

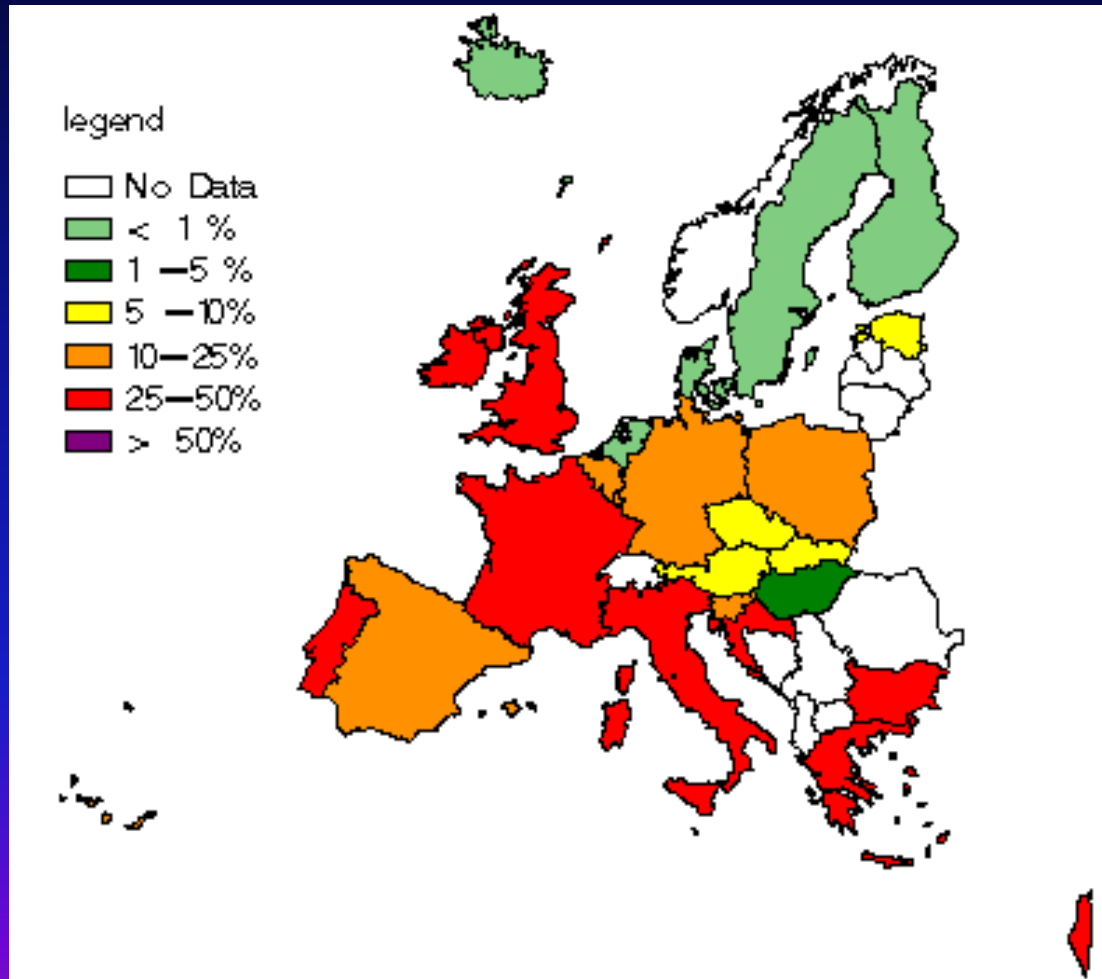


# National microbiological surveillance of methicillin-resistant *Staphylococcus aureus* (MRSA) in Belgian hospitals in 2001

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# Proportion MRSA in *S.aureus* bacteremia EARSS 2001



# *Objectives*

- To determine the molecular epidemiology and antimicrobial susceptibility of MRSA collected in Belgian hospitals in 2001
- To compare these results with those of previous national surveys of MRSA

