

Patient characteristics in nursing homes

- ❖ 2935 residents with matching records
- ❖ Age median 84 (p25: 79 , p75: 90)
- ❖ Sex ratio (F:M) 3.7:1
- ❖ Mean LOS in NH: 3.2 y, P50=29 months
- ❖ RIZIV/INAMI category
 - O: 18.8%, A: 17.9%, B: 19.4%, C:16.6%, CD: 27.3%
- ❖ % hospitalized in last (+/-) 12m: 30.0%
- ❖ AB in last 3 months: 32%



Reported MRSA status

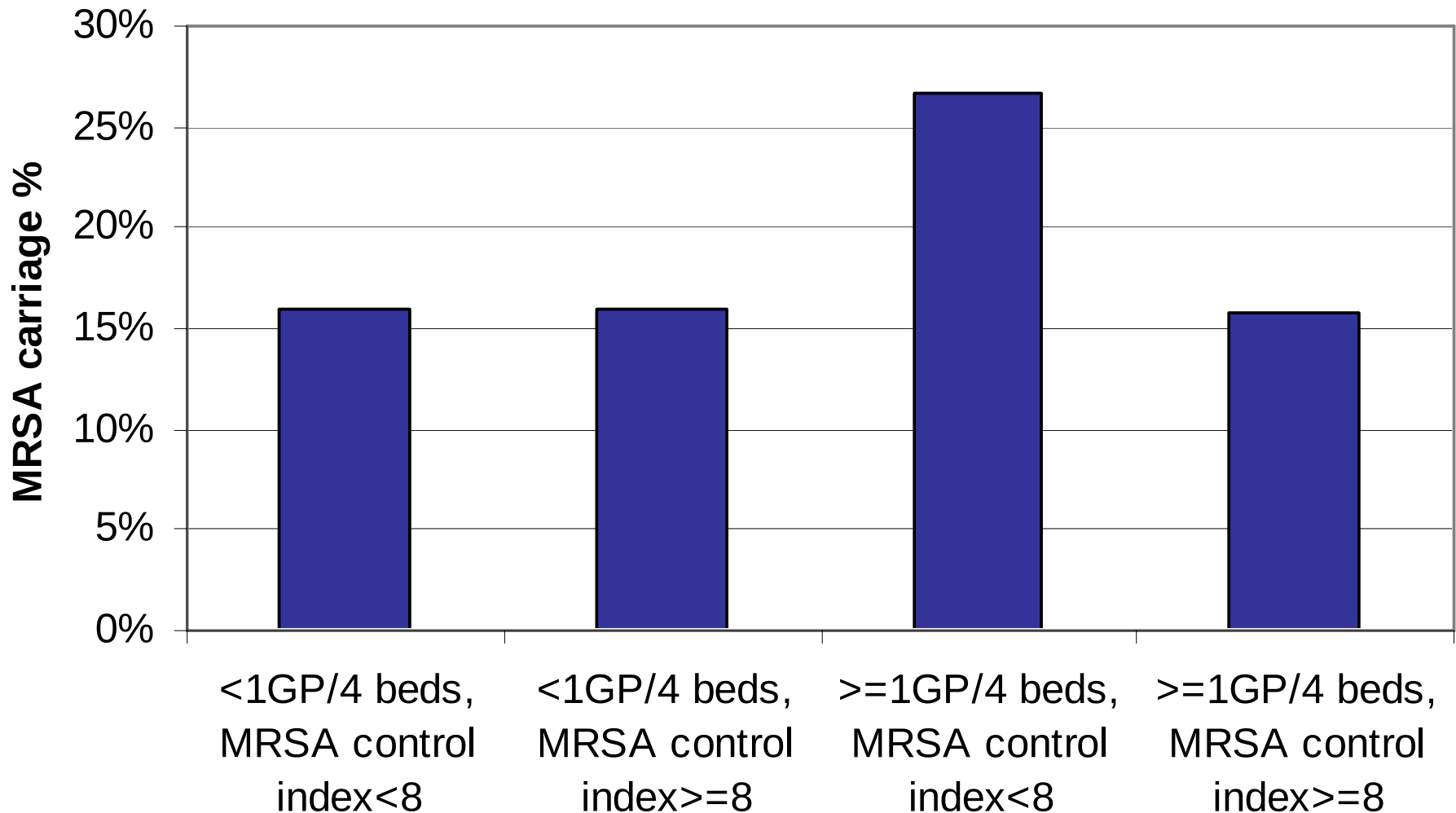
	MRSA study results		
Known MRSA carrier?	-	+	Total
no MRSA/unknown	2,238	530	2,768
	80.85	19.15	100
	95.32	90.29	94.31
previous MRSA	96	40	136
	70.59	29.41	100
	4.09	6.81	4.63
current MRSA	14	17	31
	45.16	54.84	100
	0.6	2.9	1.06
Total	2,348	587	2,935
	80	20	100
	100	100	100

