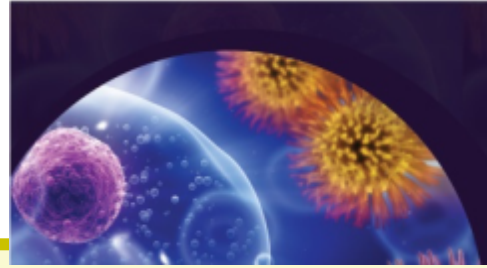
Hospital
Vila Franca de Xira



20th Infection
and Sepsis Symposium
02 - 04 March | Sheraton Porto

Sepsis epidemiology: an update

João Gonçalves Pereira
ICU director
Vila Franca Xira Hospital

Portugal

From SACiUCI

to InfAUCI

“You’re only given a little spark of madness. You mustn’t lose it.”

Robin Williams

INFECÇÃO
SEPSIS

Hospital Vila Franca de Xira

SAC UCI

Cardoso, Crit Care, 2010, 14: R83

2004-2005

17 ICUs

Identification of 897 (22%) patients with community-acquired sepsis

INFAUCI

Gonçalves-Pereira, Clin Microbiol Infect 2014, 12: 1308

2009-2010

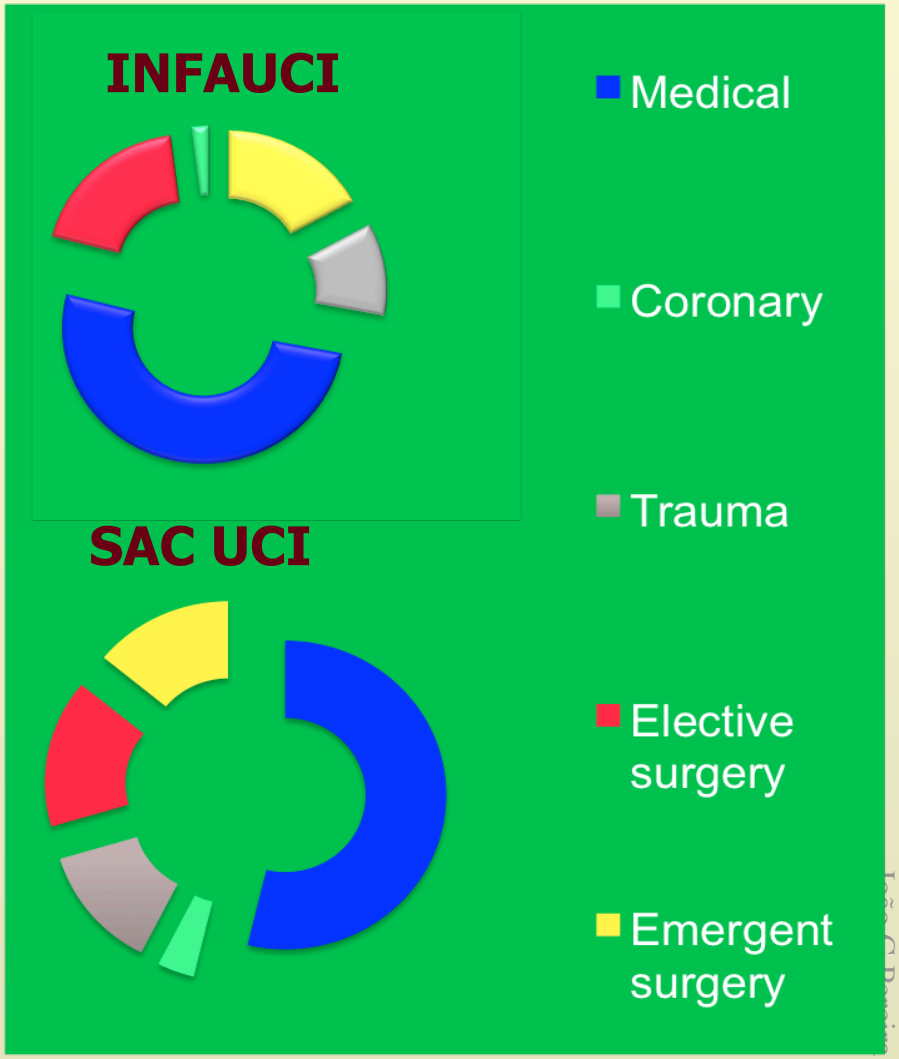
15 ICUs

Identification of 1556 (44%) patients with sepsis on ICU admission

SAC UCI

INFAUCI

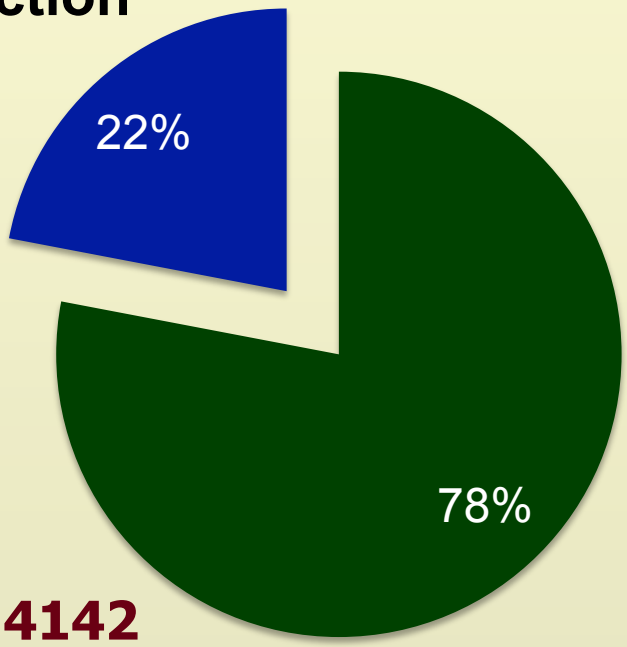
	SAC UCI	INFAUCI
N	4142	3572
Age (years)	60 (±18)	61 (±17)
SAPS II	44 (±18)	45 (±18)
SOFA	7.4 (±3)	7 [1-15]
Charlson Score		5 [0-15]
Lenght of stay (ICU)	6 [2-21]	6 [2-34]
Lenght of stay (H)	19 [3-86]	19 [3-86]
Year	2005	2010



