



WETENSCHAPPELIJK INSTITUUT  
VOLKSGEZONDHEID  
INSTITUT SCIENTIFIQUE  
DE SANTÉ PUBLIQUE

# Surveillance of ICU - Acquired Infections

## National Feedback Report

### Infection Indicators

### Year 2009

Scientific Institute of Public Health  
Direction of Public Health and Surveillance  
National Surveillance of Hospital Infections (NSIH program)

14, Juliette Wytsmanstraat  
1050 Brussels - Belgium  
<http://www.wiv-isp.be>  
<http://www.nsih.be>

Het project wordt financieel ondersteund door  
*KB van 19 juni 2007 betreffende de vaststelling en de vereffening van het budget van financiële middelen van de ziekenhuizen*

Le projet est financièrement soutenu par  
*AR du 19 juin 2007 relatif à la fixation et à la liquidation du budget des moyens financiers des hôpitaux*

Further information on this report:  
Mr. Karl Mertens  
Tel +32 2 642 5795  
[karl.mertens@wiv-isp.be](mailto:karl.mertens@wiv-isp.be)



## List of Tables

1	Participation	2
2	General Indicators	2
3	Pneumonia	3
4	Bloodstream Infections	4
5	Urinary Tract Infections	5
6	Catheter Related Infections	6
7	Case Definitions: Nosocomial Pneumonia	7
8	Case Definitions: Nosocomial Bloodstream Infections	7
9	Case Definitions: Nosocomial Urinary Tract Infections	7
10	Case Definitions: Nosocomial Catheter Related Infections	7
11	All reported micro-organisms (nosocomial infections) (a)	8
12	All reported micro-organisms (nosocomial infections) (b)	9
13	Anti Microbial Resistance Indicators I: Gram Positive Cocci	10
14	Anti Microbial Resistance Indicators II: Enterobacteriaceae (a)	11
15	Anti Microbial Resistance Indicators III: Enterobacteriaceae (b)	12
16	Anti Microbial Resistance Indicators IV: Nonfermentative Bacilli	13
17	Missing Infection variables	14

## List of Figures

1	Distribution: number of patients	15
2	Distribution: median length of stay	15
3	Distribution: $P \geq D3$ (NP) / 1000 patientdays	16
4	Distribution: NPs, ID2, 1st / 1000 IDdays bef 1st NP ; NPs, 1st episode only, with intubation in 2 days before onset of NP / 1000 intubation days	16
5	Distribution: $Bs \geq D3$ (NBs) / 1000 patientdays	17
6	Distribution: NBs, ori=cat/unk / 1000 patientdays ; primary NBs / 1000 patientdays	17
7	Distribution: NBs, (ori=cat/un,ID2) OR (ori=cat) / 1000 IDdays ; catheter associated NBs / 1000 catheterdays (CDC)	18
8	Distribution: NBs, ori=cat, 1st / 1000 IDdays bef 1st NB ; definite catheter associated NBs, 1st episodes only / 1000 catheterdays	18
9	Distribution: $Us \geq D3$ (NU) / 1000 patientdays ; NUs / 1000 patientdays	19
10	Distribution: NUs, ID2 / 1000 ID days ; catheter associated NUs / 1000 urinary catheterdays	19
11	Evolution: Number of patients	20
12	Evolution: Median Length of stay	20
13	Evolution: $P \geq D3$ (NP) / 1000 patientdays	21
14	Evolution: NPs, ID2, 1st / 1000 IDdays bef 1st NP ; NPs, 1st episode only, with intubation in 2 days before onset of NP / 1000 intubation days	21
15	Evolution: $Bs \geq D3$ (NBs) / 1000 patientdays	22
16	Evolution: NBs, ori=cat, 1st / 1000 IDdays bef 1st NB ; definite catheter associated NBs, 1st episodes only / 1000 catheterdays	22
17	Evolution: NBs, (ori=cat/un,ID2) OR (ori=cat) / 1000 IDdays ; catheter associated NBs / 1000 catheterdays (CDC)	23
18	Evolution: NBs, ori=cat/unk / 1000 patientdays ; primary NBs / 1000 patientdays	23
19	Evolution: $Us \geq D3$ (NU) / 1000 patientdays ; NUs / 1000 patientdays	24
20	Evolution: NUs, ID2 / 1000 ID days ; catheter associated NUs / 1000 urinary catheterdays	24



Table 1: Participation

	#
unit quarters	45
hospital quarters	43
unit years	21
hospital years	20
level 1	10
level 2 basic	35
level 2a (risk factors / invasive devices)	35
level 2b (cvc utilization)	4
level 2c (antibiotic utilization)	17

<sup>a</sup> unit quarters = number of IC units that participated during a particular 3-month quarter; hospital quarters = number of hospitals that participated during a particular 3-month quarter; unit years = number of IC units that participated during at least one 3-month quarter ; hospital years = number of hospitals that participated during at least one 3-month quarter

<sup>b</sup> level = number of IC units that participated during a particular 3-month quarter; level 1 = unit-based surveillance; level 2 = patient-based surveillance

Table 2: General Indicators

	#					
	agg	p10	p25	p50	p75	p90
admissions, total	4910	42	60	101.5	226	719.5
patientdays, total	38209	304.5	434.5	720.5	1759.5	5234.5
patientdays, mean	8	5.3	6.5	7.8	8.9	9.5
patientdays, median	5	4	4.75	5	5.25	6



Table 3: Pneumonia

	# <sup>a</sup>		rate <sup>a</sup>						
	agg.	agg.	p10	p25	p50	p75	p90		
patients with P (all)	504	10.26	0.00	3.59	7.94	14.15	21.53	/100 admissions	
patients with P ≥ D3 <sup>b</sup> (NP <sup>b</sup> )	461	9.39	0.00	3.59	7.75	10.14	15.30	/100 admissions	
patients with NP, ID2 <sup>b</sup>	310	6.31	0.00	0.91	3.55	6.39	9.29	/100 admissions	
P (all)	628	16.44	0.00	4.07	13.48	27.04	29.90	/1000 patientdays	
P ≥ D3 (NP)	579	15.15	0.00	4.07	13.01	16.85	28.88	/1000 patientdays	
NP, 1st <sup>b</sup>	445	11.65	0.00	4.07	11.54	13.72	23.28	/1000 patientdays	
NP, ID2	122	14.42	0.00	2.37	18.32	27.65	44.44	/1000 IDdays <sup>b</sup>	
NP, ID2, 1st	104	16.57	0.00	2.52	19.76	36.79	68.97	/1000 IDdays bef 1st NP	

<sup>a</sup> # = total; rate = # divided by indicated denominator; agg. = aggregated over all participating units; p10-90 = percentiles for distribution of participating units

<sup>b</sup> P = pneumonia, NP(s) = Nosocomial P, ≥ D3 = occurring after D2 (nosocomial), IDdays = Invasive Device (intubation for P) exposure days, ID2 = Invasive Device (intubation for P) exposure in 2 days before onset of NP, 1st = only 1st infection per patient



Table 4: Bloodstream Infections

	# <sup>a</sup>										rate <sup>a</sup>		
	agg.	agg.	p10	p25	p50	p75	p90						
patients with B (all)	130	2.65	0.00	0.85	1.80	5.50	6.40	/100 admissions					
patients with B $\geq$ D3 <sup>b</sup> (NB <sup>b</sup> )	113	2.30	0.00	0.31	1.25	3.86	5.93	/100 admissions					
patients with NB, ID2 <sup>b</sup>	62	1.26	0.00	0.00	0.37	2.03	4.59	/100 admissions					
B (all)	140	3.66	0.00	1.10	2.73	7.81	12.54	/1000 patientdays					
B $\geq$ D3 (NBs)	123	3.22	0.00	0.48	1.81	6.84	10.36	/1000 patientdays					
NB, 1st <sup>b</sup>	113	2.96	0.00	0.48	1.66	4.77	9.93	/1000 patientdays					
NB, ID2	44	2.57	0.00	0.00	1.37	6.57	10.78	/1000 IDdays <sup>b</sup>					
NB, ID2, 1st	37	2.84	0.00	0.00	1.70	7.20	15.97	/1000 IDdays bef 1st NB					
NB, ori=cat/unk <sup>b,c</sup>	82	2.15	0.00	0.00	1.15	3.99	9.10	/1000 patientdays					
NB, (ori=cat/unk, ID2)/(ori=cat) <sup>d</sup>	35	2.05	0.00	0.00	1.26	3.24	9.33	/1000 IDdays					
NB, ori=cat <sup>e</sup>	8	0.47	0.00	0.00	0.00	0.00	1.57	/1000 IDdays					
NB, ori=unk	74	1.94	0.00	0.00	1.00	3.28	9.10	/1000 patientdays					
NB, ori=cat or unk, 1st	74	1.94	0.00	0.00	0.98	3.85	5.65	/1000 patientdays					
NB, (ori=cat or unk, ID2)/(ori=cat), 1st	28	2.15	0.00	0.00	1.48	4.38	9.59	/1000 IDdays bef 1st NB					
NB, ori=cat, 1st	8	0.61	0.00	0.00	0.00	0.00	1.76	/1000 IDdays bef 1st NB					
NB, ori=unk, 1st	67	1.75	0.00	0.00	0.86	3.28	5.65	/1000 patientdays					
NBs, ID2, $\geq$ 1HC path or $\geq$ 2HCs with sc <sup>b</sup>	44	3.38	0.00	0.00	1.70	9.60	20.27	/1000 IDdays bef 1st NB					
NBs, ID2, $\geq$ 1HC path or $\geq$ 2HCs with sc, ori=cat	3	0.23	0.00	0.00	0.00	0.00	0.31	/1000 IDdays bef 1st NB					
NBs, ID2, $\geq$ 1HC path or $\geq$ 2HCs with sc, ori=cat, 1st	3	0.23	0.00	0.00	0.00	0.00	0.31	/1000 IDdays bef 1st NB					

<sup>a</sup> #=total; rate=# divided by indicated denominator; agg.=aggregated over all participating units; p10-90=percentiles for distribution of participating units

<sup>b</sup> B=Bloodstream Infection episodes; NB(s)=Nosocomial B;  $\geq$ D3=occurring after D2 (nosocomial); IDdays=Invasive Device (central vascular catheter for B) days; ID2=Invasive Device (central vascular catheter for B) in 2 days before onset of B; 1st=only 1st infection per patient; ori=cat/unk=NB origin is either catheter or unknown; ori=cat=NB origin is catheter;  $\geq$  1HC path=at least one hemoculture from a pathogen;  $\geq$  2HCs with sc=at least 2 hemocultures from a skincontaminant

<sup>c</sup> Primary BSI

<sup>d</sup> Catheter Associated Primary BSI

<sup>e</sup> Definite Catheter Associated Primary BSI



Table 5: Urinary Tract Infections

	# <sup>a</sup>		rate <sup>a</sup>						
	agg.	agg.	p10	p25	p50	p75	p90		
patients with U (all)	65	1.32	0.00	0.00	0.00	2.46	4.59	/100 admissions	
patients with U ≥ D3 (NU) <sup>b</sup>	60	1.22	0.00	0.00	0.00	1.94	3.43	/100 admissions	
patients with NU, ID2 <sup>b</sup>	47	0.96	0.00	0.00	0.00	1.53	2.51	/100 admissions	
U (all)	68	1.78	0.00	0.00	0.00	3.48	9.26	/1000 patientdays	
U ≥ D3 (NU)	63	1.65	0.00	0.00	0.00	2.86	6.19	/1000 patientdays	
NU, 1st <sup>b</sup>	59	1.54	0.00	0.00	0.00	2.69	6.19	/1000 patientdays	
NU, ID2	10	0.78	0.00	0.00	0.00	0.00	2.34	/1000 ID days before 1st NU	
NU, ID2, 1st	10	1.04	0.00	0.00	0.00	0.00	3.73	/1000 ID days before 1st NU	

<sup>a</sup> # = total; rate = # divided by indicated denominator; agg. = aggregated over all participating units; p10-90 = percentiles for distribution of participating units

