise la sédation légère ?

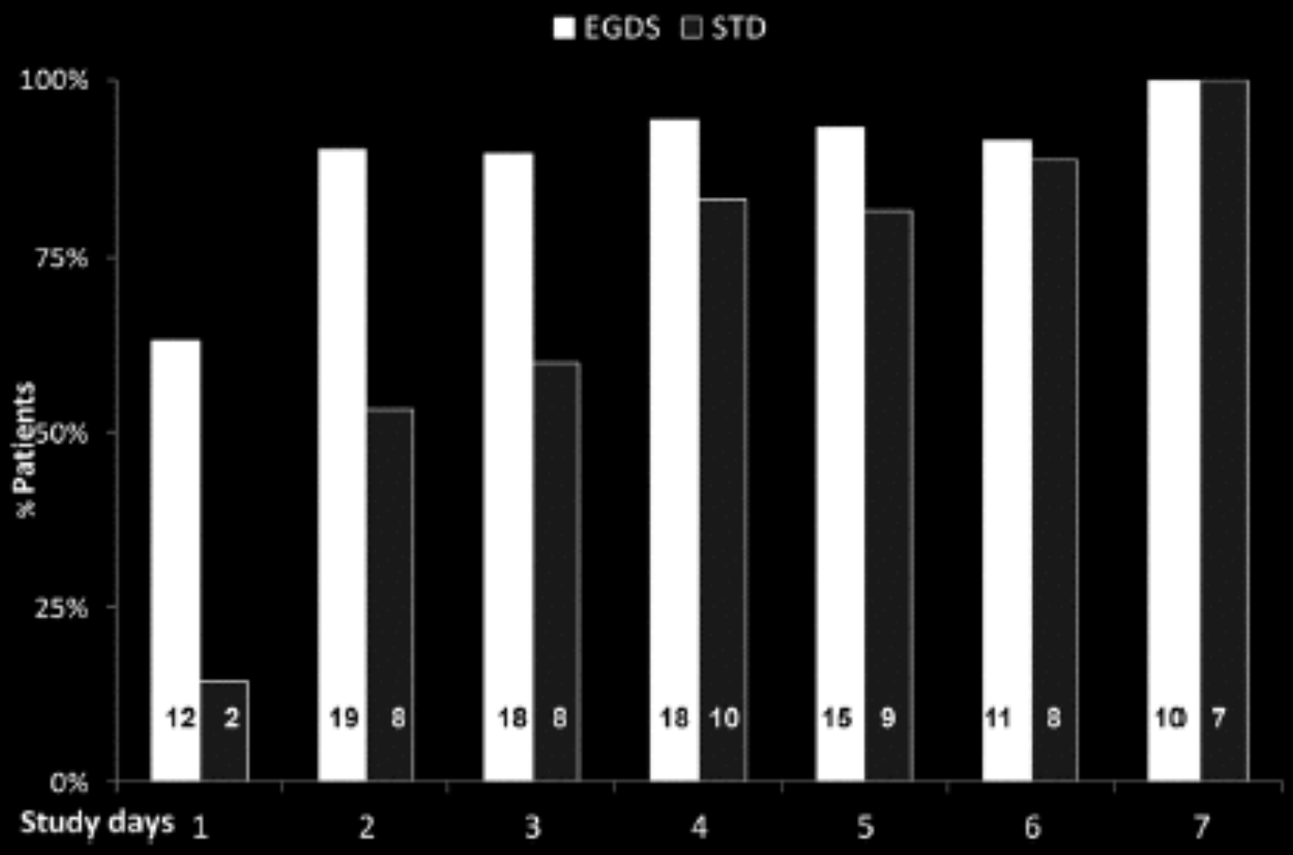
Early Goal-Directed Sedation Versus Standard Sedation in Mechanically Ventilated Critically Ill Patients: A Pilot Study*

Yahya Shehabi, FCICM, FANZCA, EMBA[1,2,3]; Rinaldo Bellomo, MD, FCICM, FRACP[2,3]; Michael C. Reade, MBBS, MPH, DPhil, FCICM[4]; Michael Bailey, PhD[3]; Frances Bass, RN, BN, GDipICU[5]; Belinda Howe, RN, BN[3]; Colin McArthur, FANZCA, FCICM[3,6]; Lynne Murray, FAIMS[3]; Ian M. Seppelt, MBBS, FANZCA, FCICM[7]; Steve Webb, MPH, PhD, FCICM[3,8]; Leonie Weisbrodt, RN, BN, MN(Hons)[9]; for the Sedation Practice in Intensive Care Evaluation (SPICE) Study Investigators and the Australian and New Zealand Intensive Care Society (ANZICS) Clinical Trials Group