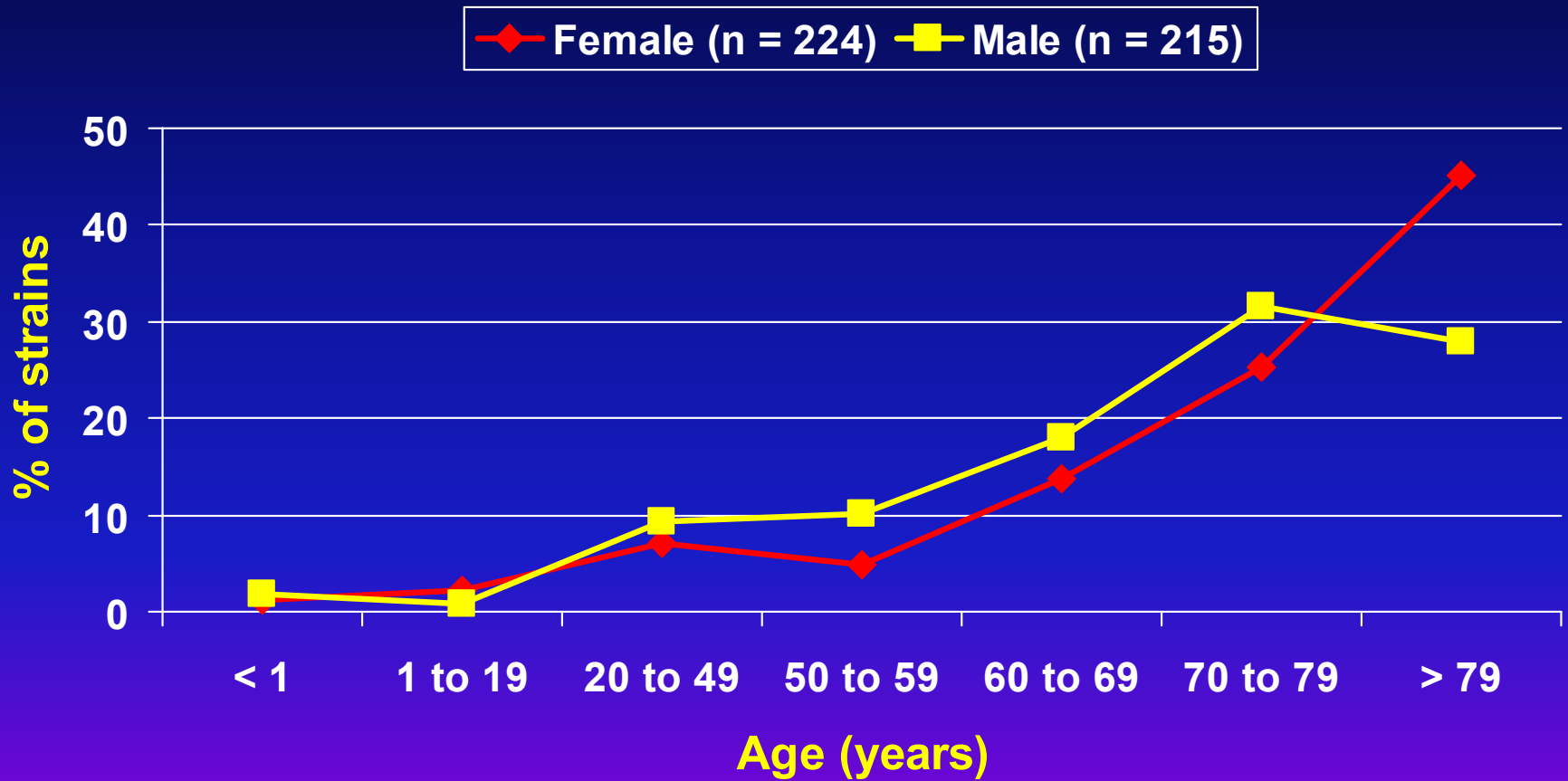
# *Material & Methods*

- 98 hospitals from Brussels (n = 12), Flanders (n = 49) and Wallonia (n = 37)
- 455 non-duplicate clinical MRSA strains
- Demographic data : age, sex, hospital unit, acquisition (nosocomial > 48 h)