<sup>b</sup> U = Urinary Tract Infection; NU = Nosocomial U; ≥ D3 = occurring after D2 (nosocomial); ID days = Invasive Device (urinary catheter for U) days; ID2 = Invasive Device (urinary catheter for U) in 2 days before onset of U; 1st = only 1st infection per patient



Table 6: Catheter Related Infections

	# <sup>a</sup>		rate <sup>a</sup>					
	agg.	agg.	p10	p25	p50	p75	p90	
patients with CRI (all)	8	0.16	0.00	0.00	0.00	0.00	1.87	/100 admissions
patients with CRI $\geq$ D3 (NCRI) <sup>b</sup>	7	0.14	0.00	0.00	0.00	0.00	1.87	/100 admissions
CRI (all)	8	0.21	0.00	0.00	0.00	0.00	2.20	/1000 patientdays
CRI $\geq$ D3 (NCRI)	7	0.18	0.00	0.00	0.00	0.00	2.20	/1000 patientdays
NCRI, 1st <sup>b</sup>	7	0.18	0.00	0.00	0.00	0.00	2.20	/1000 patientdays

<sup>a</sup> #=total; rate=# divided by indicated denominator; agg.=aggregated over all participating units; p10-90=percentiles for distribution of participating units

<sup>b</sup> U=Catheter Related Infection; NCRI=Nosocomial CRI;  $\geq$  D3=occurring after D2 (nosocomial); 1st=only 1st infection per patient



Table 7: Case Definitions: Nosocomial Pneumonia

	# <sup>a</sup>		% <sup>a</sup>				
	agg.	agg.	p10	p25	p50	p75	p90
PN1	58	10.0	0.0	0.0	0.0	12.5	28.6
PN2	12	2.1	0.0	0.0	0.0	12.5	50.0
PN3	4	0.7	0.0	0.0	0.0	0.0	6.9
PN4	427	73.7	0.0	50.0	75.0	100.0	100.0
PN5	78	13.5	0.0	0.0	0.0	16.7	33.3

<sup>a</sup>#=crude number; %=percentage; agg.=aggregated, treating national sample as one unit; p10-90=percentiles for national distribution

<sup>b</sup>PN=clinical definition for Nosocomial Pneumonia; PN1=PN and positive quantitative culture from minimally contaminated lower respiratory tract specimen; PN2=PN and positive quantitative culture from possibly contaminated lower respiratory tract specimen; PN3=PN and alternative microbiology methods; PN4=PN and positive sputum culture or non-quantitative LRT specimen culture; PN5=PN with no positive microbiology

Table 8: Case Definitions: Nosocomial Bloodstream Infections

	# <sup>a</sup>		% <sup>a</sup>				
	agg.	agg.	p10	p25	p50	p75	p90
BSI-A	122	99.2	100.0	100.0	100.0	100.0	100.0
BSI-B	1	0.8	0.0	0.0	0.0	0.0	0.0

<sup>a</sup>#=crude number; %=percentage; agg.=aggregated, treating national sample as one unit; p10-90=percentiles for national distribution

<sup>b</sup>BSI-A=positive blood culture for a recognised pathogen or clinical signs with 2 positive blood cultures for a common skin contaminant; BSI-B=clinical signs and positive blood culture with a skin contaminant or positive blood antigen test

Table 9: Case Definitions: Nosocomial Urinary Tract Infections

	# <sup>a</sup>		% <sup>a</sup>				
	aggregated	aggregated	p10	p25	p50	p75	p90
UTI-A	41	65.1	0.0	26.8	93.8	100.0	100.0
UTI-B	3	4.8	0.0	0.0	0.0	0.0	7.3
UTI-C	19	30.2	0.0	0.0	6.3	69.5	100.0

<sup>a</sup>#=crude number; %=percentage; agg.=aggregated, treating national sample as one unit; p10-90=percentiles for national distribution

<sup>b</sup>UTI-A=microbiologically confirmed symptomatic UTI; UTI-B=not microbiologically confirmed symptomatic UTI; UTI-C=asymptomatic bacteriuria

Table 10: Case Definitions: Nosocomial Catheter Related Infections

	# <sup>a</sup>		% <sup>a</sup>				
	aggregated	aggregated	p10	p25	p50	p75	p90
CRI1	0	0.0	0.0	0.0	0.0	0.0	0.0
CRI2	3	42.9	25.0	25.0	45.8	66.7	66.7
CRI3	4	57.1	33.3	33.3	54.2	75.0	75.0

<sup>a</sup>#=crude number; %=percentage; agg.=aggregated, treating national sample as one unit; p10-90=percentiles for national distribution

<sup>b</sup>CRI1=local CVC-related infection; CRI2=general CVC-related infection; CRI3=CVC-related BSI



Table 11: All reported micro-organisms (nosocomial infections) (a)

microorganism - family	code	NP <sup>a</sup>		NB <sup>a</sup>		NU <sup>a</sup>		tot <sup>a</sup>	
		# <sup>b</sup>	% <sup>b</sup>	#	%	#	%	#	%
<b>Gram-positive cocci</b>		124	19.4	51	38.9	11	17.5	192	22.6
<i>Coagulase-negative staphylococci, not specified</i>	STACNS	1	0.2	0	0.0	0	0.0	1	0.1
<i>Enterococcus faecalis</i>	ENCFAE	7	1.1	9	6.9	4	6.3	21	2.5
<i>Enterococcus faecium</i>	ENCFAI	0	0.0	1	0.8	0	0.0	1	0.1
<i>Enterococcus sp., not specified</i>	ENCNSP	2	0.3	4	3.1	4	6.3	10	1.2
<i>Other coagulase-negative staphylococci (cns)</i>	STAOTH	3	0.5	19	14.5	0	0.0	22	2.6
<i>Other gram positive cocci</i>	GPCOTH	0	0.0	1	0.8	0	0.0	1	0.1
<i>Staphylococcus aureus</i>	STAAUR	43	6.7	11	8.4	1	1.6	58	6.8
<i>Staphylococcus epidermidis</i>	STAEPI	4	0.6	1	0.8	0	0.0	6	0.7
<i>Staphylococcus haemolyticus</i>	STAHAE	1	0.2	0	0.0	0	0.0	1	0.1
<i>Staphylococcus sp., not specified</i>	STANSP	42	6.6	3	2.3	0	0.0	45	5.3
<i>Streptococcus agalactiae (b)</i>	STRAGA	1	0.2	1	0.8	1	1.6	3	0.4
<i>Streptococcus pneumoniae</i>	STRPNE	8	1.3	0	0.0	0	0.0	8	0.9
<i>Streptococcus sp., not specified</i>	STRNSP	4	0.6	1	0.8	0	0.0	6	0.7
<i>Streptococcus sp., other</i>	STROTH	8	1.3	0	0.0	1	1.6	9	1.1
<b>Gram negative cocci</b>		6	0.9	0	0.0	0	0.0	6	0.7
<i>Gram negative cocci, other</i>	GNCOTH	1	0.2	0	0.0	0	0.0	1	0.1
<i>Moraxella catharralis</i>	MORCAT	5	0.8	0	0.0	0	0.0	5	0.6
<b>Gram positive bacilli</b>		2	0.3	0	0.0	0	0.0	2	0.2
<i>Corynebacterium species</i>	CORSPP	2	0.3	0	0.0	0	0.0	2	0.2
<b>Gram-negative bacilli, enterobacteriaceae</b>		261	40.8	43	32.8	27	42.9	337	39.7
<i>Citrobacter freundii</i>	CITFRE	7	1.1	1	0.8	1	1.6	9	1.1
<i>Citrobacter koseri (ex. diversus)</i>	CITDIV	3	0.5	0	0.0	0	0.0	3	0.4
<i>Citrobacter sp., not specified</i>	CITNSP	2	0.3	0	0.0	0	0.0	2	0.2
<i>Citrobacter sp., other</i>	CITOTH	1	0.2	0	0.0	0	0.0	1	0.1
<i>Enterobacter aerogenes</i>	ENBAER	30	4.7	3	2.3	3	4.8	38	4.5
<i>Enterobacter cloacae</i>	ENBCLO	41	6.4	10	7.6	1	1.6	52	6.1
<i>Enterobacter sp., not specified</i>	ENBNSP	1	0.2	0	0.0	0	0.0	1	0.1
<i>Escherichia coli</i>	ESCCOL	60	9.4	10	7.6	15	23.8	87	10.2
<i>Hafnia species</i>	HAFSPP	3	0.5	0	0.0	0	0.0	3	0.4
<i>Klebsiella oxytoca</i>	KLEOXY	17	2.7	3	2.3	3	4.8	23	2.7
<i>Klebsiella pneumoniae</i>	KLEPNE	28	4.4	11	8.4	4	6.3	44	5.2
<i>Klebsiella sp., other</i>	KLEOTH	2	0.3	0	0.0	0	0.0	2	0.2
<i>Morganella species</i>	MOGSPP	23	3.6	1	0.8	0	0.0	24	2.8
<i>Other enterobacteriaceae</i>	ETBOTH	0	0.0	0	0.0	0	0.0	0	0.0
<i>Proteus mirabilis</i>	PRTMIR	14	2.2	0	0.0	0	0.0	15	1.8
<i>Proteus sp., not specified</i>	PRTNSP	0	0.0	1	0.8	0	0.0	1	0.1
<i>Proteus vulgaris</i>	PRTVUL	2	0.3	1	0.8	0	0.0	3	0.4
<i>Providencia species</i>	PRVSPP	1	0.2	0	0.0	0	0.0	1	0.1
<i>Serratia liquefaciens</i>	SERLIQ	3	0.5	0	0.0	0	0.0	3	0.4
<i>Serratia marcescens</i>	SERMAR	23	3.6	2	1.5	0	0.0	25	2.9

<sup>a</sup> NP=Nosocomial Pneumonia, NB=Nosocomial Bloodstream Infection, NU=Nosocomial Urinary Tract Infection, tot=all Nosocomial Infections

<sup>b</sup> #=number of micro-organisms, %=percentage of total micro-organisms



Table 12: All reported micro-organisms (nosocomial infections) (b)

microorganism - family	code	NP <sup>a</sup>		NB <sup>a</sup>		NU <sup>a</sup>		tot <sup>a</sup>	
		# <sup>b</sup>	% <sup>b</sup>	#	%	#	%	#	%
<b>Gram-negative bacilli, other</b>		201	31.5	16	12.2	8	12.7	226	26.6
<i>Achromobacter species</i>	ACHSPP	1	0.2	0	0.0	0	0.0	1	0.1
<i>Acinetobacter baumannii</i>	ACIBAU	0	0.0	1	0.8	0	0.0	1	0.1
<i>Acinetobacter Iwoffii</i>	ACILWO	1	0.2	0	0.0	0	0.0	1	0.1
<i>Acinetobacter sp., not specified</i>	ACINSP	12	1.9	0	0.0	0	0.0	12	1.4
<i>Alcaligenes species</i>	ALCSPP	1	0.2	0	0.0	0	0.0	1	0.1
<i>Burkholderia cepacia</i>	BURCEP	4	0.6	0	0.0	0	0.0	4	0.5
<i>G-bac, non enterobacteriaceae, not spec.</i>	GNBNSP	1	0.2	0	0.0	0	0.0	1	0.1
<i>Haemophilus influenzae</i>	HAEINF	15	2.3	0	0.0	0	0.0	15	1.8
<i>Legionella species</i>	LEGSPP	1	0.2	0	0.0	0	0.0	1	0.1
<i>Other gram- bacilli, non enterobacteriaciaea</i>	GNBOTH	2	0.3	0	0.0	0	0.0	2	0.2
<i>Pseudomonadaceae family, not specified</i>	PSENSP	2	0.3	0	0.0	0	0.0	2	0.2
<i>Pseudomonadaceae family, other</i>	PSEOTH	7	1.1	0	0.0	0	0.0	7	0.8
<i>Pseudomonas aeruginosa</i>	PSEAER	112	17.5	15	11.5	8	12.7	136	16.0
<i>Stenotrophomonas maltophilia</i>	STEMAL	42	6.6	0	0.0	0	0.0	42	4.9
<b>Anaerobes</b>		0	0.0	1	0.8	0	0.0	1	0.1
<i>Bacteroides fragilis</i>	BATFRA	0	0.0	1	0.8	0	0.0	1	0.1
<b>Other bacteria</b>		0	0.0	0	0.0	0	0.0	0	0.0
<i>Mycoplasma species</i>	MYPSP	0	0.0	0	0.0	0	0.0	0	0.0
<b>Parasites</b>		34	5.3	19	14.5	17	27.0	73	8.6
<i>Aspergillus fumigatus</i>	ASPFUM	11	1.7	0	0.0	0	0.0	11	1.3
<i>Aspergillus niger</i>	ASPNIG	1	0.2	0	0.0	0	0.0	1	0.1
<i>Aspergillus sp., not specified</i>	ASPNSP	2	0.3	0	0.0	0	0.0	2	0.2
<i>Aspergillus sp., other</i>	ASPOTH	1	0.2	0	0.0	0	0.0	1	0.1
<i>Candida albicans</i>	CANALB	11	1.7	6	4.6	13	20.6	33	3.9
<i>Candida glabrata</i>	CANGLA	5	0.8	7	5.3	0	0.0	12	1.4
<i>Candida parapsilosis</i>	CANPAR	0	0.0	2	1.5	0	0.0	2	0.2
<i>Candida sp., not specified</i>	CANNSP	0	0.0	1	0.8	0	0.0	1	0.1
<i>Candida sp., other</i>	CANOTH	3	0.5	1	0.8	0	0.0	4	0.5
<i>Fungi other</i>	FUNOTH	0	0.0	2	1.5	0	0.0	2	0.2
<i>Fungi, not specified</i>	FUNNSP	0	0.0	0	0.0	4	6.3	4	0.5
<b>Virus</b>		3	0.5	0	0.0	0	0.0	3	0.4
<i>Herpes simplex virus</i>	VIRHSV	3	0.5	0	0.0	0	0.0	3	0.4