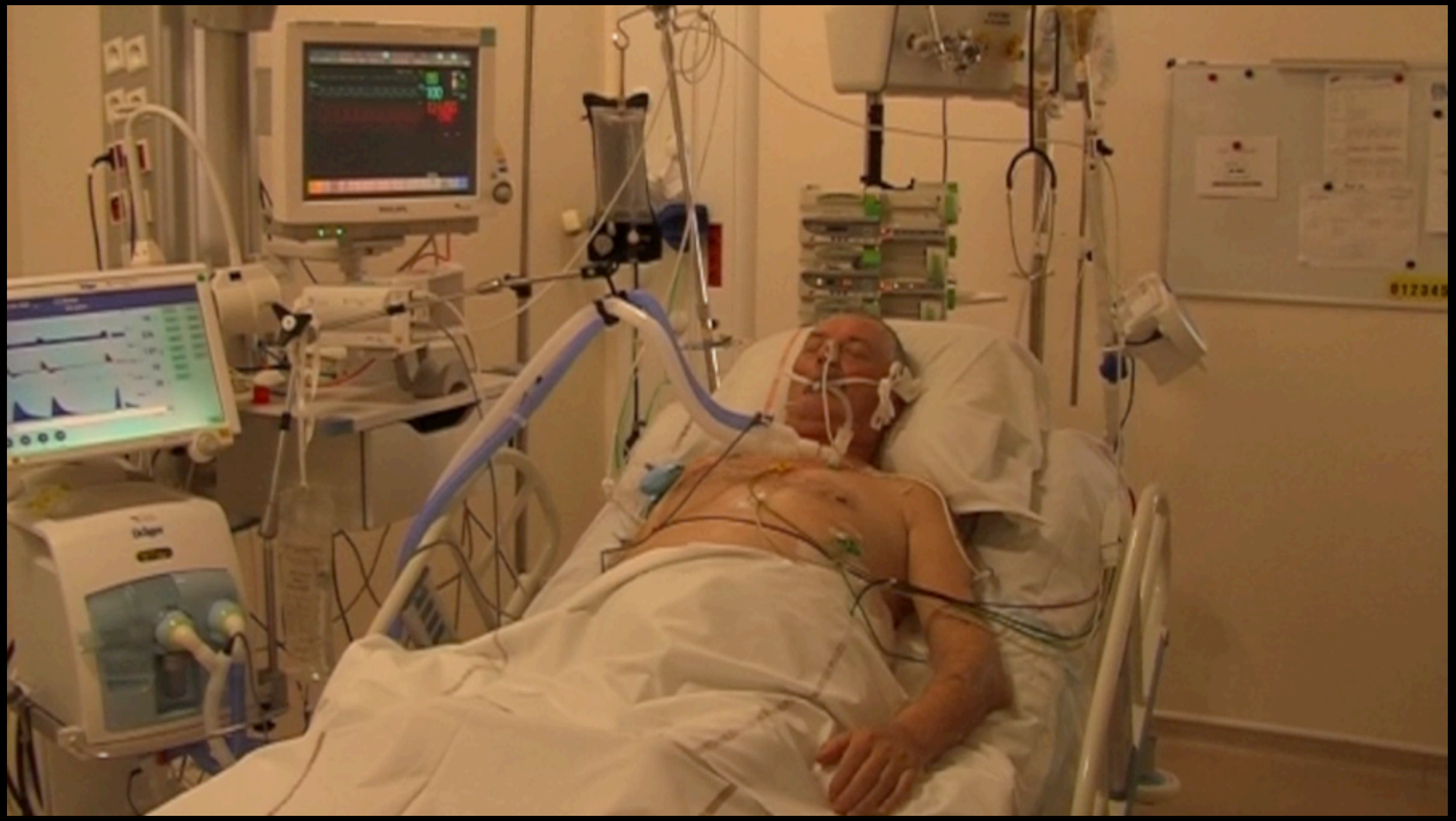


CCM 2013


30.0%
20.0%
10.0%
0.0%
% RASS scores recorded
EGDS
STDS
-5
-4
-3
-2
-1
0
1
2
3
4
RASS Scores



%age go patients in the target level of sedation



Sédation Légère

Est-ce que la Dexmédétomidine favorise la sédation légère ?

Est-ce que la Dexmédétomidine favorise la sédation légère ?

Oui

Est-ce que la Dexmédétomidine favorise la sédation légère ?

Pourquoi ?