Number of GPs and MRSA control index

- ❖ Mean GP to bed ratio: 31 GP/100 beds
- ❖ Adj OR for ≥ 1 GP/4beds: 1.6 ($p=0.005$)
- ❖ But: interaction with « MRSA control index »:
 - ❖ Screening at adm from hospital + isolation + cohorting + masks + gloves + apron
 - ❖ 0=never; 1=sometimes; 2=always



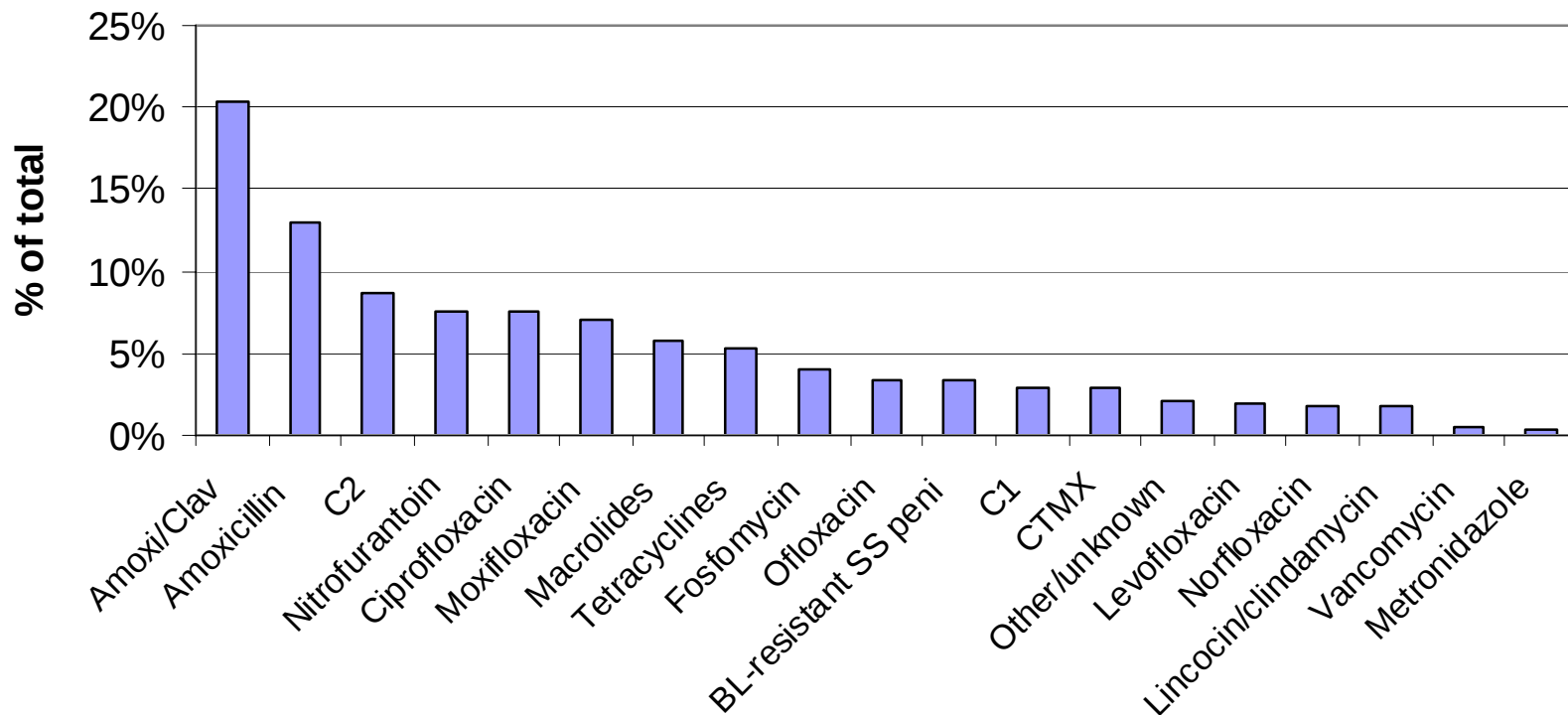
MRSA prevalence by GP to bed ratio and MRSA control index



