10 věcí, kterých bych se měl u pacienta v těžké sepsi vyvarovat

Beneš Jan

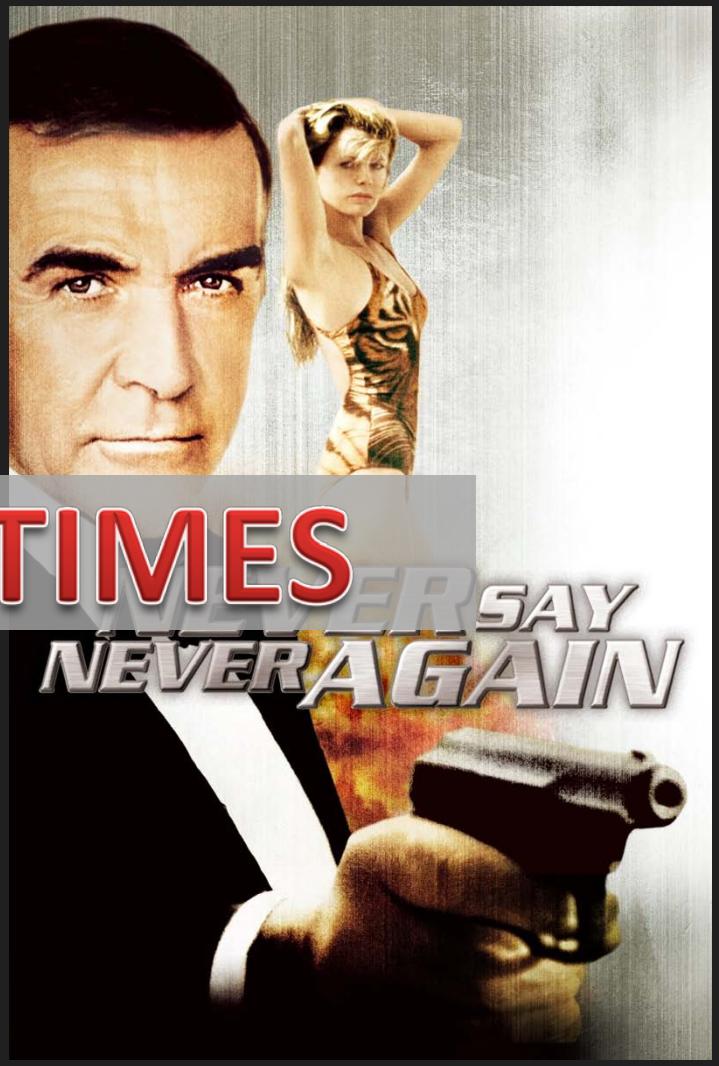
Anesteziologicko-resuscitační klinika, Fakultní nemocnice a Lékařská Fakulta v Plzni Univerzity Karlovy v Praze

Konflikt zájmu:

- **Práce na dlouhodobém výzkumu méně invazivních metod** monitorace **krevního oběhu na ARK byly podpořeny výzkumným záměrem** MSM 0021620819 a Projektem 36 (PRVOUK)

- **Monitorovací prostředky pro výzkum byly zapůjčeny fy.** CNSystems (Graz, Rakousko) a Edwards Lifescience Inc (Irvine, USA)

- **Člen** Advisory board fy Edwards Lifesciences Inc.

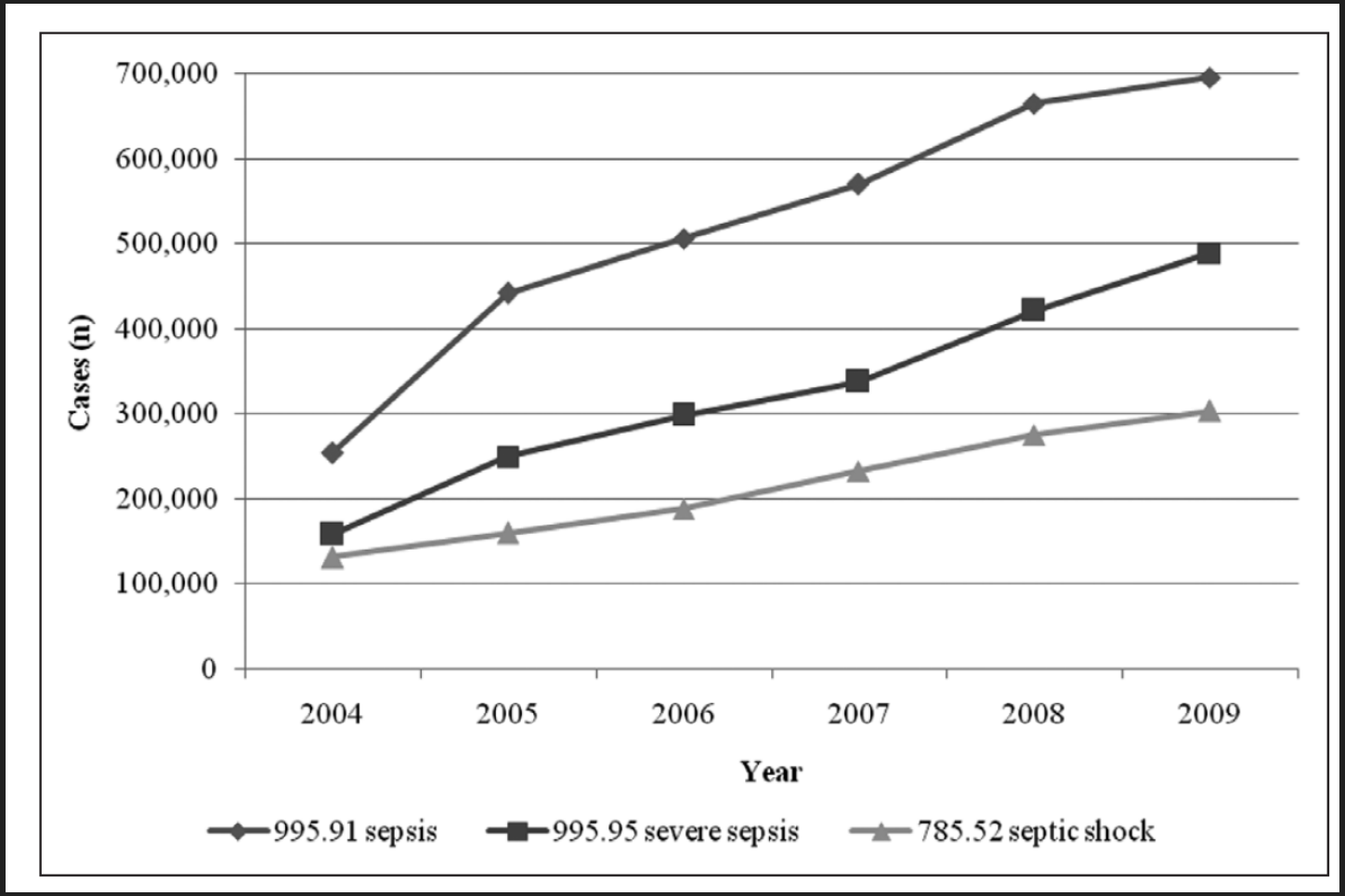

10 TIMES
NEVER SAY
NEVER AGAIN

1. Nevzdávat to

Benchmarking the Incidence and Mortality of Severe Sepsis in the United States*

(*Crit Care Med* 2013; 41:1167–1174)

David F. Gaieski MD[1]; J. Matthew Edwards, MD[1]; Michael J. Kallan, MS[2]; Brendan G. Carr, MD, MA, MS[1–3]



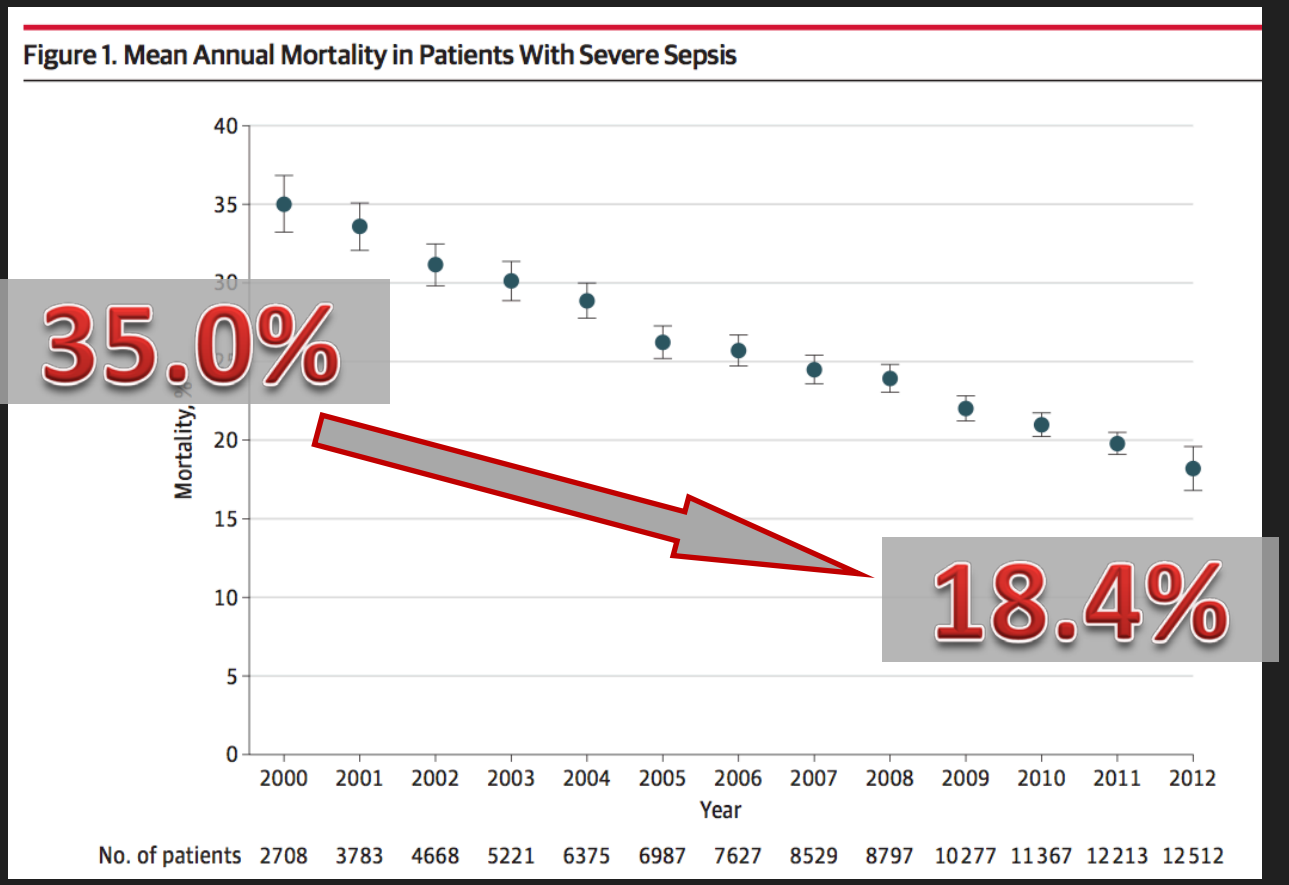
Mortality Related to Severe Sepsis and Septic Shock Among Critically Ill Patients in Australia and New Zealand, 2000-2012

Kirsi-Maija Kaukonen, MD, PhD, EDIC[1,2]; Michael Bailey, PhD[1]; Satoshi Suzuki, MD[3]; David Pilcher, FCICM[1,4,5]; Rinaldo Bellomo, MD, PhD[1,3]

[+] Author Affiliations

JAMA. 2014;311(13):1308-1316. doi:10.1001/jama.2014.2637.

