

# Anàlisi de la evolució de la mortalitat de la sepsis greu a les UCIs catalanes als últims 6 anys

## 34 Reunió de la SOCMIC

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**Ricard Ferrer i grup de recerca Edusepsis**

Intensive Care Department

Mutua Terrassa University Hospital

Barcelona. SPAIN

*ciberes*



MútuaTerrassa



UNIVERSITAT DE BARCELONA



EDUSEPSIS

# Epidemiology of Severe Sepsis USA

## Sepsis in the United States

### Systemic inflammatory response syndrome ( $\geq 2$ of the following)

- Temperature,  $>38^{\circ}\text{C}$  or  $<36^{\circ}\text{C}$
- Pulse,  $>90/\text{min}$
- Respirations,  $>20/\text{min}$
- White cells,  $>12,000$  or  $<4000/\text{mm}^3$  or  $>10\%$  band forms

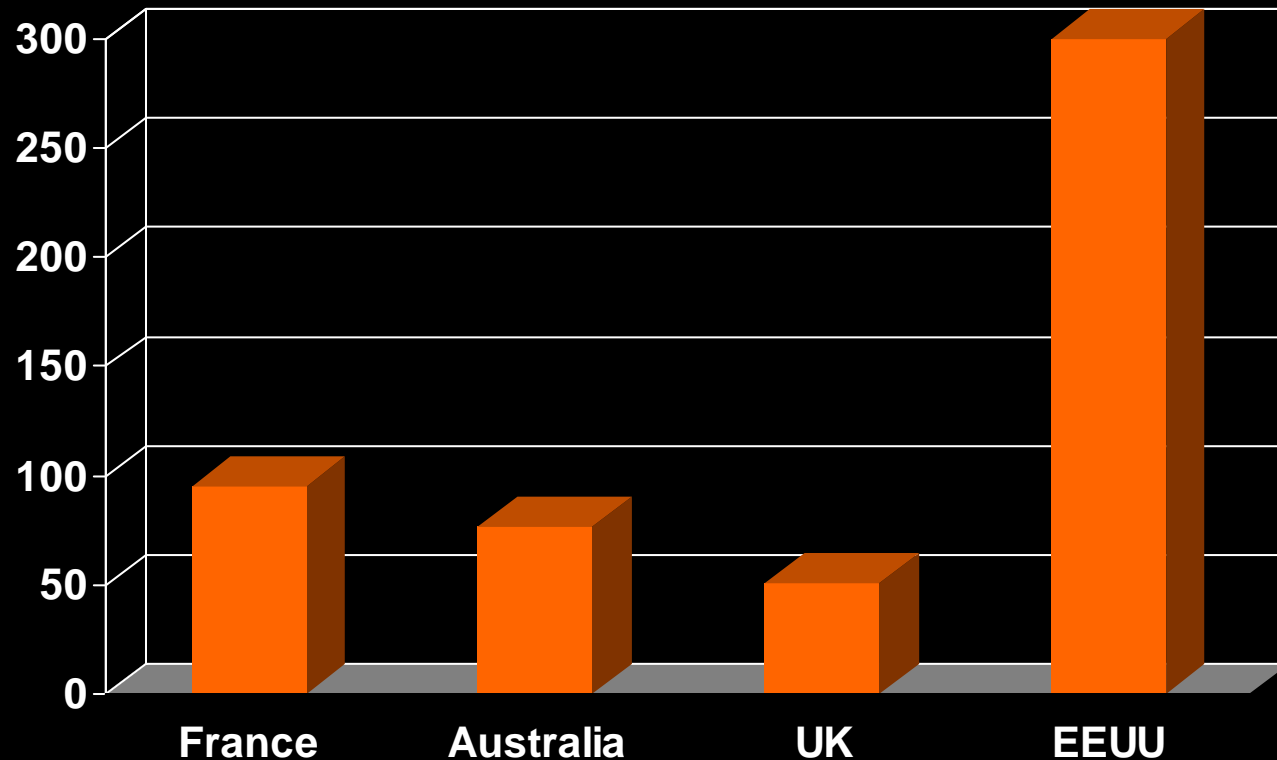
	Crude mortality	Number of deaths annually
<b>Septic shock</b> (severe sepsis plus refractory hypotension) 200,000 cases	45%	90,000
<b>Severe sepsis</b> (sepsis plus organ failure) 300,000 cases	20%	60,000
<b>Sepsis</b> (systemic inflammatory response syndrome plus evidence of infection) 400,000 cases	15%	60,000
		Total: 210,000