Mauvais Hypnotique

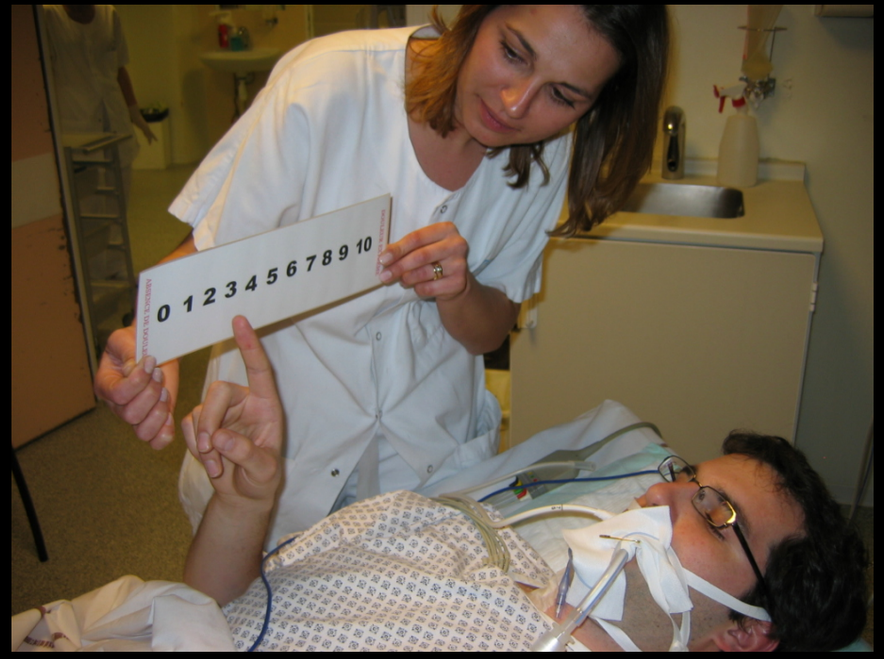
Scores Cliniques

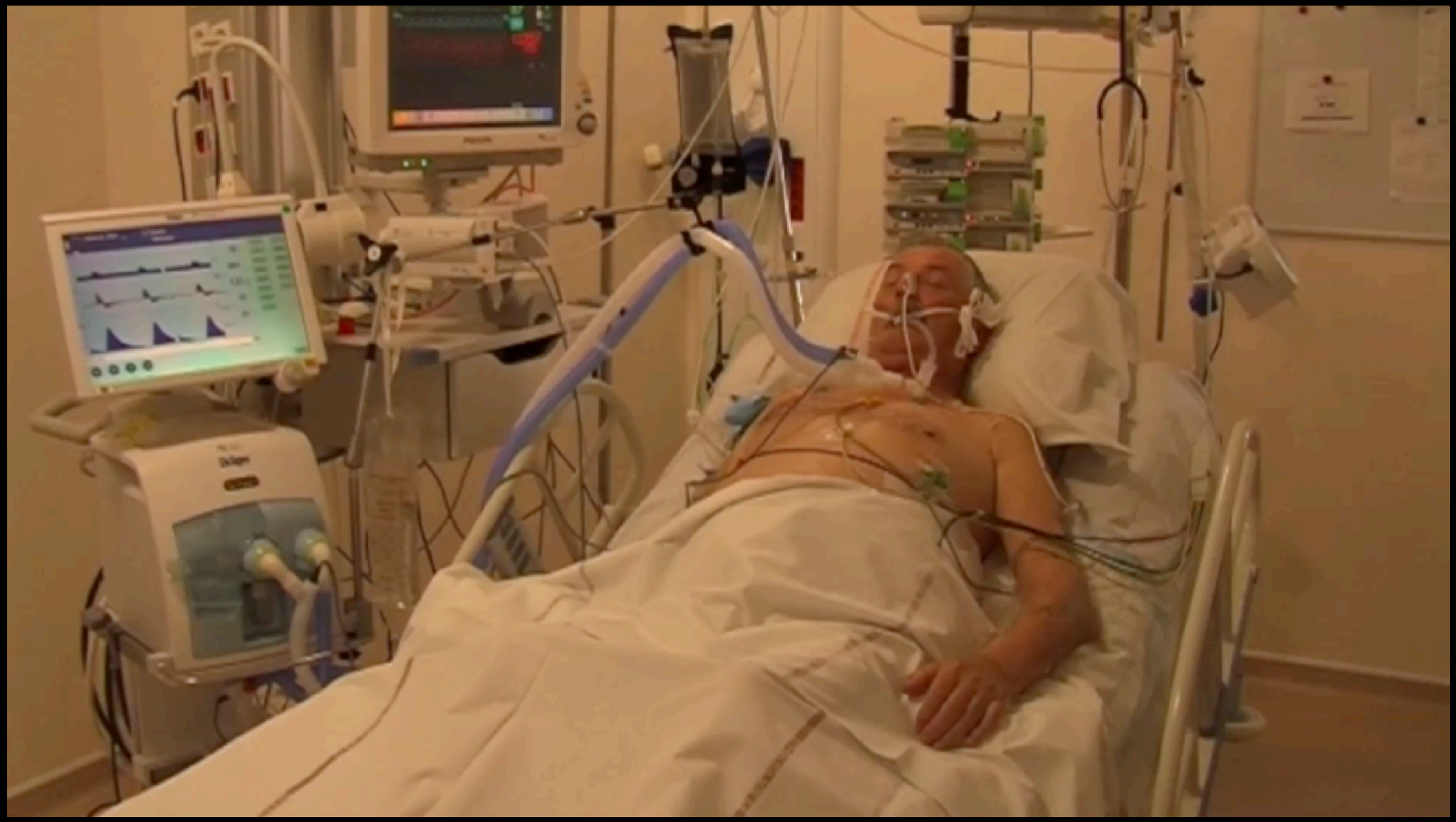
La Dexmédétomidine favorise la sédation légère

Est-ce que la Dexmédétomidine favorise la sédation coopérative ?