Figure 1. Mean Annual Mortality in Patients With Severe Sepsis



2. Neztrácet čas

The New England Journ… …ine

EARLY GOAL-DIRECTED THERAPY IN THE TREATMENT OF SEVERE SEPSIS AND SEPTIC SHOCK

EMANUEL RIVERS, M.D., M.P… …M.D., SUZANNE HAVSTAD, M.A., JULIE RESSLER, B.S., ALEXANDRIA MUZZIN, B.S., BERNHARD KNOBLICH… …PETERSON, PH.D., AND MICHAEL TOMLANOVICH, M.D., FOR THE EARLY GOAL-DIRECTED… …ATIVE GROUP*

GOAL-DIRECTED

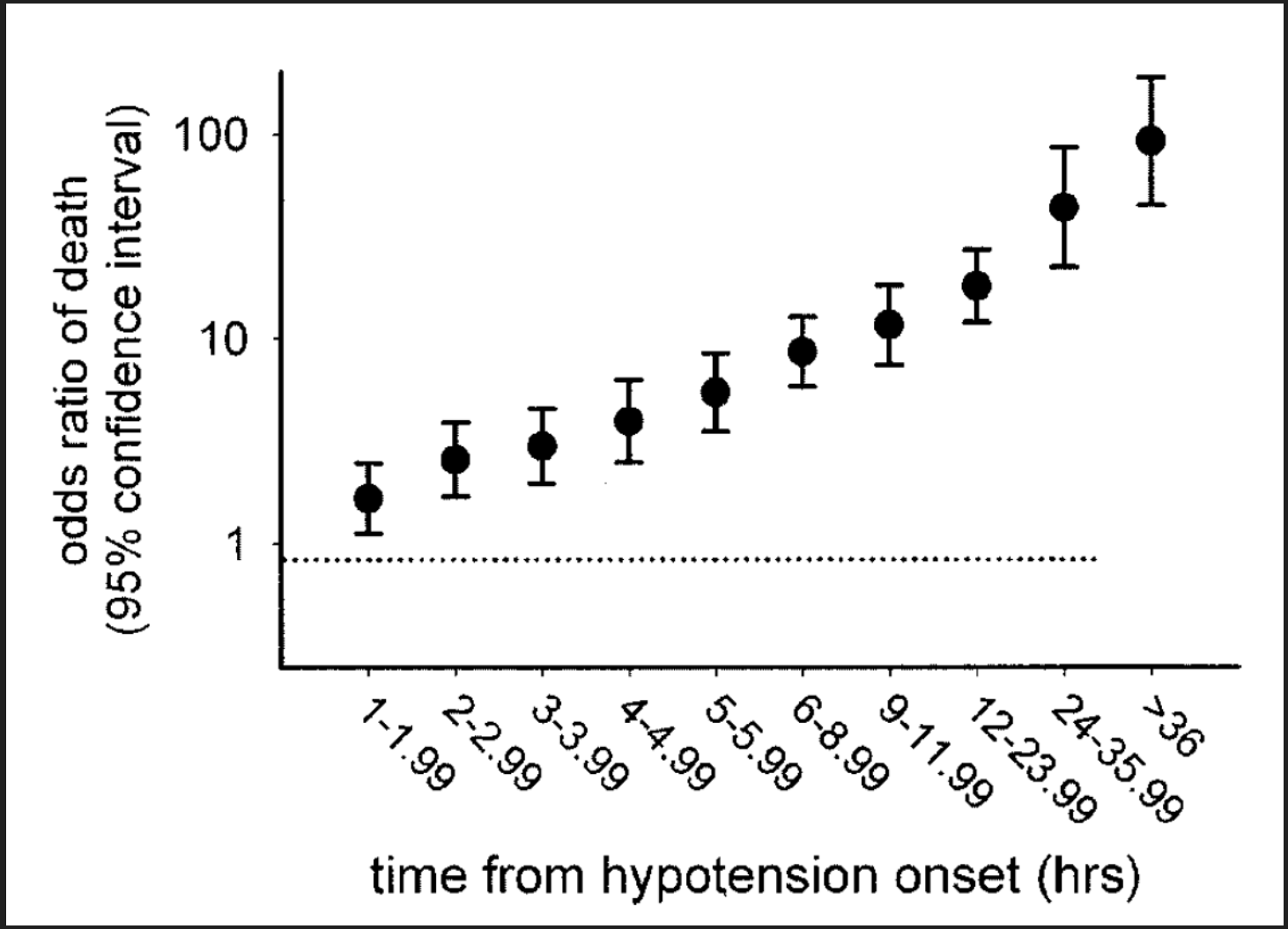
EARLY GO

263 pts
Mortalita 46% vs 30%

Duration of hypotension before initiation of effective antimicrobial therapy is the critical determinant of survival in human septic shock*

(Crit Care Med 2006; 34:1589–1596)

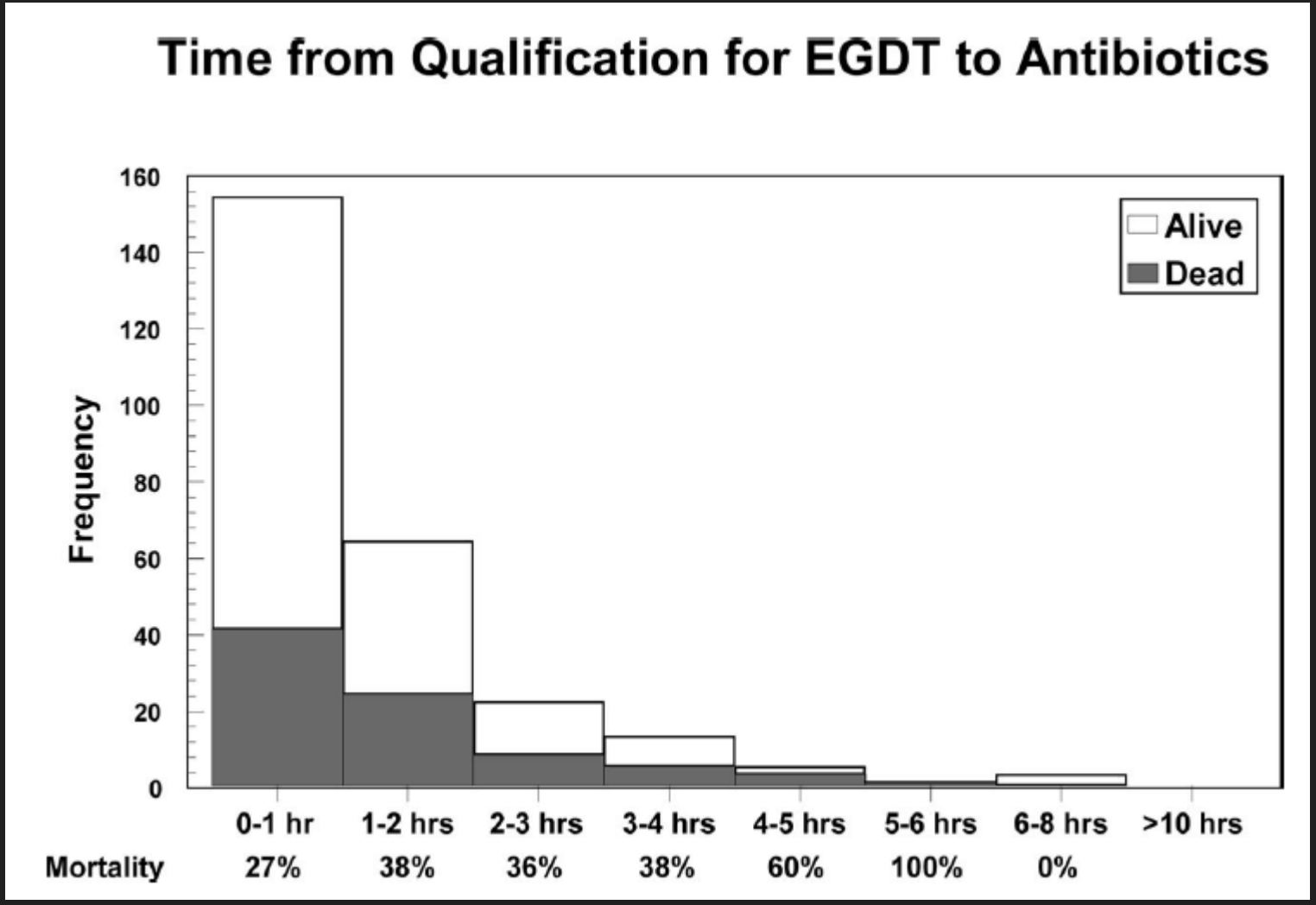
Anand Kumar, MD; Daniel Roberts, MD; Kenneth E. Wood, DO; Bruce Light, MD; Joseph E. Parrillo, MD; Satendra Sharma, MD; Robert Suppes, BSc; Daniel Feinstein, MD; Sergio Zanotti, MD; Leo Taiberg, MD; David Gurka, MD; Aseem Kumar, PhD; Mary Cheang, MSc



Impact of time to antibiotics on survival in patients with severe sepsis or septic shock in whom early goal-directed therapy was initiated in the emergency department