# Epidemiology of Severe Sepsis

## INCIDENCE OF SEVERE SEPSIS

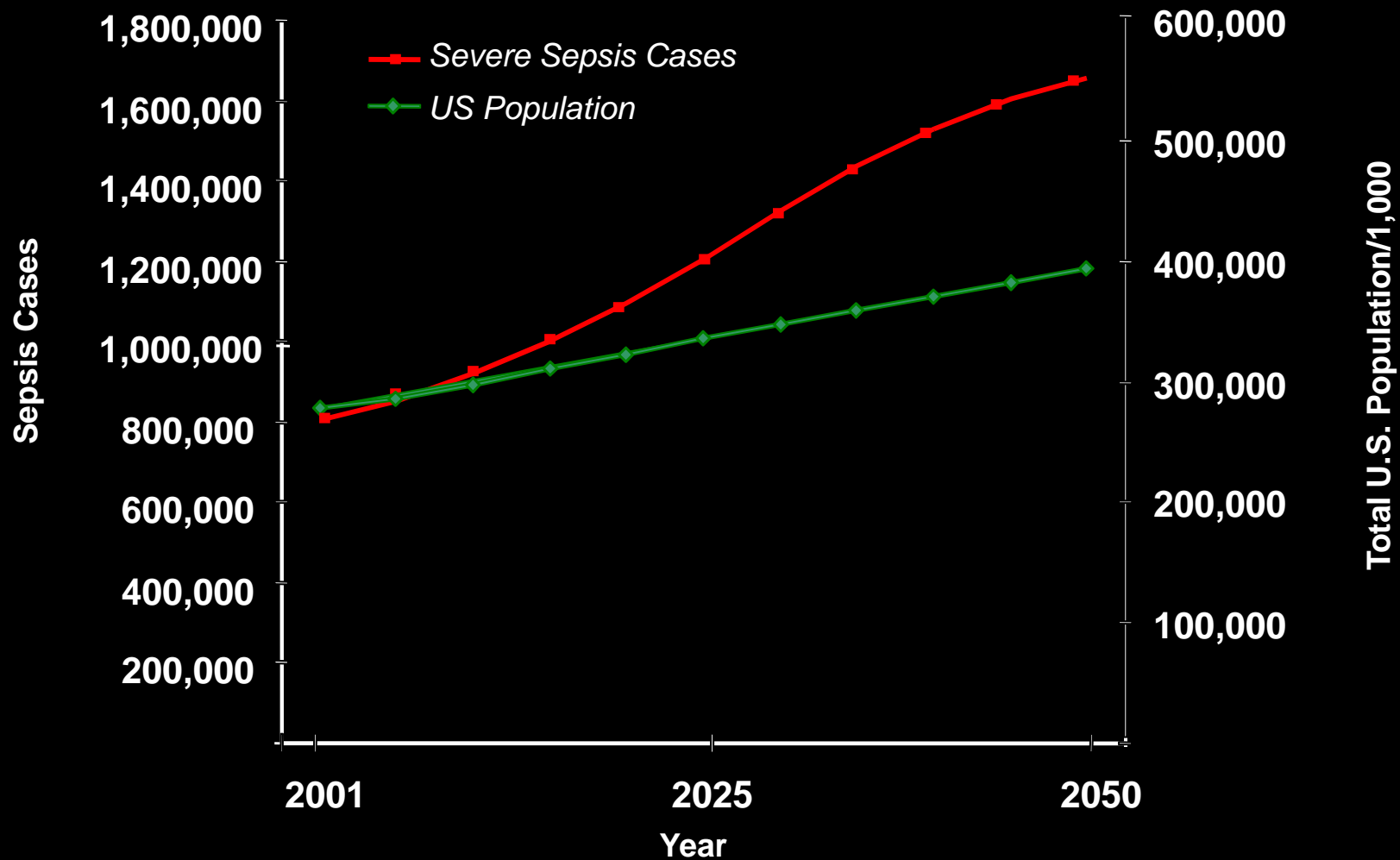
EPISODES  
100.000 res/y



*Brun-Buisson C et al Intensive Care Med. 2004;30(4):580-8.*  
*Finfer S et al. Intensive Care Med. 2004;30(4):589-96.*  
*Padkin A et al. Crit Care Med. 2003;31(9):2332-8.*  
*Angus DC et al. Crit Care Med. 2001;29(7):1303-10.*

**MORTALITY: 28 to 50%**

# Projected Incidence of Severe Sepsis in the US: 2001 - 2050



Angus DC, et al. Crit Care Med. 2001.

# Outcomes of the Surviving Sepsis Campaign in intensive care units in the USA and Europe: a prospective cohort study

Mitchell M Levy, Antonio Artigas, Gary S Phillips, Andrew Rhodes, Richard Beale, Tiffany Osborn, Jean-Louis Vincent, Sean Townsend, Stanley Lemeshow, R Phillip Dellinger

Lancet Infect Dis 2012;  
12: 919-24

	Emergency department	Ward	ICU	Total hospital mortality
USA	3008/12 212	1661/4763	664/1785	5313/18 766
Europe	766/2159	1481/3405	502/1045	2719/6609
OR unadjusted	1.65 (1.42-1.91); p<0.0001	1.51 (1.30-1.71); p<0.0001	1.61 (1.32-1.96); p<0.0001	1.80 (1.58-2.06); p<0.001
OR adjusted*	1.05 (0.89-1.23); p=0.597	1.00 (0.86-1.18); p=0.965	1.19 (0.96-1.47); p=0.106	1.05 (0.92-1.21); p=0.467