<sup>a</sup> NP=Nosocomial Pneumonia, NB=Nosocomial Bloodstream Infection, NU=Nosocomial Urinary Tract Infection, tot=all Nosocomial Infections

<sup>b</sup> #=number of micro-organisms, %=percentage of total micro-organisms



Table 13: Anti Microbial Resistance Indicators I: Gram Positive Cocci

	SIR <sup>a</sup>										IR <sup>a</sup>													
	# <sup>a</sup>	% <sup>a</sup>	p10	p25	p50	p75	p90	# <sup>a</sup>	% <sup>a</sup>	p10	p25	p50	p75	p90	# <sup>a</sup>	% <sup>a</sup>	p10	p25	p50	p75	p90			
<b><i>Staphylococcus aureus</i></b>																								
cultures	58																							
Fluoroquinolones: Ciprofloxacin/ofloxacin	26	44.8	0.0	0.0	0.0	25.0	72.8	6	23.1	0.0	0.0	13.6	100.0	100.0										
Macrolides/sim.: Clindamycin (lincosamides)	33	56.9	0.0	0.0	0.0	66.7	97.8	6	18.2	0.0	0.0	6.8	25.6	37.5										
Macrolides/sim.: Erythromycin (macrolides)	33	56.9	0.0	0.0	0.0	66.7	97.8	7	21.2	0.0	6.8	25.6	43.8	50.0										
Other antibiotics: Fosfomycin	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0										
Other antibiotics: Fusidic acid	24	41.4	0.0	0.0	0.0	0.0	97.8	0	0.0	0.0	0.0	0.0	0.0	0.0										
Aminoglycosides: Gentamycin	35	60.3	0.0	0.0	0.0	91.7	97.8	2	5.7	0.0	0.0	0.0	4.5	9.1										
Glycopeptides: Vancomycin/teicoplanin (Glycopeptides)	35	60.3	0.0	0.0	64.5	100.0	100.0	0	0.0	0.0	0.0	0.0	0.0	0.0										
Penicillins: Methicillin/Oxacillin (beta-lact.res.penic.)	58	100.0	100.0	100.0	100.0	100.0	100.0	13	22.4	0.0	0.0	20.8	50.0	83.3										
Penicillins: Penicillin	38	65.5	0.0	0.0	41.7	100.0	100.0	32	84.2	70.0	100.0	100.0	100.0	100.0										
<b><i>Streptococcus pneumoniae</i></b>																								
cultures	8																							
Penicillins: Ampicillin	1	12.5	0.0	0.0	0.0	50.0	100.0	0	0.0	0.0	0.0	0.0	0.0	0.0										
Cephalosporins: Cefotaxime/ceftriaxone (3rd gen cephalosp.)	4	50.0	0.0	0.0	50.0	100.0	100.0	0	0.0	0.0	0.0	0.0	0.0	0.0										
Macrolides/sim.: Clindamycin (lincosamides)	1	12.5	0.0	0.0	0.0	25.0	50.0	1	100.0	100.0	100.0	100.0	100.0	100.0										
Macrolides/sim.: Erythromycin (macrolides)	5	62.5	0.0	0.0	75.0	100.0	100.0	3	60.0	0.0	0.0	66.7	100.0	100.0										
Penicillins: Methicillin/Oxacillin (beta-lact.res.penic.)	1	12.5	0.0	0.0	0.0	50.0	100.0	0	0.0	0.0	0.0	0.0	0.0	0.0										
Penicillins: Penicillin	5	62.5	0.0	0.0	75.0	100.0	100.0	1	20.0	0.0	0.0	0.0	33.3	33.3										
Tetracyclines: Tetra-/doxy-/minocycline (tetracyclines)	2	25.0	0.0	0.0	25.0	75.0	100.0	1	50.0	0.0	0.0	50.0	100.0	100.0										
<b><i>Enterococcus faecalis</i></b>																								
cultures	21																							
Penicillins: Ampicillin	12	57.1	0.0	0.0	33.3	100.0	100.0	2	16.7	0.0	0.0	0.0	0.0	50.0										
Penicillins: Amoxicillin/clavulanate	4	19.0	0.0	0.0	0.0	100.0	100.0	0	0.0	0.0	0.0	0.0	0.0	0.0										
Aminoglycosides: Gentamycin	8	38.1	0.0	0.0	16.7	100.0	100.0	4	50.0	0.0	25.0	50.0	75.0	100.0										
Glycopeptides: Vancomycin/teicoplanin (Glycopeptides)	13	61.9	0.0	0.0	83.3	100.0	100.0	0	0.0	0.0	0.0	0.0	0.0	0.0										

<sup>a</sup> SIR=all Sensitive/Intermediate/Resistant antibiogram results, IR=all Intermediate/Resistant antibiogram results, #=#/100 cultures (SIR) or #/100 SIR results (IR),



Table 14: Anti Microbial Resistance Indicators II: Enterobacteriaceae (a)

	SIR <sup>a</sup>										IR <sup>a</sup>									
	# <sup>a</sup>	% <sup>a</sup>	p10	p25	p50	p75	p90	# <sup>a</sup>	% <sup>a</sup>	p10	p25	p50	p75	p90						
<b><i>Escherichia coli</i></b>																				
cultures	87																			
Penicillins: Amoxicillin/clavulanate	74	85.1	0.0	0.0	100.0	100.0	100.0	28	37.8	8.8	25.0	46.4	66.7	100.0						
Cephalosporins: Cefotaxime/ceftriaxone (3rd gen cephalosp.)	29	33.3	0.0	0.0	9.1	100.0	100.0	8	27.6	0.0	0.0	16.7	66.7	100.0						
Carbapenems: Meropenem/impipenem (carbapenems)	54	62.1	0.0	0.0	38.1	100.0	100.0	1	1.9	0.0	0.0	0.0	0.0	50.0						
ESBL: Extended Spectrum Beta Lactamase	20	23.0	0.0	0.0	2.8	66.7	100.0	5	25.0	0.0	0.0	0.0	100.0	100.0						
<b><i>Enterobacter aerogenes</i></b>																				
cultures	38																			
Penicillins: Amoxicillin/clavulanate	33	86.8	25.0	90.0	100.0	100.0	100.0	29	87.9	82.4	88.9	100.0	100.0	100.0						
Cephalosporins: Cefotaxime/ceftriaxone (3rd gen cephalosp.)	20	52.6	0.0	0.0	72.2	100.0	100.0	14	70.0	0.0	25.0	62.5	76.0	76.9						
Carbapenems: Meropenem/impipenem (carbapenems)	22	57.9	0.0	0.0	50.0	100.0	100.0	2	9.1	0.0	0.0	0.0	0.0	11.8						
ESBL: Extended Spectrum Beta Lactamase	10	26.3	0.0	0.0	25.0	50.0	100.0	6	60.0	0.0	0.0	0.0	50.0	100.0						
<b><i>Enterobacter cloacae</i></b>																				
cultures	52																			
Penicillins: Amoxicillin/clavulanate	43	82.7	0.0	0.0	100.0	100.0	100.0	38	88.4	66.7	92.9	100.0	100.0	100.0						
Cephalosporins: Cefotaxime/ceftriaxone (3rd gen cephalosp.)	24	46.2	0.0	0.0	33.3	100.0	100.0	16	66.7	0.0	50.0	80.0	100.0	100.0						
Carbapenems: Meropenem/impipenem (carbapenems)	40	76.9	0.0	0.0	100.0	100.0	100.0	0	0.0	0.0	0.0	0.0	0.0	0.0						
ESBL: Extended Spectrum Beta Lactamase	13	25.0	0.0	0.0	0.0	50.0	100.0	6	46.2	0.0	0.0	0.0	0.0	100.0						

<sup>a</sup> SIR=all Sensitive/Intermediate/Resistant antibiogram results, IR=all Intermediate/Resistant antibiogram results, #=aggregated total, %=#/100 cultures (SIR) or #/100 SIR results (IR),



Table 15: Anti Microbial Resistance Indicators III: Enterobacteriaceae (b)

	SIR <sup>a</sup>					IR <sup>a</sup>								
	# <sup>a</sup>	% <sup>a</sup>	p10	p25	p50	p75	p90	# <sup>a</sup>	% <sup>a</sup>	p10	p25	p50	p75	p90
<b><i>Klebsiella pneumoniae</i></b>														
cultures	44													
Penicillins: Amoxicillin/clavulanate	38	86.4	0.0	100.0	100.0	100.0	100.0	12	31.6	0.0	0.0	12.5	55.8	100.0
Cephalosporins: Cefotaxime/ceftriaxone (3rd gen cephalosp.)	20	45.5	0.0	0.0	0.0	100.0	100.0	6	30.0	0.0	0.0	8.3	36.1	55.6
Carbapenems: Meropenem/impipenem (carbapenems)	30	68.2	0.0	25.0	100.0	100.0	100.0	1	3.3	0.0	0.0	0.0	0.0	5.3
ESBL: Extended Spectrum Beta Lactamase	9	20.5	0.0	0.0	0.0	33.3	100.0	4	44.4	0.0	0.0	0.0	50.0	100.0
<b><i>Klebsiella oxytoca</i></b>														
cultures	23													
Penicillins: Amoxicillin/clavulanate	14	60.9	0.0	0.0	50.0	100.0	100.0	4	28.6	0.0	0.0	0.0	30.0	100.0
Cephalosporins: Cefotaxime/ceftriaxone (3rd gen cephalosp.)	6	26.1	0.0	0.0	0.0	100.0	100.0	2	33.3	0.0	0.0	0.0	33.3	66.7
Carbapenems: Meropenem/impipenem (carbapenems)	12	52.2	0.0	0.0	0.0	100.0	100.0	1	8.3	0.0	0.0	0.0	5.6	11.1
ESBL: Extended Spectrum Beta Lactamase	2	8.7	0.0	0.0	0.0	0.0	75.0	1	50.0	0.0	0.0	50.0	100.0	100.0

<sup>a</sup> SIR=all Sensitive/Intermediate/Resistant antibiotic results, IR=all Intermediate/Resistant antibiotic results, #=aggregated total, %=#/100 cultures (SIR) or #/100 SIR results (IR),