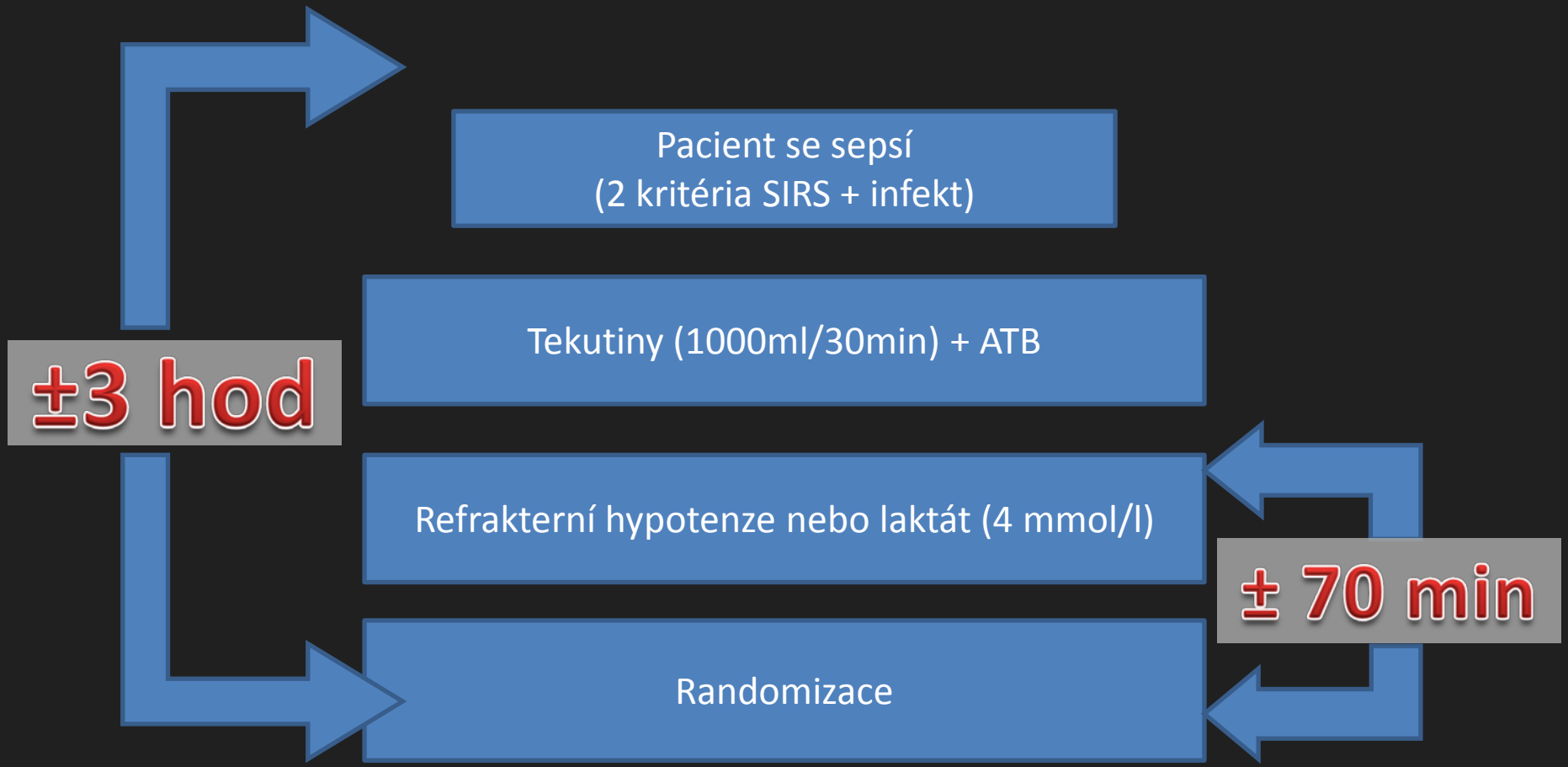
(*Crit Care Med* 2013; 41:1167–1174)

David F. Gaieski, MD; Jesse M. Pines, MD, MBA, MSCE; Roger A. Band, MD;
Mark E. Mikkelsen, MD, MSCE; Richard Massone, MD; Frances F. Furia, MD; Frances S. Shofer, PhD;
Munish Goyal, MD



A Randomized Trial of Protocol-Based Care for Early Septic Shock

The ProCESS Investigators*



A Randomized Trial of Protocol-Based Care for Early Septic Shock

The ProCESS Investigators*

U PACIENTŮ, KTEŘÍ BYLI VČAS IDENTIFIKOVÁNÍ NA URGENTNÍM PŘÍJMU A KTEŘÍ DOSTALI RYCHLE ANTIMIKROBIÁLNÍ TERAPII A ZÁKLADNÍ OBJEMOVOU LÉČBU NEBYL PROKÁZÁN VÝZNAMNÝ EFEKT REUSCITAČNÍCH PROTOKOLŮ

use of central venous catheterization and central hemodynamic monitoring in all patients.

3. Nebát se počáteční racionální terapeutické agresivity

A Randomized Trial of Protocol-Based Care for Early Septic Shock

The ProCESS Investigators*

In summary, in our multicenter, randomized trial, in which patients were identified early in the emergency department as having septic shock and received antibiotics and other nonresuscitation aspects of care promptly, we found no significant advantage, with respect to mortality or morbidity, of protocol-based resuscitation over bedside care that was provided according to the treating physician's judgment. We also found no significant benefit of the mandated use of [illegible] central hemodynamic [illegible] patients.

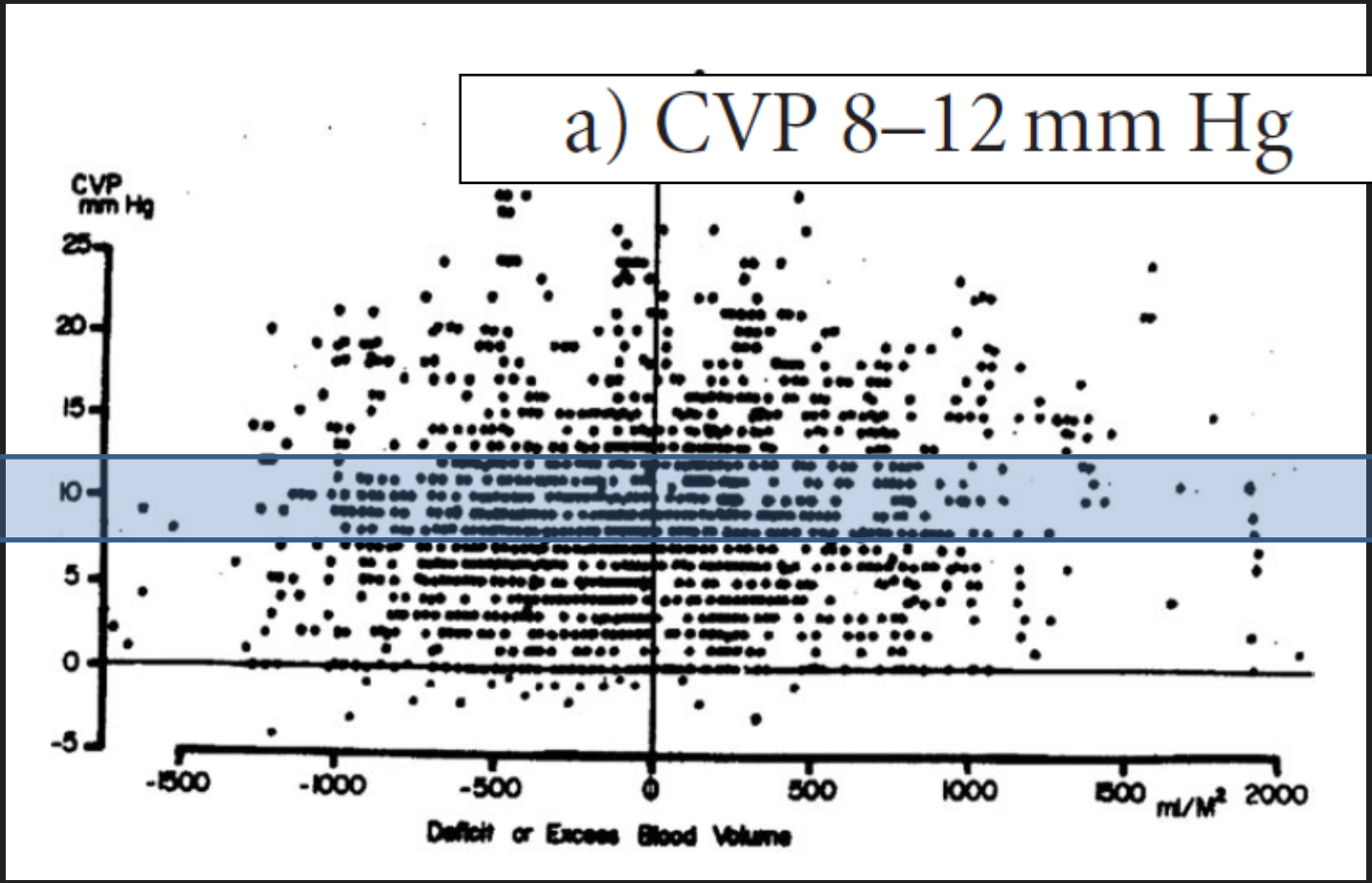
CENTRÁLNÍ ŽILNÍ KATETRIZACE SE NEUKÁZALA VÝHODNÁ U VŠECH NEMOCNÝCH

Does Central Venous Pressure Predict Fluid Responsiveness?*

A Systematic Review of the Literature and the Tale of Seven Mares

(CHEST 2008; 134:172–178)