Evaluation de la douleur chez un patient communicant

Evaluation de la douleur chez un patient communiquant





Sédation Coopérative

CARING FOR THE CRITICALLY ILL PATIENT

Pratik P. Pandharipande, MD, MSCI
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Daniel L. Herr, MD
Mervyn Maze, MB, ChB
Timothy D. Girard, MD, MSCI
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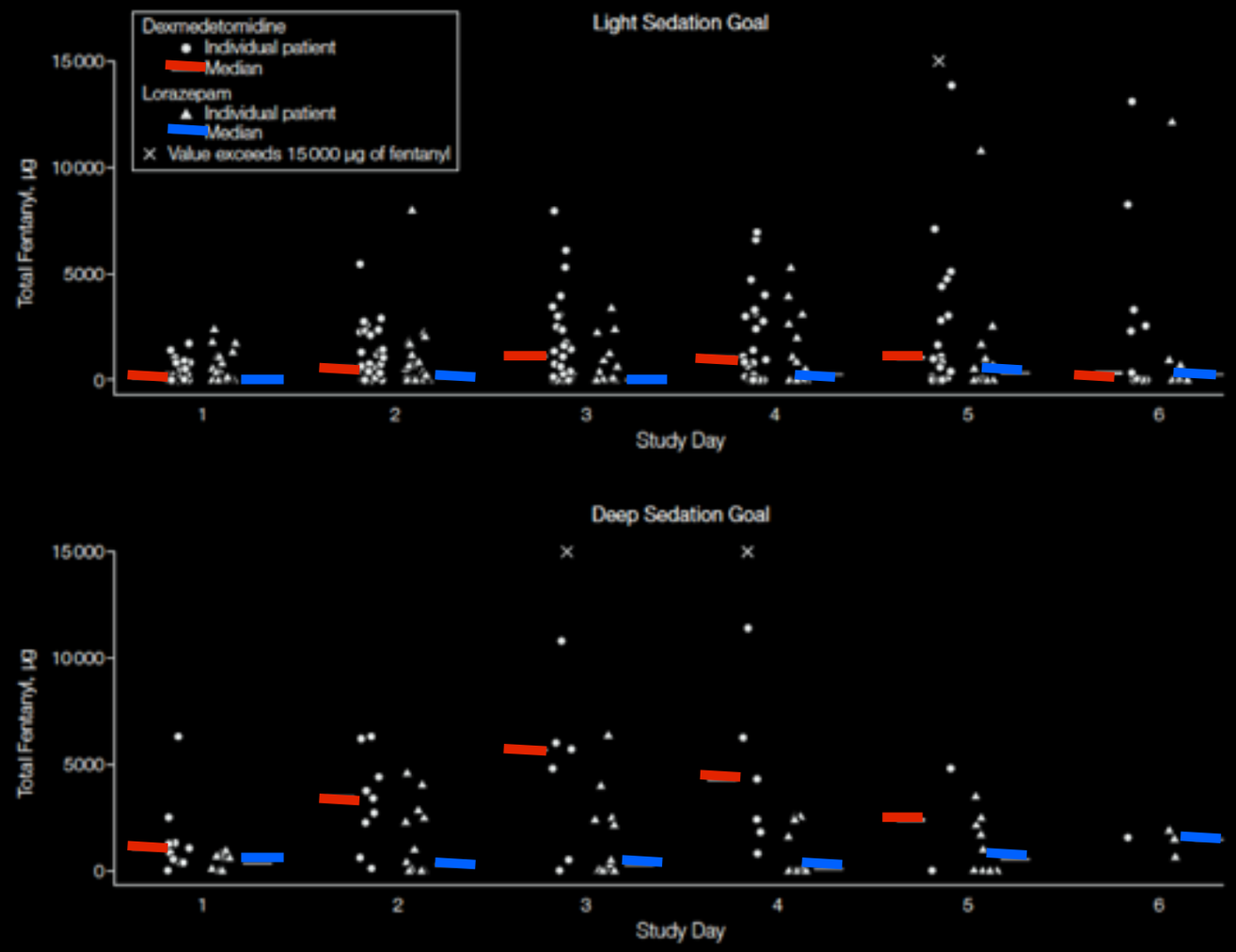
Effect of Sedation With Dexmedetomidine vs Lorazepam on Acute Brain Dysfunction in Mechanically Ventilated Patients

The MENDS Randomized Controlled Trial

Médiane Fentanyl :
575 vs 150 mcg/j



JAMA 2007

Sédation coopérative en réanimation pour un patient participatif

Patients communicants

CARING FOR THE CRITICALLY ILL PATIENT

Stephan M. Jakob, MD, PhD
Esko Ruokonen, MD, PhD
R. Michael Grounds, MBBS, FRCA, MD
Toni Sarapohja, MSc
Chris Garratt, MBChB, FFPM
Stuart J. Pocock, PhD
J. Raymond Bratty, BSc, MB, BCh, FFPM
Jukka Takala, MD, PhD
for the Dexmedetomidine for Long-Term Sedation Investigators

Dexmedetomidine vs Midazolam or Propofol for Sedation During Prolonged Mechanical Ventilation

Two Randomized Controlled Trials

Table 3. Patients' Arousability, Ability to Communicate Pain, and Ability to Cooperate With Nursing Care

