

# **QUAIS SÃO AS EVIDÊNCIAS ENTRE PROTOCOLO DE SEPSE E REDUÇÃO DE MORTALIDADE?**

**Reinaldo Salomão  
EPM / Unifesp  
Presidente do ILAS**



# PROTOCOLO DE SEPSE E REDUÇÃO DE MORTALIDADE



*“A Pestilência”, de Arnold Böcklin.*

13  
setembro

DIA MUNDIAL  
DA SEPSE



# A CADA SEGUNDO...

alguém **morre** de sepsse

**No mundo**

20.000.000  
30.000.000

de pacientes são acometidos a cada ano,  
com mais de 6 milhões de casos de sepsse  
neonatal e na primeira infância e mais  
de 100.000 casos de sepsse materna ●

[www.diamundialdasepse.com.br](http://www.diamundialdasepse.com.br)

# SEPSE: UM PROBLEMA DE SAÚDE PÚBLICA

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**O evento agudo e as consequências de longo prazo**

***morbidade***

***mortalidade***

***custos***

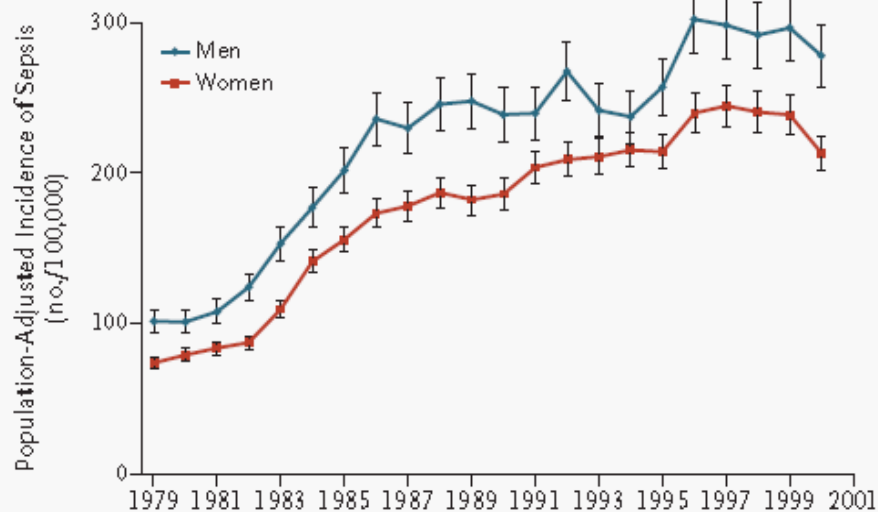
# Sepse: Estados Unidos

THE NEW ENGLAND JOURNAL OF MEDICINE

## ORIGINAL ARTICLE

### The Epidemiology of Sepsis in the United States from 1979 through 2000

Greg S. Martin, M.D., David M. Mannino, M.D., Stephanie Eaton, M.D., and Marc Moss, M.D.



**Figure 1.** Population-Adjusted Incidence of Sepsis, According to Sex, 1979–2000. Points represent the annual incidence rate, and I bars the standard error.

## Incidência:

**1979: 164.000 casos**

**(82,7 / 100.000 hab.)**

**2000: 660.000 casos**

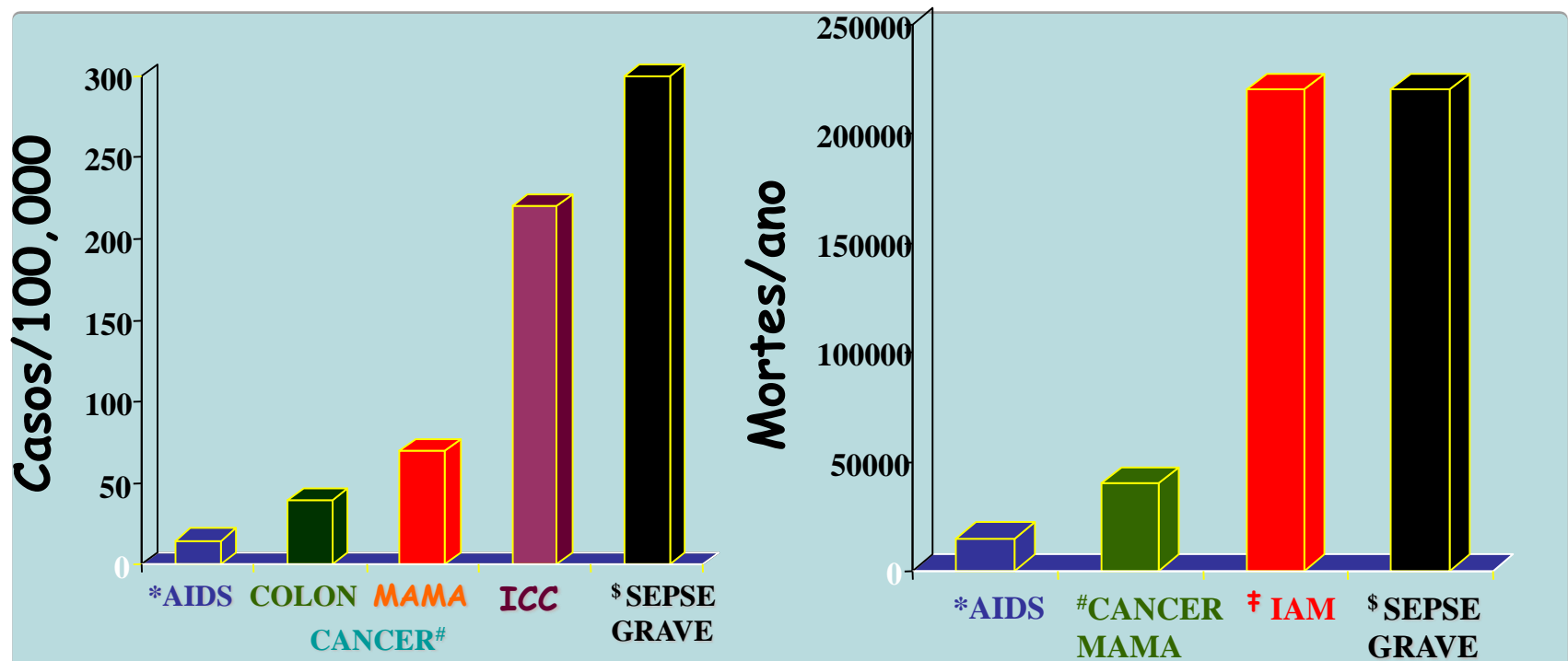
**(240,4 / 100.000 hab.)**

## Óbitos:

**1979: 43.579 (21,9 / 100.000 hab.)**

**2000: 120.491 (43,9 / 100.000 hab.)**

# Sepse: Estados Unidos



\*National Center for Health Statistics, 2001

# American Cancer Society, 2001

‡American Heart Association, 2001

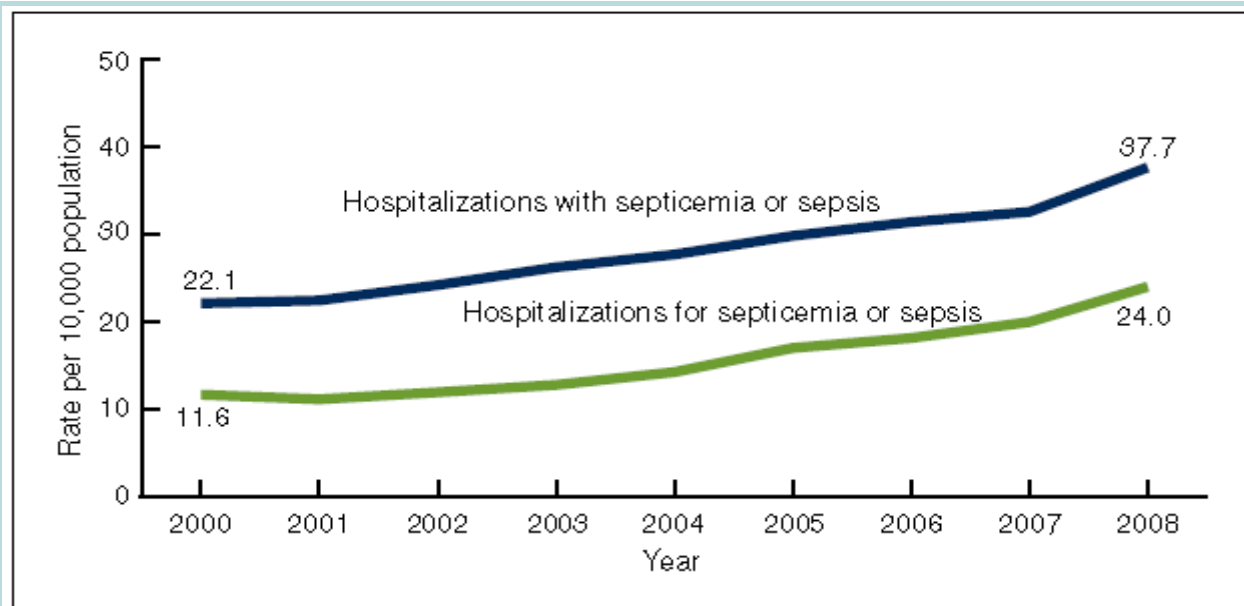
\$Angus DC, Crit Care Med, 2001

# Sepse: Estados Unidos

NCHS Data Brief ■ No. 62 ■ June 2011

## Inpatient Care for Septicemia or Sepsis: A Challenge for Patients and Hospitals

Margaret Jean Hall, Ph.D.; Sonja N. Williams, M.P.H.;  
Carol J. DeFrances, Ph.D.; and Aleksandr Golosinskiy, M.S.



NOTE: Significant linear trend from 2000 through 2008 for both categories.

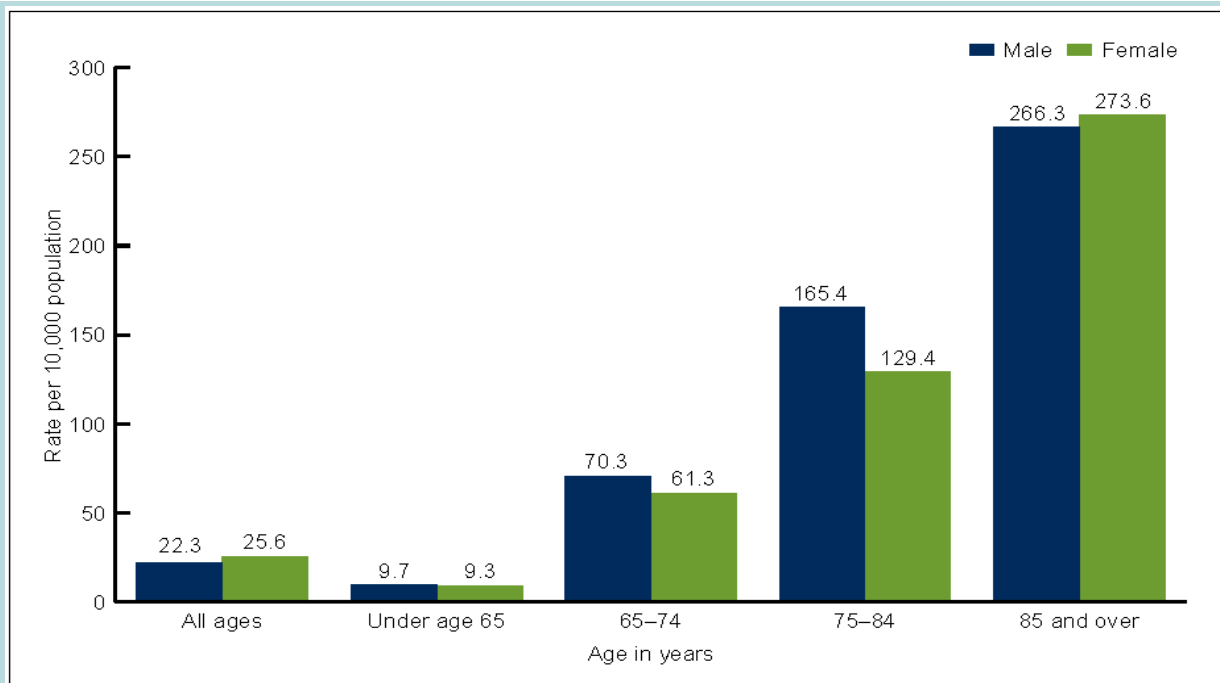
SOURCE: CDC/NCHS, National Hospital Discharge Survey, 2000–2008.