Paul E. Marik, MD, FCCP; Michael Baram, MD, FCCP; and Bobbak Vahid, MD




ŠOK
PÉČE O ADEKVÁTNÍ DODÁVKU KYSLÍKU DO TKÁNÍ
ODSTRANĚNÍ PŘÍČINY ŠOKU

ODSTRANĚNÍ **PŘÍČINY** ŠOKU

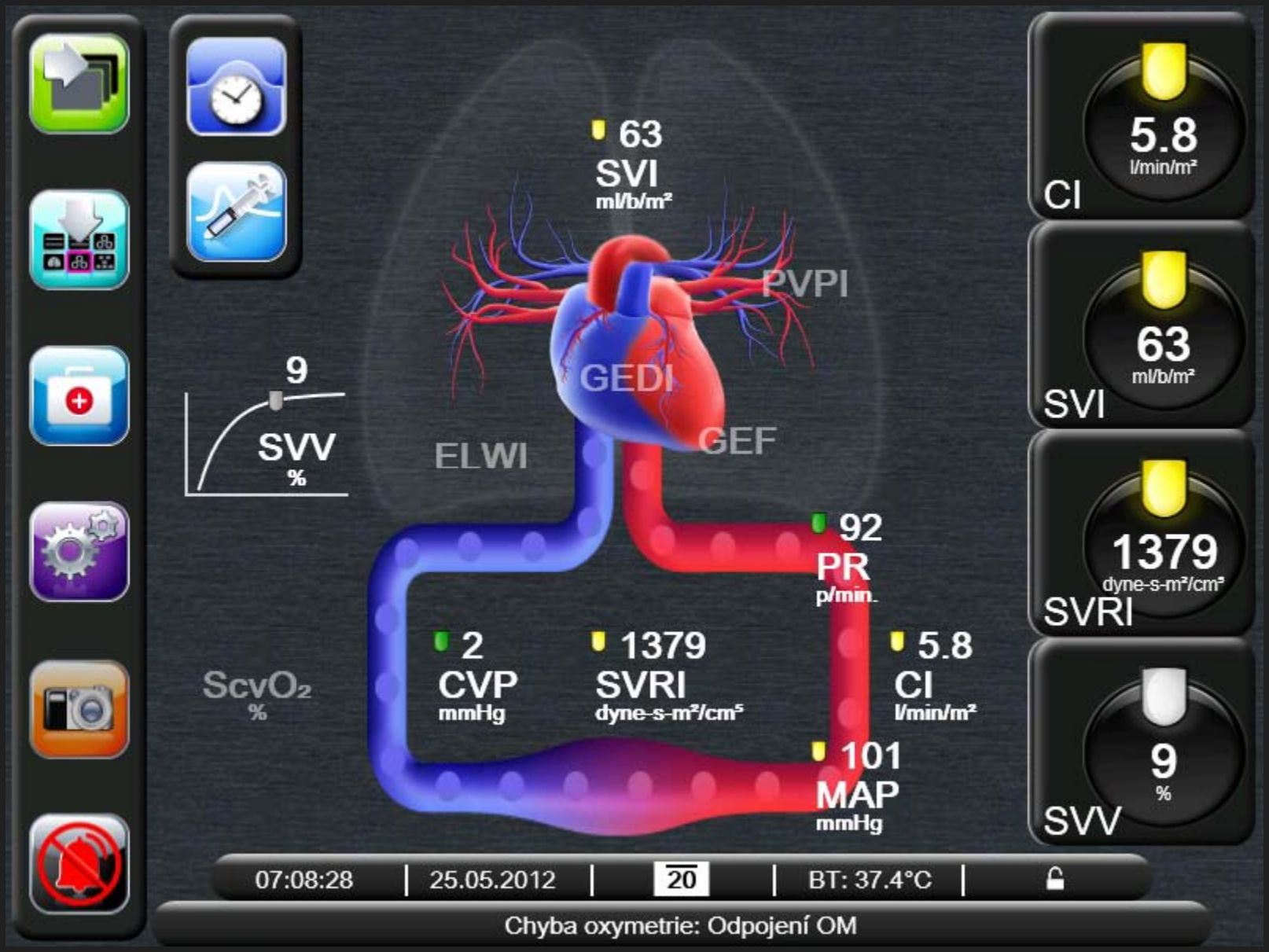
PÉČE O **ADEKVÁTNÍ DODÁVKU KYSLÍKU** DO TKÁNÍ

ATB

PERFUZE

FOKUS

OXYGENACE


63
SVI
ml/b/m²
PVPI
GEDI
GEF
ELWI
9
SVV
%
92
PR
p/min.
2
CVP
mmHg
1379
SVRI
dyne-s-m²/cm⁵
5.8
CI
l/min/m²
101
MAP
mmHg
ScvO₂
%
5.8
l/min/m²
CI
63
ml/b/m²
SVI
1379
dyne-s-m²/cm⁵
SVRI
9
%
SVV
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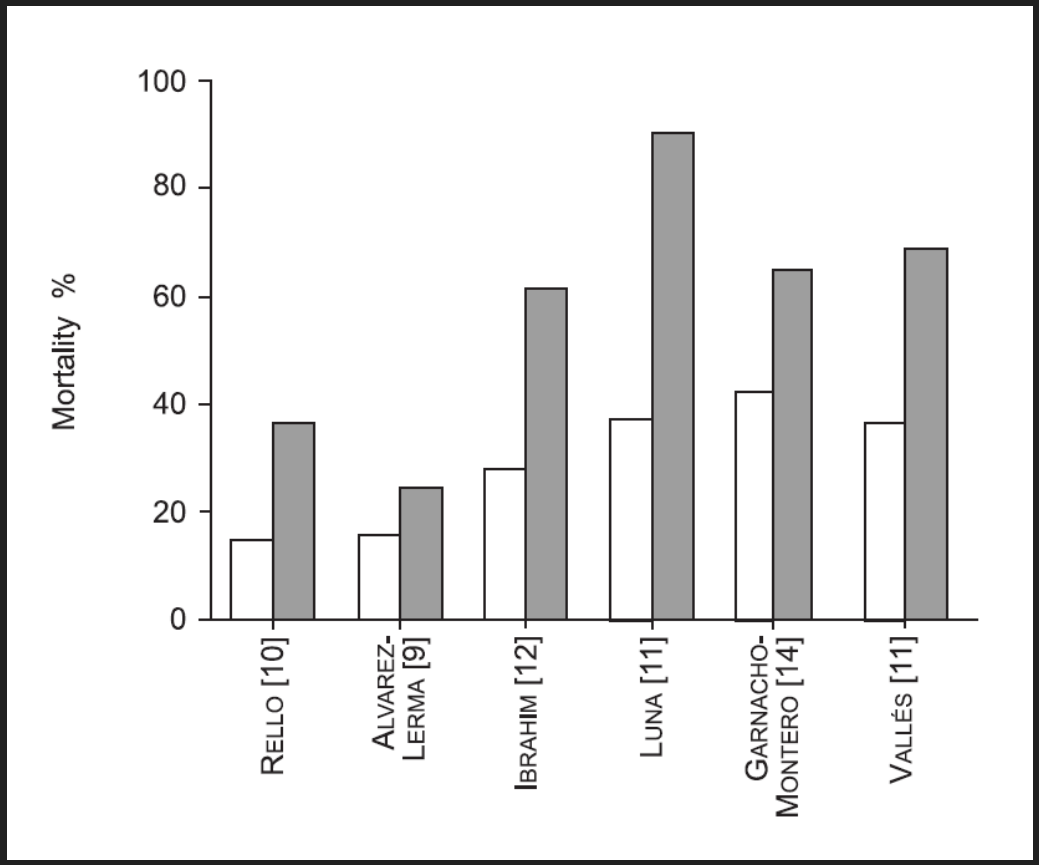
20
BT: 37.4°C
Chyba oxymetrie: Odpojení OM

Eur Respir Rev 2007; 16: 103, 33–39
DOI: 10.1183/09059180.00010302

Importance of appropriate initial antibiotic therapy and de-escalation in the treatment of nosocomial pneumonia

J. Rello



CLINICAL RESEARCH STUDY

AJM Theme Issue: Infectious Disease

Benefit of Appropriate Empirical Antibiotic Treatment: Thirty-day Mortality and Duration of Hospital Stay

Abigail Fraser, MPH,[a] Mical Paul, MD,[a,b] Nadja Almanasreh, MD,[c] Evelina Tacconelli, MD,[d] Uwe Frank, MD,[c] Roberto Cauda, MD,[d] Sara Borok, MD,[a] Michal Cohen, MD,[e] Steen Andreassen, PhD,[f] Anders D. Nielsen, MSc,[f] Leonard Leibovici, MD,[a,b] on behalf of the TREAT Study Group

Table 3 Duration of Hospitalization by Medical Center and Appropriateness of Antibiotic Treatment

	Appropriate Antibiotic Treatment	Inappropriate Antibiotic Treatment
Rabin Medical Center, Israel		
No. of patients	282	151
Mean (SD)	7.97 (8.58)	10.77 (13.90)
Median (range)	5 (0-62)	7 (1-125)
Freiburg University Hospital, Germany		
No. of patients	90	31
Mean ± SD	15.63 (8.83)	18.42 (13.83)
Median (range)	14 (1-36)	14 (3-65)
A. Gemelli University Hospital, Italy		
No. of patients	84	39
Mean ± SD	14.25 (11.63)	16.62 (12.20)
Median (range)	10.5 (1-62)	12 (2-48)
Total		
No. of patients	456	221
Mean ± SD	10.64 (13.90)	12.87 (9.86)
Median (range)*	7 (0-62)	8 (1-125)

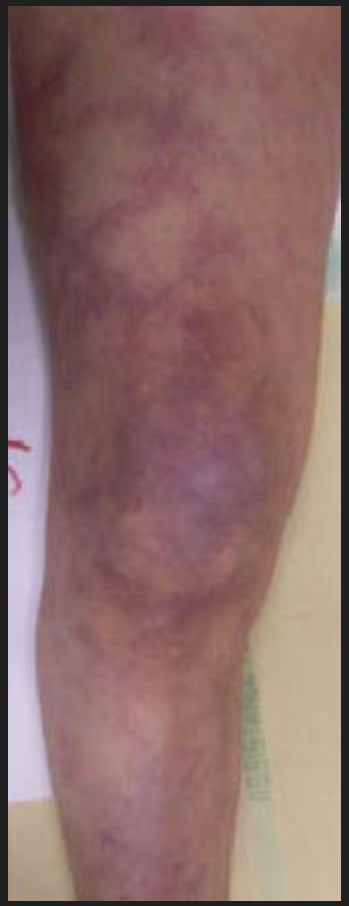
SD = standard deviation.
*Mann Whitney test, $P = .048$.