	Adjusted Mean Estimate (95% CI)			
	Dexmedetomidine	Preferred Usual Care	*P* Value[a]	Estimate of Difference (95% CI)
Dexmedetomidine vs midazolam (MIDEX)	(n = 249)	(n = 251)		
Total VAS score[b]	49.7 (45.5 to 53.8)	30.0 (25.9 to 34.1)	<.001	19.7 (15.2 to 24.2)
Can the patient communicate pain?	46.3 (41.7 to 50.9)	24.2 (19.7 to 28.8)	<.001	22.1 (17.1 to 27.1)
How arousable is the patient?	58.2 (53.7 to 62.6)	40.7 (36.3 to 45.1)	<.001	17.5 (12.7 to 22.3)
How cooperative is the patient?	44.8 (40.3 to 49.2)	25.1 (20.8 to 29.5)	<.001	19.7 (14.8 to 24.5)
Dexmedetomidine vs propofol (PRODEX)	(n = 251)	(n = 247)		
Total VAS score[b]	51.3 (46.9 to 55.7)	40.1 (35.7 to 44.6)	<.001	11.2 (6.4 to 15.9)
Can the patient communicate pain?	49.3 (44.5 to 54.2)	35.4 (30.5 to 40.4)	<.001	13.9 (8.7 to 19.1)
How arousable is the patient?	59.1 (54.7 to 63.4)	47.8 (43.4 to 52.3)	<.001	11.2 (6.5 to 16.0)
How cooperative is the patient?	47.2 (42.3 to 52.2)	38.0 (33.0 to 43.0)	<.001	9.2 (3.9 to 14.5)

JAMA 2012

Diminution du delirium

CARING FOR THE CRITICALLY ILL PATIENT

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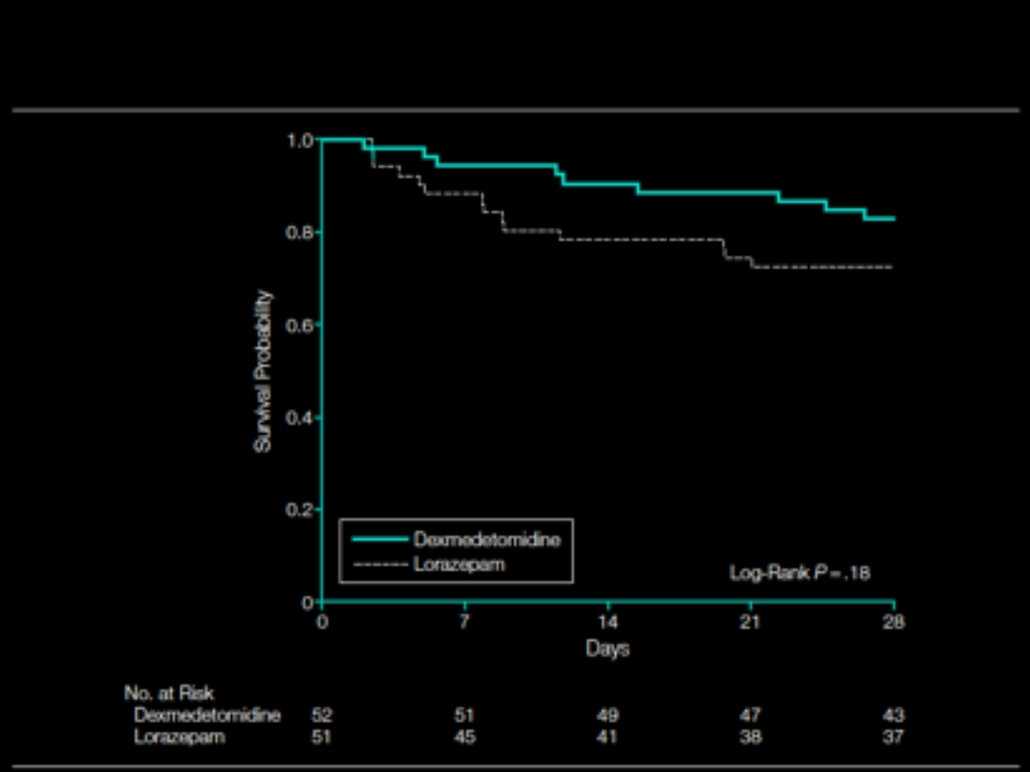
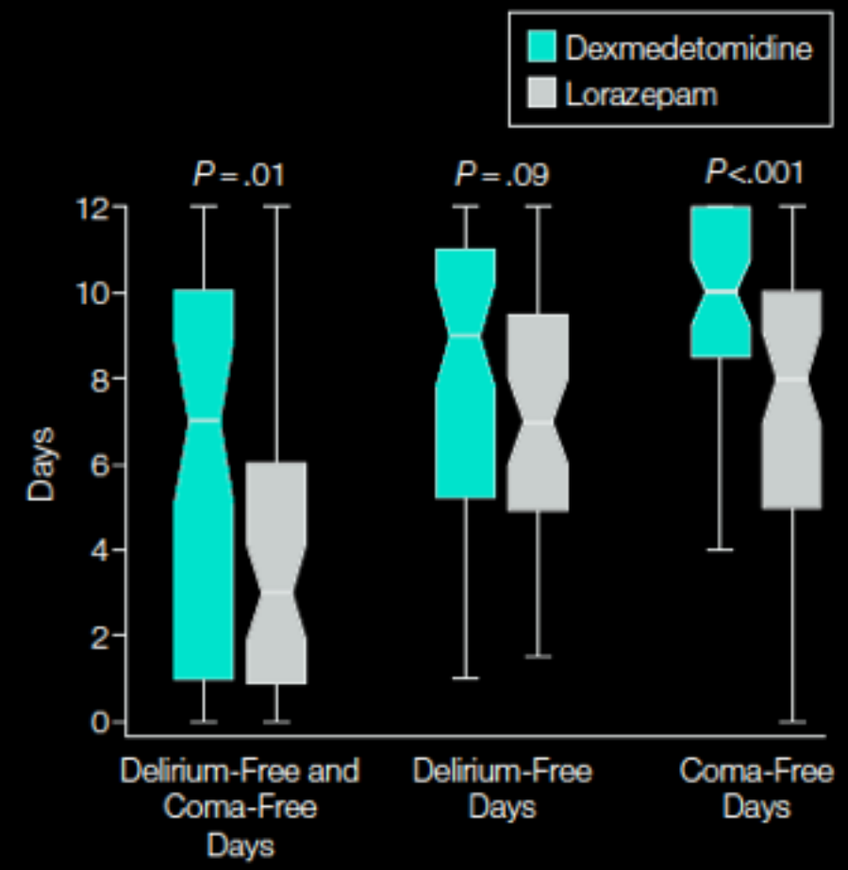