# Sepse: Estados Unidos

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Characteristic	Septicemia or sepsis	Other diagnoses
Disposition	Percent	
Routine <sup>1</sup>	39	79
Transfer to other short-term care facility <sup>1</sup>	6	3
Transfer to long-term care institution <sup>1</sup>	30	10
Died during the hospitalization <sup>1</sup>	17	2
Other or not stated	8	6
Total	100	100

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# Sepse: Global

Series

## Critical Care 1



### Critical care and the global burden of critical illness in adults

Neill K J Adhikari, Robert A Fowler, Satish Bhagwanjee, Gordon D Rubenfeld

	Population in 2004 ( $\times 10^3$ )	Number of deaths in 2004 ( $\times 10^3$ )†						Estimated potential burden of selected critical illnesses per year ( $\times 10^3$ )‡		
		Total	Infection	Maternal conditions	Malignant neoplasms	Cardiovascular diseases	Injuries	Patients mechanically ventilated	Acute lung injury	Sepsis
High-income countries	949 818	8008	468 (6%)	1 (0%)	2146 (27%)	2978 (37%)	490 (6%)	2000-3000	170-820	2300-2800
East Asia and Pacific	1892 113	14 000	1776 (13%)	44 (<1%)	2284 (16%)	4439 (32%)	1678 (12%)	3900-5900	340-1600	4500-5700
Europe and central Asia	476 096	5684	284 (5%)	3 (<1%)	820 (14%)	3248 (57%)	604 (11%)	990-1500	85-410	1100-1400
Latin America and Caribbean	549 187	3499	474 (14%)	16 (<1%)	543 (16%)	998 (29%)	407 (12%)	1100-1700	98-470	1300-1600
Middle East and north Africa	324 542	2114	299 (14%)	15 (<1%)	181 (9%)	732 (35%)	281 (13%)	680-1000	58-280	780-970
South Asia	1493430	13778	3993 (29%)	179 (1%)	954 (7%)	3438 (25%)	1476 (11%)	3100-4700	270-1300	3600-4500
Sub-Saharan Africa	749 269	11662	6475 (56%)	269 (2%)	493 (4%)	1232 (11%)	847 (7%)	1600-2400	130-650	1800-2200
World	6436826	58772	13777 (23%)	527 (1%)	7424 (13%)	17073 (29%)	5784 (10%)	13000-20 000	1150-5500	15000-19 000

# Sepse: Países de Baixa Renda

## Severe Sepsis

Pakistan 80%

*Siddiqui S. J Indian Med Assoc 2007; 105:221*

Turkey 92%

*Tanriover MD, et al. Epidemiol Infect 2006; 134:315-322*

Thailand 90%

*Cheng AC, et al. Clin Infect Dis 2007; 45:308-314*

## Septic Shock

Tunisia 82%

*Frikha N, et al. Tunis Med 2005; 83:320-325*

Mongolia 80%

*Dünser M, et al. Wien Klin Wochenschr 2008; 120:600-607*

# Mortality rates of sepsis in Brazil

## BASES

E Silva *et al.*  
Crit Care 2004;8:R251

## Sepse Brasil

Sales Jr JA *et al.*  
RBTI 2006;18:9

### Mortality

Severe sepsis 47.3%

Septic shock 52%

34.4%

65%

# Promoting Global Research Excellence in Severe Sepsis (PROGRESS): Lessons from an International Sepsis Registry

R. Beale, K. Reinhart, F.M. Brunkhorst, G. Dobb, M. Levy, G. Martin, C. Martin, G. Ramsey, E. Silva, B. Vallet, J.-L. Vincent, J.M. Janes, S. Sarwat, M.D. Williams, for the PROGRESS Advisory Board

**N=12881**  
**ICUs= 276**  
**Countries = 27**

Table 4 Intensive care unit outcomes in severe sepsis patients.									
Intensive care unit outcomes	Adult patients only								
	Global (n = 12,570)	Germany (n = 1,855)	Argentina (n = 1,269)	Canada (n = 1,215)	Brazil (n = 969)	India (n = 803)	US (n = 761)	Australia (n = 669)	Malaysia (n = 641)
Overall ICU mortality (%)	39.2 (4,933/12,570)	36.3 (674/1,855)	46.6 (591/1,269)	30.3 (368/1,215)	56.1 (544/969)	37.4 (300/803)	33.0 (251/761)	22.0 (147/669)	56.8 (364/641)
Severity score mean <sup>a</sup> ± SD (n)									
APACHE II	23.3 ± 8.3 (9,191)	27.0 ± 8.3 (1,384)	22.9 ± 7.5 (1,110)	23.4 ± 7.9 (1,171)	22.8 ± 7.5 (919)	19.8 ± 7.2 (427)	26.1 ± 8.4 (232)	20.6 ± 7.7 (660)	24.2 ± 8.7 (446)
Total SOFA	9.3 ± 3.9 (5,135)	10.5 ± 3.5 (1,021)	6.9 ± 3.8 (639)	–	8.5 ± 3.7 (923)	10.1 ± 3.9 (90)	10.5 ± 3.9 (81)	10.1 ± 3.6 (171)	10.4 ± 3.7 (554)

**39,2%      36,3%      46,6%      30,3%      56,1%      37,4%      33,0%      22,0%      56,8%**

# **SPREAD - Sepsis PREvalence Assessment Database**

## **Perfil epidemiológico da sepse grave e choque séptico dentro de UTI brasileiras**

**Flavia R. Machado, Fernanda Carrara, Alexandre C Biasi, Fernando Bozza, Juliana Lubarino, Reinaldo Salomao, Elaine M. Ferreira, , Derek Angus, Luciano Cesar Pontes Azevedo e investigadores do estudo SPREAD**



Latin American  
**Sepsis**  
Institute

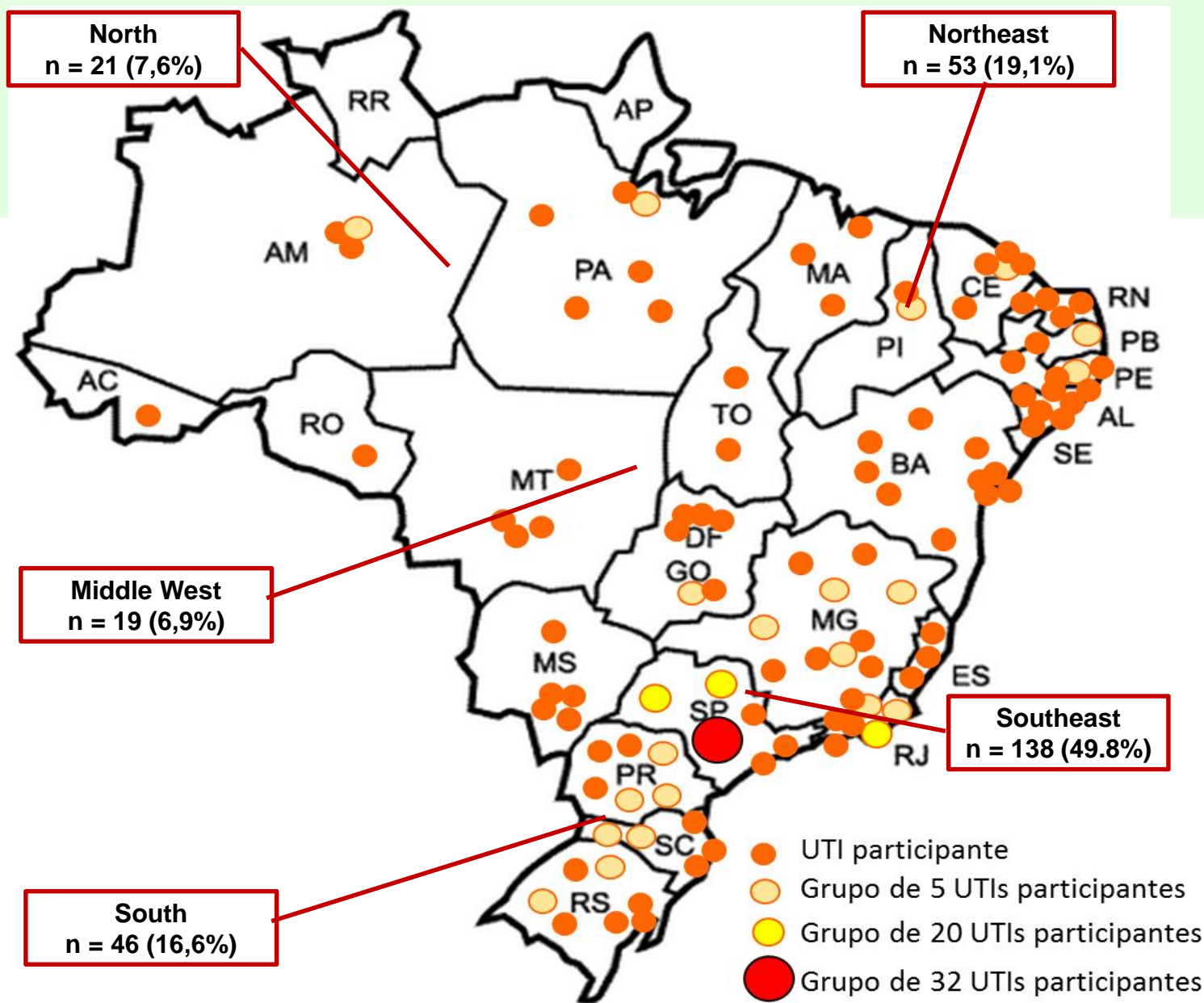


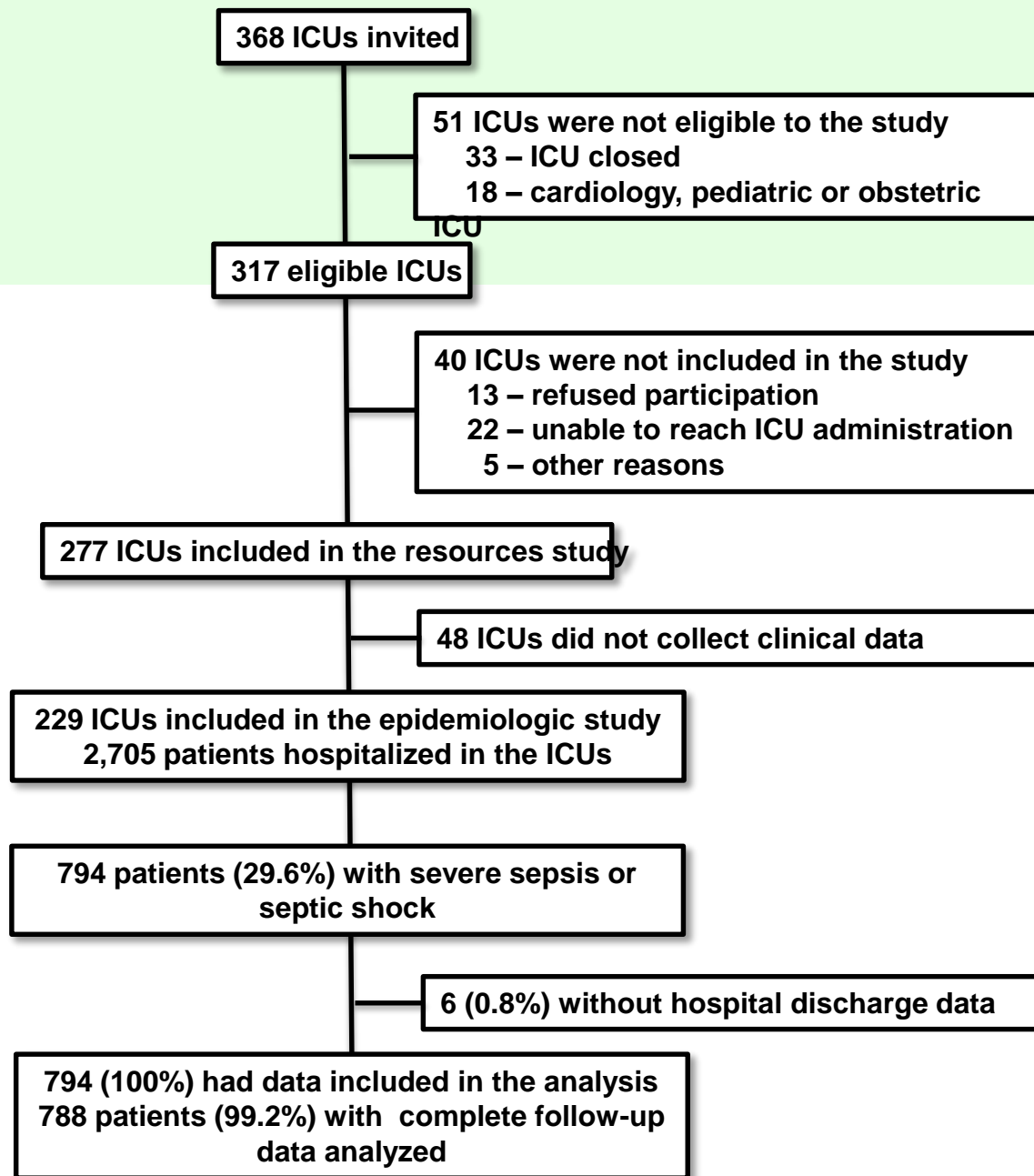
# **SPREAD - Sepsis PREvalence Assessment Database**

## **Perfil epidemiológico da sepse grave e choque séptico dentro de UTI brasileiras**

### **Estudo Epidemiológico Nacional**

- ✓ 10 extratos: conforme região geoeconômica e tamanho das cidades
- ✓ Amostragem em 20% das UTIs de cada extrato (privada ou pública)
- ✓ 229 UTIs – 2.705 leitos.
- ✓ Cada UTI registrou os números de sepse
- ✓ Acompanhamento até a alta hospitalar ou 60º dia de internação.







# **SPREAD - Sepsis PREvalence Assessment Database**

**PREVALÊNCIA: 29,6%**  
**MORTALIDADE: 55,7%**

## **Disponibilidade de recursos**

<b>Alta:</b>	<b>52,7%</b>
<b>Intermediária:</b>	<b>56,0%</b>
<b>Baixa:</b>	<b>66,4%</b>

# Campanha Sobrevivendo à Sepse

Address <http://ice-ccm.med.tau.ac.il/>

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**Presentations**

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## ICE-CCM

### International Collaboration for Excellence in Critical Care Medicine

This collaborative effort to enhance excellence in critical care medicine, involving four University of Toronto affiliated hospitals, is supported by an unrestricted educational grant from Eli Lilly Global in conjunction with Eli Lilly Canada Inc.