Infection Incidence

SAC UCI

Infection



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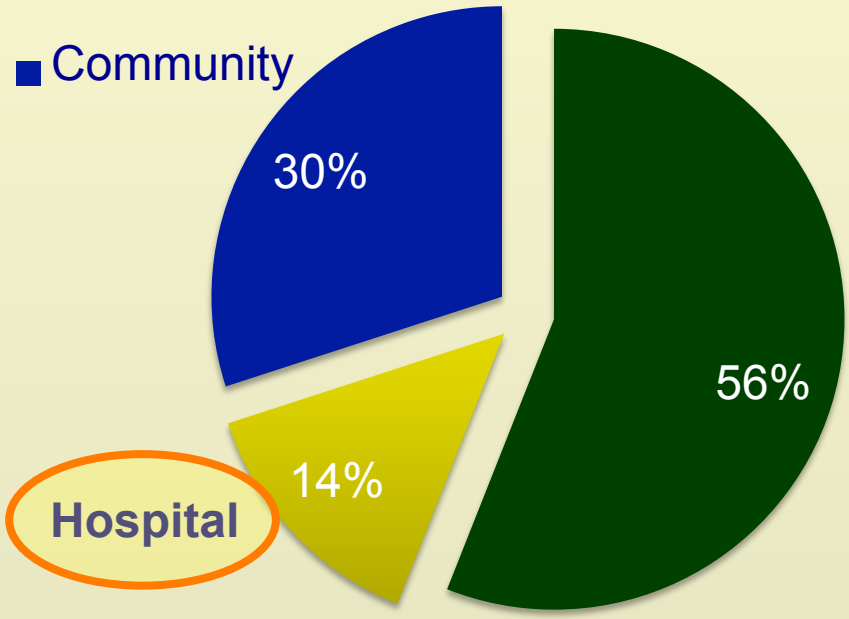
Cardoso, Crit Care, 2010, 14: R83

INFAUCI

Infection



N=3572

Gonçalves-Pereira, Clin Microbiol Infect 2014, 12: 1308

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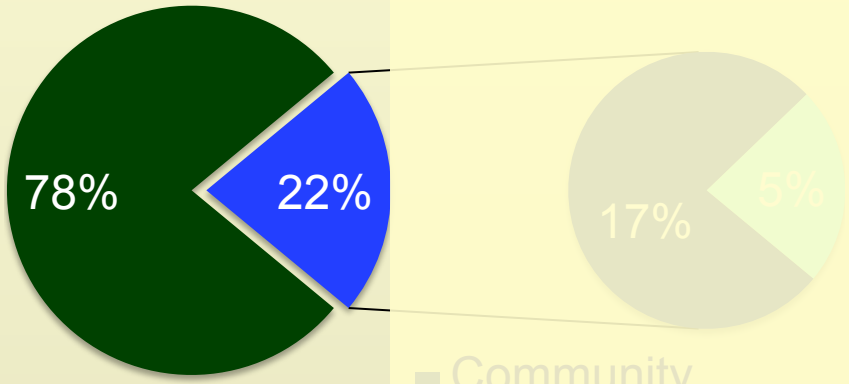
Infection Incidence

SAC UCI

Infection



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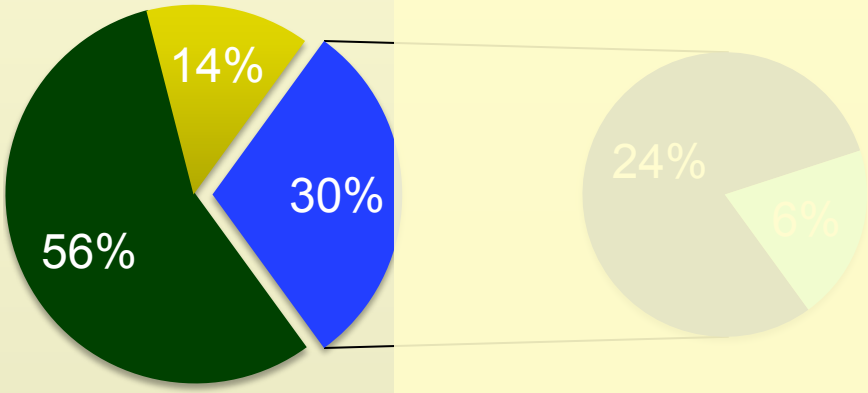
INFAUCI

Infection



N=3572

Gonçalves-Pereira, Clin Microbiol Infect 2014, 12: 1308

- HCA/CAI – 23% (SAC UCI), 20% (INFAUCI)

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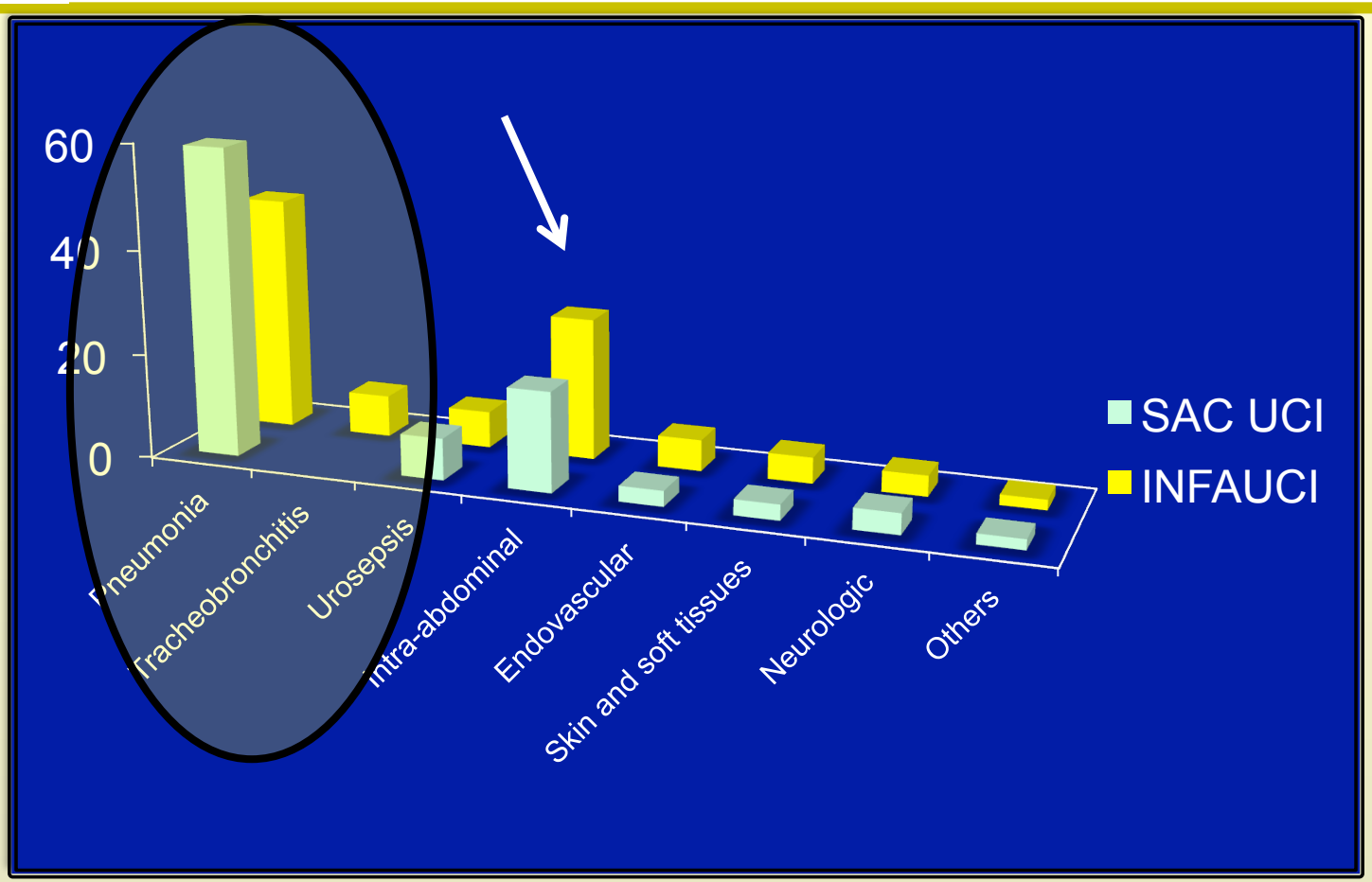
Infection Source