**ICU bed availability is higher in the USA**



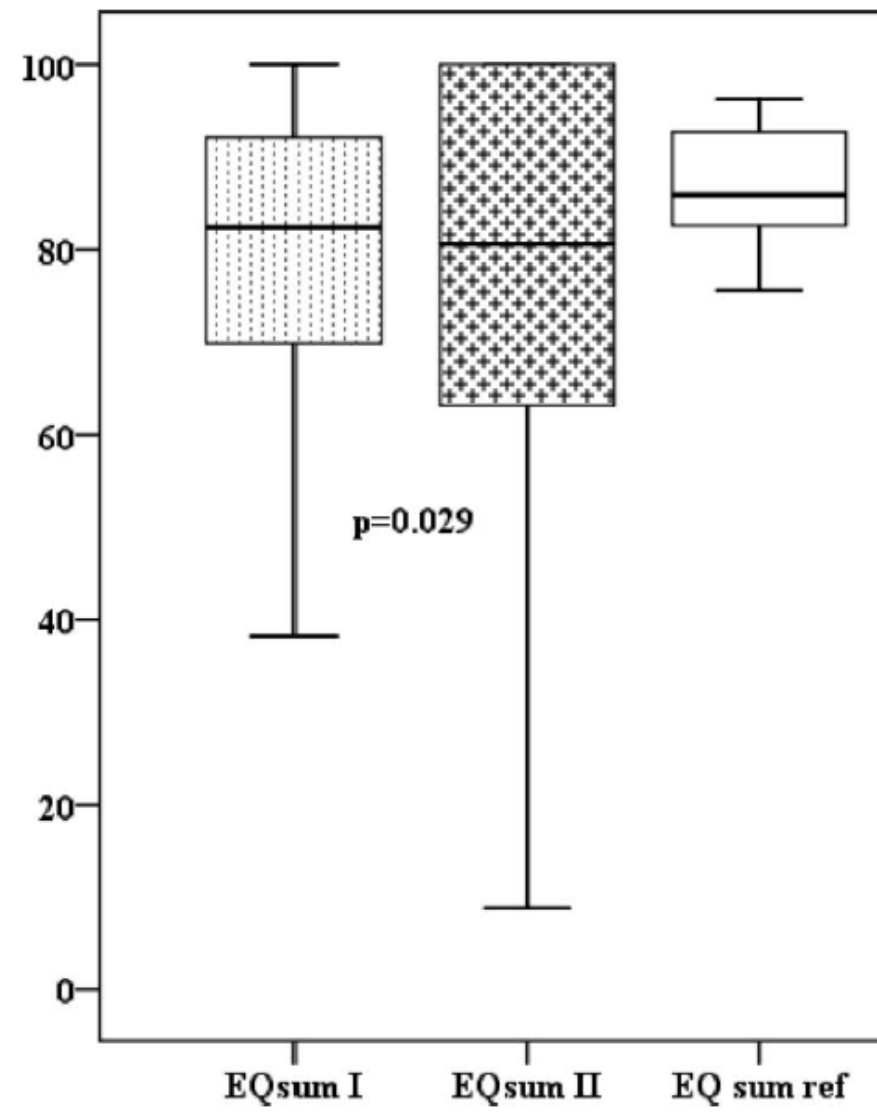
# Long-term outcome and quality-adjusted life years after severe sepsis\*

Sari Karlsson, MD; Esko Ruokonen, MD, PhD; Tero Varpula, MD, PhD; Tero I. Ala-Kokko, MD, PhD; Ville Pettilä, MD, PhD; for the Finnsepsis Study Group

Crit Care Med 2009; 37: 1268–1274

	Mortality (%)
ICU	15.5
Hospital	28.3
1 Year	40.9
2 Year	44.9

Quality of life (EuroQol-5D)=



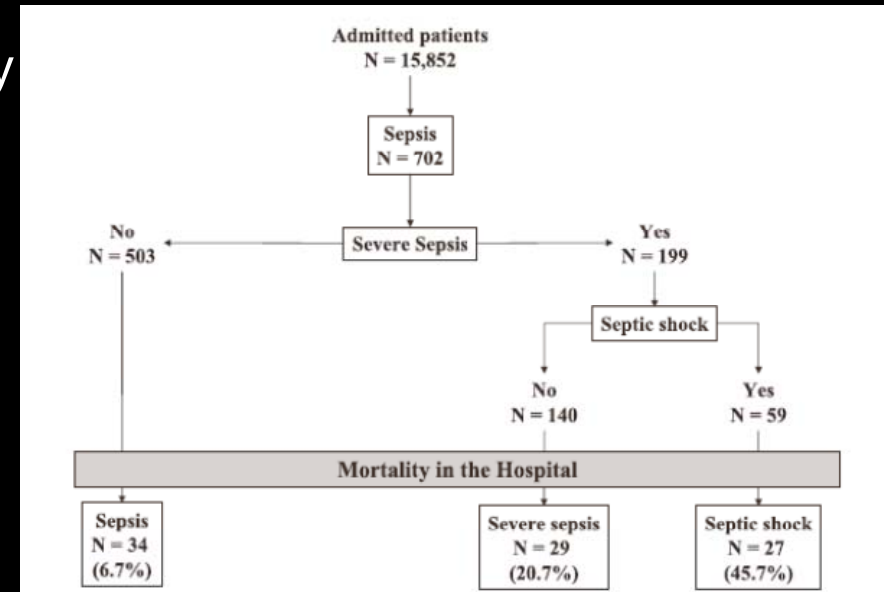
# Sepsis incidence and outcome: Contrasting the intensive care unit with the hospital ward\*