Probability of survival during first 28 days after enrollment.



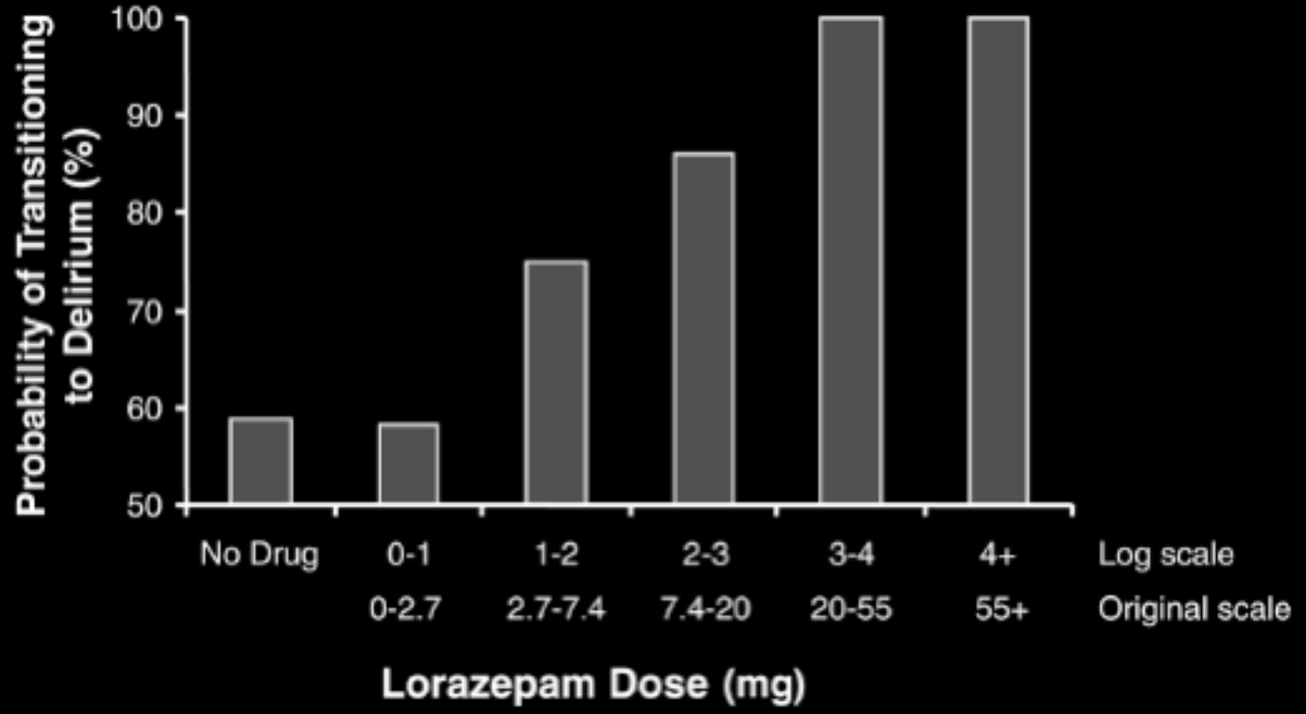
JAMA 2007

Critical Care 2008,

Review

Delirium in the intensive care unit

Timothy D Girard[1,2], Pratik P Pandharipande[3] and E Wesley Ely[1,2,4]