**MOUNT SINAI HOSPITAL**

**SUNNYBROOK & WOMEN'S HOSPITAL**

**ST MICHAEL'S HOSPITAL**

**University Health Network**

### Contact Information

DIRECTOR Dr. Tom Stewart



**Surviving Sepsis**

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## Understanding Sepsis

### Disclaimer

**Questions and Answers**

**Background**

**Treatments**

**Glossary**

**Disclaimer**

### Surviving Sepsis Campaign

### Legal Disclaimer

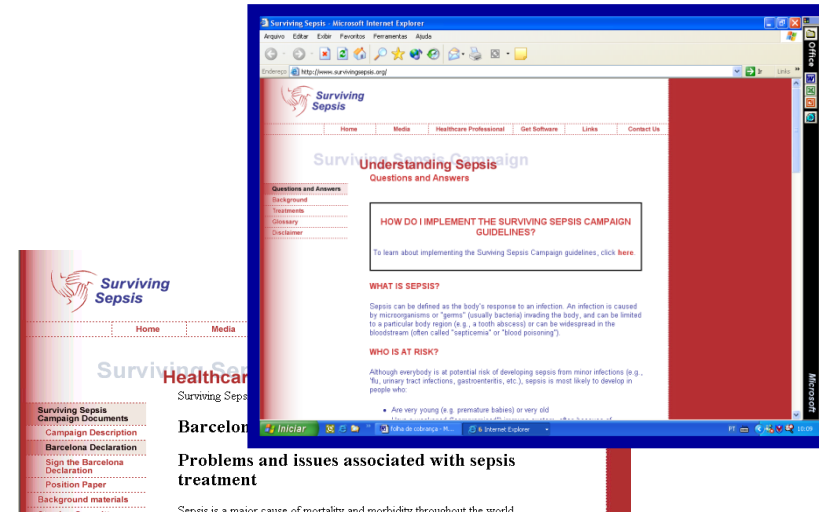
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# Campanha Sobrevivendo à Sepsis

**Fase I - Declaração de Barcelona (Setembro, 2002)**

**Fase II - Diretrizes para o tratamento da sepsis grave e choque séptico (2004)**

**Fase III - Implementação das diretrizes na prática clínica: pacotes (2005)**



## Special Articles

### Surviving Sepsis Campaign guidelines for management of severe sepsis and septic shock

R. Phillip Dellinger, MD; Jean M. Carlet, MD; Henry Masur, MD; Herwig Gerlach, MD, PhD; Thierry Calandra, MD; Jonathan Cohen, MD; Juan Gea-Banacloche, MD, PhD; Didier Keh, MD; John C. Marshall, MD; Margaret M. Parker, MD; Graham Ramsay, MD; Janice L. Zimmerman, MD; Jean-Louis Vincent, MD, PhD; Mitchell M. Levy, MD; for the Surviving Sepsis Campaign Management Guidelines Committee

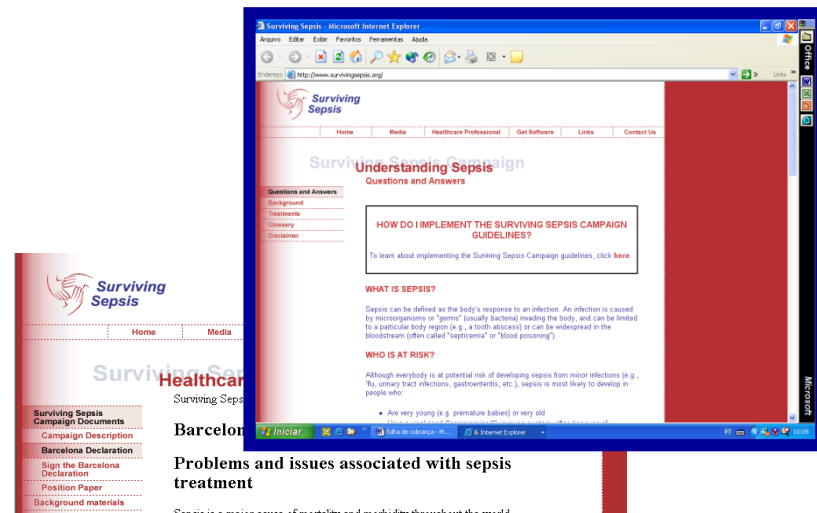
Sponsoring Organizations: American Association of Critical-Care Nurses, American College of Chest Physicians, American College of Emergency Physicians, American Thoracic Society, Australian and New Zealand Intensive Care Society, European Society of Clinical Microbiology and Infectious Diseases, European Society of Intensive Care Medicine, European Respiratory Society, International Sepsis Forum, Society of Critical Care Medicine, Surgical Infection Society.

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# Campanha Sobrevivendo à Sepsis

**PARTICIPE!**

## Eventos

**31/12/2014** Congresso Paulista de Medicina Intensiva.

[+ informações](#)

**18/09/2014** Sepsis 2014 e Internacional Sepsis Forum.

[+ informações](#)



# ***Campanha Sobrevivendo à Seps***

**DIAGNÓSTICO**

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**CONTROLE DO FOCO**

**REPOSIÇÃO VOLÊMICA**

**INOTRÓPICOS**

**ESTERÓIDES**

**PROTEÍNA C ATIVADA**

**DERIVADOS DE SANGUE**

**VENTILAÇÃO MECÂNICA**

**SEDAÇÃO / ANALGESIA / BLOQUEIO**

**CONTROLE GLICÊMICO**

**RIM E BICARBONATO**

**TROMBOSE VENOSA**

**ÚLCERA DE STRESS**

**LIMITES NO TRATAMENTO**

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**Surviving Sepsis Campaign guidelines for management of severe sepsis and septic shock**

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# Campanha Sobrevivendo à Sepsis

RESSUSCITAÇÃO INICIAL

DIAGNÓSTICO

ANTIBIÓTICOS

CONTROLE DO FOCO

REPOSIÇÃO VOLÊMICA

INOTRÓPICOS

ESTERÓIDES

**Intervenções tempo-dependentes**

PROTEÍNA C ATIVADA

DERIVADOS DE SANGUE

VENTILAÇÃO MECÂNICA

SEDAÇÃO / ANALGESIA / BLOQUEIO

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## Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock: 2008

R. Phillip Dellinger, MD; Mitchell M. Levy, MD; Jean M. Carlet, MD; Julian Bion, MD; Margaret M. Parker, MD; Roman Jaeschke, MD; Konrad Reinhart, MD; Derek C. Angus, MD, MPH; Christian Brun-Buisson, MD; Richard Beale, MD; Thierry Calandra, MD, PhD; Jean-Francois Dhainaut, MD; Herwig Gerlach, MD; Maurene Harvey, RN; John J. Marini, MD; John Marshall, MD; Marco Ranieri, MD; Graham Ramsay, MD; Jonathan Sevransky, MD; B. Taylor Thompson, MD; Sean Townsend, MD; Jeffrey S. Vender, MD; Janice L. Zimmerman, MD; Jean-Louis Vincent, MD, PhD; for the International Surviving Sepsis Campaign Guidelines Committee

# Revisão dos pacotes - 2012

## 3-horas

Coleta de lactato

Hemoculturas

Antibióticos

Fluidos

## 6 - horas

### pacote de choque

Vasopressores

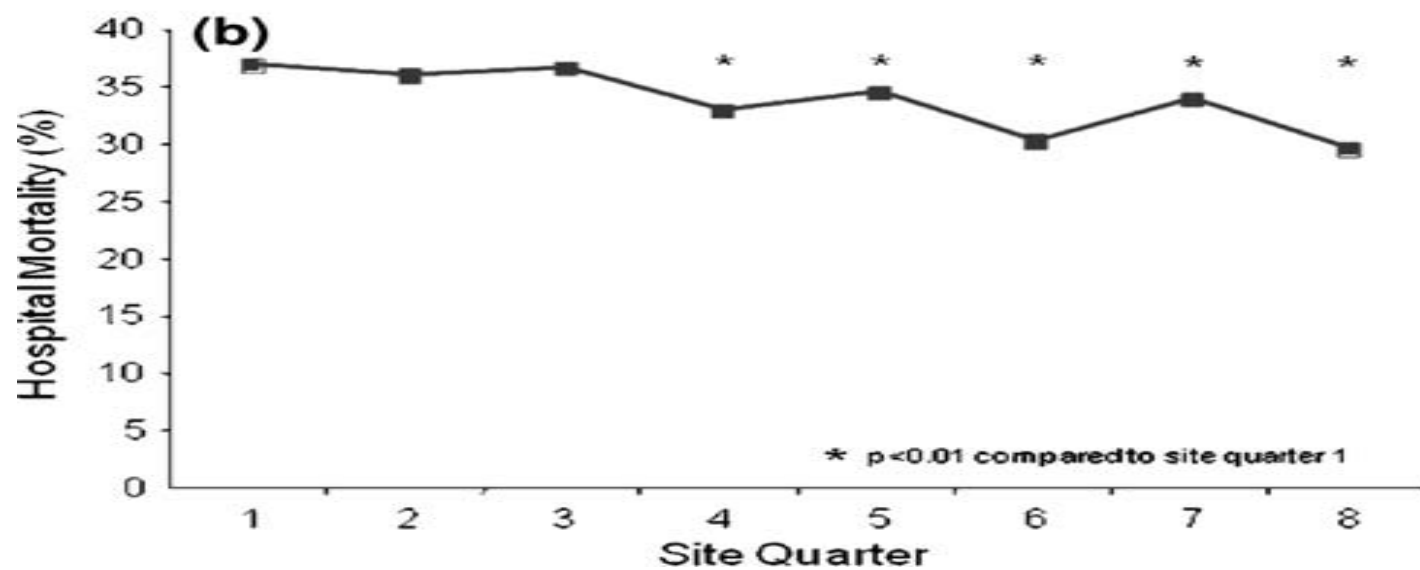
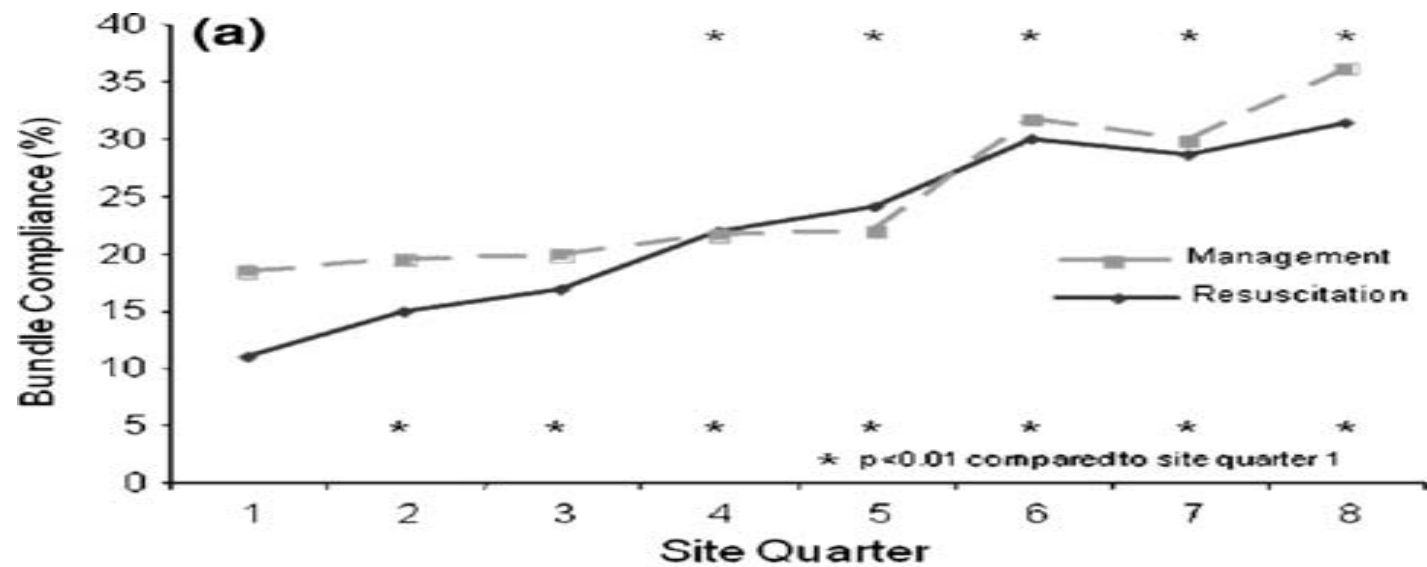
Otimização de PVC