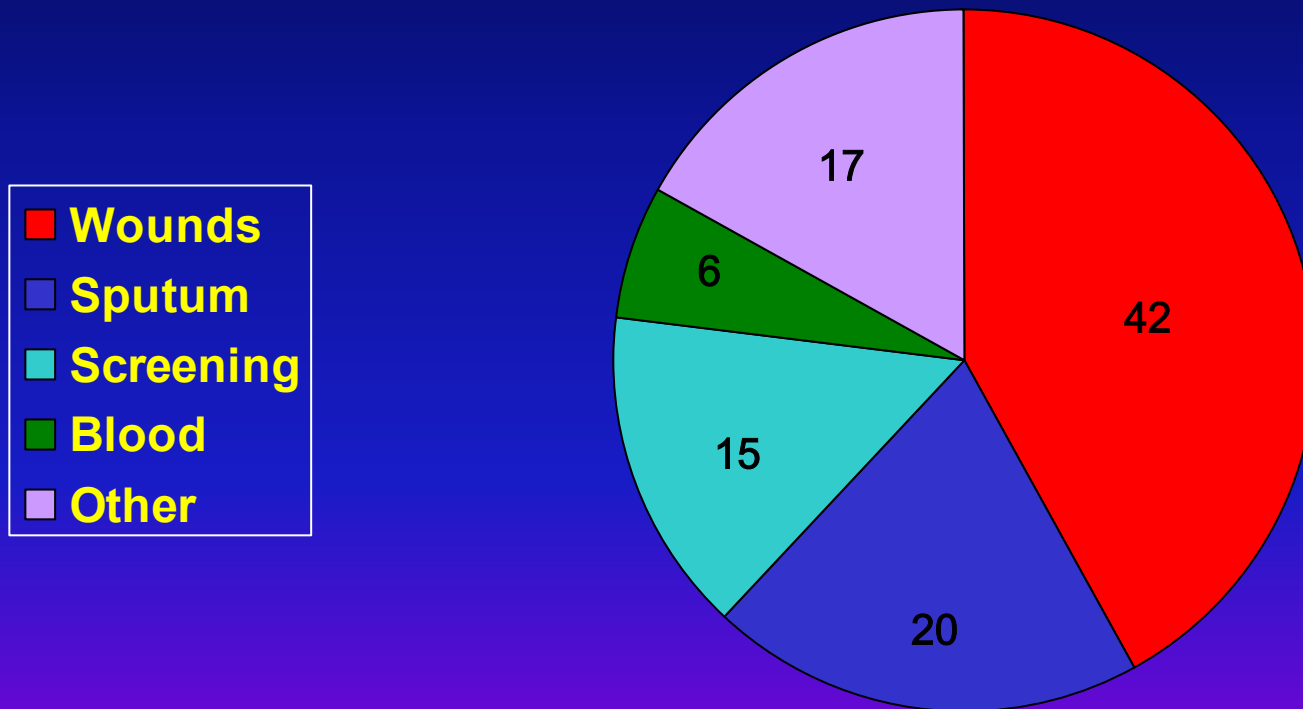
# *Microbiological methods*

- Identification and oxacillin resistance
  - Phenotypic: coagulase, oxacillin agar screen (6  $\mu\text{g/ml}$ )
  - Genotypic: 16S rDNA-*mecA*-*nuc* triplex PCR
- MICs for 17 antimicrobials by agar dilution (NCCLS M100-S9, 2002)
- Macrorestriction *Sma*I resolved by PFGE