Les benzodiazepines en Réanimation doivent être reléguées au rang des souvenirs à côté de la protéine C activée, du contrôle strict de la glycémie, de l'HFO …

W Ely
Chest 2012

Sédation coopérative en réanimation pour un patient participatif

Patient Compétent

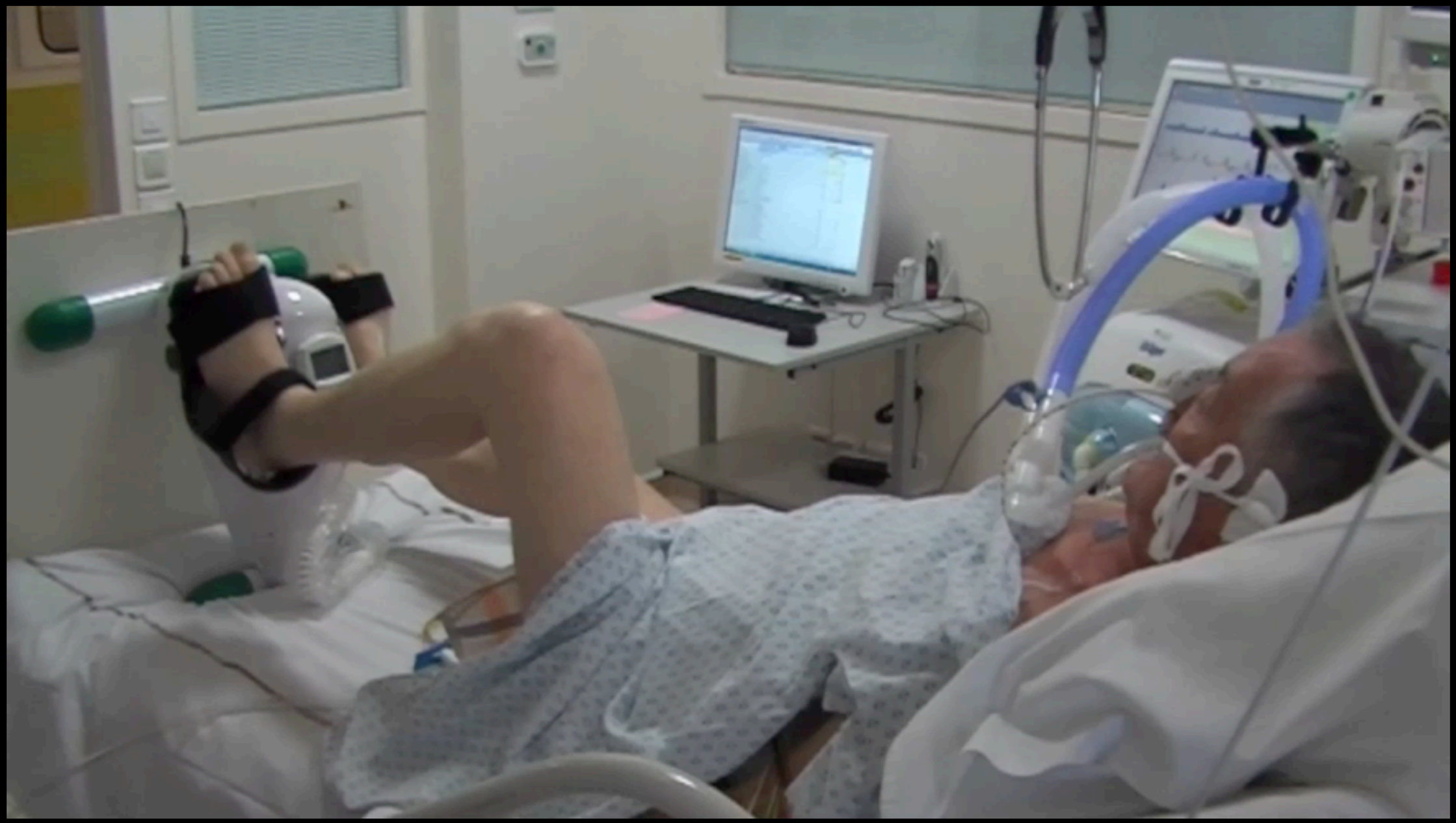
Patient Compétent