Table 16: Anti Microbial Resistance Indicators IV: Nonfermentative Bacilli

	SIR <sup>a</sup>										IR <sup>a</sup>												
	# <sup>a</sup>	% <sup>a</sup>	p10	p25	p50	p75	p90	# <sup>a</sup>	% <sup>a</sup>	p10	p25	p50	p75	p90	# <sup>a</sup>	% <sup>a</sup>	p10	p25	p50	p75	p90		
<b><i>Pseudomonas aeruginosa</i></b>																							
cultures																							
Carbapenems: Meropenem/imipenem (carbapenems)	107	78.7	0.0	0.0	96.6	100.0	100.0	38	35.5	0.0	0.0	0.0	16.7	41.9	107	78.7	0.0	0.0	96.6	100.0	100.0	100.0	
Cephalosporins: Ceftazidim (anti-pseudom 3G ceph)	115	84.6	0.0	16.7	100.0	100.0	100.0	37	32.2	0.0	0.0	8.3	42.8	100.0	115	84.6	0.0	16.7	100.0	100.0	100.0	100.0	
Polymyx.: Colistin (polymixins)	95	69.9	0.0	0.0	0.0	50.0	100.0	1	1.1	0.0	0.0	0.0	0.0	1.1	95	69.9	0.0	0.0	0.0	50.0	100.0	100.0	
Penicillins: Piperacillin/ticarcillin (anti-pseudom. penic.)	17	12.5	0.0	0.0	0.0	100.0	100.0	4	23.5	0.0	0.0	0.0	50.0	100.0	17	12.5	0.0	0.0	0.0	100.0	100.0	100.0	
Penicillins: Piperacillin/ticarcillin + enzyme inhibitor	113	83.1	0.0	0.0	97.8	100.0	100.0	23	20.4	0.0	0.0	10.0	33.3	75.0	113	83.1	0.0	0.0	97.8	100.0	100.0	100.0	
<b><i>Acinetobacter baumannii</i></b>																							
cultures																							
Carbapenems: Meropenem/imipenem (carbapenems)	1	100.0	100.0	100.0	100.0	100.0	100.0	0	0.0	0.0	0.0	0.0	0.0	0.0	1	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cephalosporins: Ceftazidim (anti-pseudom 3G ceph)	1	100.0	100.0	100.0	100.0	100.0	100.0	0	0.0	0.0	0.0	0.0	0.0	0.0	1	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
Polymyx.: Colistin (polymixins)	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Penicillins: Piperacillin/ticarcillin (anti-pseudom. penic.)	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Penicillins: Piperacillin/ticarcillin + enzyme inhibitor	1	100.0	100.0	100.0	100.0	100.0	100.0	0	0.0	0.0	0.0	0.0	0.0	0.0	1	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

<sup>a</sup> SIR=all Sensitive/Intermediate/Resistant antibiotic results, IR=all Intermediate/Resistant antibiotic results, #=#/100 cultures (SIR) or #/100 SIR results (IR),



Table 17: Missing Infection variables

variable	L1 <sup>a</sup>	L2 <sup>a</sup>	Ls <sup>a</sup>	Req <sup>a</sup>	# <sup>a</sup>	% <sup>a</sup>	p10	p25	p50	p75	p90
invasive device in 48 hours preceding infection	V	V	0	R	41	5.3	0.0	0.0	0.0	11.1	92.3
origin of bloodstream infection	V	V	0	O	51	36.4	0.0	1.0	50.0	100.0	100.0
antimicrobial treatment	V	V	0	O	37	4.7	0.0	0.0	0.0	6.5	92.3
Microorganism indicator	V	V	0	M	2	0.3	0.0	0.0	0.0	0.0	0.0
total infection variables	V	V	0	O	131	3.8	0.0	1.9	4.3	11.4	25.0

<sup>a</sup> L1= level 1 variable (denominator-based surveillance) ; L2= level 2 variable (patient-based surveillance) ; L2s= level 2 suboption (0=basic level 2 variables a=extra patient admission and day by day variables, b=central vascular catheter follow-up, c=antimicrobial treatment follow-up); Req: M=mandatory, R=Required, O=Optional #=number of missing variables; %=# / 100 eligible records



Hospital (all) :  
4910 patients

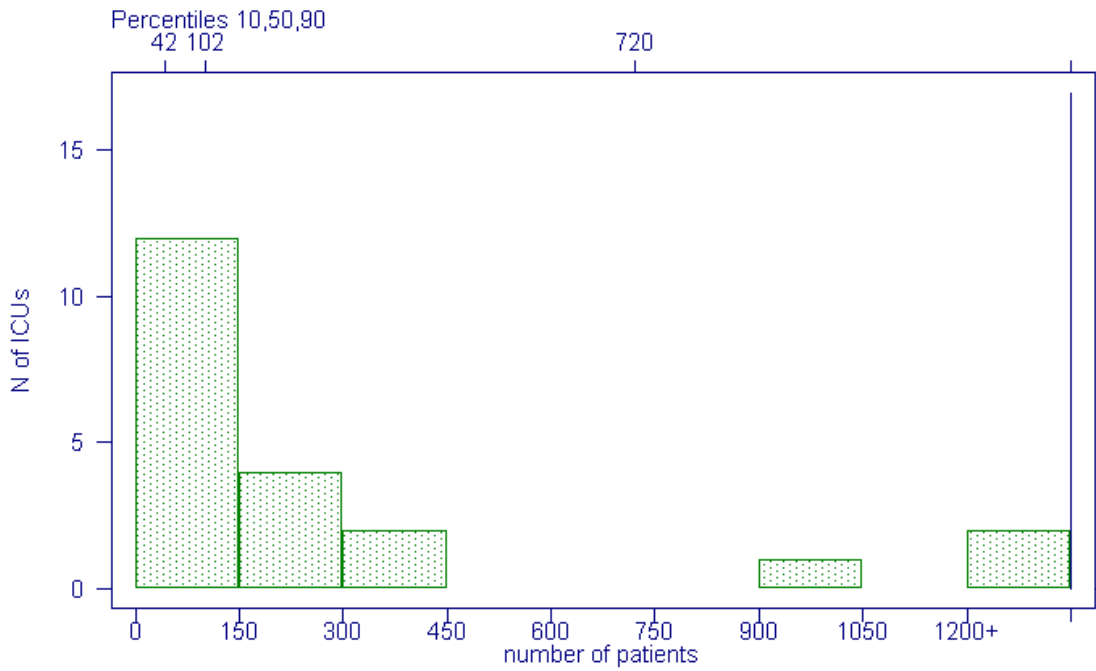


Figure 1: Distribution: number of patients

Hospital (all) :  
5.0 days

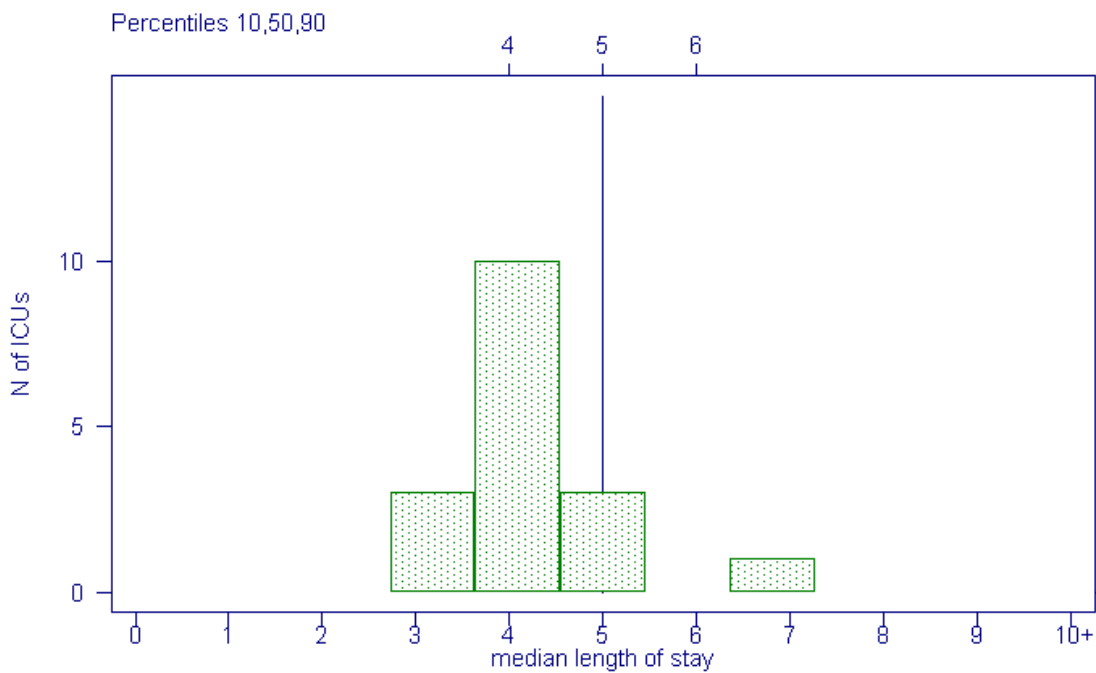


Figure 2: Distribution: median length of stay



Hospital (all) :  
15.2 NP/1000 patientdays (95% CI 13.9 - 16.4)

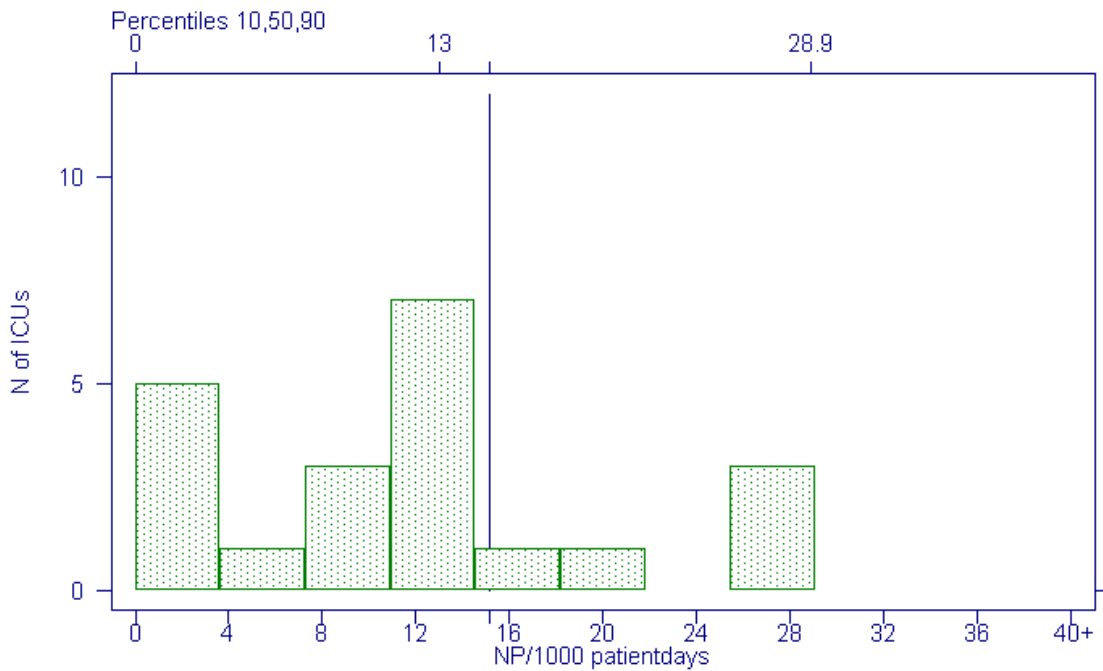


Figure 3: Distribution: P<sub>≥</sub>D3 (NP) / 1000 patientdays

Hospital (all) :  
16.6 NPs, ID2, 1st / 1000 IDdays bef 1st NP (95% CI 13.5 - 20.1)