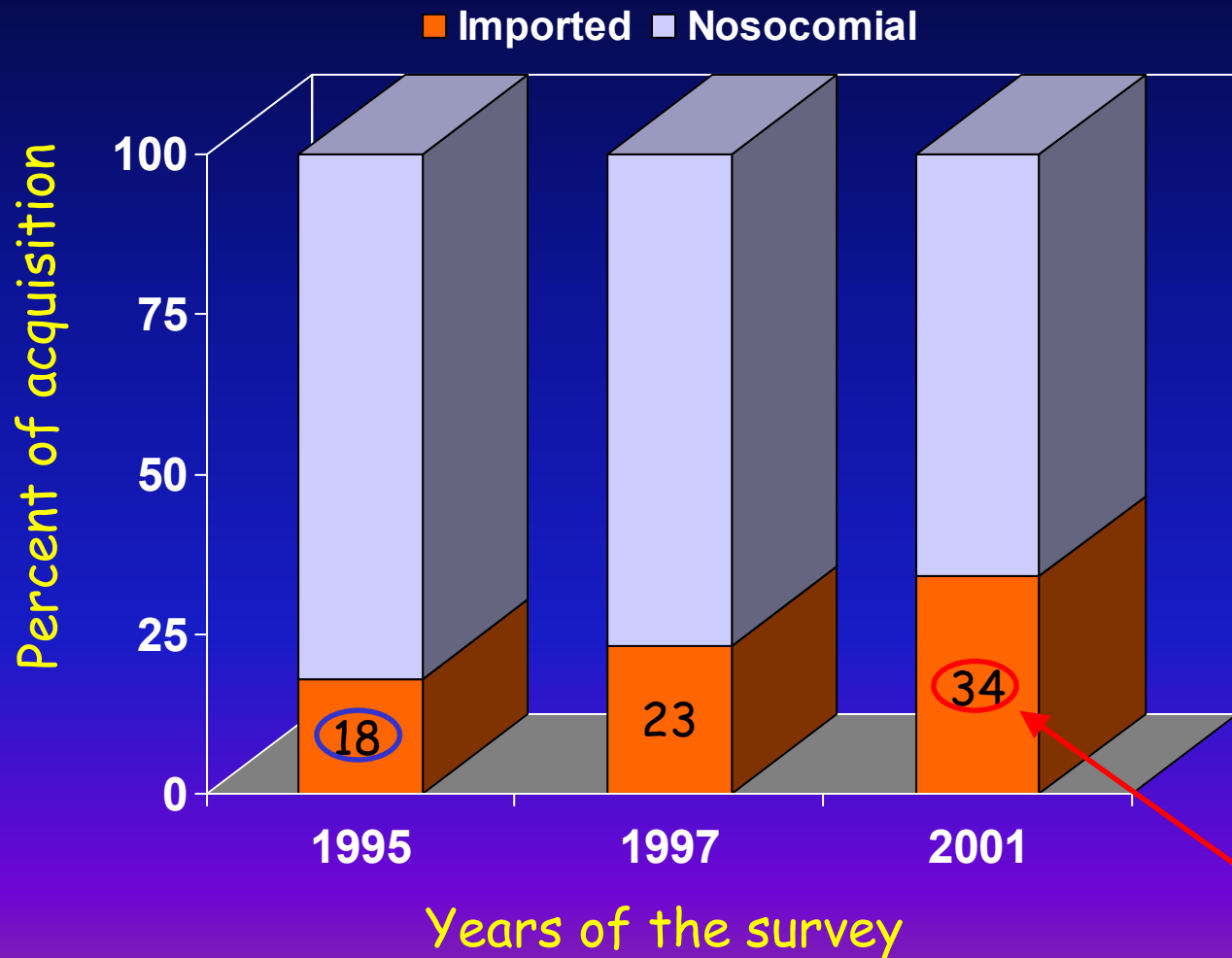
# Proportion of MRSA strains by age and sex, Belgium, 2001