Roughly 60% of infections were from the pulmonary tract

(either pneumonia or tracheobronchitis)

INFAUCI data

Source of Infection	Place of acquisition			Hospital Mortality
	Community	HCA	Hospital	
Total	898 (54.9%)	228 (13.9%)	511 (31.2%)	38.2%
Pneumonia (N=745)	59.7%	12.4%	28.0%	39.9%
Tracheobronchitis (N=102)	67.6%	14.7%	17.6%	24.5%
Intra-Abdominal (N=436)	44.0%	12.0%	44.0%	39.4%
Endovascular (N=101)	29.7%	30.7%	39.6%	49.5%
Skin and soft tissue (N=93)	59.1%	16.1%	24.7%	43.0%
Urological (N=92)	57.6%	19.6%	22.8%	26.1%
Neurological (N=43)	81.4%	7.0%	11.6%	16.3%
Other (N=28)	75.0%	7.1%	17.9%	39.3%

Gonçalves-Pereira, Clin Microbiol Infect 2014, 12: 1308

INFAUCI data

	Stratification of sepsis			Positive Microbiology	Appropriate Antibiotic
	Sepsis	Severe Sepsis	Septic shock		
Total	312 (19.0%)	478 (29.1%)	850 (51.8%)	48.3%	74.4%
Pneumonia (N=745)	21.1%	34.0%	45.0%	39.7%	75.5%
Tracheobronchitis (N=102)	51.0%	30.4%	18.6%	44.1%	79.1%
Intra-Abdominal (N=436)	11.5%	22.9%	65.6%	47.9%	67.0%
Endovascular (N=101)	6.9%	26.7%	66.3%	77.2%	74.0%
Skin and soft tissue (N=93)	19.4%	28.0%	52.7%	60.2%	74.1%
Urological (N=92)	9.8%	18.5%	71.7%	70.7%	89.8%
Neurological (N=43)	32.6%	39.5%	27.9%	53.5%	89.5%
Other (N=28)	17.9%	25.0%	57.1%	42.9%	92.3%

Gonçalves-Pereira, Clin Microbiol Infect 2014, 12: 1308

SAC UCI Positive microbiology 40.5%

Appropriate antibiotic 81.6%

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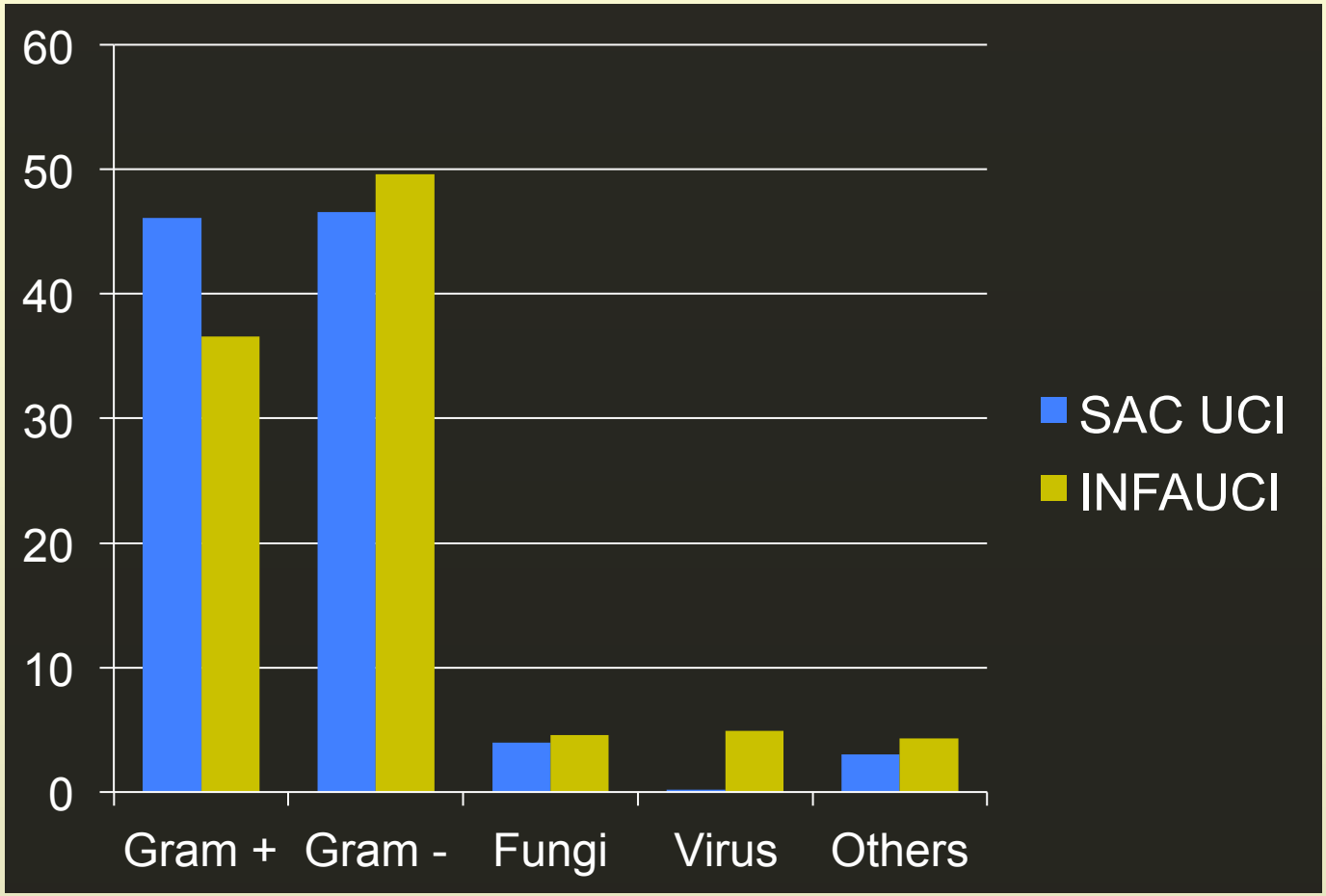
Isolated Microrganisms