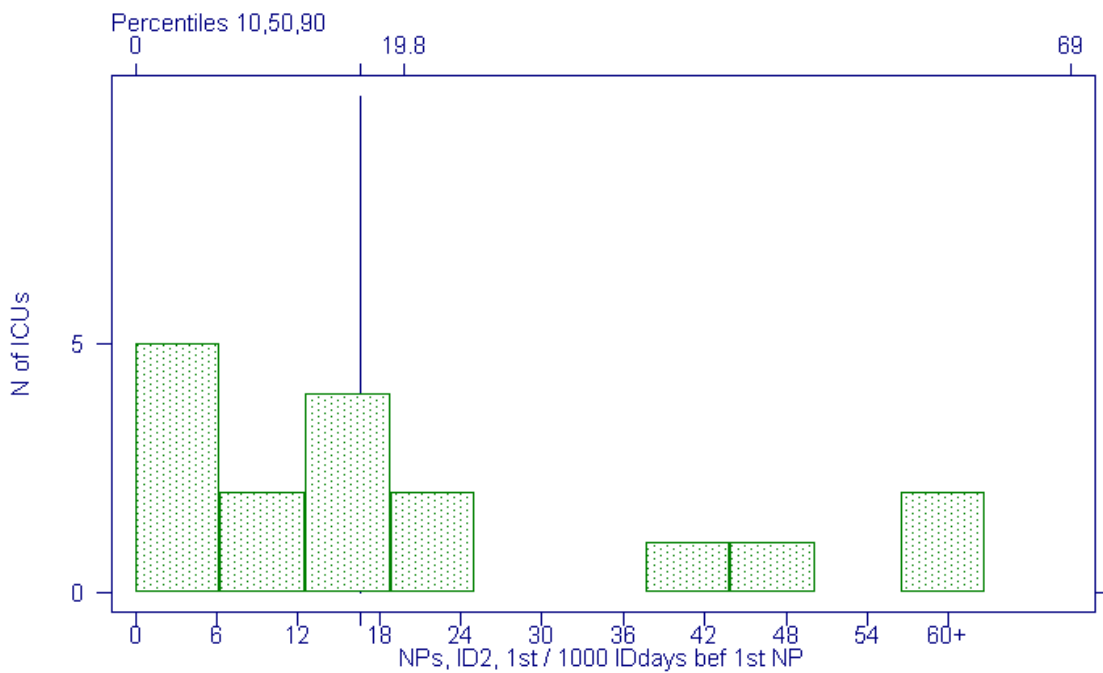


Figure 4: Distribution: NPs, ID2, 1st / 1000 IDdays bef 1st NP ; NPs, 1st episode only, with intubation in 2 days before onset of NP / 1000 intubation days



Hospital (all):  
3.2  $B_{s \geq D3}$  (NBs) / 1000 patientdays (95% CI 2.7 - 3.8)

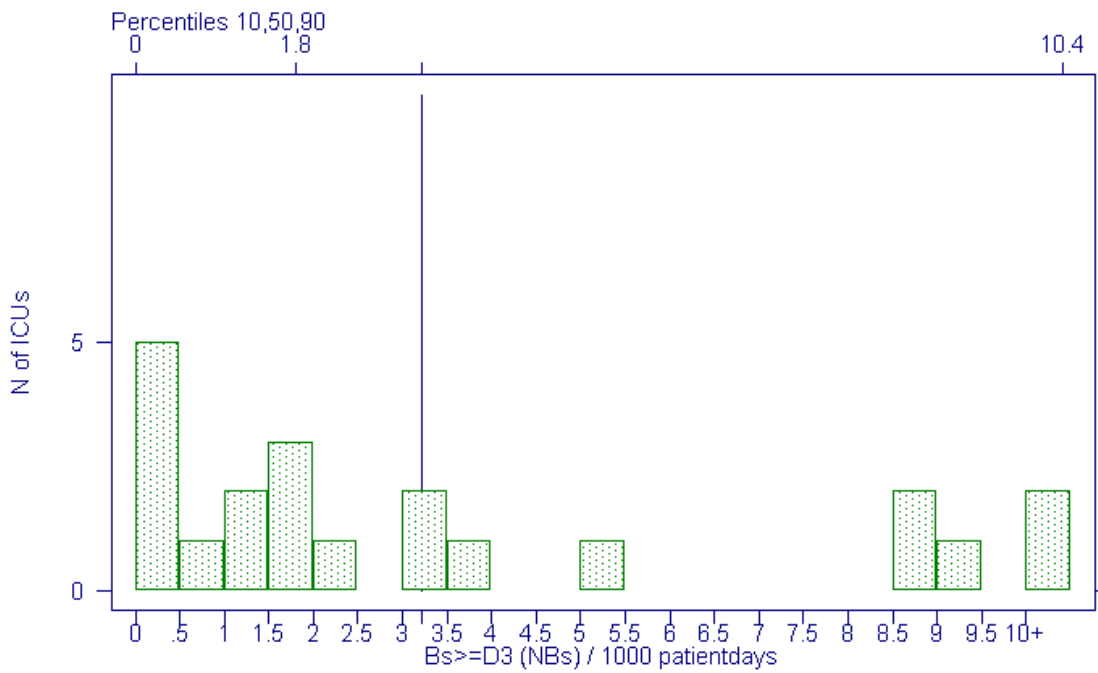


Figure 5: Distribution:  $B_{s \geq D3}$  (NBs) / 1000 patientdays

Hospital (all):  
2.1 NBs, ori=(cat/un) / 1000 patientdays (95% CI 1.7 - 2.7)

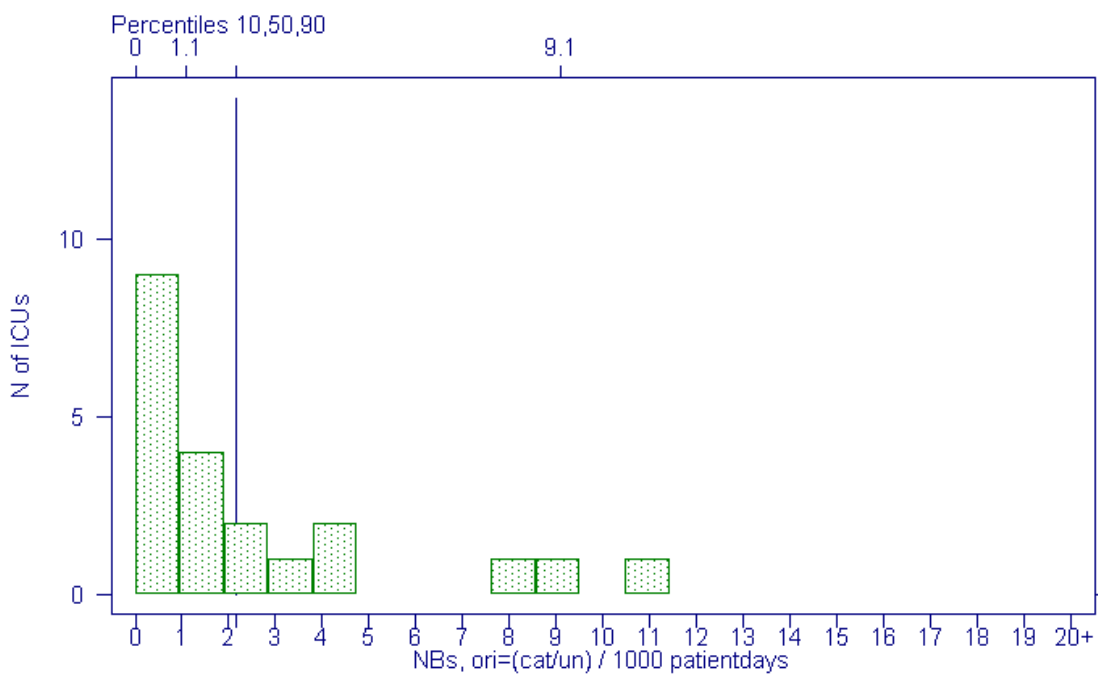


Figure 6: Distribution: NBs, ori=(cat/un) / 1000 patientdays ; primary NBs / 1000 patientdays



Hospital (all) :  
2 NBs, (ori=cat/un,ID2) / 1000 IDdays (95% CI 1.4 - 2.8)

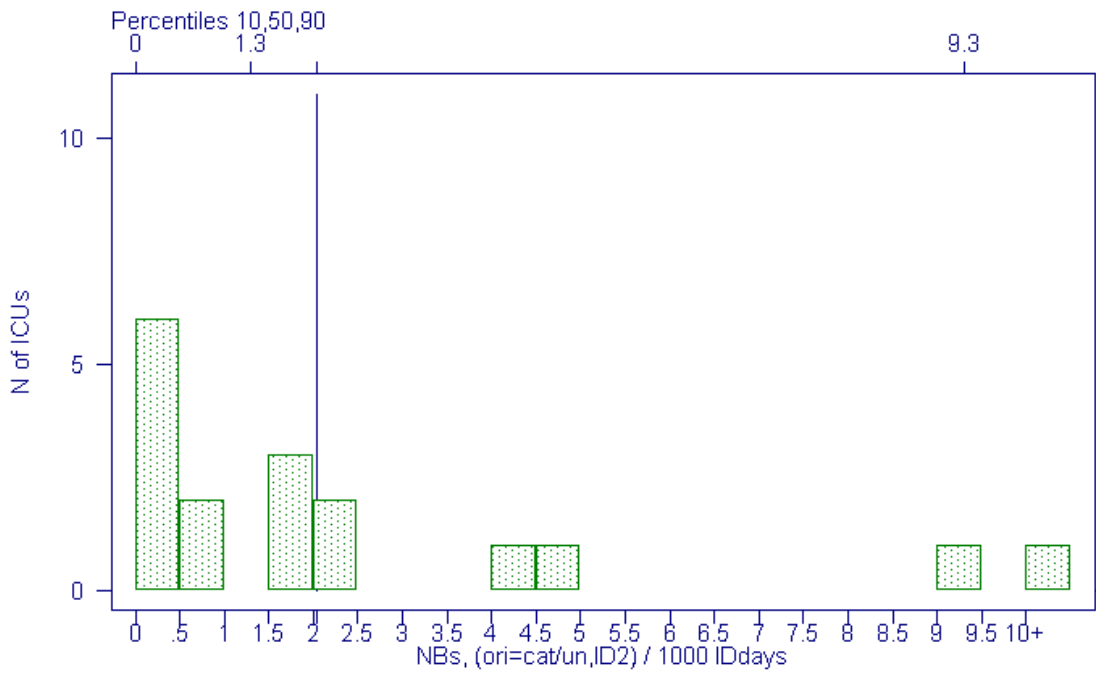


Figure 7: Distribution: NBs, (ori=cat/un,ID2) OR (ori=cat) / 1000 IDdays ; catheter associated NBs / 1000 catheterdays (CDC)

Hospital (all) :  
.6 NBs, ori=cat, 1st / 1000 IDdays bef 1st NB (95% CI .3 - 1.2)

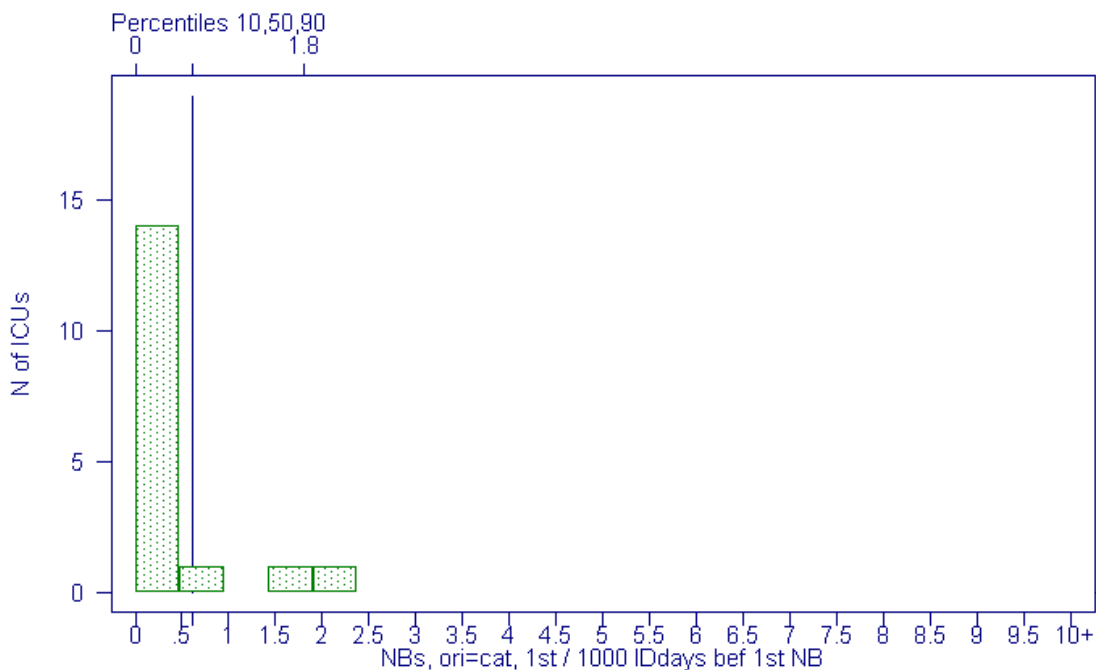


Figure 8: Distribution: NBs, ori=cat, 1st / 1000 IDdays bef 1st NB ; definite catheter associated NBs, 1st episodes only / 1000 catheterdays