Andrés Esteban, MD, PhD; Fernando Frutos-Vivar, MD; Niall D. Ferguson, MD, MSc; Oscar Peñuelas, MD; José Ángel Lorente, MD, PhD; Federico Gordo, MD, PhD; Teresa Honrubia, MD, PhD; Alejandro Algora, MD; Alejandra Bustos, MD; Gema García, MD; Inmaculada Rodríguez Díaz-Regañón, MD; Rafael Ruiz de Luna, MD

**Incidence Severe sepsis:** 104/100.000 res/y  
 Only 32% received intensive care

**Incidence Septic Shock:** 31/100.000 res/y

**Mortality** 20.7% - 45.7%



	Community-Acquired Infection (n = 585)	Hospital-Acquired Infection (n = 106)	Intensive Care Unit-Acquired Infection (n = 11)
Pulmonary, n (%)	331 (56)	28 (26)	6 (54.5)
Gastrointestinal, n (%)	79 (13.5)	27 (27)	—
Urinary-gynecologic, n (%)	15 (20)	26 (24)	2 (18)
Skin and muscle, n (%)	30 (5)	17 (16)	—
Central nervous system, n (%)	4 (0.7)	—	1 (9)
Catheter-related infection, n (%)	2 (0.3)	3 (3)	2 (18)
Other origin, n (%)	24 (4)	5 (5)	—

# Impact of the Surviving Sepsis Campaign protocols on hospital length of stay and mortality in septic shock patients: Results of a three-year follow-up quasi-experimental study\*

(Crit Care Med 2010; 38:1036–1043)

Álvaro Castellanos-Ortega, MD, PhD; Borja Suberviola, MD; Luis A. García-Astudillo, MD; María S. Holanda, MD; Fernando Ortiz, MD; Javier Llorca, MD, PhD; Miguel Delgado-Rodríguez, MD, MPH, PhD

	Historical Group, n = 96 (20%)	Intervention Group, n = 384 (80%)	<i>p</i>
Patient characteristics			
Age, yr	62.2 ± 16.3	64.5 ± 15.1	.328
Male, n (%)	55 (57.3)	255 (66.4)	.097
Sequential Organ Failure Assessment score	10.2 ± 3.2	9.4 ± 3.2	.036
Acute Physiology and Chronic Health Evaluation II score	24.6 ± 7.8	23.2 ± 7.3	.136
Mechanical ventilation, n (%)	83 (86.4)	254 (66.1)	<.001
Central venous oxygen saturation (%) at ICU admission	67.1 ± 13.8	68.3 ± 13.7	.410
Location before ICU admission, n (%)			.007
Emergency department	19 (19.8)	126 (32.8)	
Medical ward	32 (33.3)	76 (19.8)	
Surgery department	26 (27.1)	123 (32.0)	
Another hospital	19 (19.8)	59 (15.4)	
Source of infection, n (%)			.850
Intra-abdominal infection	28 (29.2)	134 (35.3)	
Pneumonia	42 (43.8)	136 (35.8)	
Urinary tract infection	8 (8.3)	45 (11.8)	
Skin/soft tissue infection	5 (5.2)	15 (4.0)	
Other infections	7 (7.3)	25 (6.5)	
Unknown	6 (6.2)	25 (6.6)	
<b>Hospital mortality, n (%)</b>	<b>55 (57.3)</b>	<b>144 (37.5)</b>	<b>.001</b>



# Surviving Sepsis Campaign

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- **Phase 1:** 2002, Barcelona declaration.  
**Reduce mortality from severe sepsis by 25% by 2009**
- **Phase 2:** Creating guidelines for sepsis management.  
*Intensive Care Med 2004;30:536-55*  
*Intensive Care Med 2008;34:17-60*
- **Phase 3:** Translating guidelines to clinical practice.  
**Two sepsis bundles in partnership with IHI.**  
**Database: measure the change process.**

- Determinar si des de la introducció de les guies internacionals de tractament de la sepsis de la Surviving Sepsis Campaign (SSC) s'ha produït una reducció de mortalitat atribuïble a una millora en el tractament en els pacients ingresats en les UCIs catalanes amb sepsis greu o shock séptic.