Isolated Resistant Microrganisms

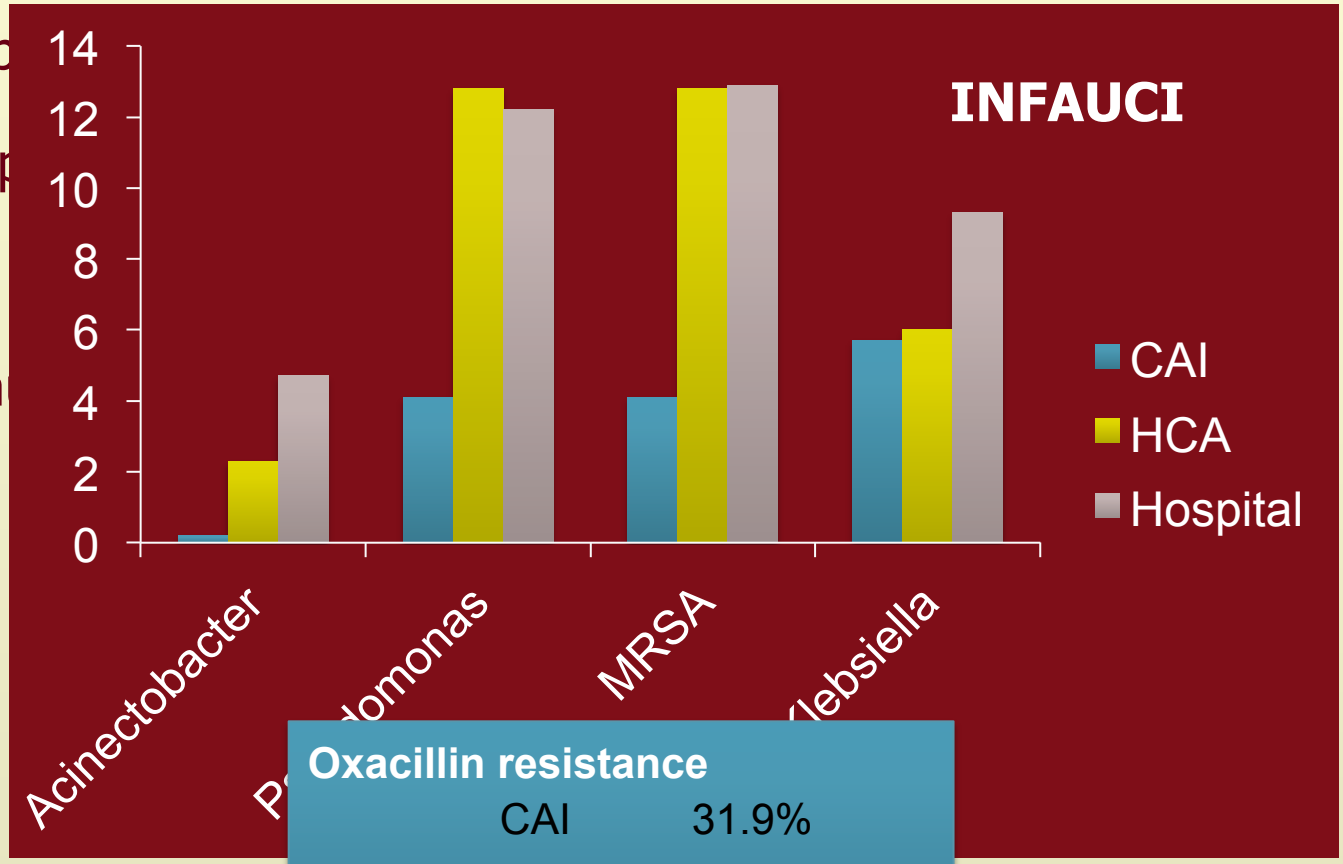
SAC UCI

Acinectobacter sp

Pseudomonas spp

Klebsiella spp

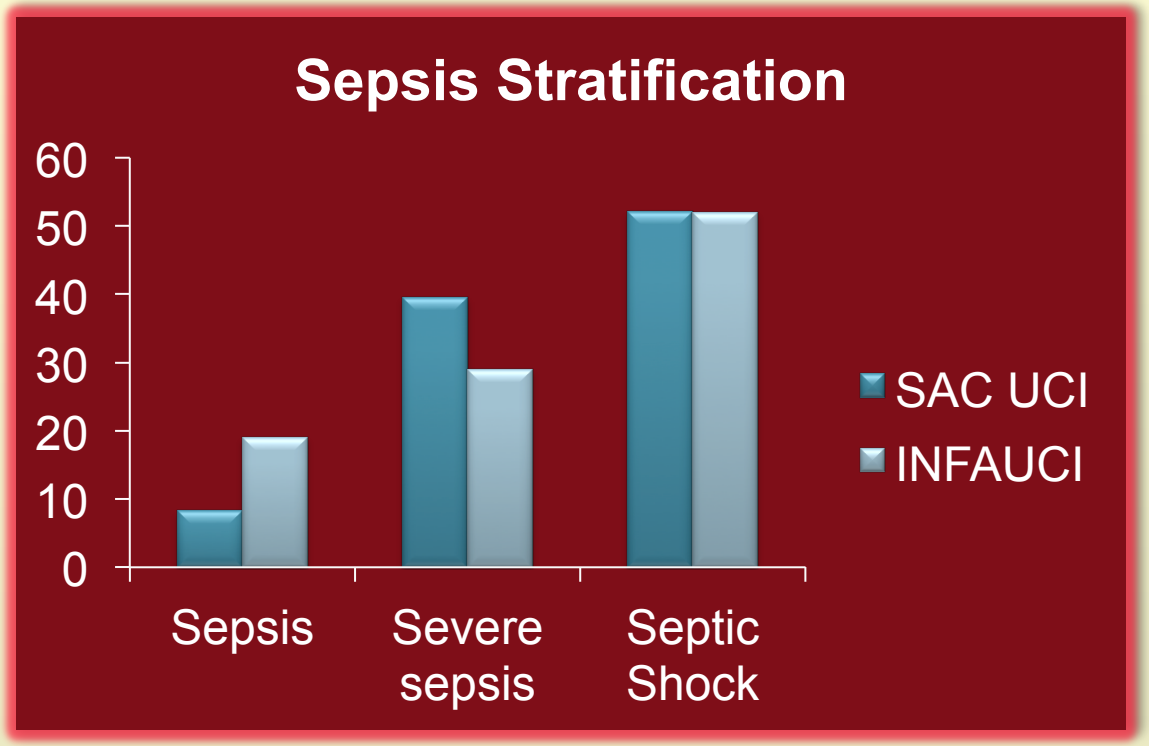
Staphylococcus a



Oxacillin resistance

CAI	31.9%
HCA	60.7%
H	67.9%

Sepsis Estratification on ICU admission



Length of Stay

ICU 9 (10) vs 8 (36)