# Distribution of MRSA strains by sample category, 2001



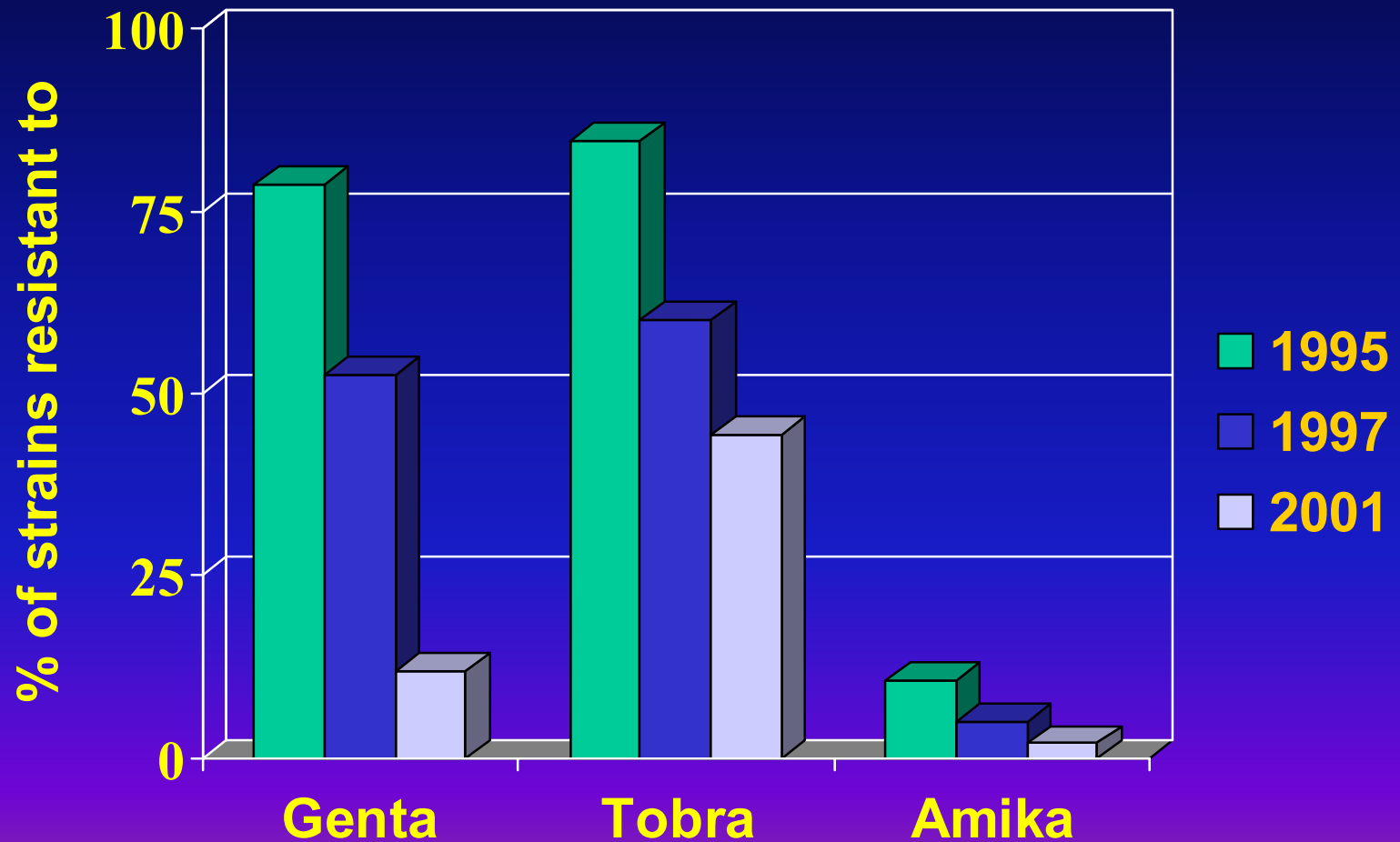
# Proportion of imported vs nosocomial MRSA, National Survey, 1995-2001