4. … a její ekonomické / personální náročnosti

SEPSE	AIM	CMP
Augmentin 500 ,-/den Meronem 6 000,-/den	ReoPro 20 000,- Simdax 30 000,-	Actilyse 20 000,-
HD monitorace 5-10 tis	TCA + stent cca 100 – 150 tis	Mechanická trombolýza , extrakce 100 – 130 tis

5. Nedělat léčebnou kosmetiku

110/60 (76)	99%
95/min	85 ml



Astrup		
B'-pH	7,22	
B'-pO2	7,6	
B'-pCO2	5,9	
B-BE	-8,6	
B-HCO3 aktualni	17,8	
B-Oxyhemoglobin	0,83	
B-Saturace Hb kys	0,85	
B-Hemoglobin	106	
B'-Teplota aktualní	36,5	
Spec. bioch. vyšetře		
P-Laktat		7,59

VIEWPOINT

Re-thinking resuscitation: leaving blood pressure cosmetics behind and moving forward to permissive hypotension and a tissue perfusion-based approach

Martin W Dünser*[1], Jukka Takala[2], Andreas Brunauer[1] and Jan Bakker[3]

Dünser *et al. Critical Care* 2013, 17:326

Table 1. Tissue perfusion-based resuscitation endpoints

Category	Parameter	Endpoint	Suggested measurement interval	Pathophysiologic background	Therapeutic implications
Peripheral perfusion	Capillary refill time	<4.5 seconds	15-60 minutes[a]	Inadequate systemic blood flow	Fluids, red blood cells, inotropes, vasodilator.
	Skin mottling	Absent			
	Peripheral temperature	Warm			Vasopressors only to ensure minimum mean arterial blood pressure for coronary and cerebral perfusion!
	Peripheral perfusion index	≥1.4	Continuous		
	Tissue oxygen saturation	≥70%			
Venous oxygen saturation	Central	≥65%-70%	Continuous		
	Mixed	≥60%-65%			
Arterial lactate	Absolute value	<2 mmol/L	2 hours	Inadequate systemic blood flow or excessive vasodilation	Fluids, blood, inotropes, vasodilators, and/or vasopressors
	Clearance	>20%/2 hours			
Urine output		≥0.5 mL/kg per hour	15-60 minutes[a]		

6. Nepodléhat módním trendům

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MARCH 26, 2009 VOL. 360 NO. 13

Intensive versus Conventional Glucose Control in Critically Ill Patients

The NICE-SUGAR Study Investigators*

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Hydroxyethyl Starch 130/0.42 versus Ringer's Acetate in Severe Sepsis

Anders Perner, M.D., Ph.D., Nicolai Haase, M.D.,

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MAY 31, 2012 VOL. 366 NO. 22

Drotrecogin Alfa (Activated) in Adults with Septic Shock

V. Marco Ranieri, M.D., B. Taylor Thompson, M.D., Philip S. Barie, M.D., M.B.A., Jean-François Dhainaut, M.D.,

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 OCTOBER 22, 2009 VOL. 361 NO. 17

Intensity of Continuous Renal-Replacement Therapy in Critically Ill Patients

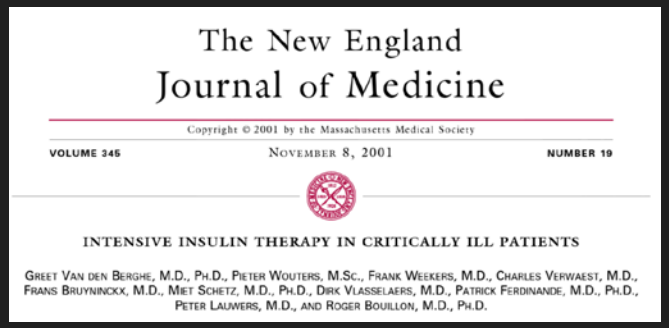
The RENAL Replacement Therapy Study Investigators*

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MAY 1, 2014 VOL. 370 NO. 18

A Randomized Trial of Protocol-Based Care for Early Septic Shock

The ProCESS Investigators*

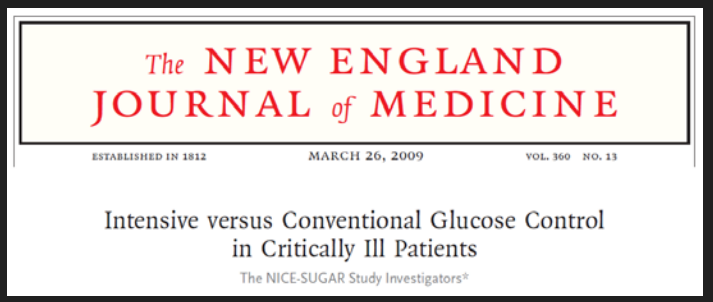


The New England
Journal of Medicine

VOLUME 345 NOVEMBER 8, 2001 NUMBER 19

INTENSIVE INSULIN THERAPY IN CRITICALLY ILL PATIENTS

GREET VAN DEN BERGHE, M.D., PH.D., PIETER WOUTERS, M.SC., FRANK WEEKERS, M.D., CHARLES VERWAEST, M.D., FRANS BRUYNINCKX, M.D., MIET SCHETZ, M.D., PH.D., DIRK VLASSELAERS, M.D., PATRICK FERDINANDE, M.D., PH.D., PETER LAUWERS, M.D., AND ROGER BOUILLON, M.D., PH.D.



The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MARCH 26, 2009 VOL. 360 NO. 13

Intensive versus Conventional Glucose Control in Critically Ill Patients

The NICE-SUGAR Study Investigators*

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Hypoglycemia and Risk of Death in Critically Ill Patients

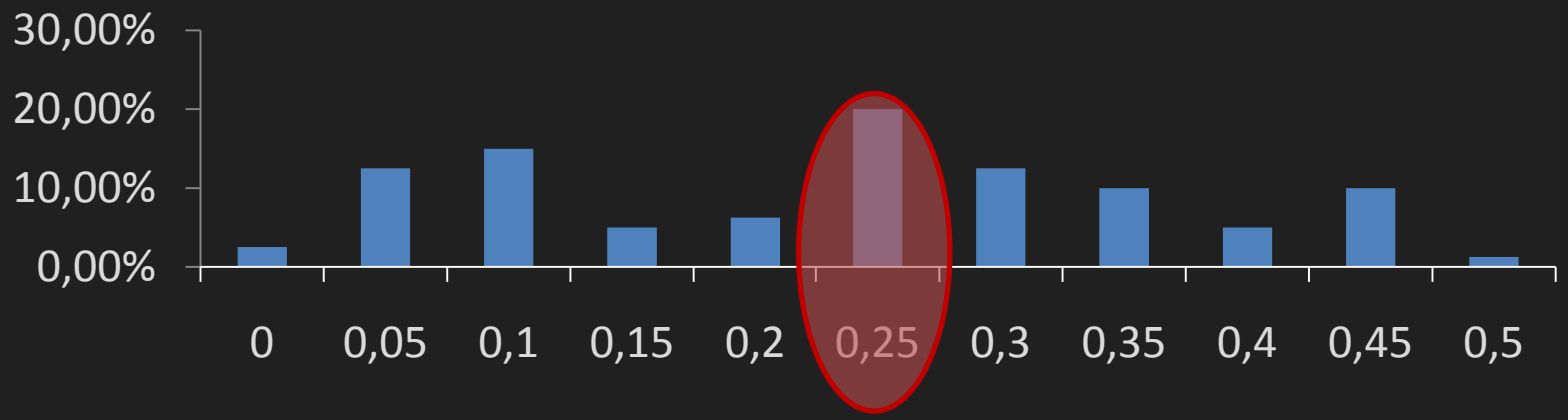
The NICE-SUGAR Study Investigators*

7. Opomíjet limitace klinických studií

Představte si phase 3 studii naradrenalinu …

… pacient se sepsí indukovanou refrakterní hypotenzí (STK pod 90mmHg po podání 1000ml) dostane 0,25ug/kg/min testované látky...

Bude tohle fungovat ?



The NEW ENGLAND JOURNAL of MEDICINE

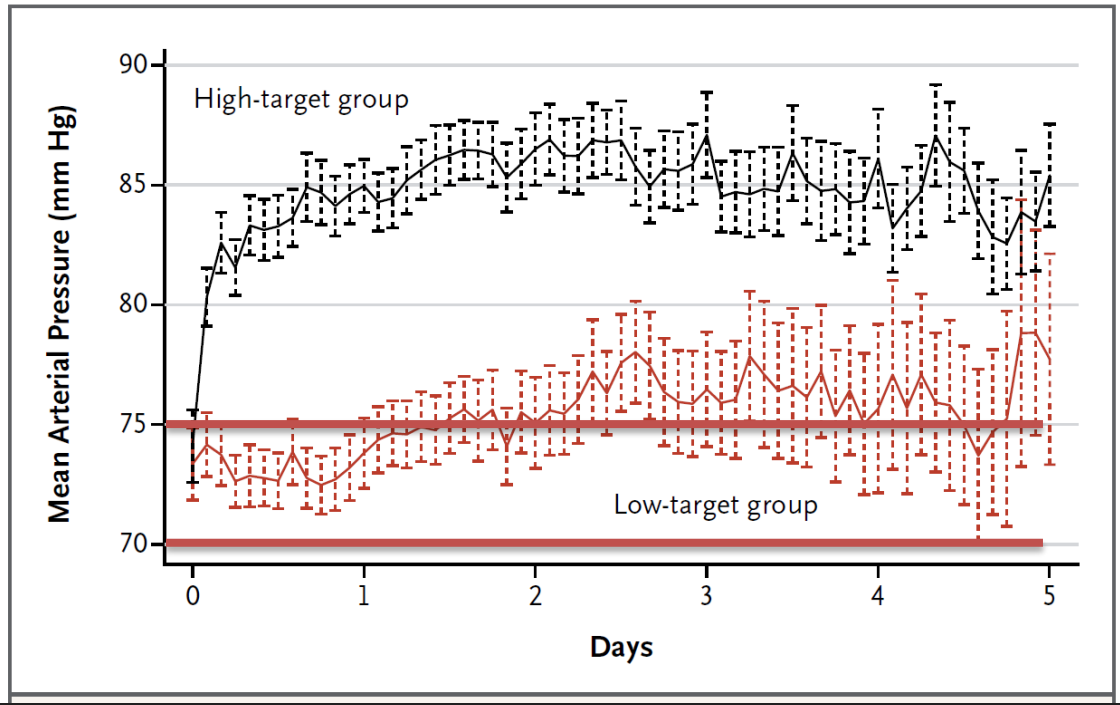
ESTABLISHED IN 1812 APRIL 24, 2014 VOL. 370 NO. 17

High versus Low Blood-Pressure Target in Patients with Septic Shock

Pierre Asfar, M.D., Ph.D., Ferhat Meziani, M.D., Ph.D., Jean-François Hamel, M.D., Fabien Grelon, M.D.,

CONCLUSIONS

Targeting a mean arterial pressure of 80 to 85 mm Hg, as compared with 65 to 70 mm Hg, in patients with septic shock undergoing resuscitation did not result in significant differences in mortality at either 28 or 90 days. (Funded by the French Ministry of Health; SEPSISPAM ClinicalTrials.gov number, NCT01149278.)