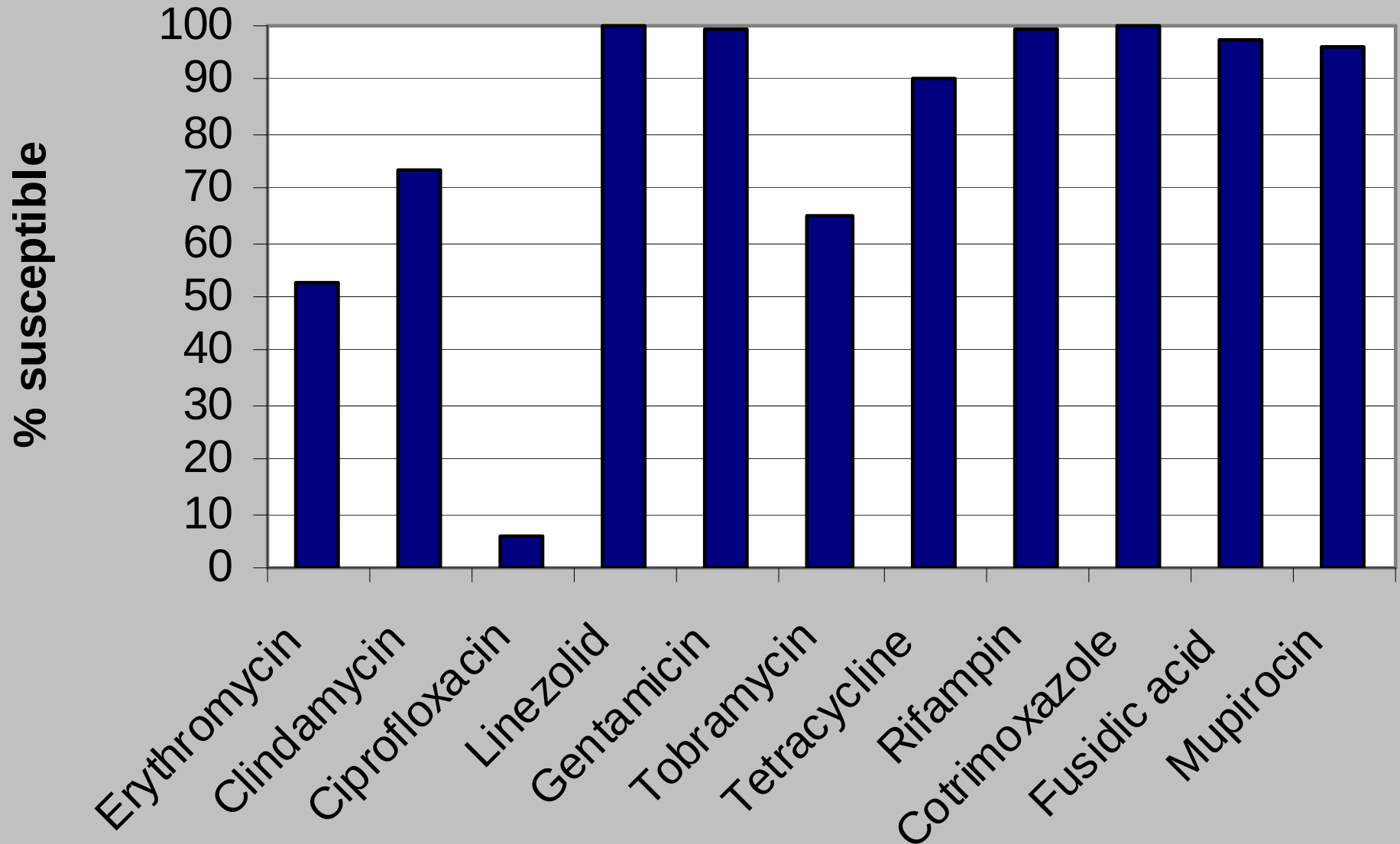
Risk factors for MRSA carriage: multilevel logit regression (cu: 0.01)