Otimização de  $SvO_2$

# **O PROTOCOLO DE SEPSE MUDA A MORTALIDADE?**

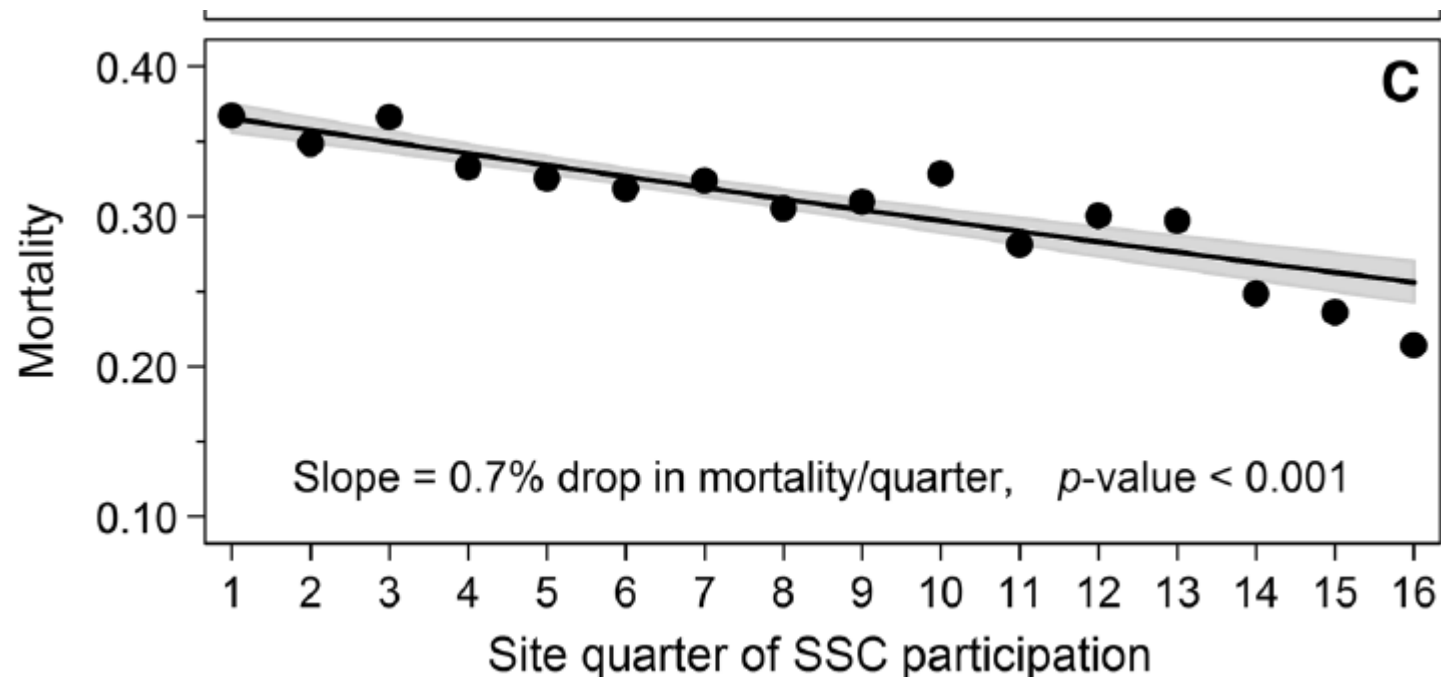
Mitchell M. Levy  
R. Phillip Dellinger  
Sean R. Townsend  
Walter T. Linde-Zwirble  
John C. Marshall  
Julian Bion  
Christa Schorr  
Antonio Artigas  
Graham Ramsay  
Richard Beale  
Margaret M. Parker  
Herwig Gerlach  
Konrad Reinhart  
Eliezer Silva  
Maurene Harvey  
Susan Regan  
Derek C. Angus

## **The Surviving Sepsis Campaign: results of an international guideline-based performance improvement program targeting severe sepsis**



Mitchell M. Levy  
Andrew Rhodes  
Gary S. Phillips  
Sean R. Townsend  
Christa A. Schorr  
Richard Beale  
Tiffany Osborn  
Stanley Lemeshow  
Jean-Daniel Chiche  
Antonio Artigas  
R. Phillip Dellinger

# Surviving Sepsis Campaign: association between performance metrics and outcomes in a 7.5-year study





# SPREAD - Sepsis PREvalence Assessment Database

**Tabela 13 – Fatores associados a letalidade – análise multivariada.**

Variável	Valor de p	OR	IC (95%)	
			Inferior	Superior
SAPS 3	<0,001	1,038	1,027	1,05
Aderência a ATB	0,035	0,669	0,46	0,972
Aderência ao pacote	0,001	0,481	0,311	0,746
Disfunção na enfermaria	0,088	1,443	0,947	2,197
Disfunção na UTI	0,012	1,643	1,116	2,419
Disponibilidade recursos intermediária	0,397	1,256	0,741	2,128
Disponibilidade recursos baixa	0,036	1,79	1,039	3,086
Ter protocolo sepse	0,705	1,083	0,715	1,64
UTI 11 a 30 leitos	0,057	1,483	0,988	2,226
UTI >30 leitos	0,086	1,77	0,923	3,394

OR – odds ratio; IC – intervalo de confiança; SAPS - *Symplified Acute Physioly Score*; ATB – antibioticoterapia; UTI - unidade de terapia intensiva. Análise de regressão logística com efeito aleatório do intercepto

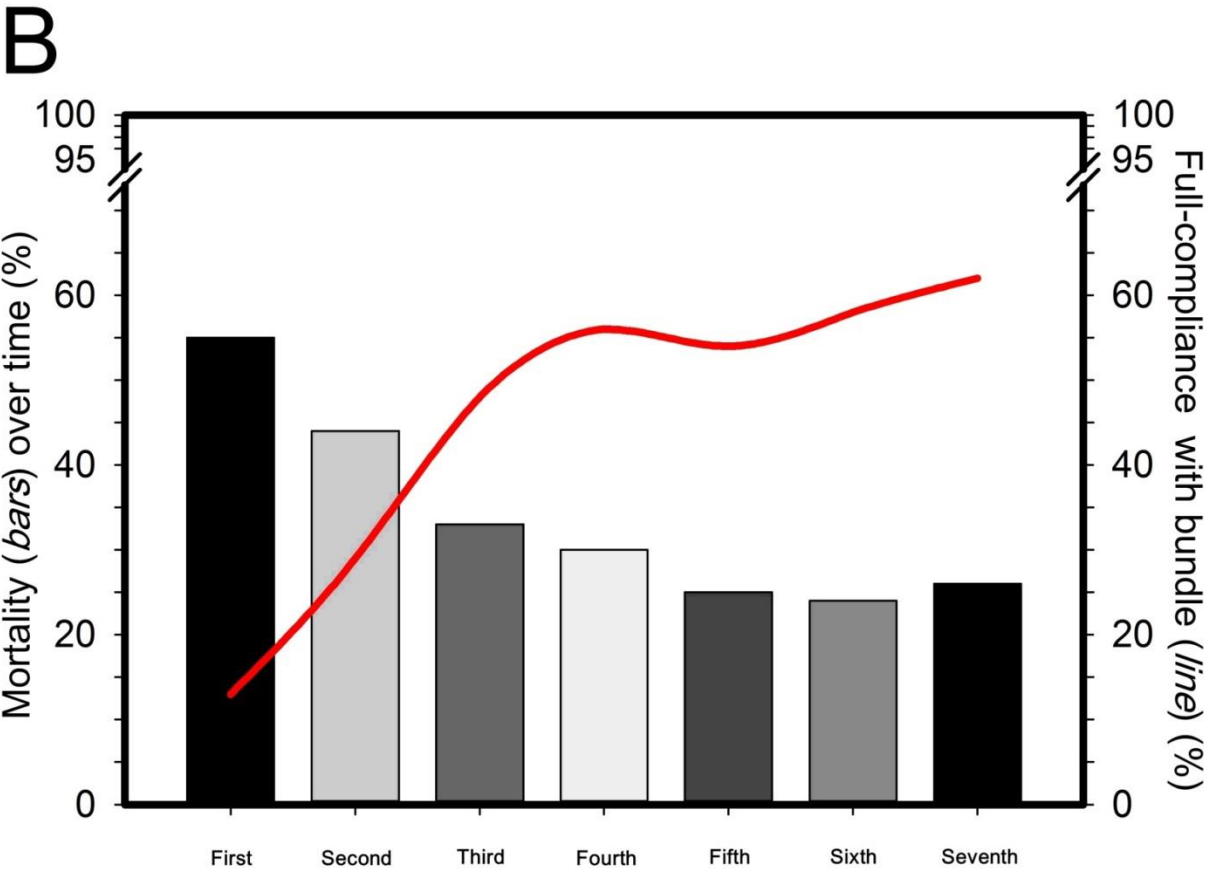




Danilo Teixeira Noritomi  
Otavio T. Ranzani  
Mariana Barbosa Monteiro  
Elaine Maria Ferreira  
Sergio Ricardo Santos  
Fernando Leibel  
Flavia Ribeiro Machado

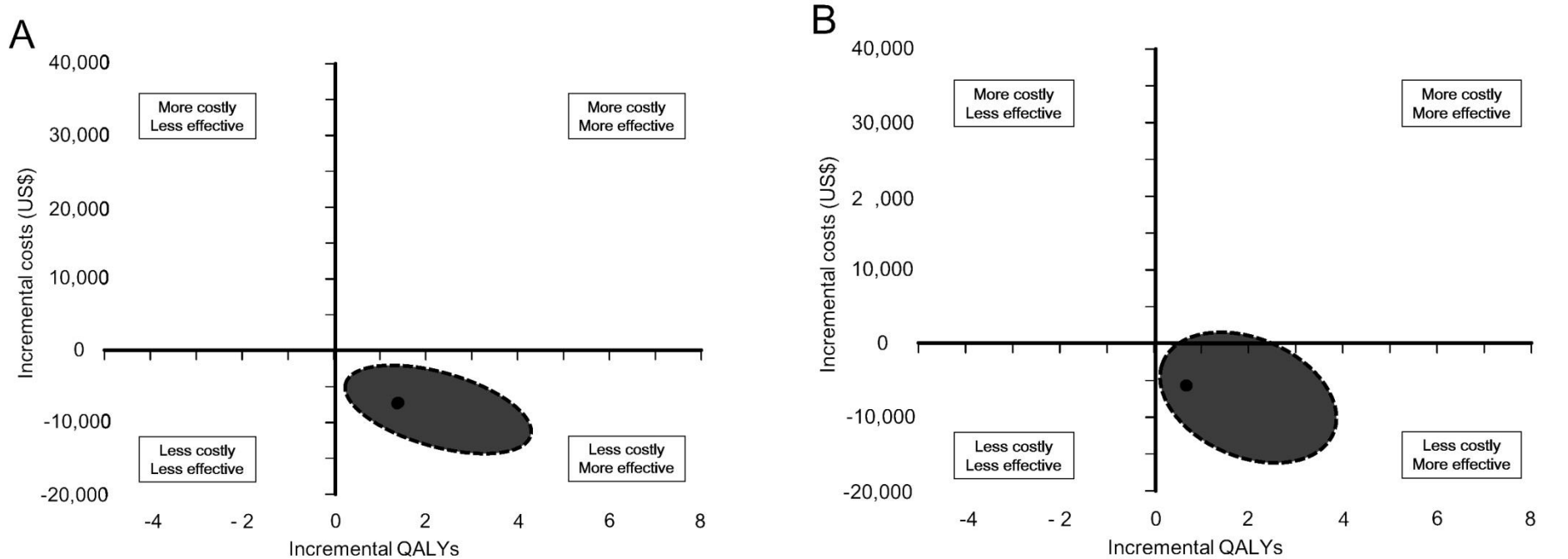
**Implementation of a multifaceted sepsis education program in an emerging country setting: clinical outcomes and cost-effectiveness in a long-term follow-up study**

**10 hospitais  
N= 2120**

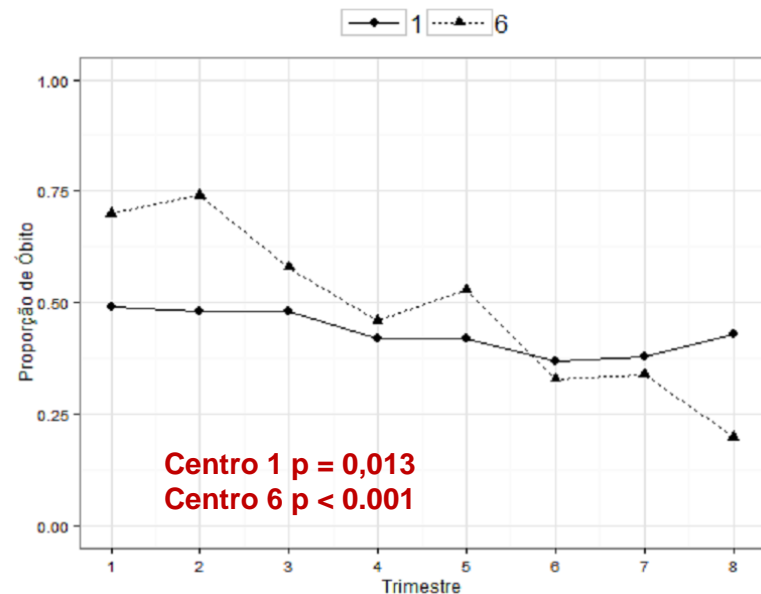
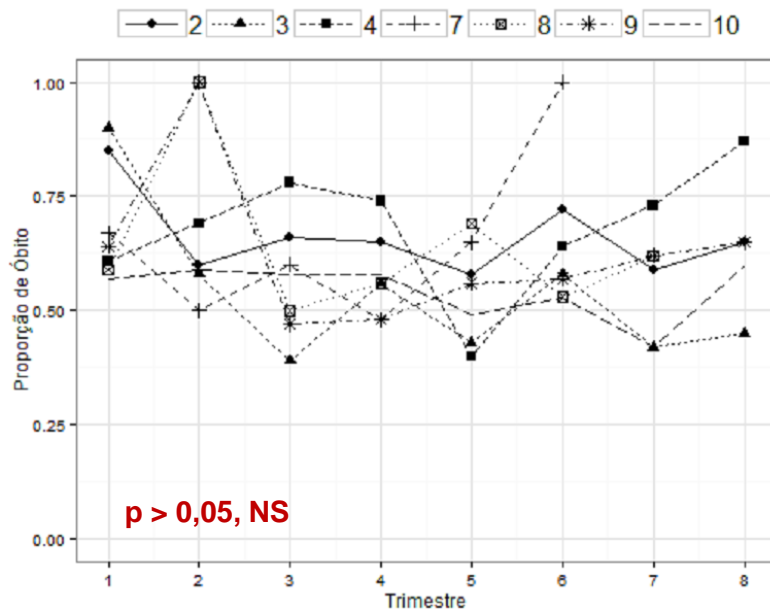