The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 APRIL 24, 2014 VOL. 370 NO. 17

High versus Low Blood-Pressure Target in Patients with Septic Shock

Pierre Asfar, M.D., Ph.D., Ferhat Meziani, M.D., Ph.D., Jean-François Hamel, M.D., Fabien Grelon, M.D.,

Secondary outcomes — no./total no. (%)			
Death at day 90†	164 (42.3)	170 (43.8)	0.74
Survival at day 28 without organ support‡	241 (62.1)	235 (60.6)	0.66
Doubling of plasma creatinine	161 (41.5)	150 (38.7)	0.42
No chronic hypertension	71/215 (33.0)	85/221 (38.5)	0.32
Chronic hypertension	90/173 (52.0)	65/167 (38.9)	0.02
Renal-replacement therapy from day 1 to day 7	139 (35.8)	130 (33.5)	0.50
No chronic hypertension	66/215 (30.7)	77/221 (34.8)	0.36
Chronic hypertension	73/173 (42.2)	53/167 (31.7)	0.046

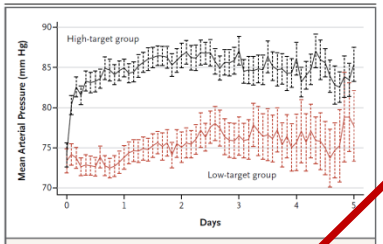


Figure 2. Mean Arterial Pressure during the 5-Day Study Period.
Mean arterial pressures were significantly lower in the low-target group than in the high-target group during the 5 protocol-specified days ($P=0.02$ by repeated-measures regression analysis), although the values exceeded the target values of 80 to 85 mm Hg in the high-target group and 65 to 70 mm Hg in the low-target group. The I bars represent 95% confidence intervals.

fluid balance, and the fluid balance was lower than those reported previously,[7,8] possibly because our population of patients differed from those in previous studies or because of more restrictive protocols for fluid administration in France. In addition, there were no significant between-group differences in the overall rates of organ dysfunction or death at 90 days. However, in patients with a history of chronic arterial hypertension, targeting a mean arterial pressure of 80 to 85 mm Hg reduced both the incidence of a doubling of the blood creatinine level and the rate of renal-replacement therapy. There was no significant between-group difference in the overall rate of serious adverse events, but patients in the high-target group had significantly more episodes of atrial fibrillation.

No differences in the primary and secondary outcomes were observed between the two groups. Our study was prospectively powered to detect an absolute difference of 10 percentage points in the rate of death on the basis of an expected rate of 45% in the low-target group, at an alpha level of 0.05 and a beta level of 0.20, with the use of a two-tailed test. The expected overall death rate in our study was consistent with the rates among patients with septic shock that were reported in previous multicenter trials (37%,[5] 39%,[8] 47%,[4] and 49%[6]) at the time the trial was designed. The absolute reduction of 10 percentage points in mo... our study because the ... in the literature whe... in 2008 had teste... the hy... reductions of 2... percentag... age points, and 10 percen... of death. Two other trials ... after ... started recruitin... hy...thesis of an absolute ... percentage points[7,15] and ... Hence, the anticipated r... study was close to the risk... previous studies. However, ... death at 28 days was lower ... other studies, although it ... rate in more recent trials, ... ranging from 25 to 57% ... Nevertheless, the lower-t... death led to an underpow... we may not have detected ... cidence of some adverse e... events such as myocardial ...

Septic shock is a major ... fibrillation,[17] and in our st... was significantly more co... target group than in the l... adverse effect might be r... cantly higher doses of catecholamine and the longer duration of catecholamine infusions in the high-target group. However, given the small number of episodes of atrial fibrillation, other confounding factors cannot be ruled out. The association between atrial fibrillation and septic shock should be considered only as a hypothesis-generating concept for future trials.

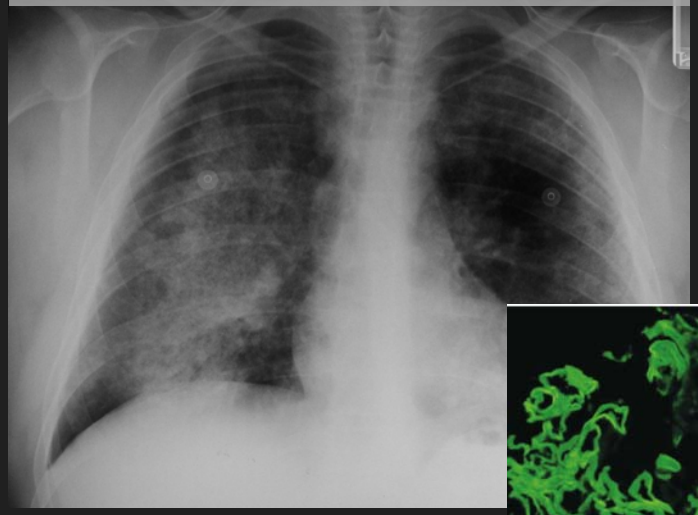
At ra... cording ... hyperte... reporte... sion, wh... ies.[18] A... sion, a ... pressur... means ... could h... perfusi... rates. N... betwee... those v... dent. T...

organ dysfunction or death at 90 days. However, in patients with a history of chronic arterial hypertension, targeting a mean arterial pressure of 80 to 85 mm Hg reduced both the incidence of a doubling of the blood creatinine level and the rate of renal-replacement therapy. There was no

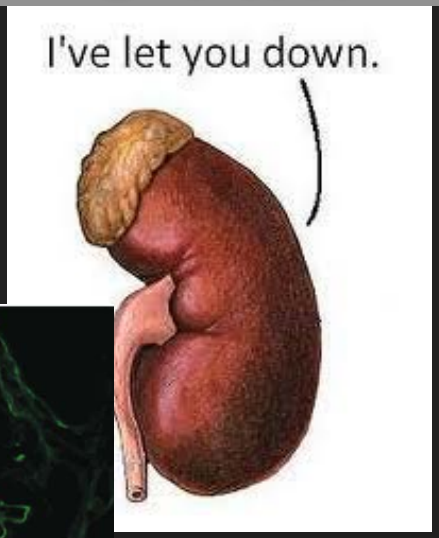
Studie	Relativní riziko
CHEST	1,21 (1,00-1,45)
6 S	1,28 (0,96-1,72)
SEPSISPAM	1,23 (0,91-1,67)

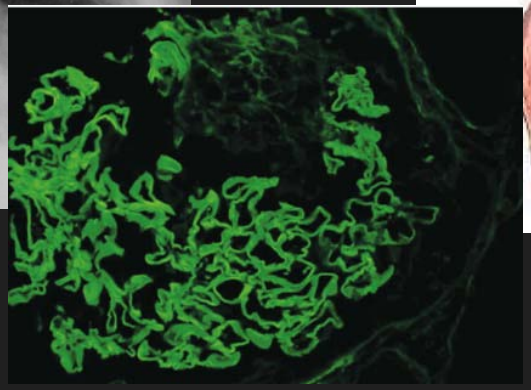
8. Nemyslet si, že už vím o pacientově stavu všechno

PNEUMONIE



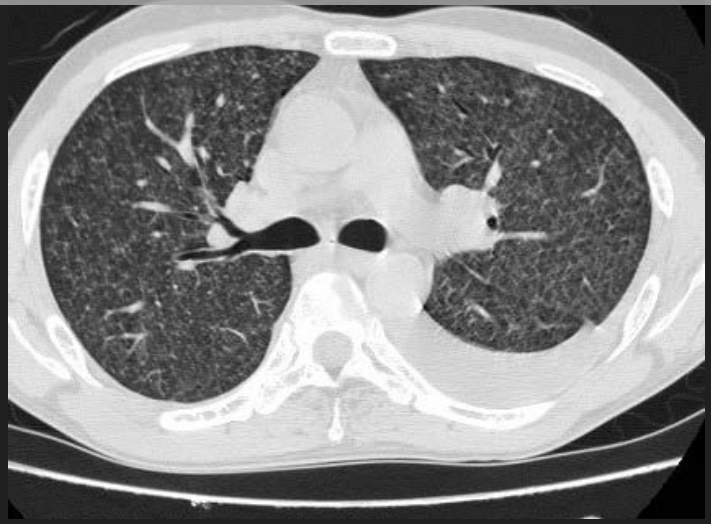
S-AKI



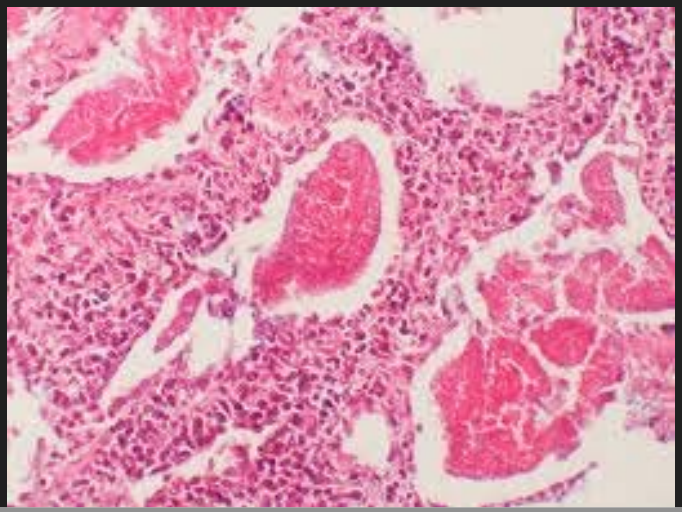


GOODPASTURE SY.