	Adj OR	(95% CI)	p value
Previous hospital admission	1.31	(1.07 - 1.61)	0.009
Known MRSA carrier			
No/unknown	1.00	-	
Previous MRSA	1.33	(0.87 - 2.02)	0.183
Current MRSA	3.23	(1.49 - 7.01)	0.003
Antibiotic use in last 3m			
Fluoroquinolones	1.59	(1.17 - 2.17)	0.003
Peni+enz.inh	1.59	(1.19 - 2.12)	0.002
Impaired mobility	1.41	(1.14 - 1.74)	0.002
Riziv > 0	1.63	(1.19 - 2.23)	0.003
Presence of wound/ulcer	1.57	(1.18 - 2.09)	0.002
N of GP's in NH and MRSA control index (Mci)			
<1GP/4beds, Mci <8	1.00	-	
<1GP/4beds, Mci ?8	1.30	(0.86 - 1.96)	0.209
>=1GP/4beds, Mci <8	2.03	(1.51 - 2.73)	<0.001
>=1GP/4beds, Mci ?8	1.03	(0.69 - 1.55)	0.879
MRSA situation unknown	1.51	(1.15 - 1.96)	0.003
No AB formulary or never used	1.45	(1.11 - 1.90)	0.006

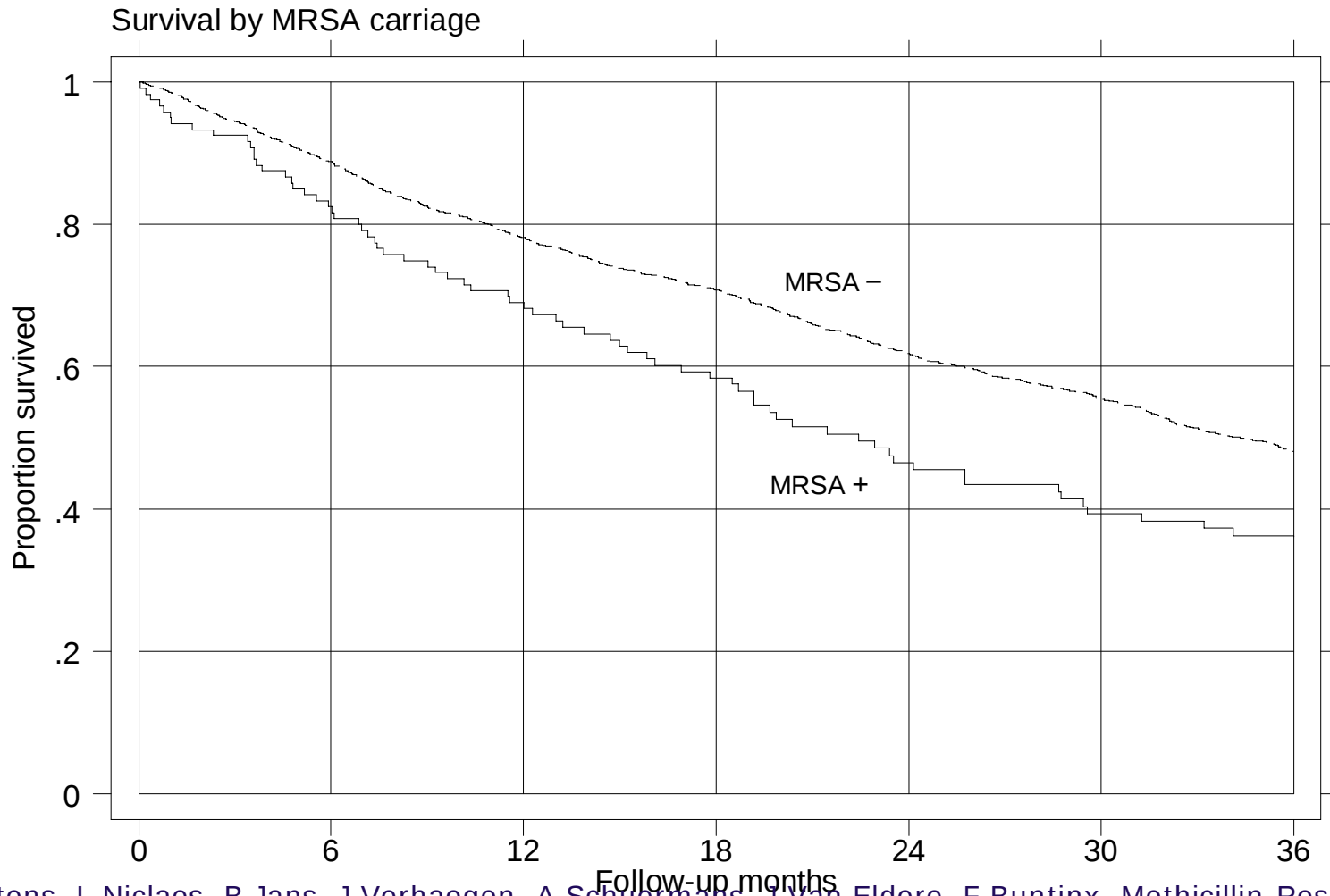
Distribution of antibiotic used in 3 months period in 60 Belgian nursing homes, April-May 2005 (N=975/2935)