Hospital (all):  
1.6 NUs / 1000 patientdays (95% CI 1.3 - 2.1)

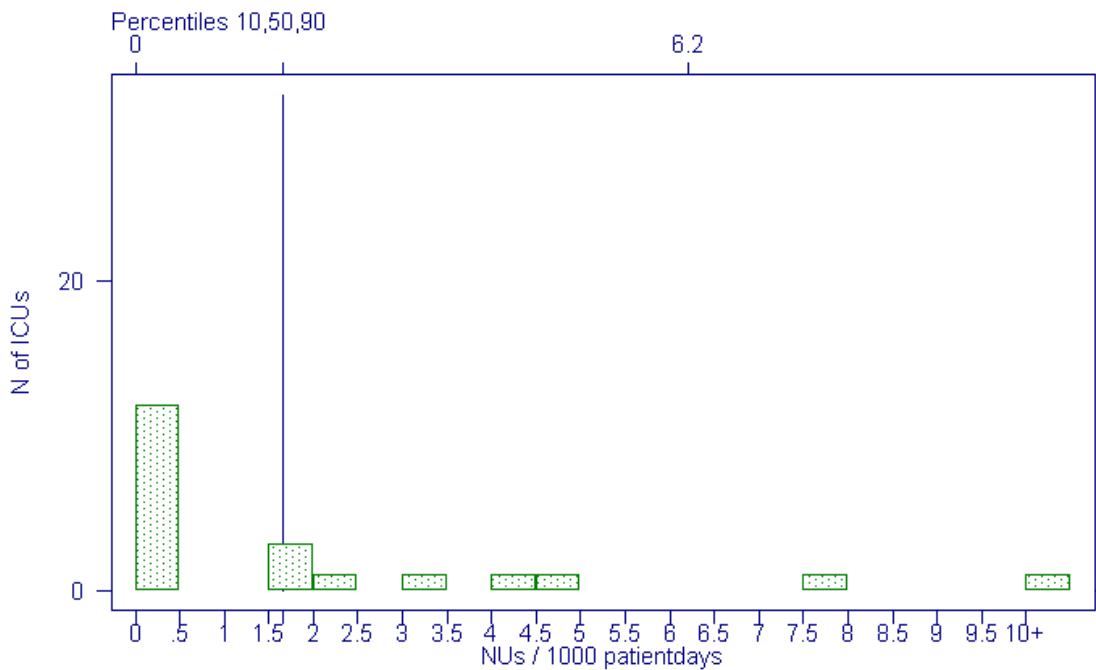


Figure 9: Distribution:  $Us_{\geq D3}$  (NU) / 1000 patientdays ; NUs / 1000 patientdays

Hospital (all):  
.8 NUs, ID2 / 1000 ID days (95% CI .4 - 1.4)

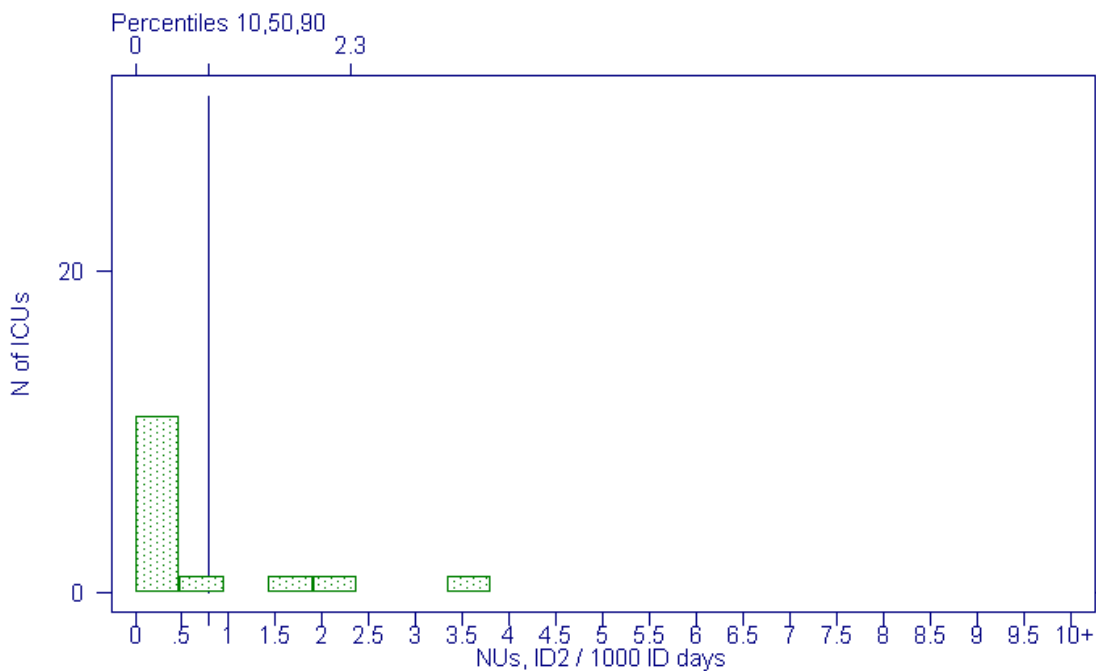


Figure 10: Distribution: NUs, ID2 / 1000 ID days ; catheter associated NUs / 1000 urinary catheterdays