Hospital 19 (9) vs 22 (86)

Impact of Infection on the mortality

SAC UCI	No infection	Infection	
ICU mortality	23%	30%	<0.001
Hospital mortality	32%	38%	0.003

INFA				
ICU				
Hos				

	Total (n=1651)	Survivors (n=1020; 62%)	Non Survivors (n=631; 38%)	AOR	95% CI
Age (yrs), median (P05-P95)	64 (31-84)	61 (29-82)	70 (36-86)	1.03	1.02-1.04
SAPS II mean±sd	49±18	43±15	58±17	1.04	1.03-1.05
Dependent Funtional status	12%	9%	17%	1.73	1.16-2.56
SOFA Day 1:	8 (3-17)	7 (2-14)	10 (4-18)	1.07	1.01-1.12
Chronic Hepatic Failure	6%	4%	10%	3.469	1.97-6.11
Neurological disease	12%	9%	15%	1.66	1.07-2.58
Imunosupression	11%	8%	14%	1.80	1.13-2.87
Chronic Renal Failure	10%	7%	14%	2.43	1.53-3.86
Septic Shock	52%	43%	66%	1.79	1.14-2.81
Nosocomial infection	23%	19%	29%	**1.81**	1.33-2.47
Inappropriate Antibiotics	12%	9%	17%	**2.29**	1.49-3.51

Gonçalves-Pereira, Clin Microbiol Infect 2014, 12: 1308

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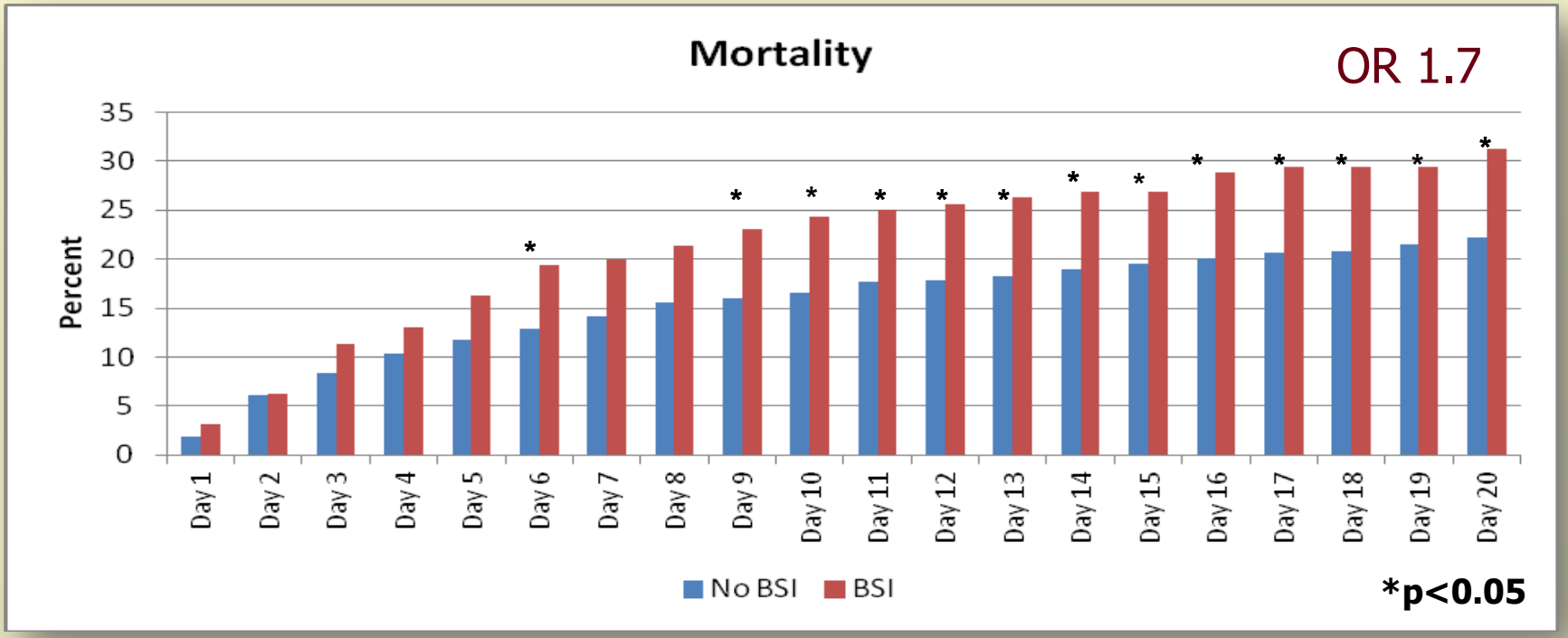
Impact of Infection on the mortality

SAC UCI	No infection	Infection	
ICU mortality	23%	30%	<0.001
Hospital mortality	32%	38%	0.003

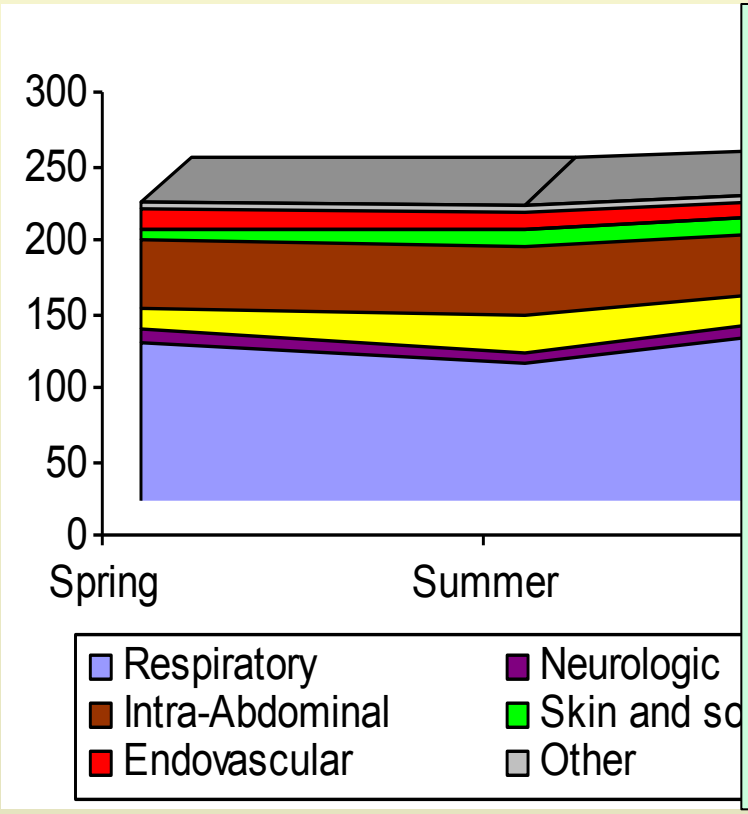
160 patients with Positive Blood Cultures