Danilo Teixeira Noritomi  
Otavio T. Ranzani  
Mariana Barbosa Monteiro  
Elaine Maria Ferreira  
Sergio Ricardo Santos  
Fernando Leibel  
Flavia Ribeiro Machado

Implementation of a multifaceted sepsis education program in an emerging country setting: clinical outcomes and cost-effectiveness in a long-term follow-up study



# ...mas nem sempre funciona



Coeficiente	Estimativa	Erro Padrão	z	P-Valor	Razão de Chances	Intervalo de Confiança (95%)	
						Límite Inferior	Límite Superior
Trimestre:Centro1	-0.057	0.023	-2.484	0.013	0.945	0.903	0.988
Trimestre:Centro2	-0.004	0.056	-0.079	0.937	0.996	0.891	1.111
Trimestre:Centro3	-0.115	0.076	-1.514	0.130	0.891	0.765	1.033
Trimestre:Centro4	0.058	0.061	0.958	0.338	1.060	0.941	1.195
Trimestre:Centro6	-0.259	0.063	-4.139	$\leq 0.001$	0.772	0.682	0.871
Trimestre:Centro7	0.202	0.123	1.646	0.100	1.224	0.964	1.563
Trimestre:Centro8	0.015	0.112	0.131	0.896	1.015	0.81	1.263
Trimestre:Centro9	0.121	0.079	1.523	0.128	1.128	0.966	1.32
Trimestre:Centro10	-0.037	0.085	-0.439	0.661	0.963	0.814	1.137

...pode até funcionar sem protocolo

*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

ORIGINAL ARTICLE

Goal-Directed Resuscitation for Patients  
with Early Septic Shock

The ARISE Investigators and the ANZICS Clinical Trials Group\*

**...pode até funcionar sem protocolo**

**DESDE QUE TODOS FAÇAM O QUE  
PRECISA SER FEITO**

# SEPSE

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***É necessário conhecer***

***É necessário reconhecer***

***É urgente tomarmos atitude***

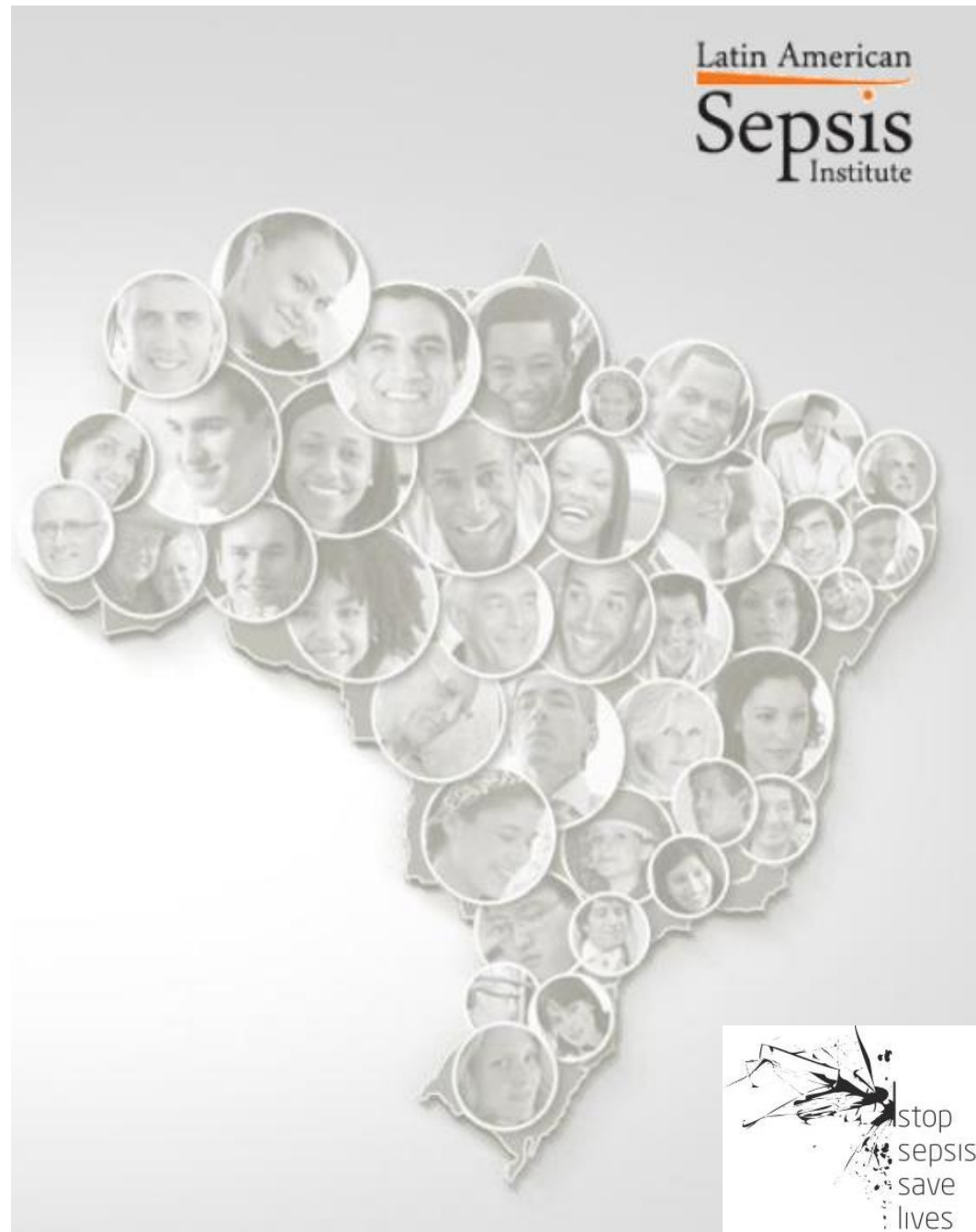
# SEPSE

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***OBRIGADO***

# Conhecimento sobre Sepse

Brasil  
Junho 2014



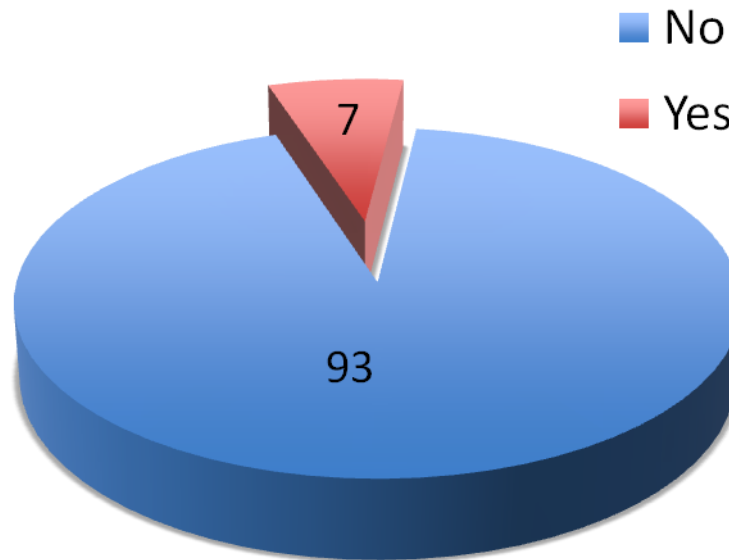
# Methodology

- **The survey was conducted by Datafolha, Ltda. as personal interviews from 06 to 10 June 2014.**
- **Sample size was representative of Brazilian population aged 16+: 2126 persons (1025 male, 1101 female).**
- **Data were collected in 134 Brazilian cities of all sizes.**

# Methodology

- **Question 1:**
  - **Have you heard the word: sepsis?**
- **Question 2: If yes, what is sepsis?**
  - **Sepsis is a rock band**
  - **Sepsis is the body's response to an infection**
  - **Sepsis is blood poisoning**
  - **I don't know / I don't remember**
  - **None of these**

# Have you ever heard the word sepsis?



# The costs of septic syndromes in the intensive care unit and influence of hospital-acquired sepsis

**Table 3** Length of stay (*LOS*) and costs (2001 euros) of admission in the intensive care unit for infected and septic patients. Total LOS indicates the total length of stay in the hospital during the index admission

	All patients	Deceased	Survivors	Sepsis on ICU admission	ICU-acquired sepsis
Patients with sepsis <sup>a</sup>				—	—
Patients with septic shock <sup>a</sup>					
Patients having no infection					
No. patients	200	40	160	—	—
ICU LOS (days)	6.5 (9.4)	4.8 (5.8)	7 (10)	—	—
Total hospital LOS, days	20 (26.7)	12 (18.5)	22 (28)	—	—
Total costs	12,719 (14,634)	10,654 (11,354)	13,012 (15,266)	—	—
No. of patients	87	16	71	50	36
ICU LOS (days)	14 (17.5)	20 (22)	13 (16)	7 (7)	29 (9)
Total LOS	37 (34.5)	31.5 (30)	39 (35)	29 (15)	58 (29)
Total costs	26,256 (25,131)	33,320 (33,591)	24,503 (22,804)	17,261 (15,710)	39,908 (29,975)
Patients with severe sepsis					
No. of patients	81	28	53	41	40
LOS ICU	19 (21)	17 (16.2)	20 (22)	9.5 (8)	23 (19)
Total LOS	43 (37)	27 (21)	51 (40)	35 (33)	52.5 (39)
Total costs	35,185 (33,490)	31,430 (28,680)	37,366 (36,030)	21,461 (16,809)	42,132 (36,142)
No. patients	56	34	22	36	19
LOS ICU	12.2 (16)	10.3 (17)	15 (14)	6.7 (7)	23.5 (28)
Total LOS	34 (33)	24 (25)	50 (37)	25.5 (22)	48 (40)
Total costs	27,083 (25,574)	24,632 (27,114)	31,372 (22,646)	17,705 (11,578)	44,851 (34,529)

<sup>a</sup> Data on the type of infection was missing for one patient

# A Multicentre, Prospective Study to Evaluate Costs of Septic Patients in Brazilian Intensive Care Units

**Table III.** Overall costs (\$US, year 2006 values) in sepsis management according to discharge status and institution main characteristics

Category	All (n = 524)	Survivors (n = 291)	Non-survivors (n = 233)	p-Value	Private hospital (n = 196)	Public hospital (n = 328)	p-Value
Daily ICU cost [median (IQR)]	934 (735–1170)	826 (668–982)	1094 (888–1342)	<0.0001	977 (734–1322)	914 (737–1134)	0.514
Total ICU cost [median (IQR)]	9632 (4583–18 387)	10 161 (3806–18 199)	9425 (5031–19 585)	0.4999	9490 (4305–17 034)	9773 (4643–19 221)	0.3703