REZISTENTNÍ TBC

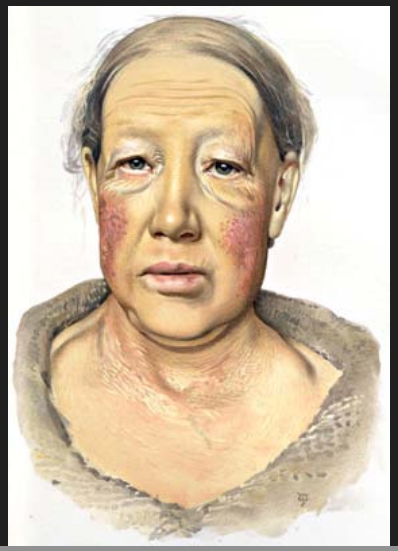


HIV/AIDS



PNEUMOCYSTIS

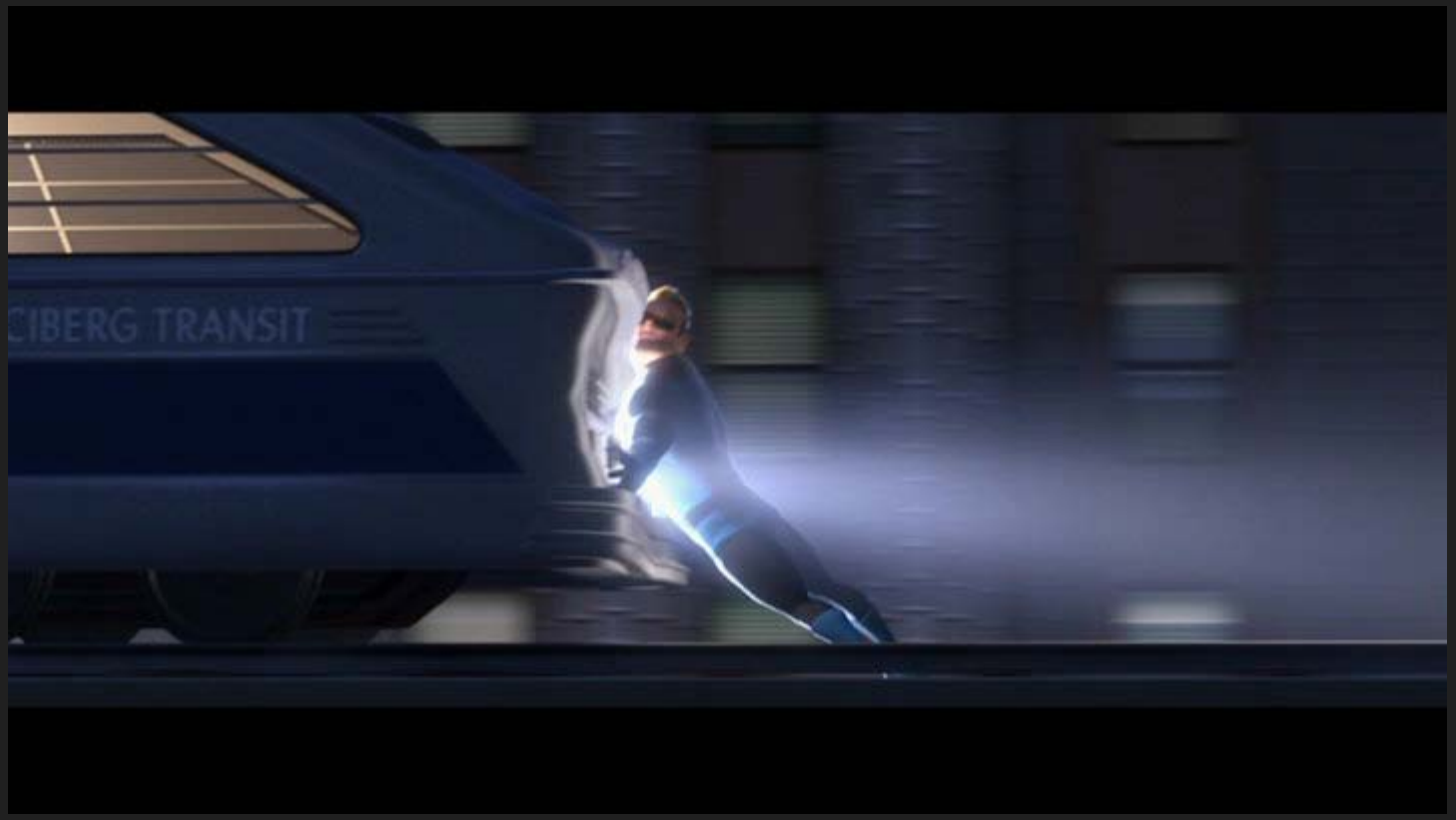
„EXOTICKÁ“ PNEUMONIE



MYXEDEM

LEGIONELLA

9. Neopomenout de-eskalovat

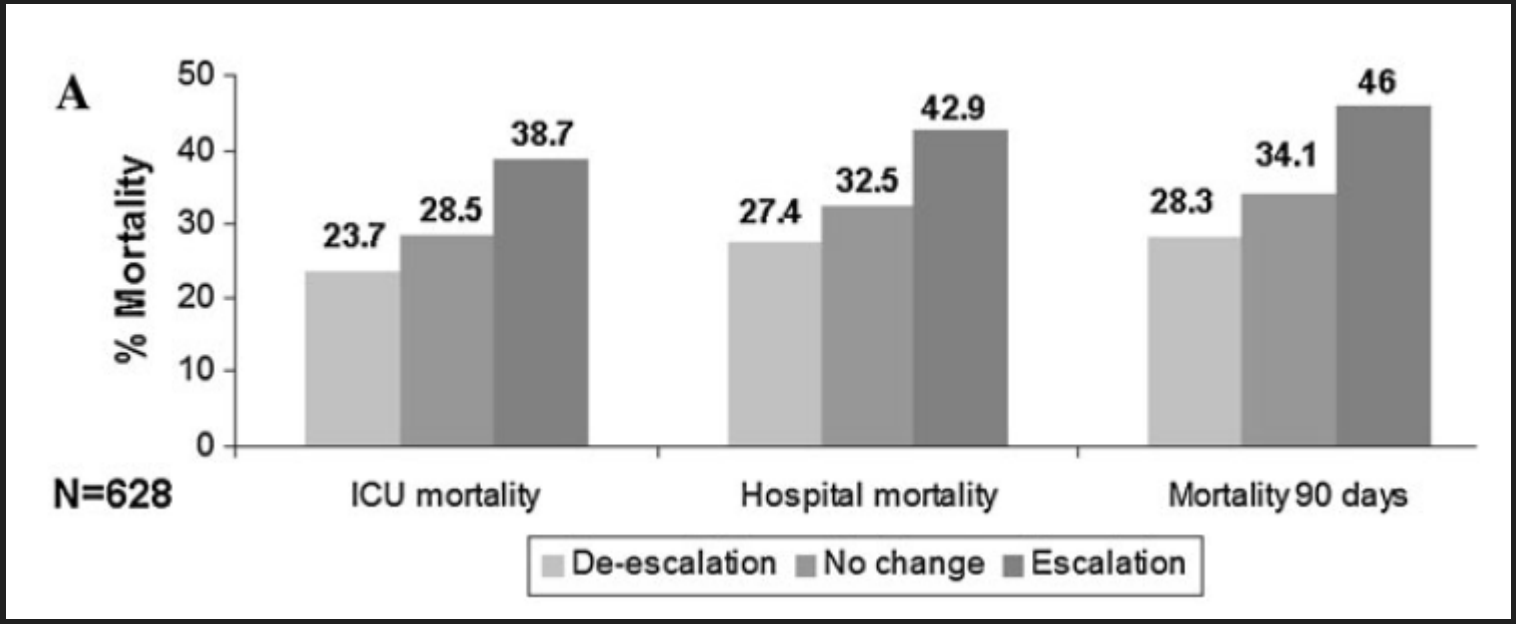


Intensive Care Med (2014) 40:32–40
DOI 10.1007/s00134-013-3077-7

ORIGINAL ARTICLE

J. Garnacho-Montero
A. Gutiérrez-Pizarraya
A. Escoresca-Ortega
Y. Corcia-Palomo
Esperanza Fernández-Delgado
I. Herrera-Melero
C. Ortiz-Leyba
J. A. Márquez-Vácaro

De-escalation of empirical therapy is associated with lower mortality in patients with severe sepsis and septic shock



The Importance of Fluid Management in Acute Lung Injury Secondary to Septic Shock

CHEST / 136 / 1 / JULY, 2009

Claire V. Murphy, PharmD; Garrett E. Schramm, PharmD; Joshua A. Doherty, BS; Richard M. Reichley, RPh; Ognjen Gajic, MD, FCCP; Bekele Afessa, MD, FCCP; Scott T. Micek, PharmD; and Marin H. Kollef, MD, FCCP

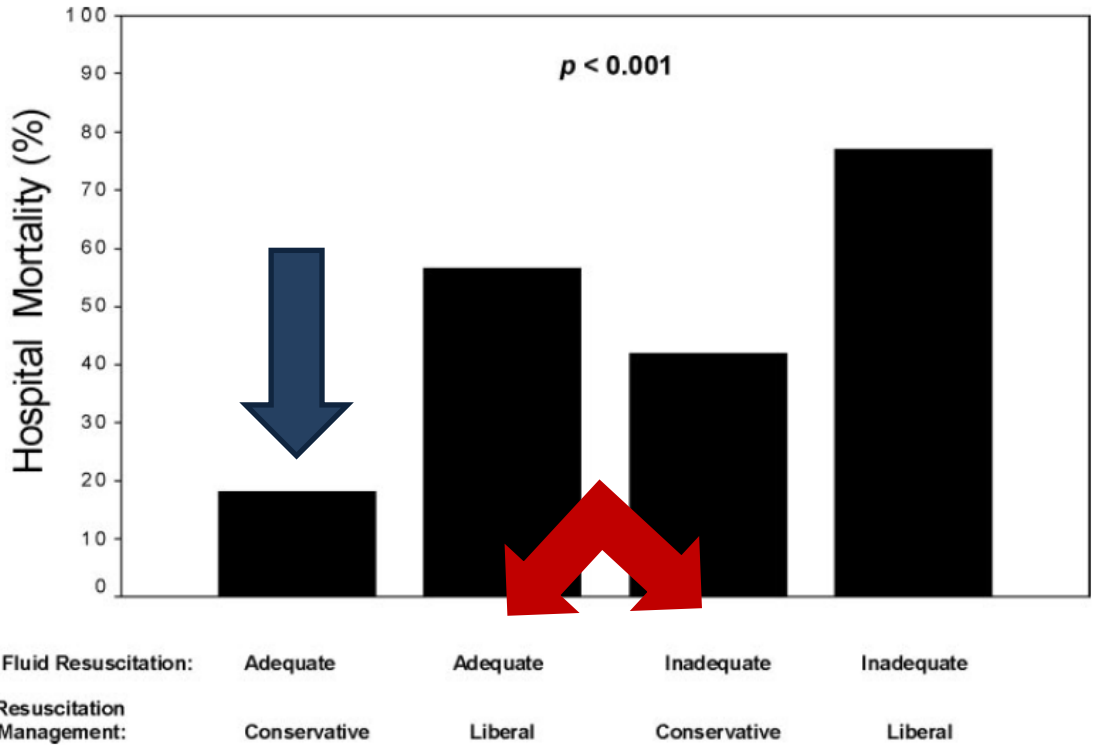


FIGURE 3. Hospital mortality according to whether or not patients achieved AIFR, CLFM, both, or neither.