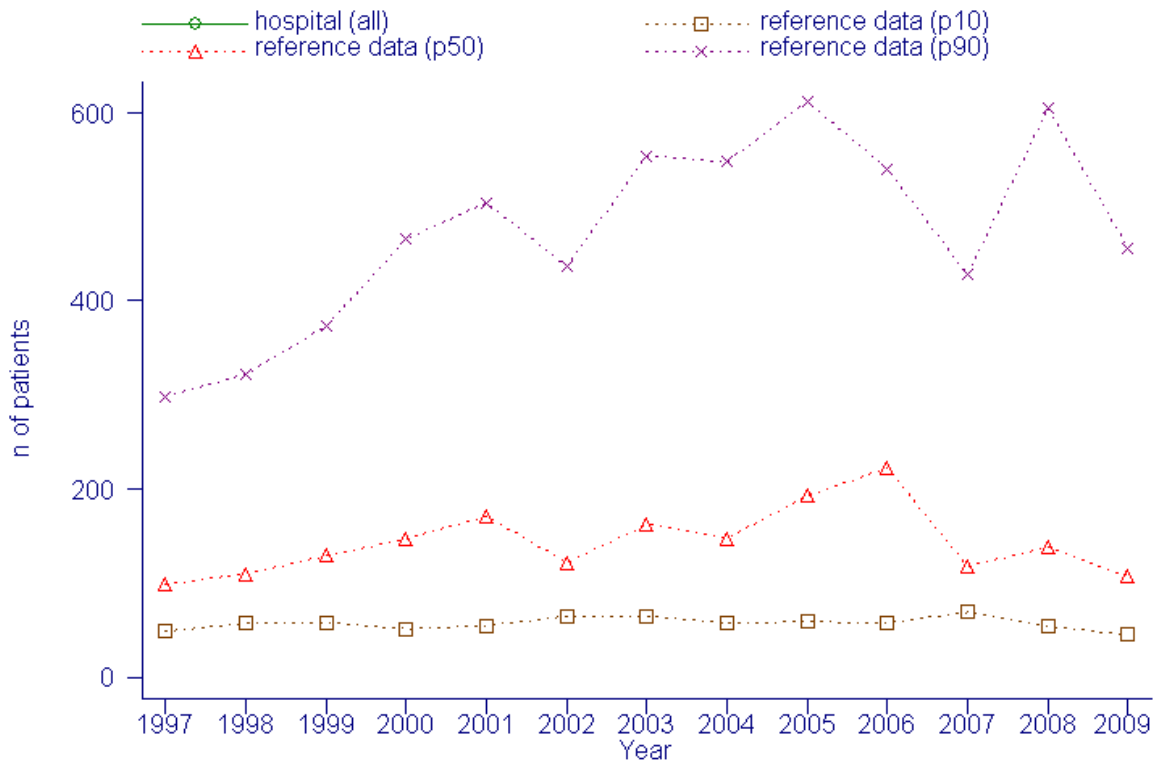


Figure 11: Evolution: Number of patients

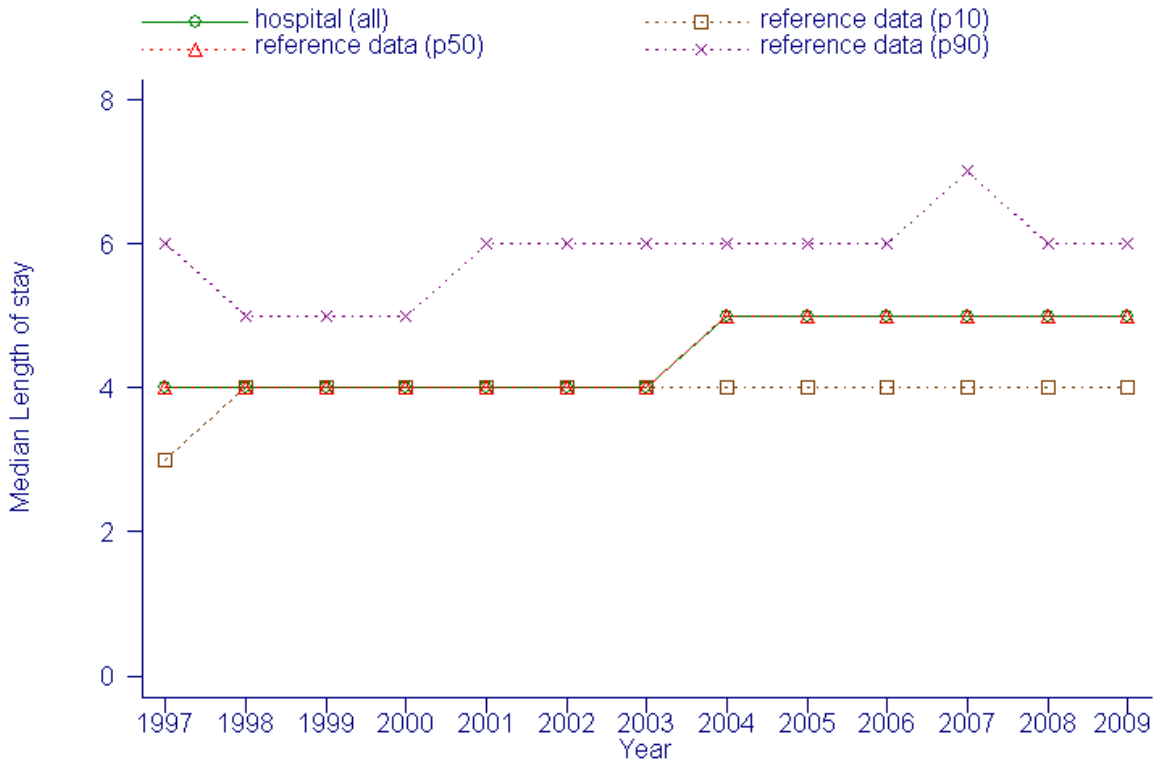


Figure 12: Evolution: Median Length of stay

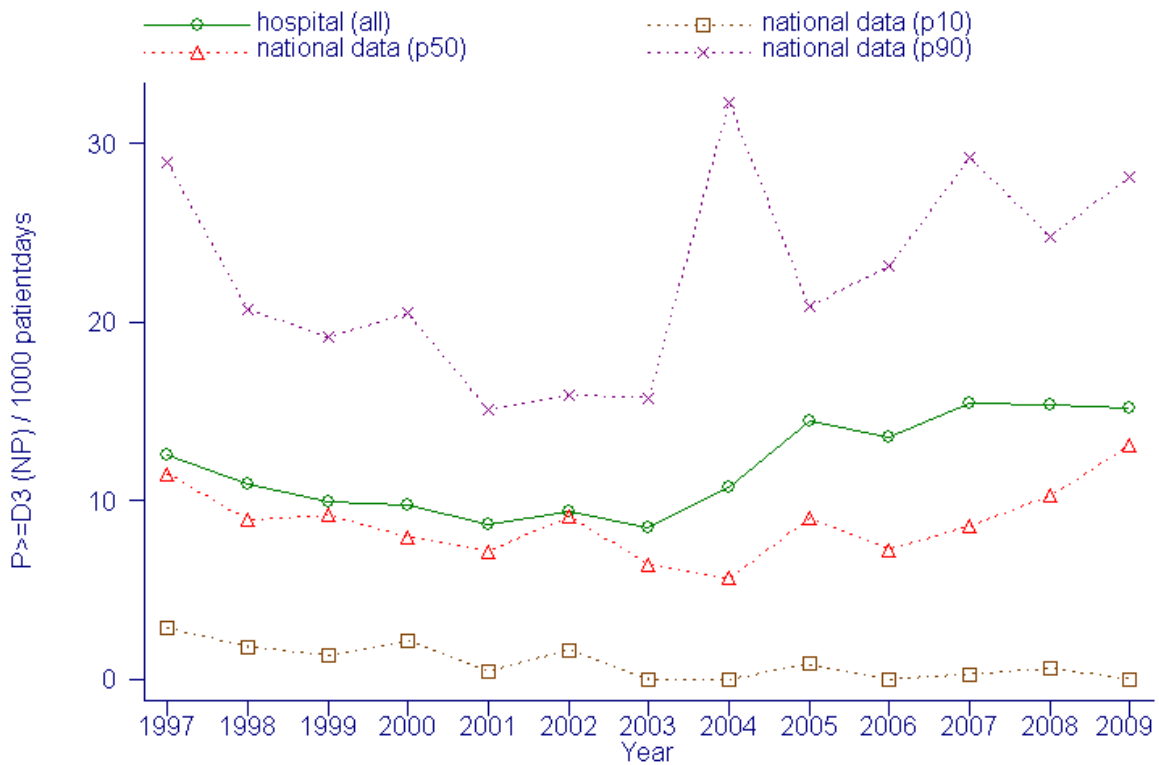


Figure 13: Evolution: P ≥ D3 (NP) / 1000 patientdays

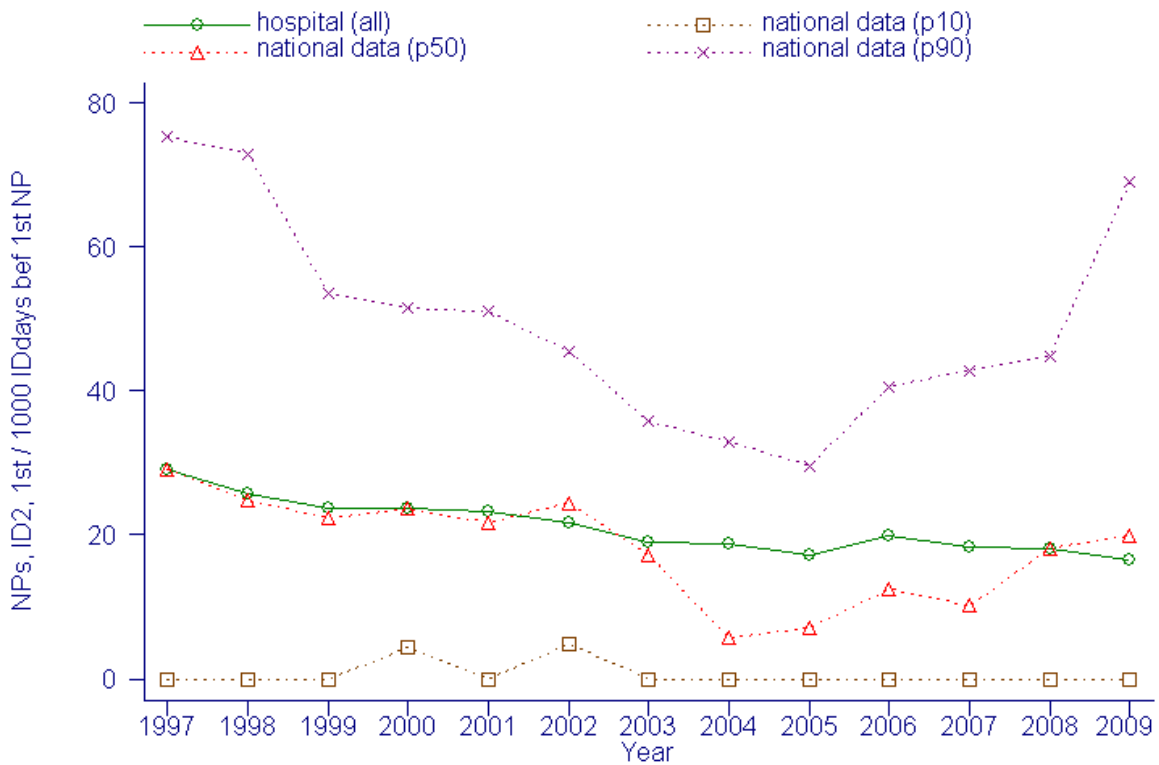


Figure 14: Evolution: NPs, ID2, 1st / 1000 IDdays bef 1st NP ; NPs, 1st episode only, with intubation in 2 days before onset of NP / 1000 intubation days

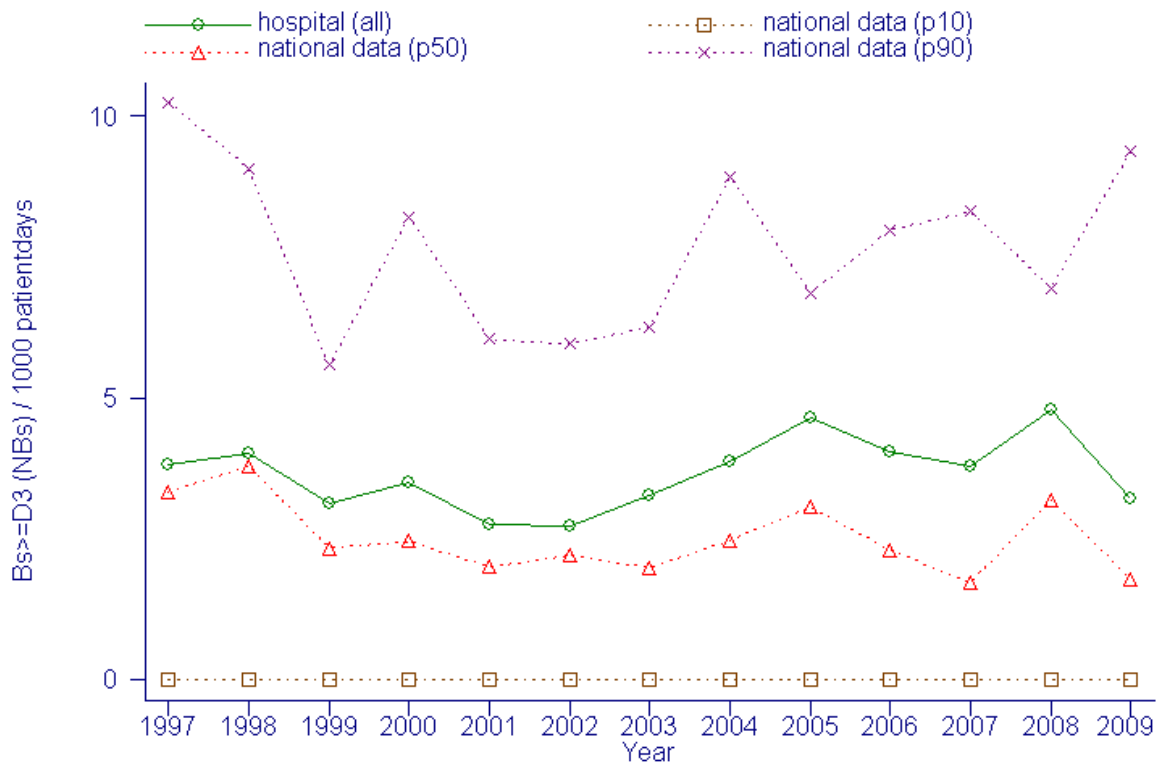


Figure 15: Evolution: Bs ≥ D3 (NBs) / 1000 patientdays

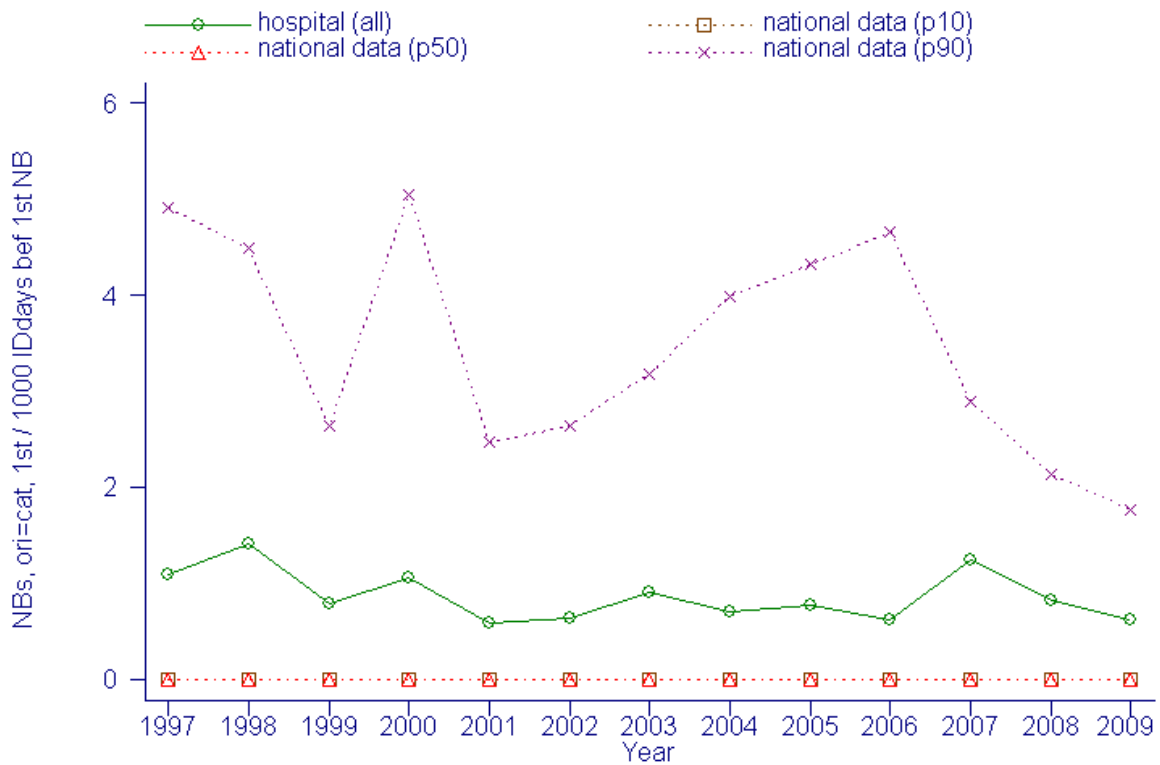


Figure 16: Evolution: NBs, ori=cat, 1st / 1000 IDdays bef 1st NB ; definite catheter associated NBs, 1st episodes only / 1000 catheterdays