**Daily ICU cost:  
U\$ 934**

# SEPSE

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# SEPSE

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***OBRIGADO***

# The lingering consequences of sepsis

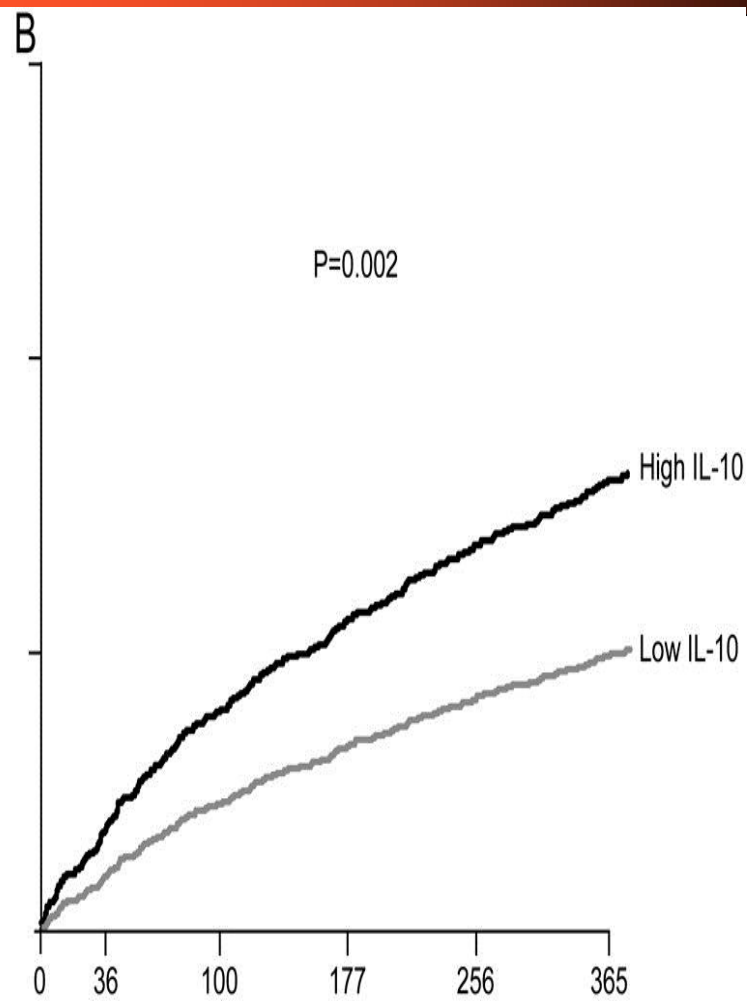
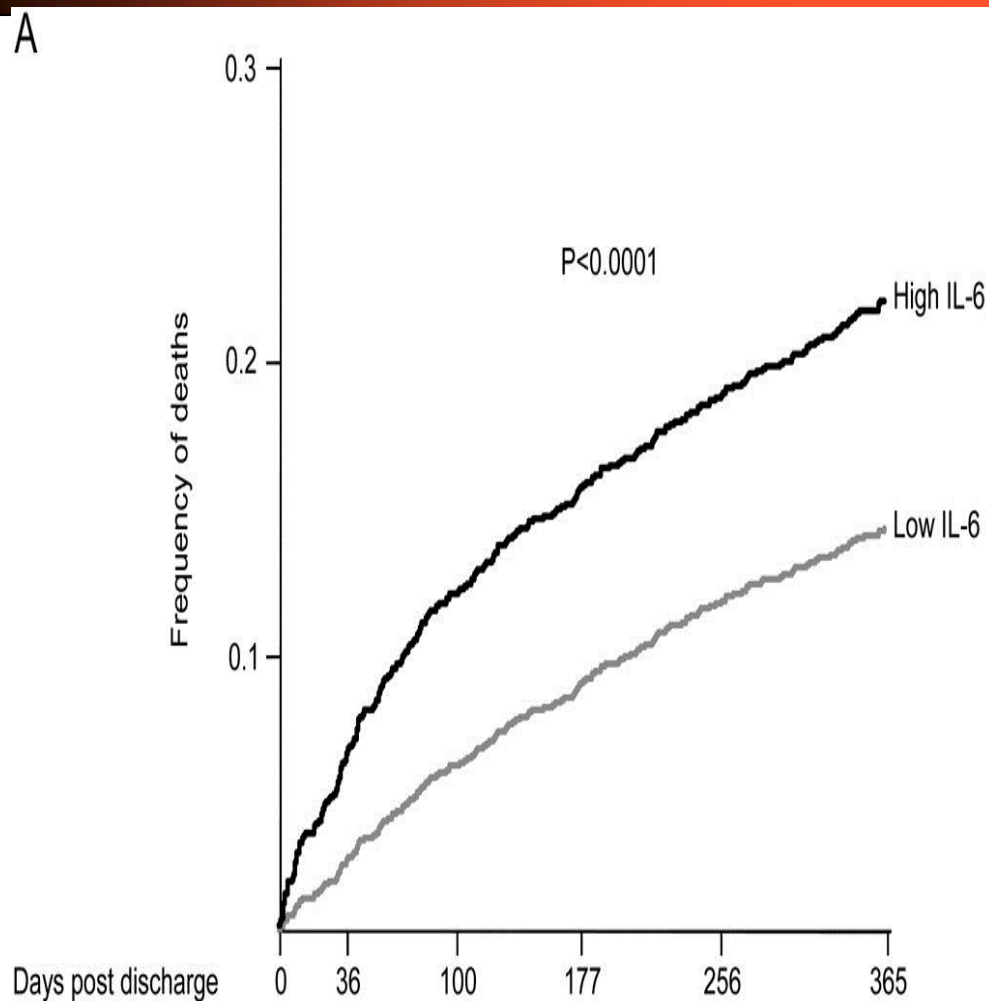
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***immune deregulation***

***persistence of organ dysfunction***

***cognition and disability***

# Community acquired pneumonia



# ASSOCIATION BETWEEN IL-6 AND IL-10 AT HOSPITAL DISCHARGE AND CAUSE-SPECIFIC MORTALITY OVER 1 YEAR\*

Causes of Death	No. (%)	<i>IL-6</i>	<i>IL-10</i>
Cardiovascular	92 (31)	9.6 (1.2)	1.5(1.3)
Infection	32 (11)	14.0 (1.3)	2.5(1.4)
Cancer	73 (25)	11.9 (1.2)	1.5(1.3)
CLRD	47 (16)	5.5 (1.3)	1.4(1.4)
Renal failure	19 (6)	20.3 (1.4)	2.6(1.6)
Others	33 (11)	5.9 (1.3)	1.9(1.4)

# Burden of illness imposed by severe sepsis in Germany

A.Schmid · H.Burchardi · J. Clouth · H. Schneider  
Eur J Health Econom 2002 · 3:77–82

Table 1

**Evaluated health care goods and resources and the mean and range assessed number per patient**

	Mean	Range
Medication <sup>a</sup>	37	5–67
Analgesics	2	1–5
Antibiotics	4	1–11
Muscle relaxants	1	1–3
Sedatives	4	1–9
Vasoactive drugs	3	1–7
Blood and blood products	4	1–9
Nutritional products	10	1–27
Other	11	1–19
Laboratory analysis	118	14–169
Microbiological analysis	20	1–159
Disposables <sup>b</sup>	28	10–41
Staff services in ICU <sup>c</sup>	NA	
Hotel costs for ICU	NA	

<sup>a</sup> Includes nutrition, volume replacement, and blood products

<sup>b</sup> Includes diagnostic procedures, for example, drainages, catheter, radiography, computed tomography

<sup>c</sup> Includes physicians, nurses, without physiotherapy

**44,000 a 95,000 casos  
Sepse Grave por ano**

# Burden of illness imposed by severe sepsis in Germany

A.Schmid · H.Burchardi · J. Clouth · H. Schneider  
Eur J Health Econom 2002 · 3:77–82

Table 2

**Mean direct costs per severely septic patient and per day (in euros)**

	Per patient	Per day
Medication	9,304	527
Routine laboratories	2,337	133
Microbiology	882	50
Disposables	753	43
Hotel costs ICU	1,518	86
Staff costs ICU	8,503	480

**23,300 euros / paciente**

**1,025 to 2,214 milhões/ano  
(28% do gasto)**

**2,622 to 5,660 milhões/ano  
(72% do gasto)**

Table 3

**Mean indirect costs per severely septic patient (in euros)**

	Per patient	Range
Temporary morbidity	3,432	2,307–4,258
Permanent morbidity	10,159	1,180–21,362
Mortality	46,000	17,346–135,643

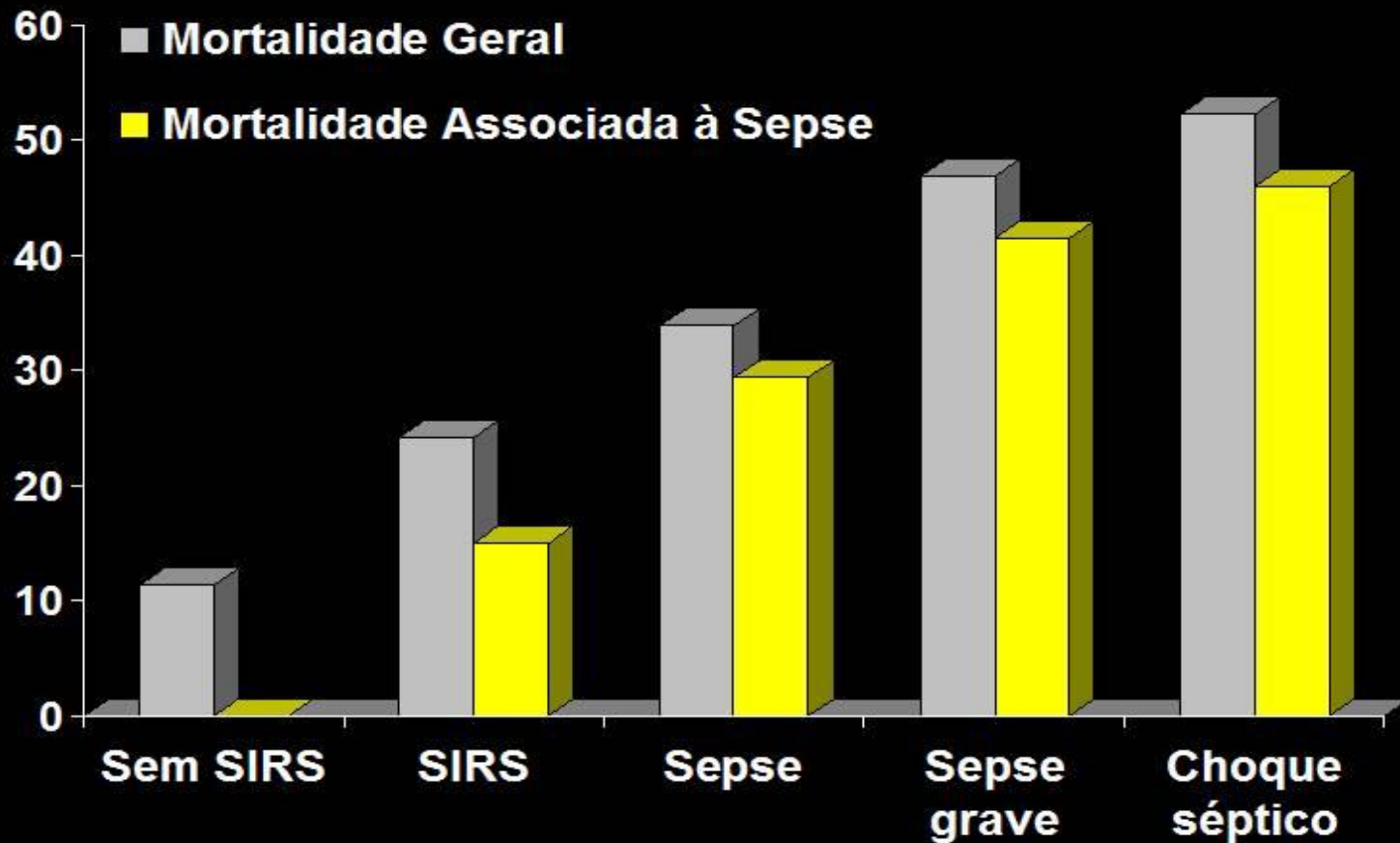
# ***Hospital São Paulo – Escola Paulista de Medicina***

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**Letalidade: 33,4% (121/ 362)**  
**(pacientes sem bacteremia: 5,6%)**

**11,6% dos óbitos do período**  
**(>50% dos óbitos do berçário)**

# ***Brazilian Sepsis Epidemiological Study – BASES***

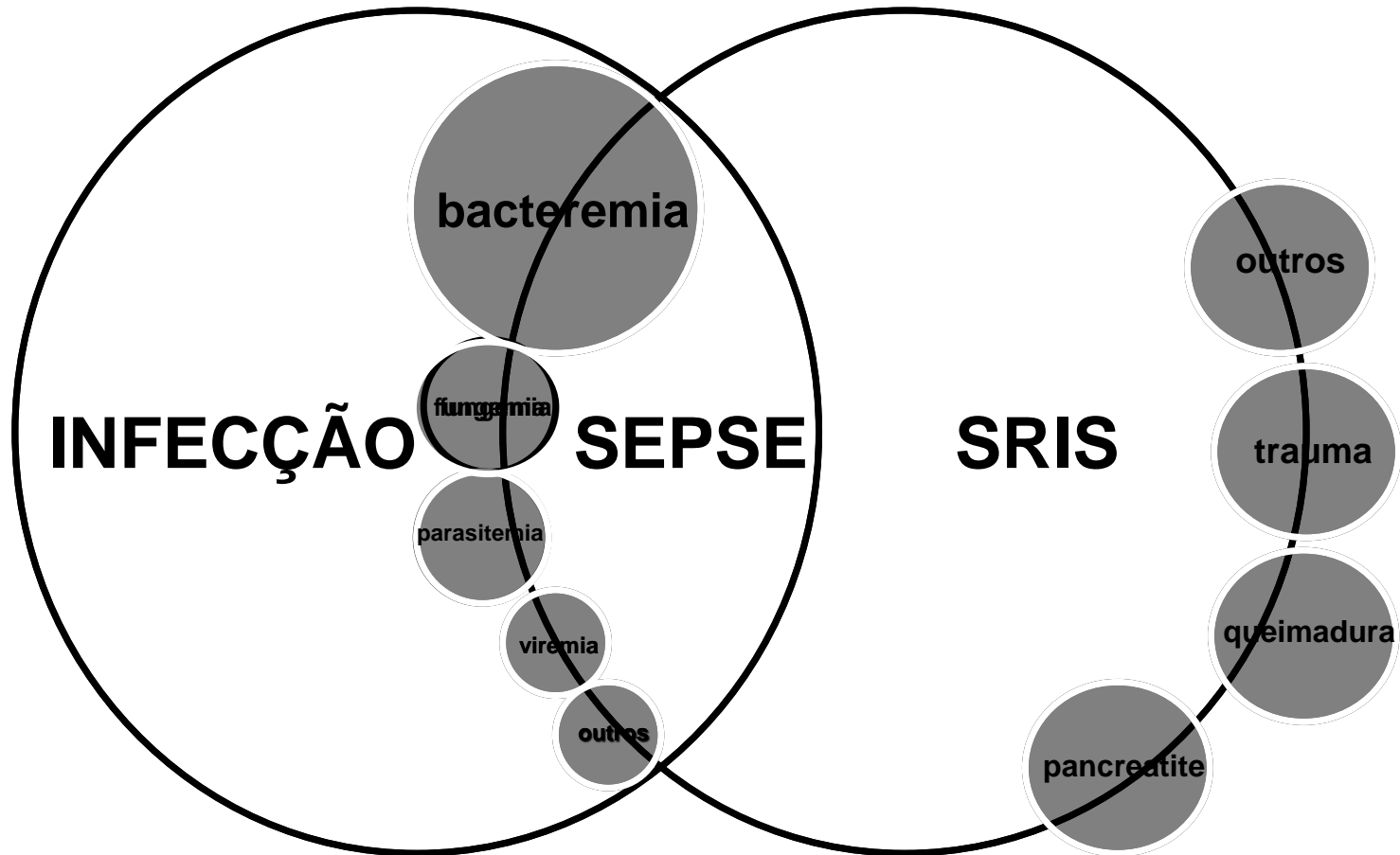


# ***Conceito e Clínica***



***“A Pestilência”,  
de Arnold  
Böcklin.***

# Conceito e Clínica



**1992**

- **SIRS**
- **Sepse: resposta inflamatória secundária a infecção**
- **Sepse grave: sepsse + disfunção orgânica**
- **Choque séptico: sepsse grave + hipotensão arterial não responsiva a reposição volêmica (drogas vasoativas)**