10. „… někdy už to vzdát …“

DOPORUČENÍ PŘEDSTAVENSTVA ČLK č. 1/2010

k postupu při rozhodování o změně léčby intenzivní na léčbu paliativní u pacientů v terminálním stavu, kteří nejsou schopni vyjádřit svou vůli

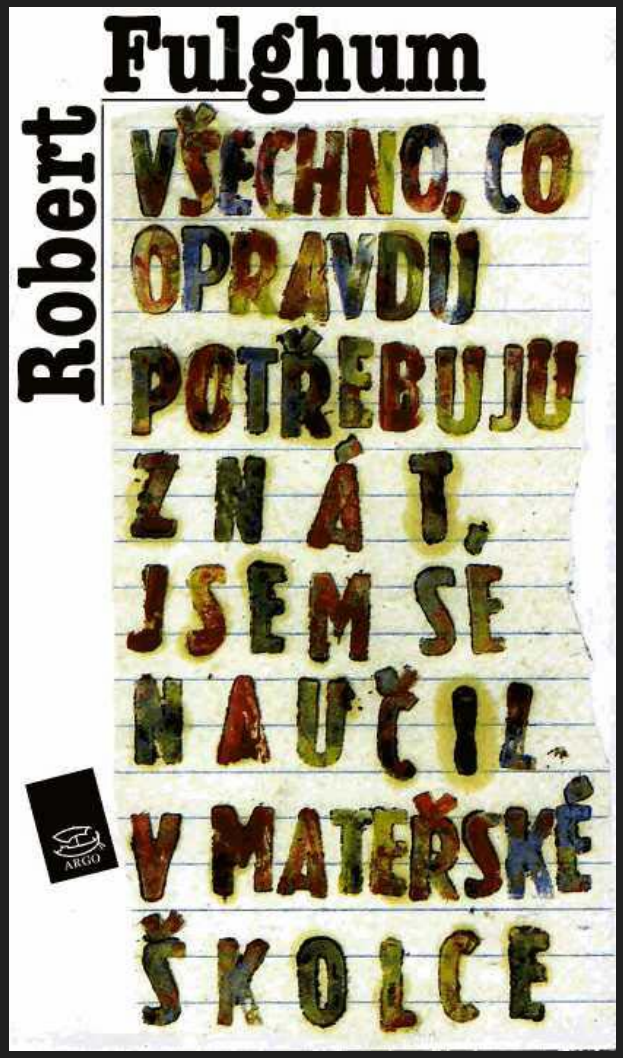
c) Zahájení nebo pokračování jakéhokoliv léčebného postupu, který není odborně odůvodněný, kde neexistuje racionální předpoklad jeho příznivého účinku na celkový průběh onemocnění a kde rizika komplikací, strádání, útrap a bolesti převažují nad reálným klinickým přínosem zvoleného postupu, je v rozporu s etickými principy medicíny a Chartou práv umírajících. Neexistuje povinnost zahajovat marnou a neúčelnou léčbu nebo v ní pokračovat, pokud je probíhající léčba odůvodněně za takovou označena.

d) Zabezpečení fyzických, psychických, sociálních a duchovních potřeb pacienta, odstranění pocitů bolesti, strádání a utrpení s respektováním lidské důstojnosti jsou základní priority paliativní péče.


03
20
UDA

10 times NEVER AGAIN

1. Nevzdávat to
2. Neztrácet čas
3. Nebát se počáteční racionální terapeutické agresivity
4. … a její ekonomické / personální náročnosti
5. Nedělat léčebnou kosmetiku
6. Nepodléhat módním trendům
7. Opomíjet limitace klinických studií
8. Nemyslet si, že už vím o pacientově stavu všechno
9. Neopomenout de-eskalovat
10. „… někdy už to vzdát …“



NEOPOMENOUT SI NA CESTU PŘIBALIT ZDRAVÝ SELSKÝ ROZUM A TROCHU ZNALOSTÍ

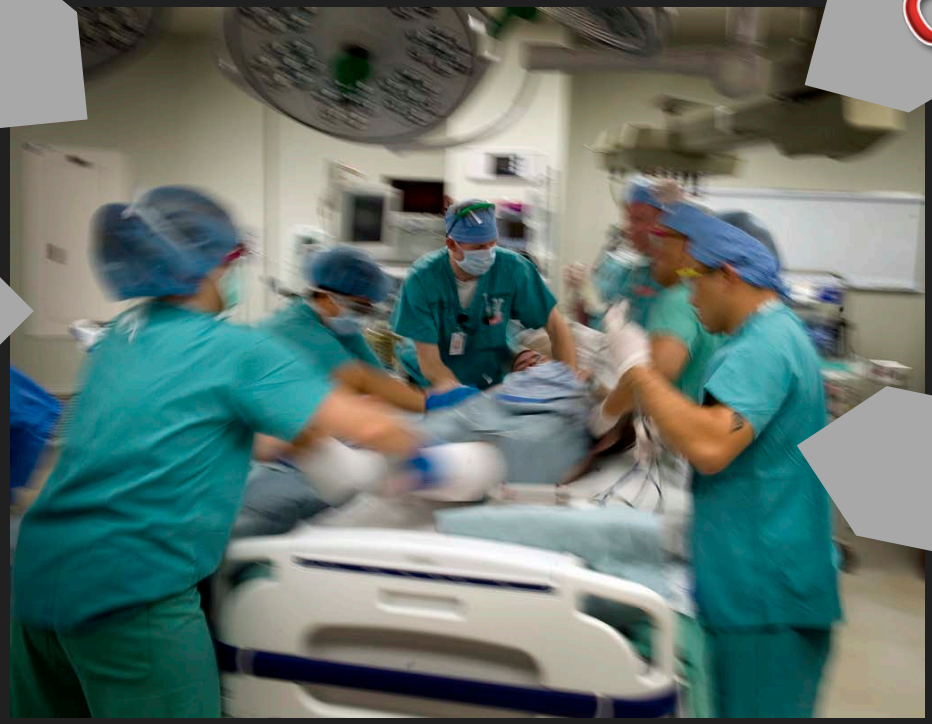
DĚKUJI ZA POZORNOST

Práce byla podpořena
VZ MSM0021620819 a projektem P36 „PRVOUK“

ATB

OBJEM

ECHO



NA

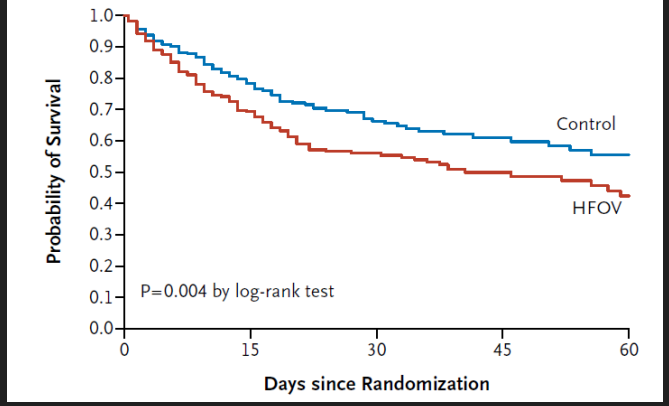
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

High-Frequency Oscillation in Early Acute Respiratory Distress Syndrome

Niall D. Ferguson, M.D., Deborah J. Cook, M.D., Gordon H. Guyatt, M.D.,

OSCILLATE



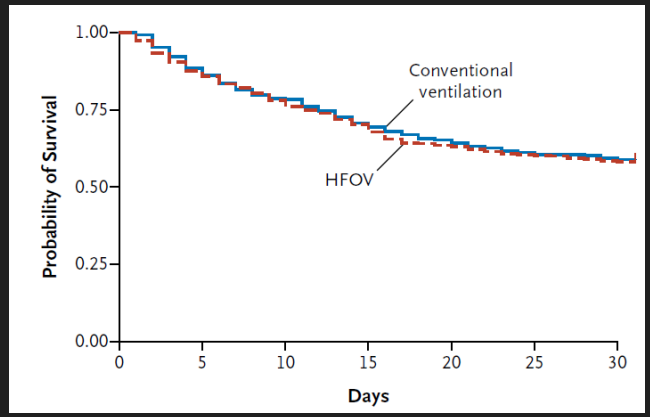
The NEW ENGLAND JOURNAL of MEDICINE

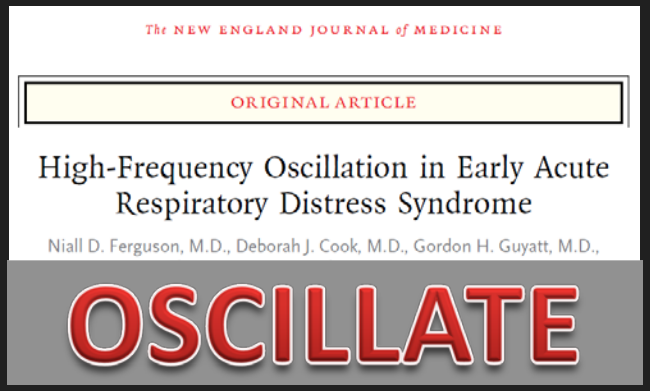
ORIGINAL ARTICLE

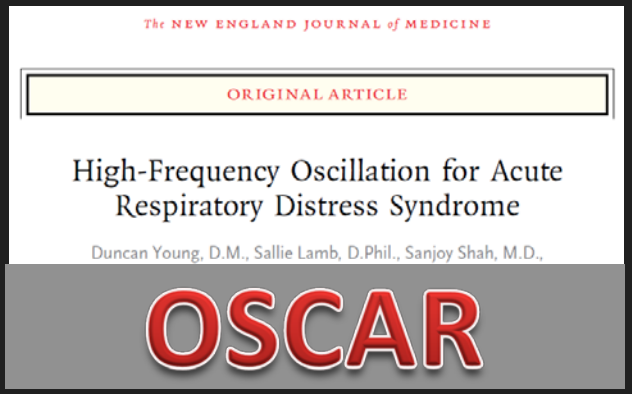
High-Frequency Oscillation for Acute Respiratory Distress Syndrome

Duncan Young, D.M., Sallie Lamb, D.Phil., Sanjoy Shah, M.D.,

OSCAR







In conclusion, in a large effectiveness study, we were unable to find any benefit or harm from the use of HFOV in adult patients with ARDS. We recommend that this mode of ventilation not be used for routine care.