Antimicrobial susceptibility of MRSA isolates from 60 Nursing homes



Kaplan-Meier survival estimates by MRSA status at baseline in 23 nursing homes, April-June 2000 - June 2003

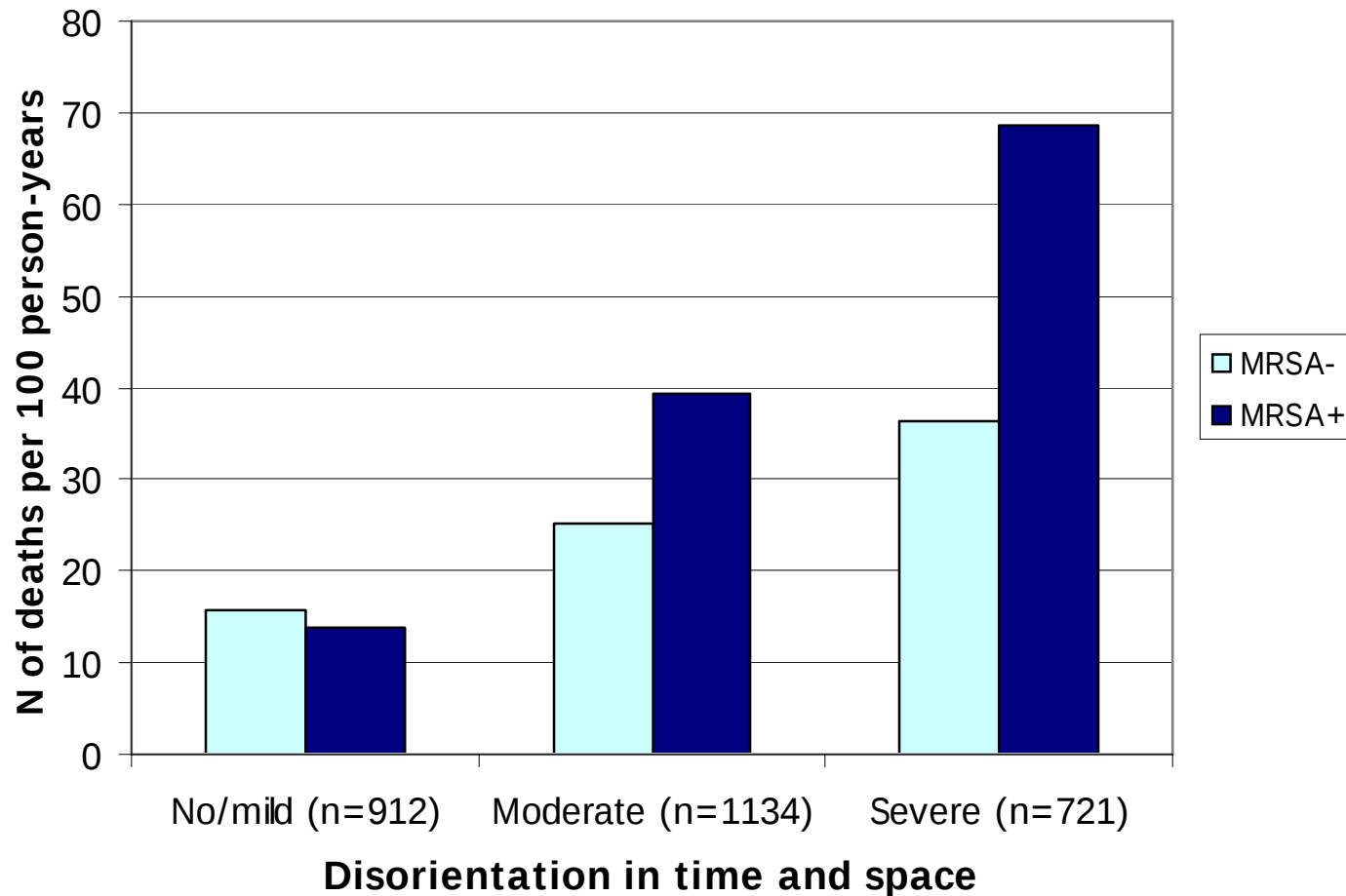


C Suetens, L Niclaes, B Jans, J Verhaegen, A Schuermans, J Van Eldere, F Buntinx. Methicillin-Resistant *Staphylococcus aureus* Colonization Is Associated with Higher Mortality in Nursing Home Residents with Impaired Cognitive Status. JAGS 2006. Published article online: 29-Nov-2006 doi: 10.1111/j.1532-5415.2006.00972.x

Cox regression: independent predictors of mortality at 36 months of follow-up

	N	HR	(95 % CI)	p-value
MRSA carriage at baseline				
No/mild disorientation	29/907	0.83	(0.43-1.62)	0.589
Moderate disorientation	61/1117	1.25	(0.89-1.74)	0.198
Severely disoriented	28/716	1.79	(1.14-2.79)	0.011
Disorientation (in MRSA free patients)				
No/mild	907	Ref.	-	-
Moderate	1117	1.35	(1.16-1.56)	<0.001
Severe	716	1.77	(1.49-2.09)	<0.001
Mobility				
Ambulatory	1432	Ref.	-	-
Chairbound	1213	1.48	(1.30-1.67)	<0.001
Bedridden	95	1.79	(1.34-2.39)	<0.001
Co-morbidity index				
0	412	Ref.	-	-
1-2	1503	1.28	(1.03-1.60)	0.026
3-4	650	1.67	(1.32-2.12)	<0.001
>=5	175	2.22	(1.68-2.95)	<0.001
Age group				
<70 y	150	Ref.	-	-
70-79 y	584	1.39	(1.01-1.92)	0.043
80-89 y	1261	1.81	(1.33-2.46)	<0.001
>=90 y	745	2.89	(2.12-3.94)	<0.001
Male gender	659	1.64	(1.44-1.86)	<0.001
Pressure sore at baseline	143	1.73	(1.39-2.15)	<0.001

Variable disorientation modifies the effect of MRSA carriage on mortality



Infection-related deaths & hospitalisation

- ❖ Deaths 1.5 x more infection-related in MRSA carriers ($p=0.046$)