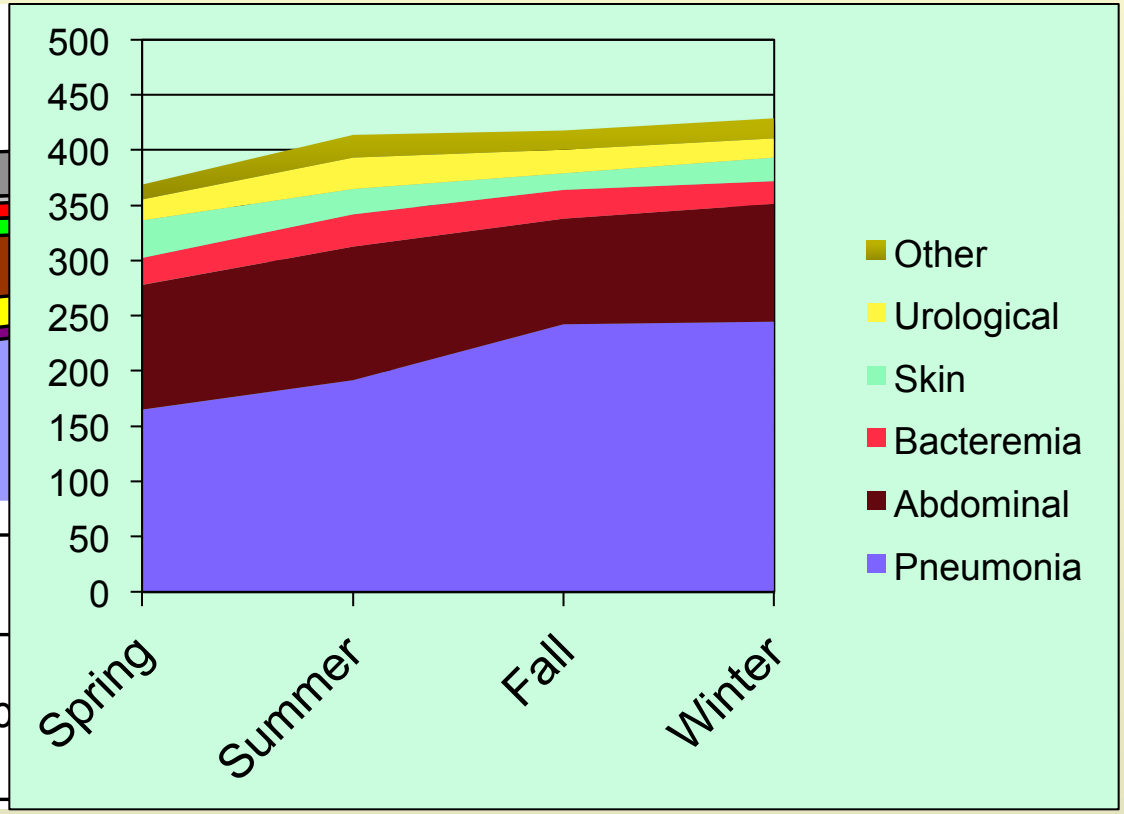
Gonçalves-Pereira, Clin Microbiol Infection, 2013, 19: 242