# ***Brazilian Sepsis Epidemiological Study (BASES study)***

***2001-2***

**Incidência: 57,9 episódios / 1000  
pacientes-dia**

**30,5 episódios / 100  
admissões UTI**

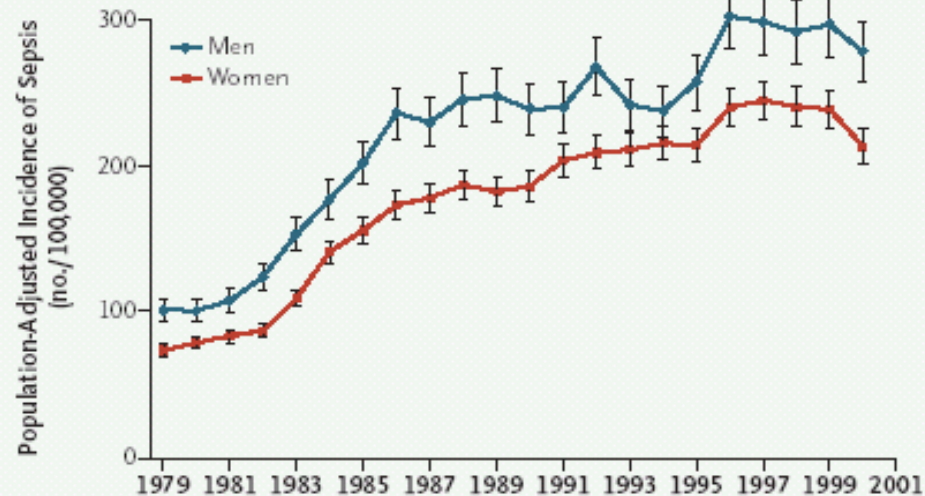
# Sepse: Estados Unidos

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

## The Epidemiology of Sepsis in the United States from 1979 through 2000

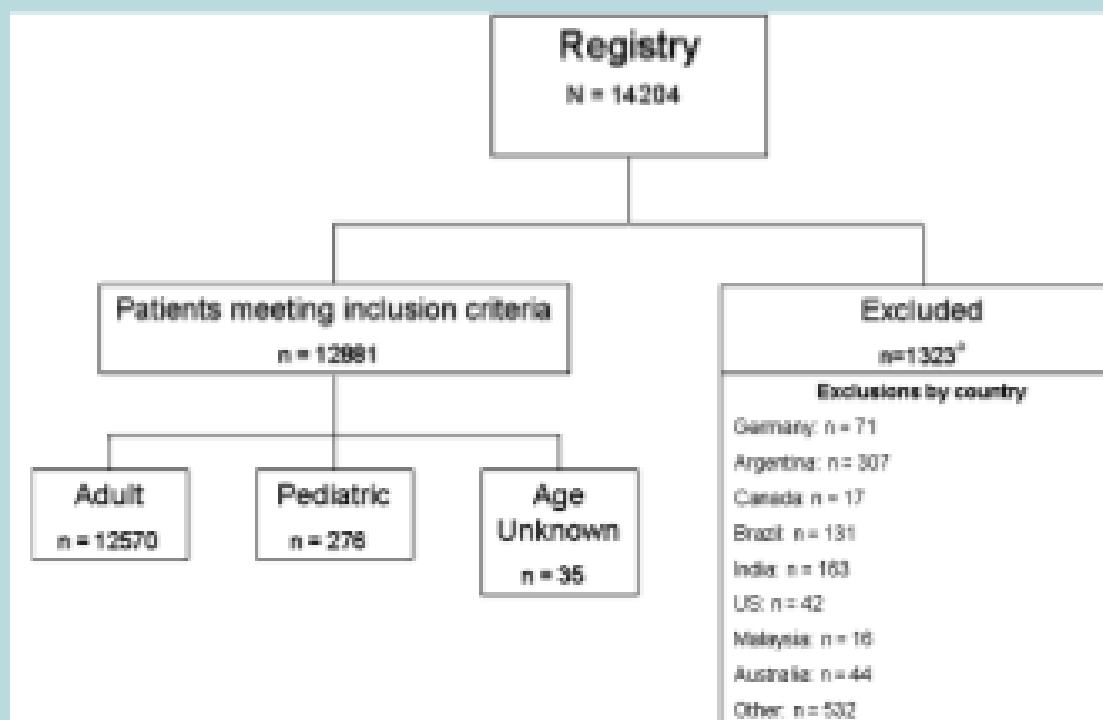
Greg S. Martin, M.D., David M. Mannino, M.D., Stephanie Eaton, M.D.,  
and Marc Moss, M.D.



**Figure 1.** Population-Adjusted Incidence of Sepsis, According to Sex, 1979–2000. Points represent the annual incidence rate, and I bars the standard error.

# Promoting Global Research Excellence in Severe Sepsis (PROGRESS): Lessons from an International Sepsis Registry

R. Beale, K. Reinhart, F.M. Brunkhorst, G. Dobb, M. Levy, G. Martin, C. Martin, G. Ramsey, E. Silva, B. Vallet, J.-L. Vincent, J.M. Janes, S. Sarwat, M.D. Williams, for the PROGRESS Advisory Board



# A Multicentre, Prospective Study to Evaluate Costs of Septic Patients in Brazilian Intensive Care Units

*Ana M.C. Sogayar,<sup>1</sup> Flavia R. Machado,<sup>2</sup> Alvaro Rea-Neto,<sup>3</sup> Amselmo Dornas,<sup>4</sup> Cintia M.C. Grion,<sup>5</sup> Suzana M.A. Lobo,<sup>6</sup> Bernardo R. Tura,<sup>7</sup> Carla L.O. Silva,<sup>8</sup> Ruy G.R. Cal,<sup>1</sup> Idal Beer,<sup>1</sup> Vilto Michels Jr,<sup>8</sup> Jorge Safi Jr,<sup>9</sup> Marcia Kayath<sup>9</sup> and Eliezer Silva<sup>1,8</sup> for the Costs Study Group – Latin American Sepsis Institute*

1 Hospital Israelita Albert Einstein, São Paulo, Brazil

2 Hospital São Paulo (UNIFESP), São Paulo, Brazil

3 Hospital das Clínicas da Universidade Federal do Paraná (UFPR), Curitiba, Brazil

4 Hospital Mater Dei, Belo Horizonte, Brazil

5 Hospital Universitário da Universidade Estadual de Londrina, Londrina, Brazil

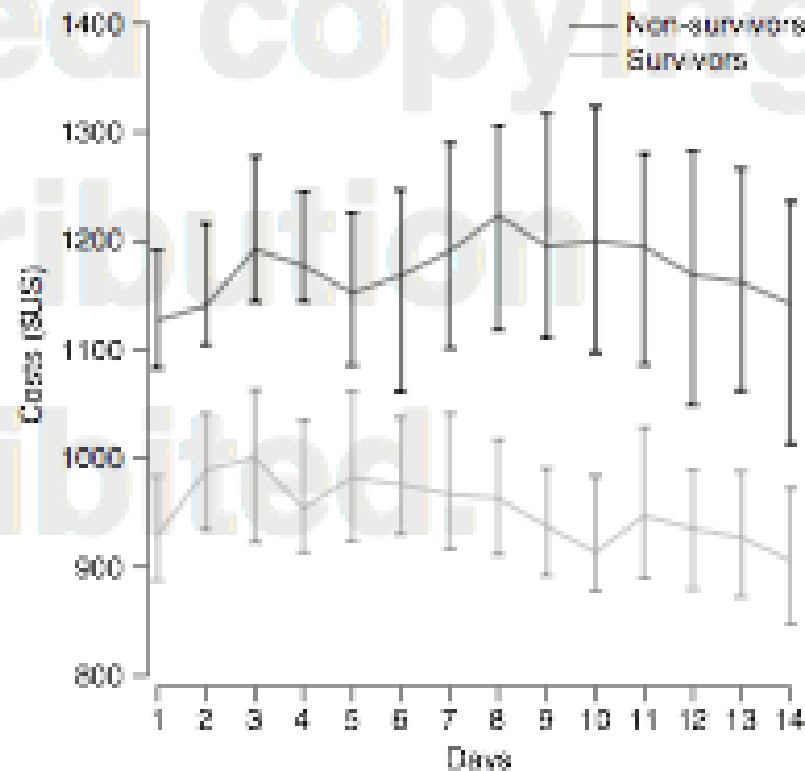
6 Hospital de Base, São José do Rio Preto, Brazil

7 Instituto Nacional de Cardiologia, Rio de Janeiro, Brazil

8 Instituto Latino Americano para Estudos da Sepsis, São Paulo, Brazil

9 Eli Lilly do Brasil, São Paulo, Brazil

# A Multicentre, Prospective Study to Evaluate Costs of Septic Patients in Brazilian Intensive Care Units

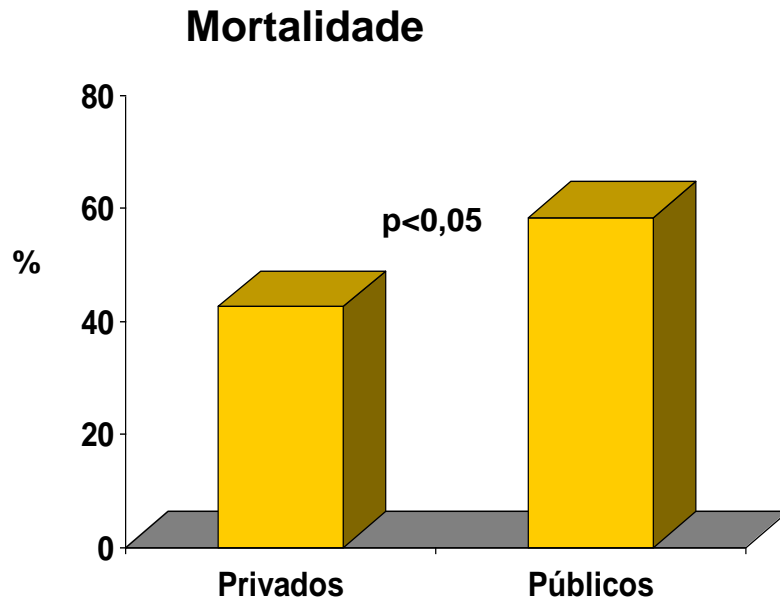


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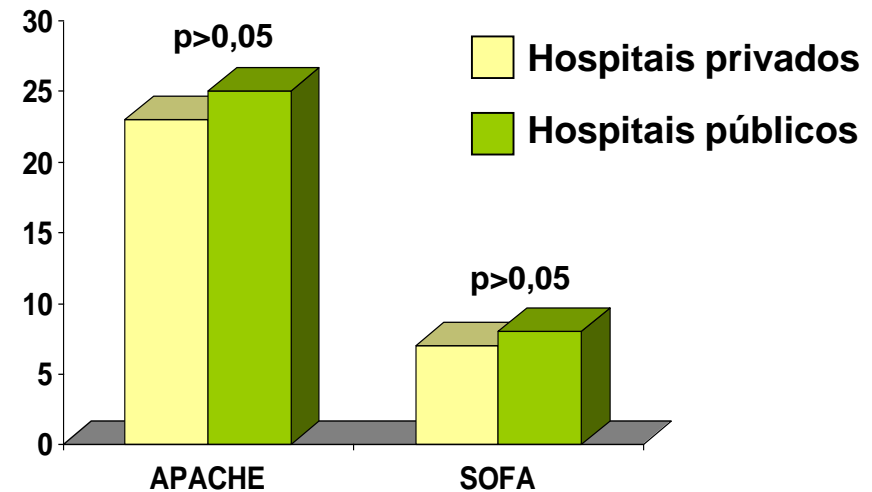
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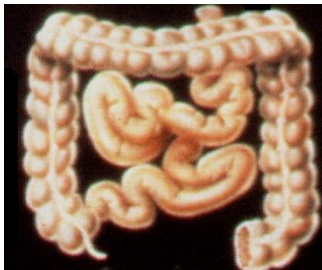
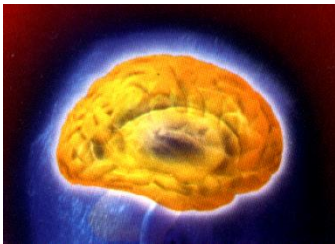
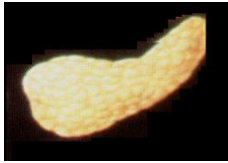
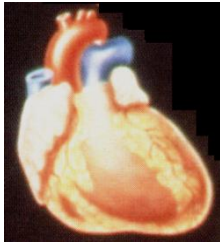


**21 Centros**  
**n=5504**  
**Sepse Grave= 619**



# DISFUNÇÃO ORGÂNICA?

# PROTOCOLOS?



# Surviving Sepsis Campaign

- Declaração de Barcelona (2002)

## Fase I

- Diretrizes para o tratamento da sepse grave e choque séptico (2004)

Revisão em 2008 e 2012

## Fase II

- Implementação das diretrizes na prática clínica: pacotes (2005)

## Fase III



Surviving Sepsis Campaign guidelines for management of severe sepsis and septic shock

R. Phillip Dellinger, MD; Jean M. Carlet, MD; Henry Masur, MD; Herwig Gerlach, MD, PhD; Thierry Calandra, MD; Jonathan Cohen, MD; Juan Gea-Banacloche, MD, PhD; Didier Keh, MD; John C. Marshall, MD; Margaret M. Parker, MD; Graham Ramsay, MD; Janice L. Zimmerman, MD; Jean-Louis Vincent, MD, PhD; Mitchell M. Levy, MD; for the Surviving Sepsis Campaign Management Guidelines Committee

Sponsoring Organizations: American Association of Critical-Care Nurses, American College of Chest Physicians, American College of Emergency Physicians, American Thoracic Society, Australian and New Zealand Intensive Care Society, European Society of Clinical Microbiology and Infectious Diseases, European Society of Intensive Care Medicine, European Respiratory Society, International Sepsis Forum, Society of Critical Care Medicine, Surgical Infection Society.