- ❖ MRSA carriers 2 x more likely to be hospitalised for respiratory tract infection



Conclusions (1)

- ❖ Alarming high prevalence of MRSA carriage (1/5 residents, 3-4 x times higher than previous studies in FL and 1997 & 2000)
- ❖ Reported MRSA prevention measures, IC procedures vs. compliance? (no observation)
- ❖ MRSA problem=both reason and consequence of measures
- ❖ Previous AB use and hospitalisation confirmed as risk factors
- ❖ Degree of care dependence = risk factor, not underlying comorbidity (Charlson index) ~ number of nursing contacts ?



Conclusions (2)

- ❖ Number of GP's in NH ~ rationalization of AB use + index of « feasibility of coordination » in general
- ❖ Interaction with MRSA control index ~ feasibility of coordinating IC control measures
- ❖ Dissemination of nosocomial epidemic MRSA clones in Belgian Nursing Homes
- ❖ Predominance of MRSA PFGE type B2 ST45-SCC*mec* IV found in 86% of Nursing Homes
- ❖ Resistance rate to antimicrobials similar than those of nosocomial isolates



Conclusions (3)

- ❖ Need for re-assessment MRSA prevalence (evaluation introduction national guidelines)
=> repeat survey 2007 or 2008? + observation of IC practices ?
- ❖ Study of dynamics of transmission



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**With the support of the Federal platform for Hospital Hygiene
and ...**



Belgian Antibiotic Policy Coordination Committee



Belgian Infection Control Society

**We wish to thank all participating nursing homes for their
enthusiastic collaboration**

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