Réhabilitation précoce en Réanimation

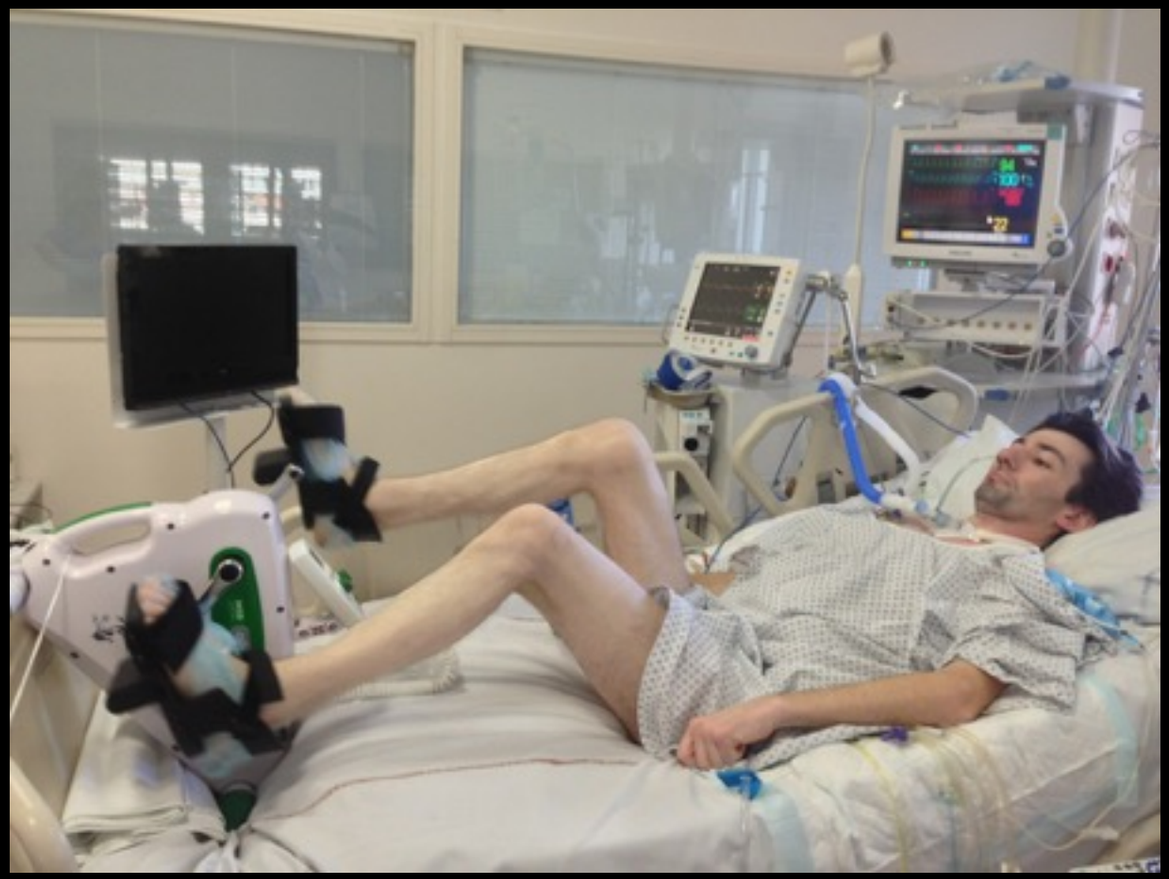
Special Article

Barr et al. rit Care Med

January 2013 • Volume 41 • Number 1

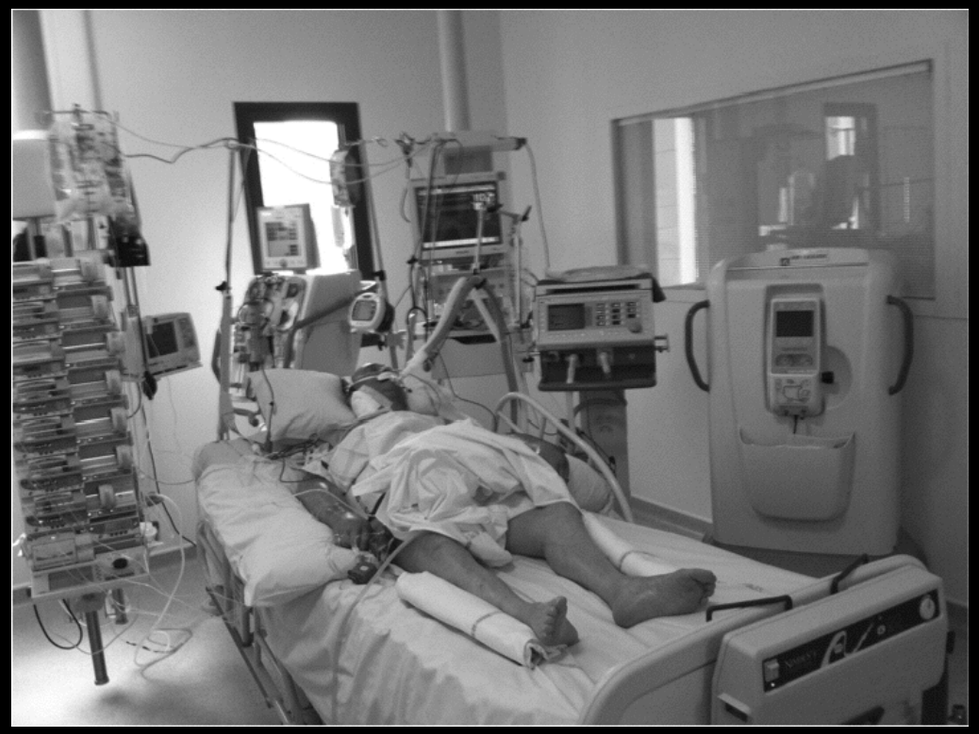


Réhabilitation précoce



Conclusion

Sédation légère
Travail d’équipe
Protocoles
Nouvelles molécules



Merci de votre attention

20 ans …