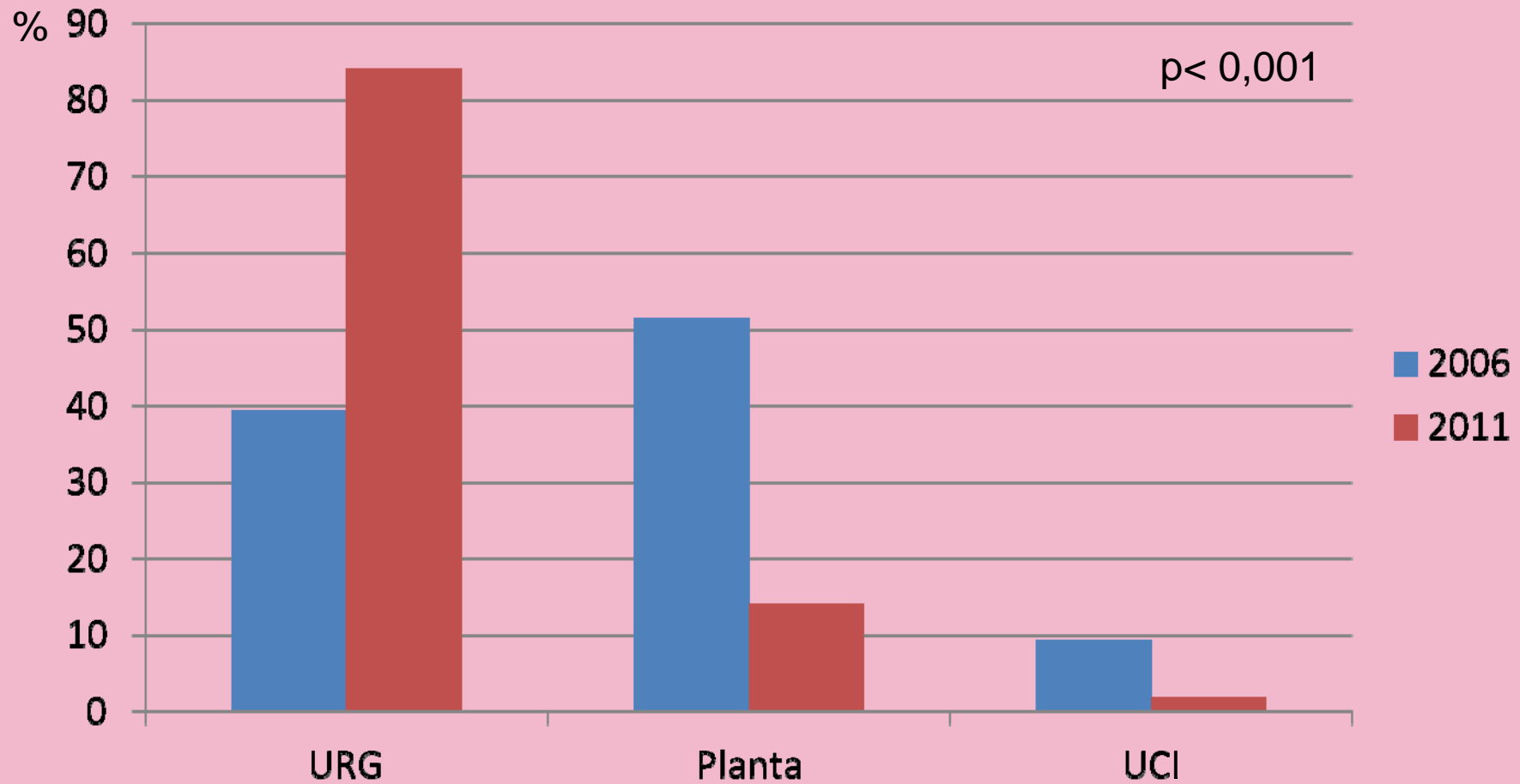
- Tots els episodis de sepsis greu o shock septic en dos períodes de temps.
  - 2 mesos al 2006, abans de la intervenció EDUSEPSIS.
  - 3 mesos al 2011, abans de la intervenció ABISS.
- 6 UCIS catalanes que van participar als 2 períodes:
  - Centre Medic Delfos
  - Hospital Parc Tauli de Sabadell
  - Consorci Sanitari de Terrassa
  - Hospital Mutua Terrassa
  - Hospital Vall d'Hebron
  - Hospital Josep Trueta de Girona

- S'han comparat les variables clíniques, de tractament i mortalitat entre els dos grups.
- Les dades es presenten com percentatges o com mitja  $\pm$  desviació estàndard.
- Anàlisi estadístic:
  - t de Student per variables contínues.
  - chi quadrat per variables categòriques.
  - Anàlisi multivariat per ajustar la mortalitat.