Seasonal distribution of infections

SAC UCI

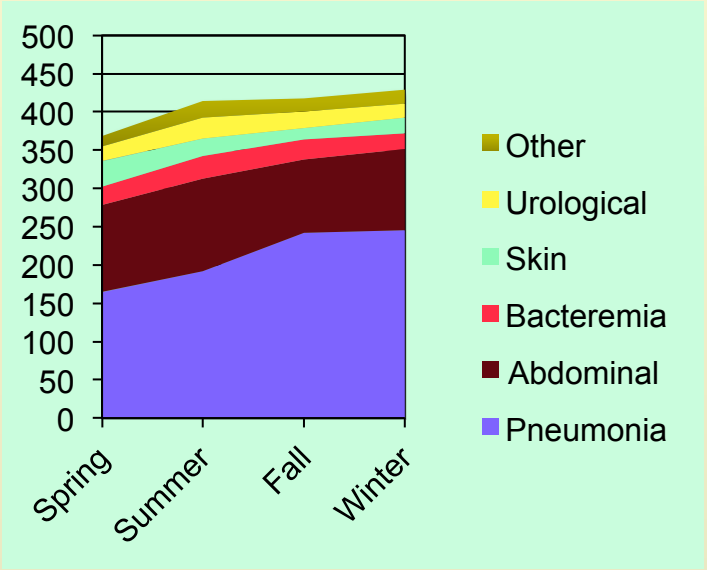


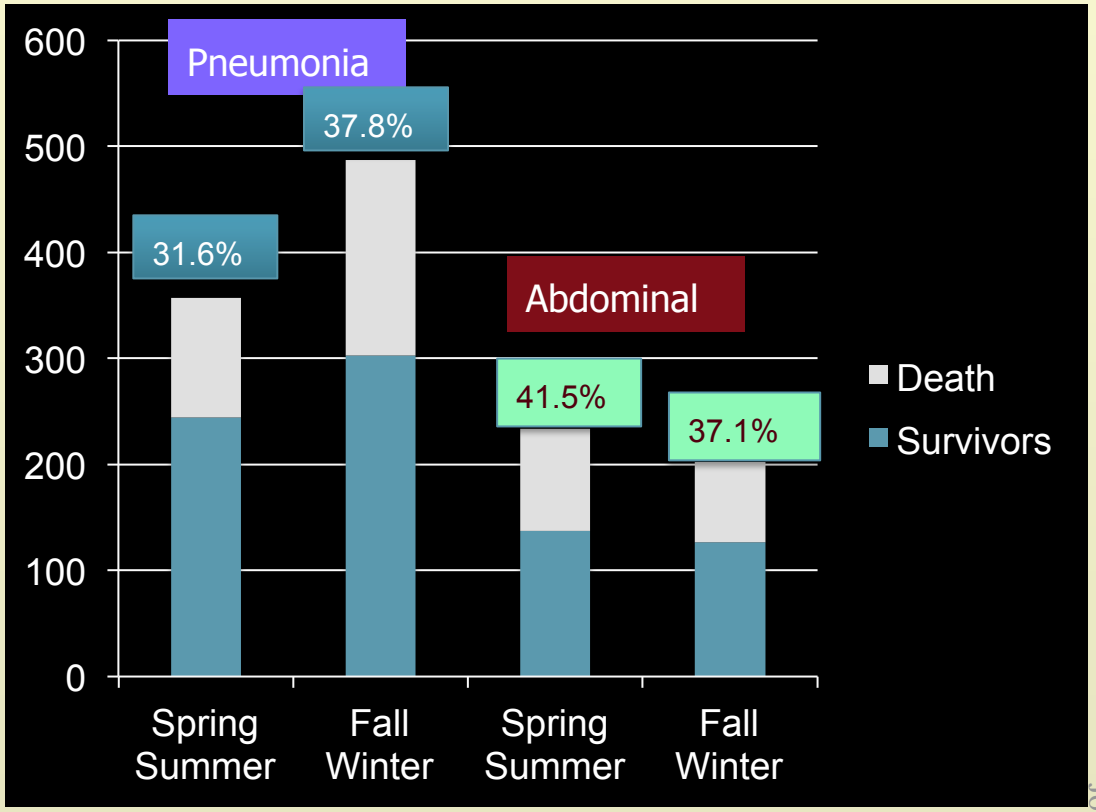
INFAUCI



Seasonal distribution of infections

INFAUCI





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Process of Care

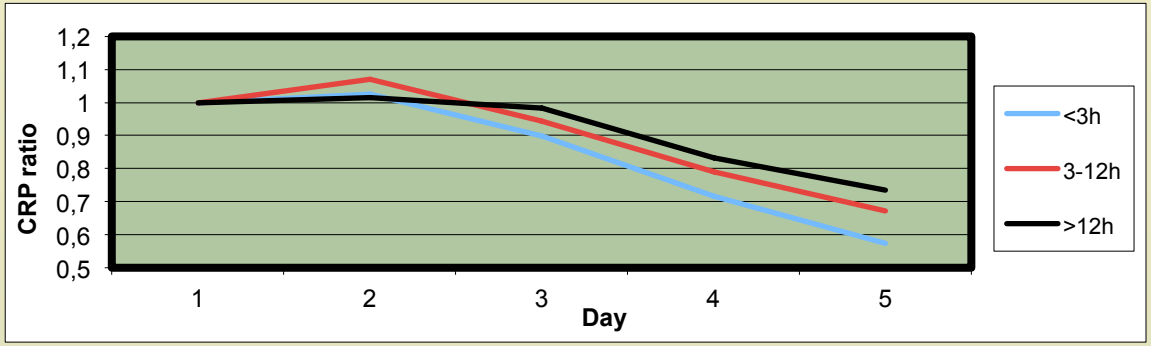
Early appropriate antibiotic therapy

SAC UCI

Mortality and Time of Antibiotic Therapy (<3h/≥3h)

	N	<3h	≥ 3h	OR	95% CI	P
Total	707	**24.2%**	**32.6%**	**1.52**	1.05-2.20	**0.026**
Documented Infection	364	**24.3%**	**37.9%**	**1.90**	1.04-3.45	**0.035**
Septic Shock	452	**36.7%**	**45.4%**	**1.433**	0.91-2.27	**0.124**

Antibiotic adequacy 81.6%



Gonçalves-Pereira, ATS 2011 P B104

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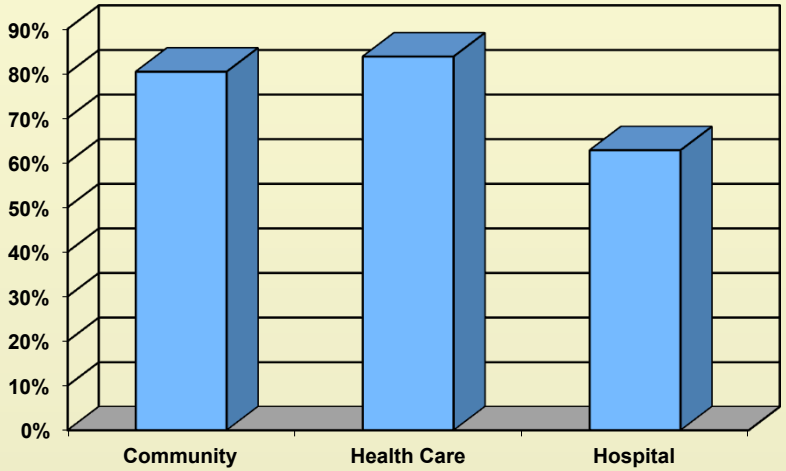
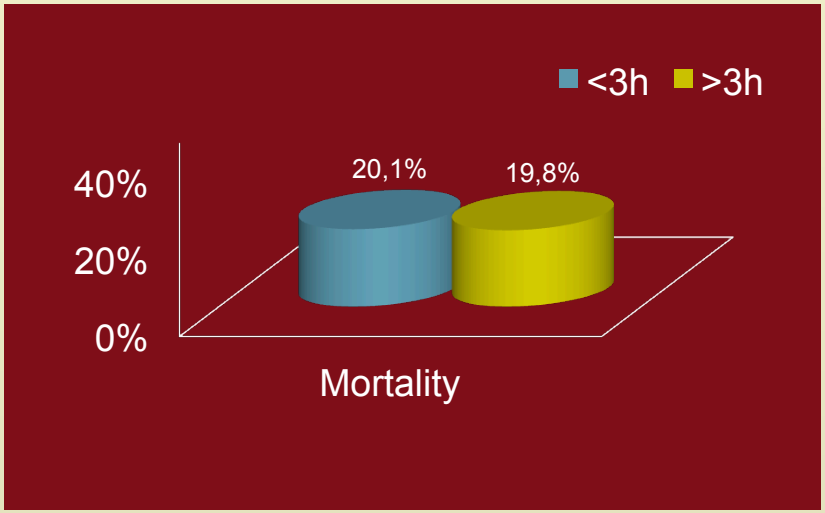
Process of Care