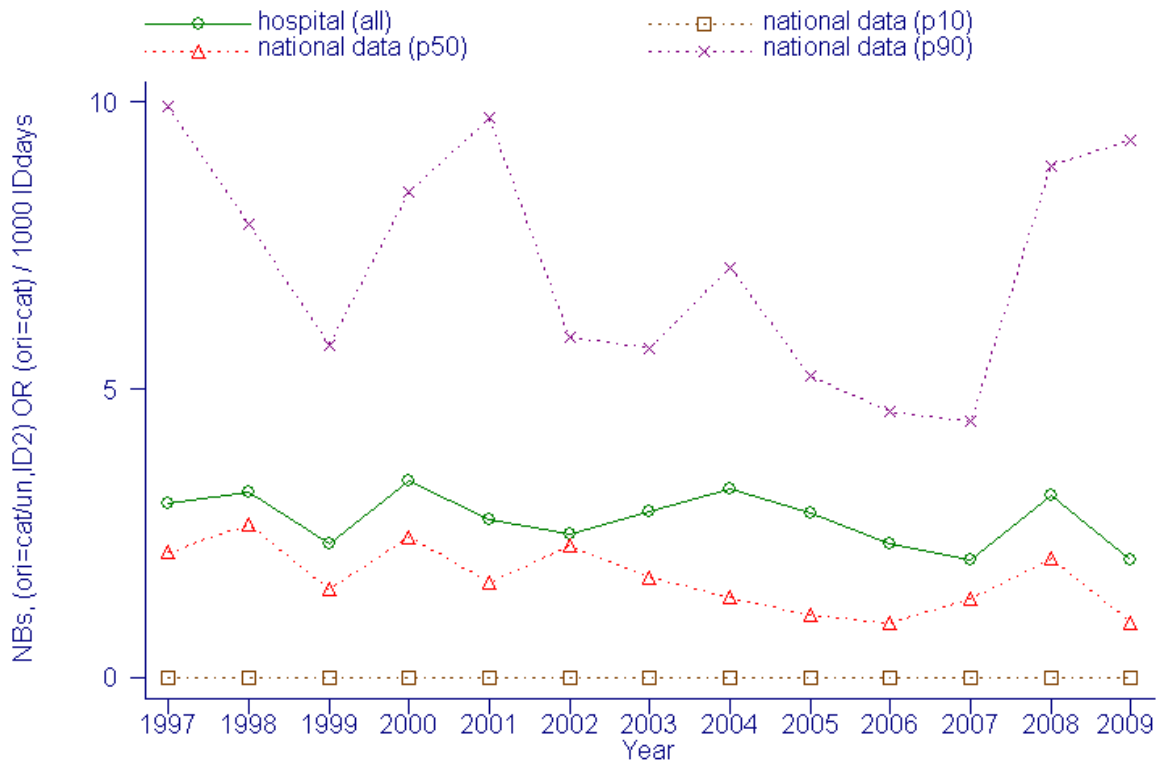


Figure 17: Evolution: NBs, (ori=cat/un,ID2) OR (ori=cat) / 1000 IDdays ; catheter associated NBs / 1000 catheterdays (CDC)

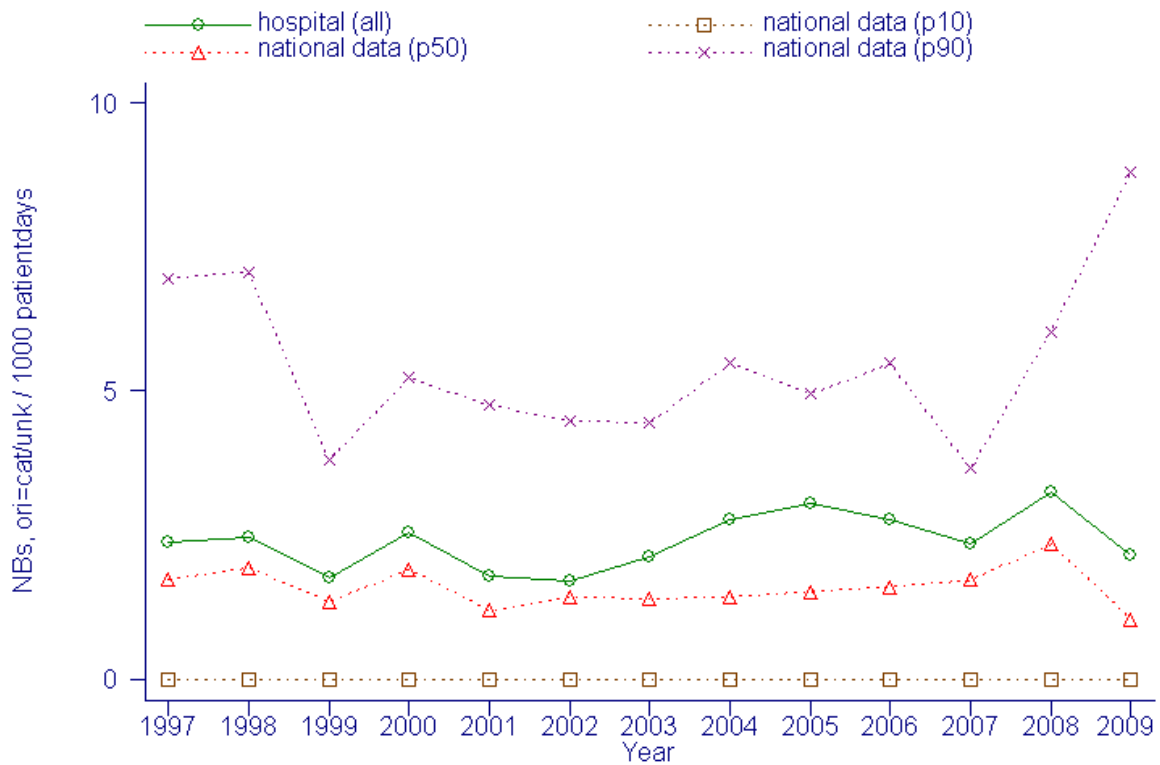


Figure 18: Evolution: NBs, ori=cat/unk / 1000 patientdays ; primary NBs / 1000 patientdays

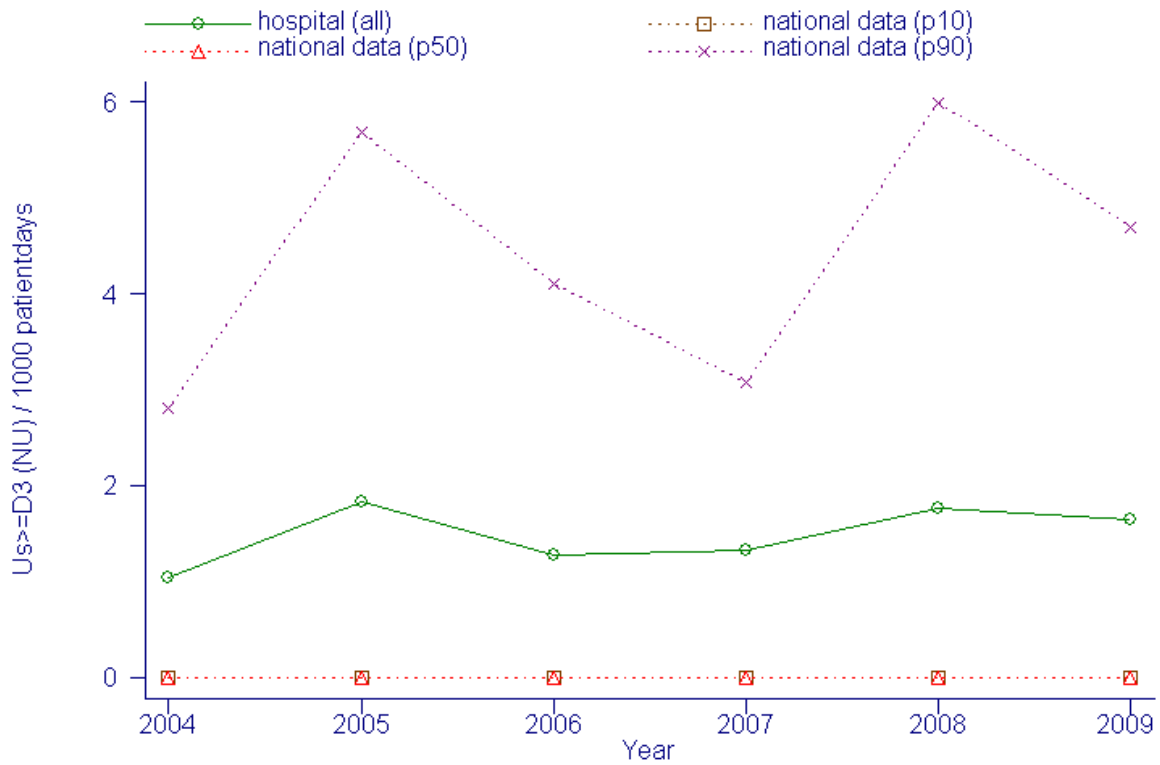


Figure 19: Evolution:  $Us \geq D3$  (NU) / 1000 patientdays ; NUs / 1000 patientdays

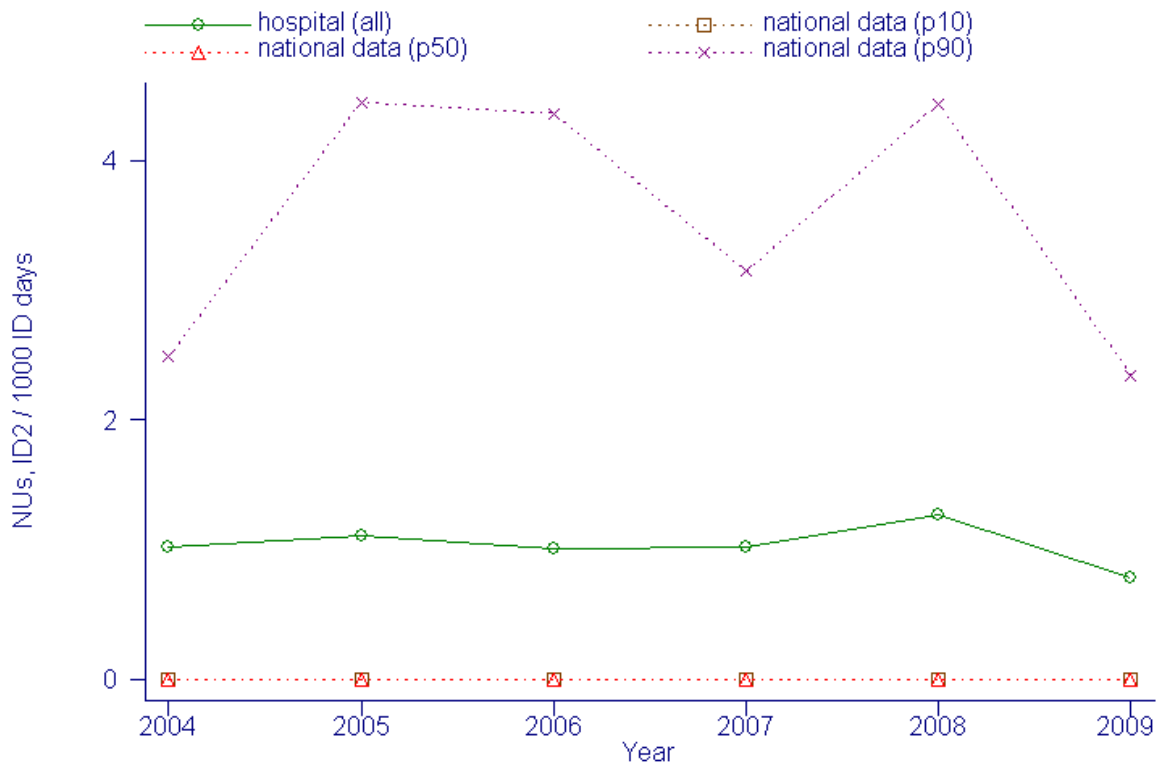


Figure 20: Evolution: NUs, ID2 / 1000 ID days ; catheter associated NUs / 1000 urinary catheterdays