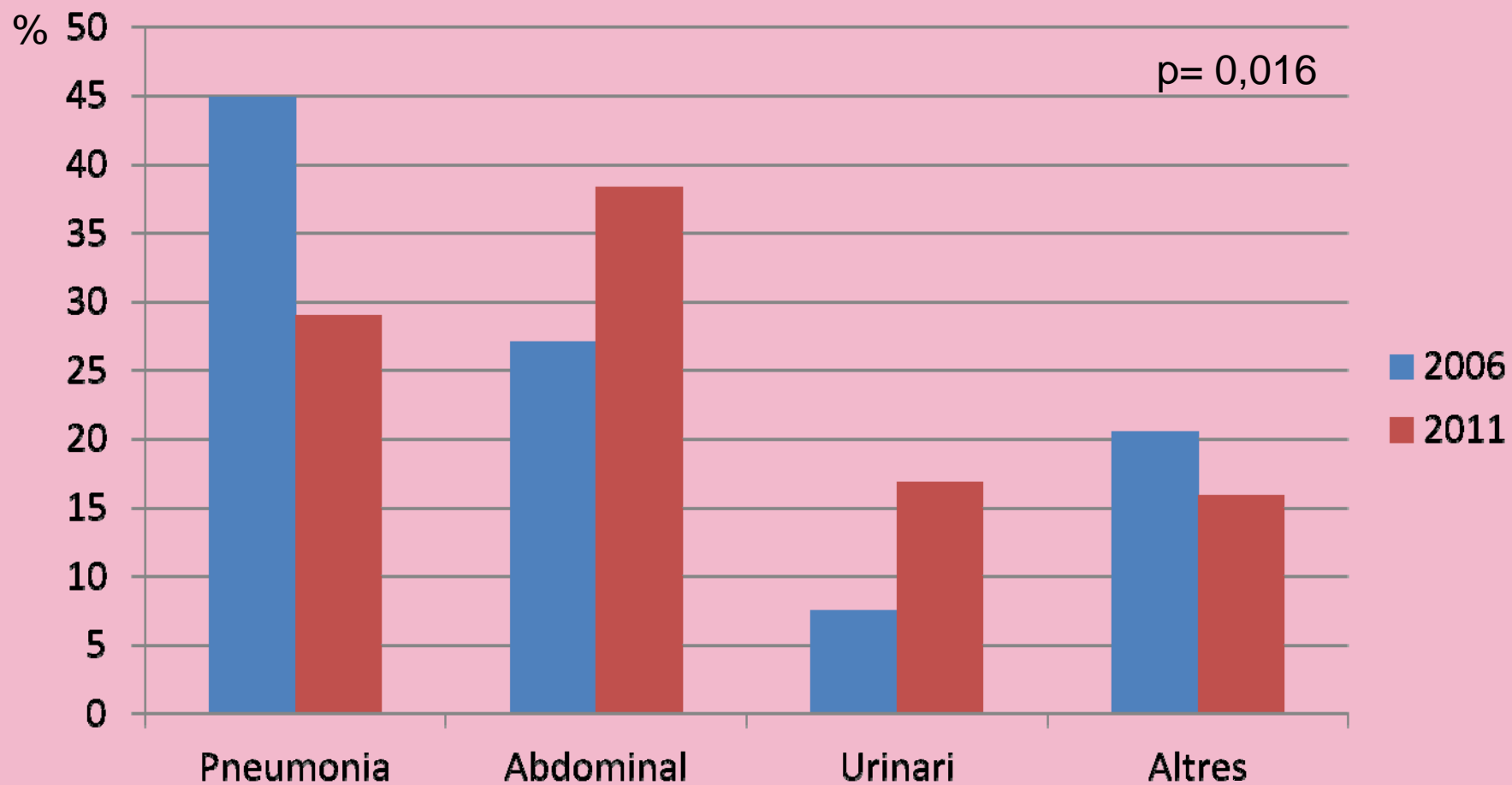
- Es van incloure 214 pacients, 107 a cada període.
- Al 2011 els pacients van ser tenir:
  - més gravetat (APACHE II  $18.7 \pm 6.8$  vs  $21.4 \pm 7.1$ ;  $p=0,005$ )
  - tendència a tenir més edat ( $60.3 \pm 17.3$  vs  $62.7 \pm 15.1$  anys;  $p=0,276$ ) i més gènere masculí ( $68,2\%$  vs  $57,9\%$ ;  $p= 0,119$ ).