# “PACOTES”



## 6 horas

Diagnóstico

Coleta de lactato

Hemocultura

ATB em 1 hora

Reposição volêmica

Vasopressor (65 mmHg)

Cateter central

SvcO<sub>2</sub>

## 24 horas

Corticóides

Proteína C ativada

Controle da glicemia

Pressão platô < 30 cmH<sub>2</sub>O

# World data - sepsis protocols...

**Implementation of a bundle of quality indicators for the early management of severe sepsis and septic shock is associated with decreased mortality\***

H. Bryant Nguyen, MD, MS; Stephen W. Corbett, MD, PhD; Robert Steele, MD; Jim Banta, PhD, MPH; Robin T. Clark, BS; Sean R. Hayes; Jeremy Edwards; Thomas W. Cho, MD; William A. Witalake, MD

A Focus on Sepsis

**Implementation of the Surviving Sepsis Campaign guidelines for severe sepsis and septic shock: We could go faster**

Massimo Zambon MD<sup>a</sup>, Marcello Ceola MD<sup>b</sup>, Roberto Almeida-de-Castro MD<sup>a</sup>, Antonino Gullo MD<sup>a</sup>, Jean-Louis Vincent MD, PhD<sup>b,\*</sup>

<sup>a</sup>Department of Anesthesiology and Intensive Care, Cattinara Hospital, University of Trieste, Italy 447-34149

<sup>b</sup>Department of Intensive Care, Erasme Hospital, Free University of Brussels, 1070 Brussels, Belgium

**Implementation and outcomes of the Multiple Urgent Sepsis Therapies (MUST) protocol\***

Nathan I. Shapiro, MD, MPH; Michael D. Howell, MD; Daniel Talmor, MD, MPH; Dermot Lahay, BA; Long Ngo, PhD; Jon Buras, MD, PhD; Richard E. Wolfe, MD; J. Woodrow Weiss, MD; Alan Lisbon, MD

**Prospective External Validation of the Clinical Effectiveness of an Emergency Department-Based Early Goal-Directed Therapy Protocol for Severe Sepsis and Septic Shock\***

Alan E. Jones, MD; Anne Focht, RN, MSN; James M. Horkan, MD; and Jeffrey A. Kline, MD

**Outcome of Septic Shock in Older Adults After Implementation of the Sepsis “Bundle”**

Ali A. El Solh, MD, MPH, Morohunfolu E. Akinmusi, MD, Leith N. Alsawalha, MD, and Lilibeth A. Pineda, MD

**An evidence-based resuscitation algorithm applied from the emergency room to the ICU improves survival of severe septic shock**

R. CASTRO, T. REGUEIRA, M. L. AGUIRRE, O. P. LLANOS, A. BRUHN, G. BUGEDO, A. DOUGNAC, L. CASTILLO, M. ANDRESEN, G. HERNÁNDEZ

Department of Intensive Care Medicine, Pontificia Universidad Católica de Chile, Santiago, Chile

**A MODIFIED GOAL-DIRECTED PROTOCOL IMPROVES CLINICAL OUTCOMES IN INTENSIVE CARE UNIT PATIENTS WITH SEPTIC SHOCK: A RANDOMIZED CONTROLLED TRIAL**

Shu-Min Lin, Chien-Da Huang, Horng-Chyuan Lin, Chien-Ying Liu, Chun-Hua Wang, and Han-Pin Kuo

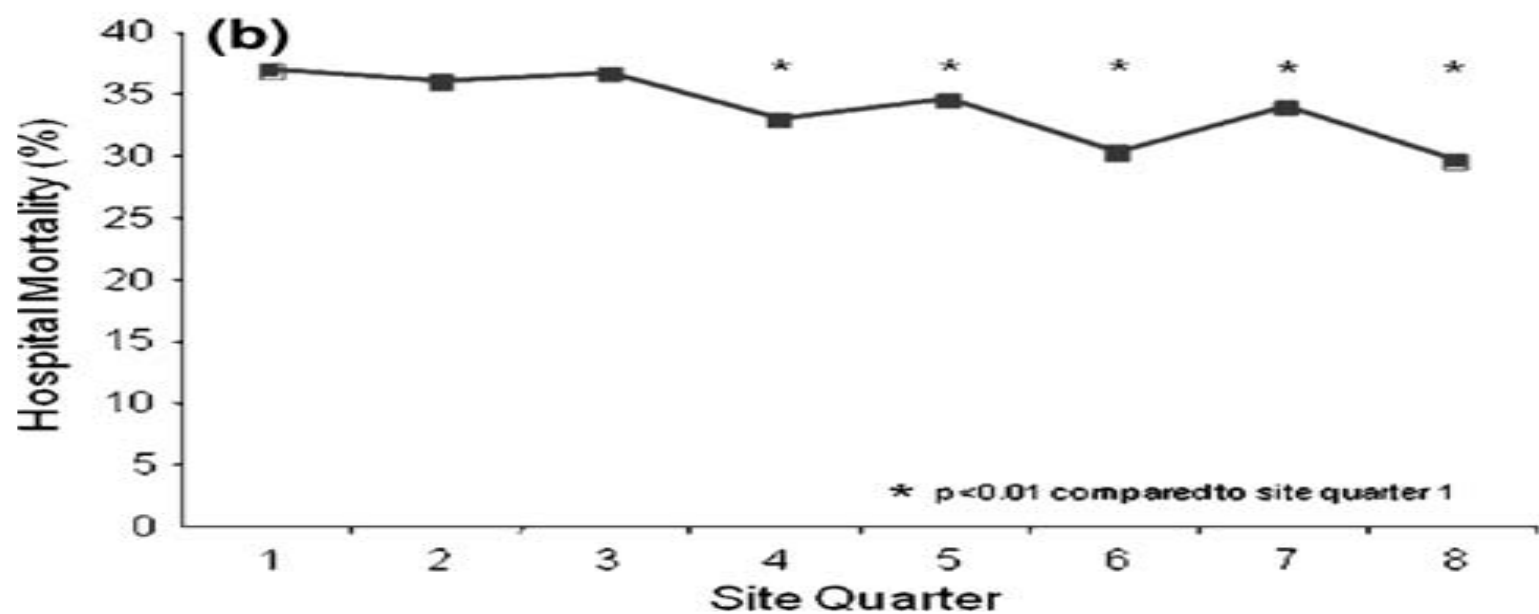
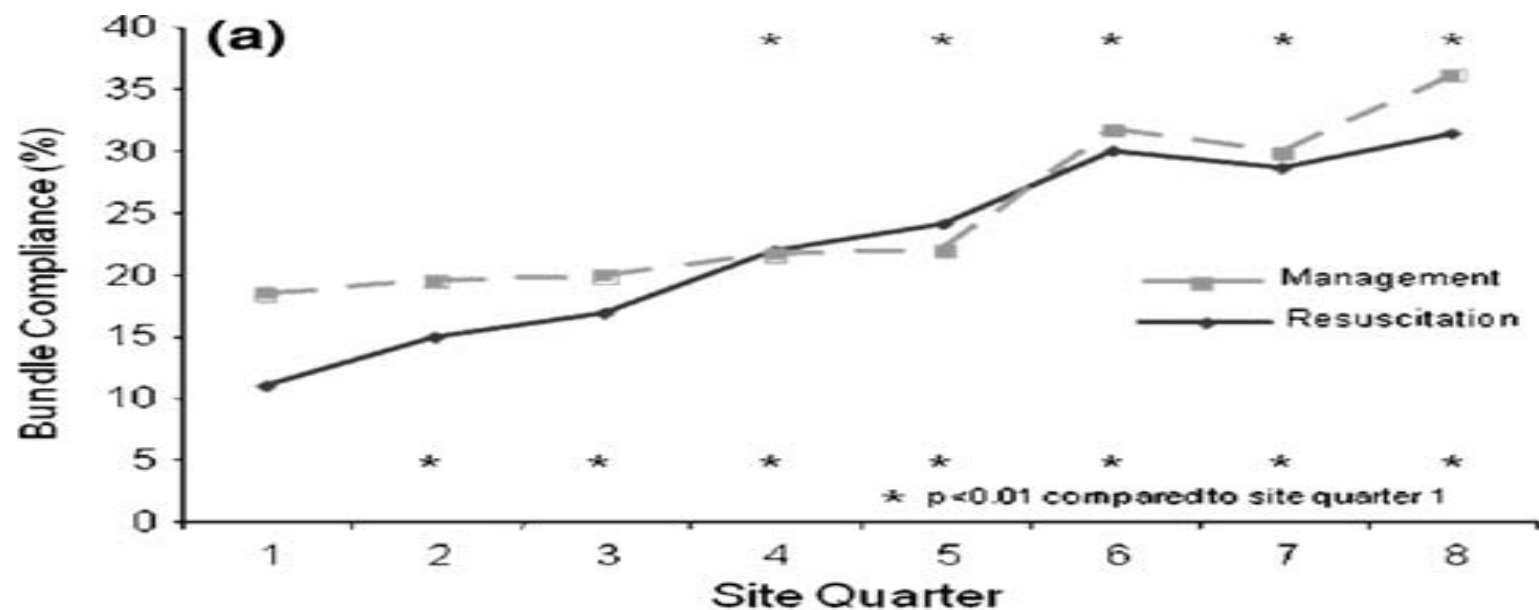
Department of Thoracic Medicine, Chang Gung Memorial Hospital, Chang Gung University College of Medicine, Taipei, Taiwan

**The costs and cost-effectiveness of an integrated sepsis treatment protocol**

Daniel Talmor, MD, MPH; Dan Greenberg, PhD; Michael D. Howell, MD; Alan Lisbon, MD; Victor Novack, MD, PhD; Nathan Shapiro, MD, MPH

Mitchell M. Levy  
R. Phillip Dellinger  
Sean R. Townsend  
Walter T. Linde-Zwirble  
John C. Marshall  
Julian Bion  
Christa Schorr  
Antonio Artigas  
Graham Ramsay  
Richard Beale  
Margaret M. Parker  
Herwig Gerlach  
Konrad Reinhart  
Eliezer Silva  
Maurene Harvey  
Susan Regan  
Derek C. Angus

## **The Surviving Sepsis Campaign: results of an international guideline-based performance improvement program targeting severe sepsis**



# Impacto Social da Sepsé

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- **Elevada morbidade**
- **Elevada mortalidade**
- **Custos**

# Impacto Social da Sepsé

---

➤ Elevada morbidade

➤ Elevada Mortalidade

➤ Custos

➤ Prevenção

➤ Pesquisa e desenvolvimento

➤ Abordagem adequada

# Mortalidade de sepse no Brasil

## **BASES – Brazilian Sepsis**

### **Epidemiological Study**

E Silva et al. Crit Care 2004;8:R251

**1383 pacientes (5 UTIs)**

**Idade – 65 anos**

**17% sepse grave**

## **Sepse Brasil**

Sales JR JA et al. RBTI 2006;18:9

**3128 patients (75 ICUs)**

**Idade – 62 anos**

**14% sepse grave**



***“A Pestilência”,  
de Arnold  
Böcklin.***

# **6<sup>th</sup> ISICEM – LATIN AMERICA**

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**As conseqüências persistentes  
da sepse: um desastre de saúde  
pública oculto?**

# XI FÓRUM INTERNACIONAL DE SEPSE – 18 e 19 de Setembro 2014 – São Paulo - SP

**XI FÓRUM INTERNACIONAL DE SEPSE**  
Instituto Latino-Americano de Sepsis  
**18.19**  
Setembro

***É necessário conhecer***

O Evento   Parceiros   Palestrantes   Programação   Inscrições   Temas Livres   Expositores   Informações

f t y

**Programação**

**Sobre a Sepsis**

**Temas Livres**

**Inscrições Online**