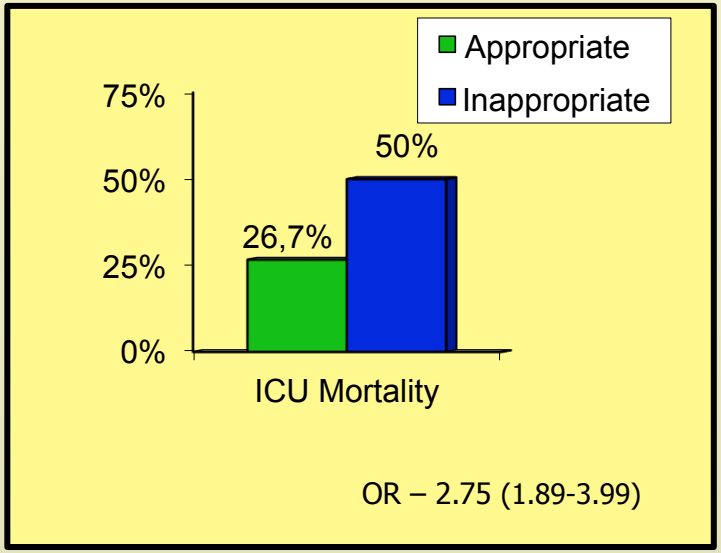
Early appropriate antibiotic therapy

INFAUCI



Time until antibiotic therapy – 2.30h





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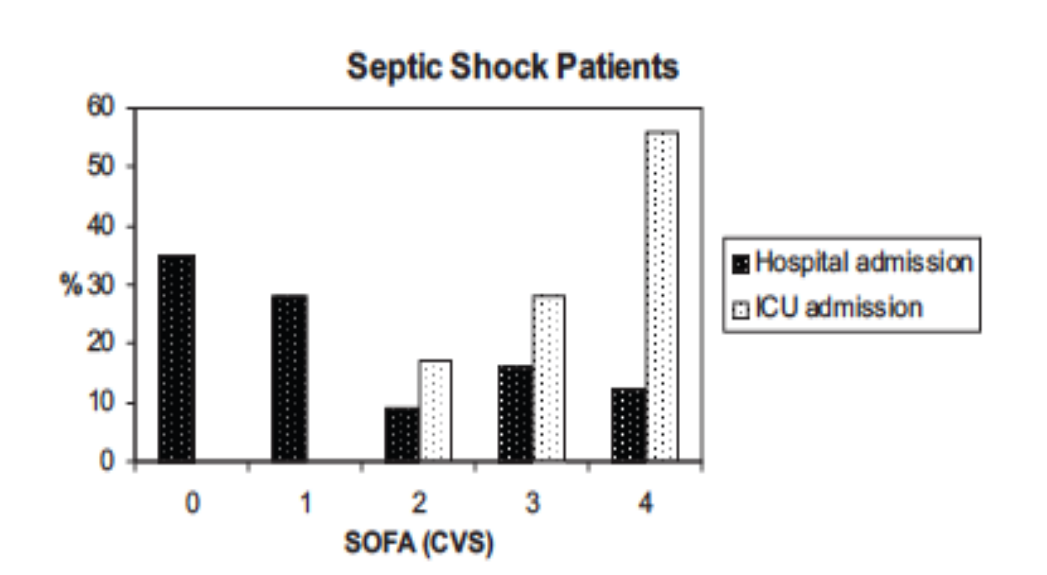
Process of Care

Admission delay

INFAUCI

The mortality rate was similar i r
first to the ward (35.9% vs. 35



SAC UCI

The mortality rate was similar i ward
(32% vs. 29%)

An increase in CV failure was noted, from 8.6% at D0 to 51% at admission to the ICU

Povoa, Crit Care Med, 2009, 37: 410

Process of Care

Microbiology

INFAUCI

Only 48.3% documented infections

(50.9% of hospital-acquired infections)

SAC UCI

Blood cultures were collected in 48% of CAI patients

Collection was associated with a decrease in mortality

OR 0.57 (0.33-0.97)

Cardoso, Crit Care, 2010, 14: R83

- **Post ICU Mortality**

SAC UCI – 11.4% (infected) vs. 11.4% (non infected)

INFAUCI – 14.2% (infected) vs. 9.6% (non infected), $p<0.001$

Process of Care

ICU acquired infection

INFAUCI

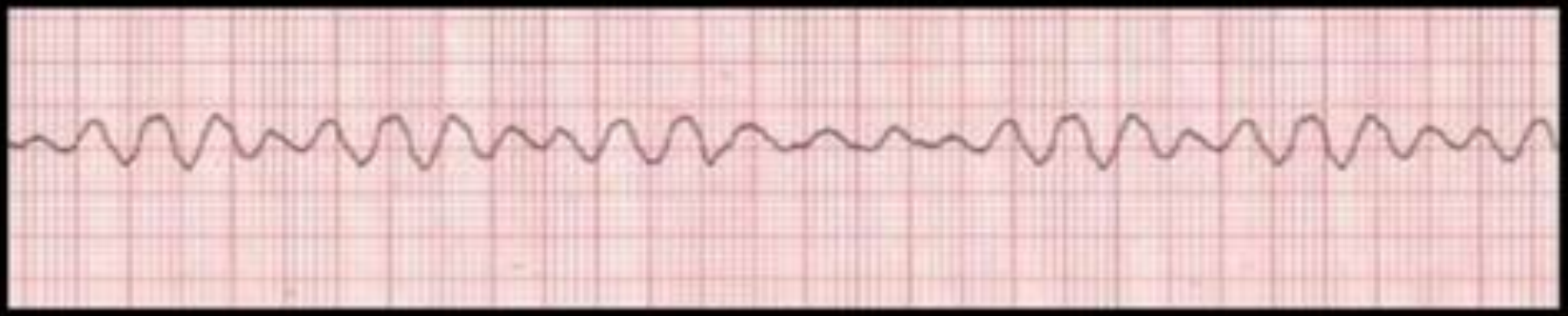
Infection	Total (n=3757)	None (n=1631; 43%)	ICU-acquired (n=474; 13%)	On admission (n=1652; 44%)	*p*
Male gender (%)	61	58	69	62	*<0,001**
Age (yrs), median (P05-P95)	63 (29-84)	63 (27-83)	61 (25-83)	64 (31-84)	*0.002§*
SOFA, median	7 (1-15)	5 (1-13)	8 (3-14)	8 (3-17)	*<0,001§*
ICU lenght of stay	6 (2-34)	3 (1-13)	18 (6-54)	8 (2-38)	*<0,001§*
Hospital lenght of stay	19 (3-87)	13 (2-84)	35 (8-106)	22 (3-89)	*<0,001§*
ICU Mortality	23	19	22	28	*<0,001**
Hospital mortality	32	26	33	38	*<0,001**

- ✓ In the overall population an ICU acquired infection was associated with an increase in mortality OR 1.55 (1.32-1.82)
- ✓ In the infected population a new ICU acquired infection increase mortality OR 2.16 (1.74-2.67)

Gonçalves-Pereira, Clin Microbiol Infection, 2013, 19: 242

Conclusions

- Population characteristics were similar in SAC UCI (2005) and INFAUCI (2010) studies
- Infected patients are roughly 40% of all ICU admissions and 50% presented in septic shock
- Health care associated infections are frequent and commonly present resistant microrganisms
- Changes in the process of care may help to improve the outcome of the infected population



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