# Resultats: Origen Sepsis



# Resultats: Focus Sepsis

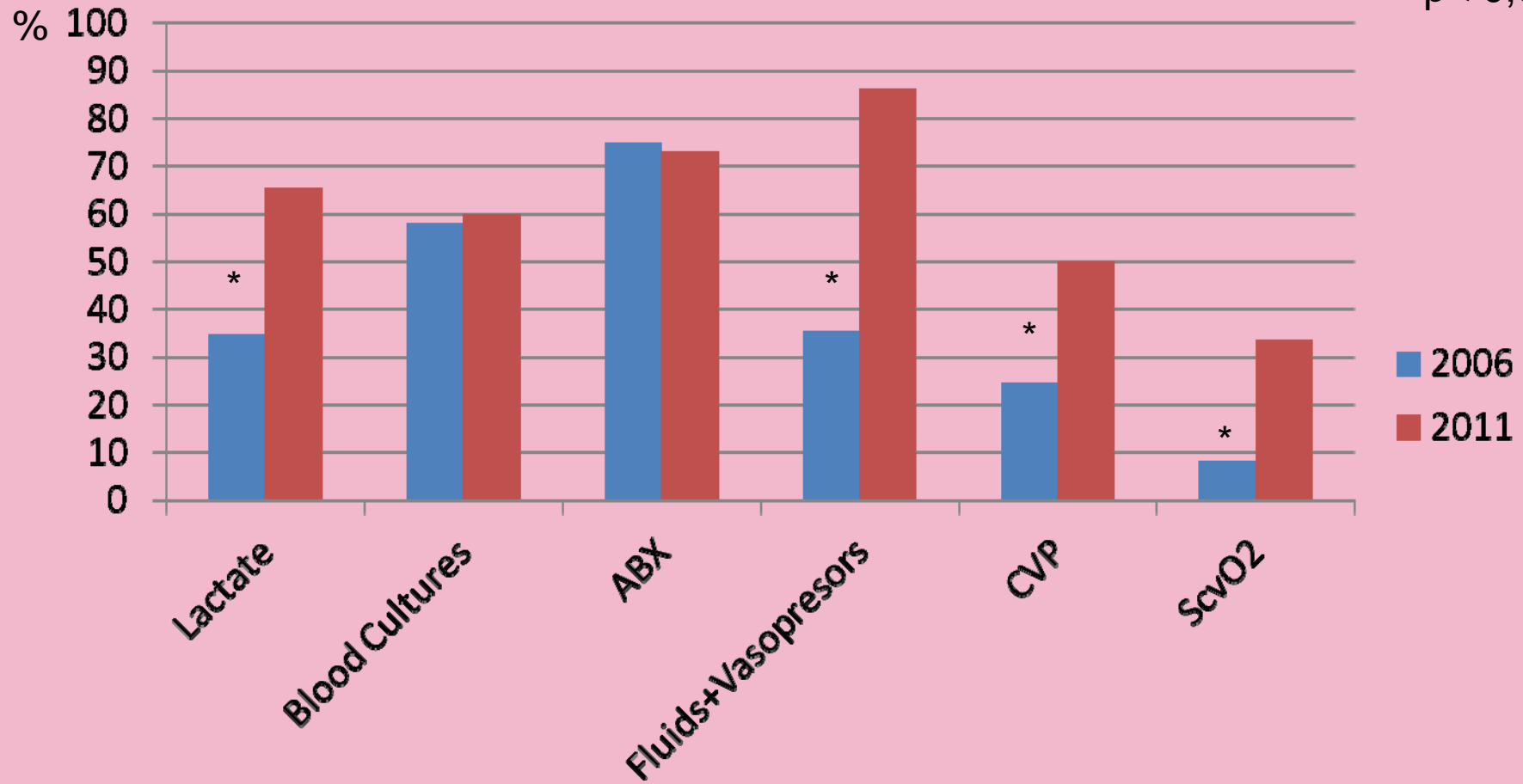




**ABISS**  
EDUSEPSIS

# Results: Compliment Indicators

\*  $p < 0,05$

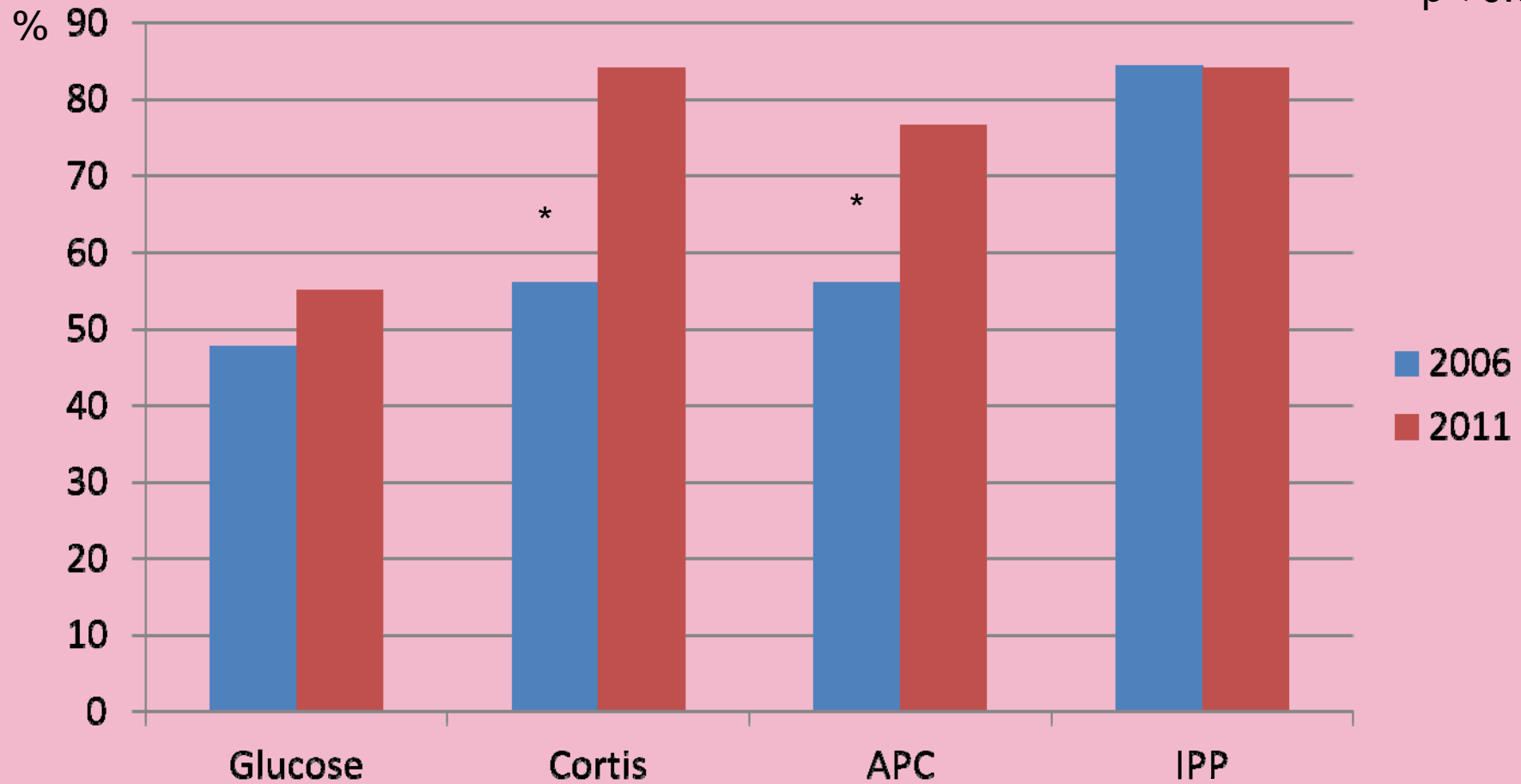




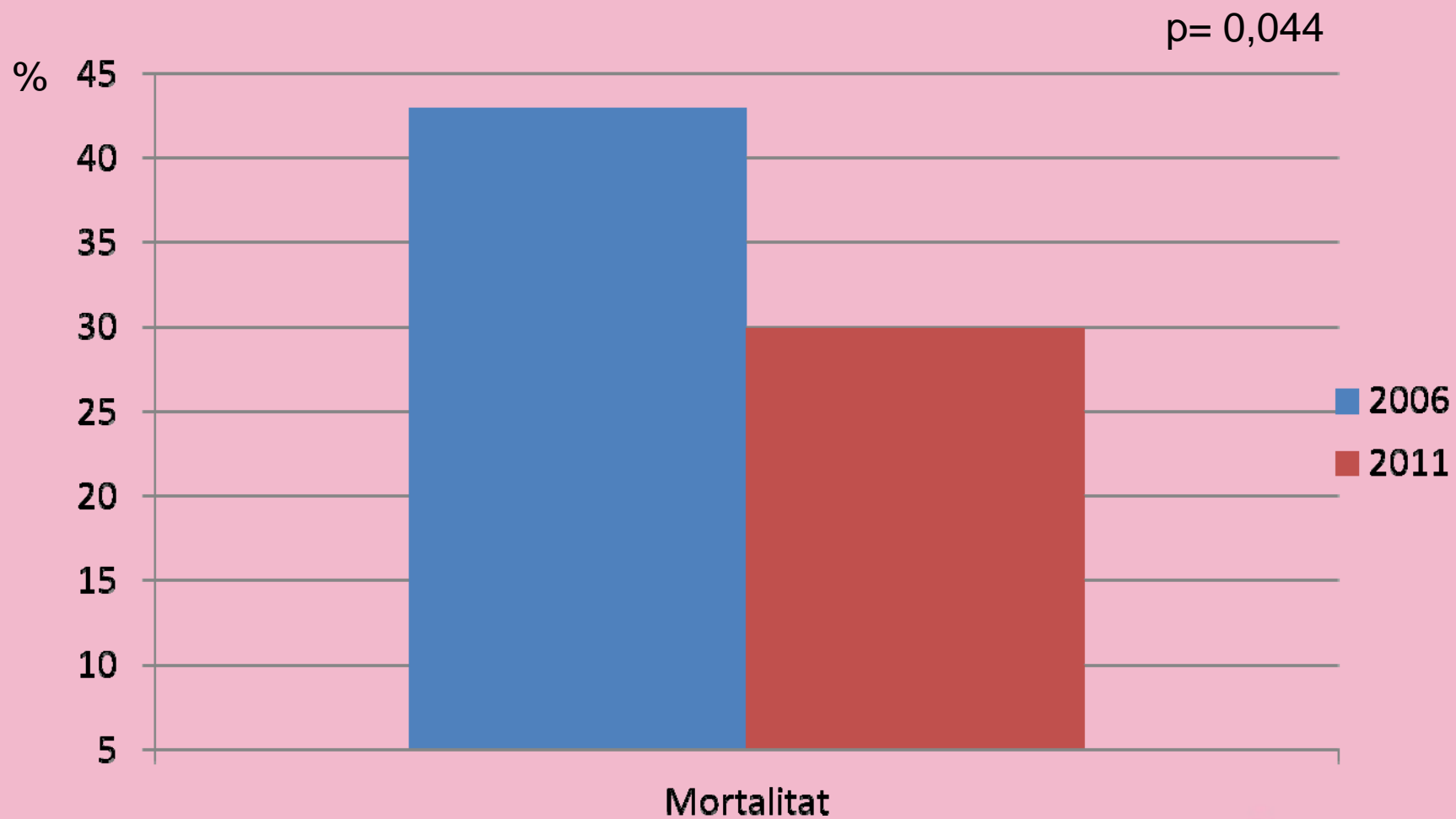
**ABISS**  
EDUSEPSIS

# Results: Compliment Indicators

\*  $p < 0.05$



# Resultats: Mortalitat





- Descens de la mortalitat:
  - Crua: 12,2%
  - Relativa: 29,0%
- Mortalitat ajustada per edat, gravetat, origen de la sepsis i focus d'infecció:  
 $OR\ 0,446\ (0,222-0,893),\ p=0,023$

- En els últims 6 anys s'ha reduït la mortalitat de la sepsis a Catalunya, probablement atribuïble a una millora en el compliment de les recomanacions de tractament.
- Encara existeix marge de millora en algunes de les recomanacions.

- Investigadors catalans Edusepsis.
- Unitat de Recerca Clínica del hospital de Sabadell
- Institut Carlos III.
- Astra-Zeneca pel suport logístic durant trobades d'investigadors.