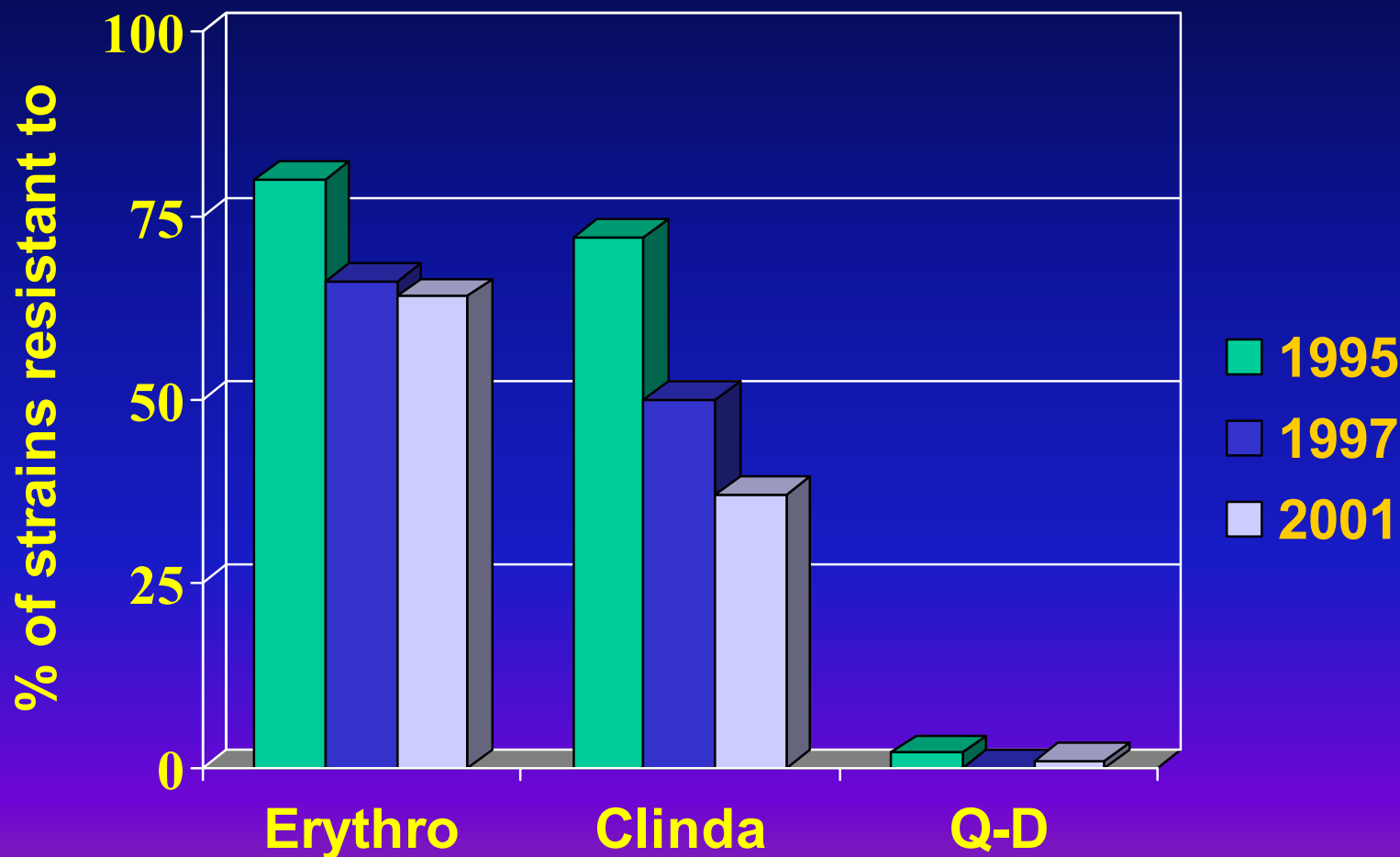
# Proportion of non susceptible MRSA strains, Belgium, 1995-2001

Antimicrobials Breakpoints (mg/l)	1995 (n = 384)		1997 (n = 357)		2001 (n = 450)	
	R	I	R	I	R	I
	Oxacillin	98.9	0.0	98.9	0.0	99.1
Vancomycin	0.0	0.0	0.0	0.0	0.0	0.0
Teicoplanin	0.0	0.0	0.0	0.0	0.0	0.0
Erythromycin	79.7	5.7	65.8	4.5	63.8	7.8
Clindamycin	71.9	0.5	49.9	0.0	37.4	0.2
Quinupristin-Dalfopristin	0.6	0.6	0.0	0.0	0.7	0.0
Ciprofloxacin	96.1	0.5	94.7	0.6	94.4	0.4
Gentamicin	78.6	0.5	52.4	0.6	11.8	0.3
Tobramycin	84.7	1.0	60.2	3.6	44.2	1.6
Amikacin	10.7	26.3	5.0	15.7	2.0	4.4
Netilmicin	0.3	4.7	0.5	2.8	0.2	2.0
Minocyclin	0.8	1.6	4.2	2.8	4.7	2.1
Rifampin	27.9	23.4	15.7	10.1	3.5	0.2
Cotrimoxazole	2.0	0.0	0.6	0.0	0.7	0.0
Linezolid	NT	NT	NT	NT	0.0	0.0
Fusidic acid	0.8	2.3	0.8	1.4	0.7	5.8
Mupirocin	0.5	4.4	2.5	5.0	3.4	7.2

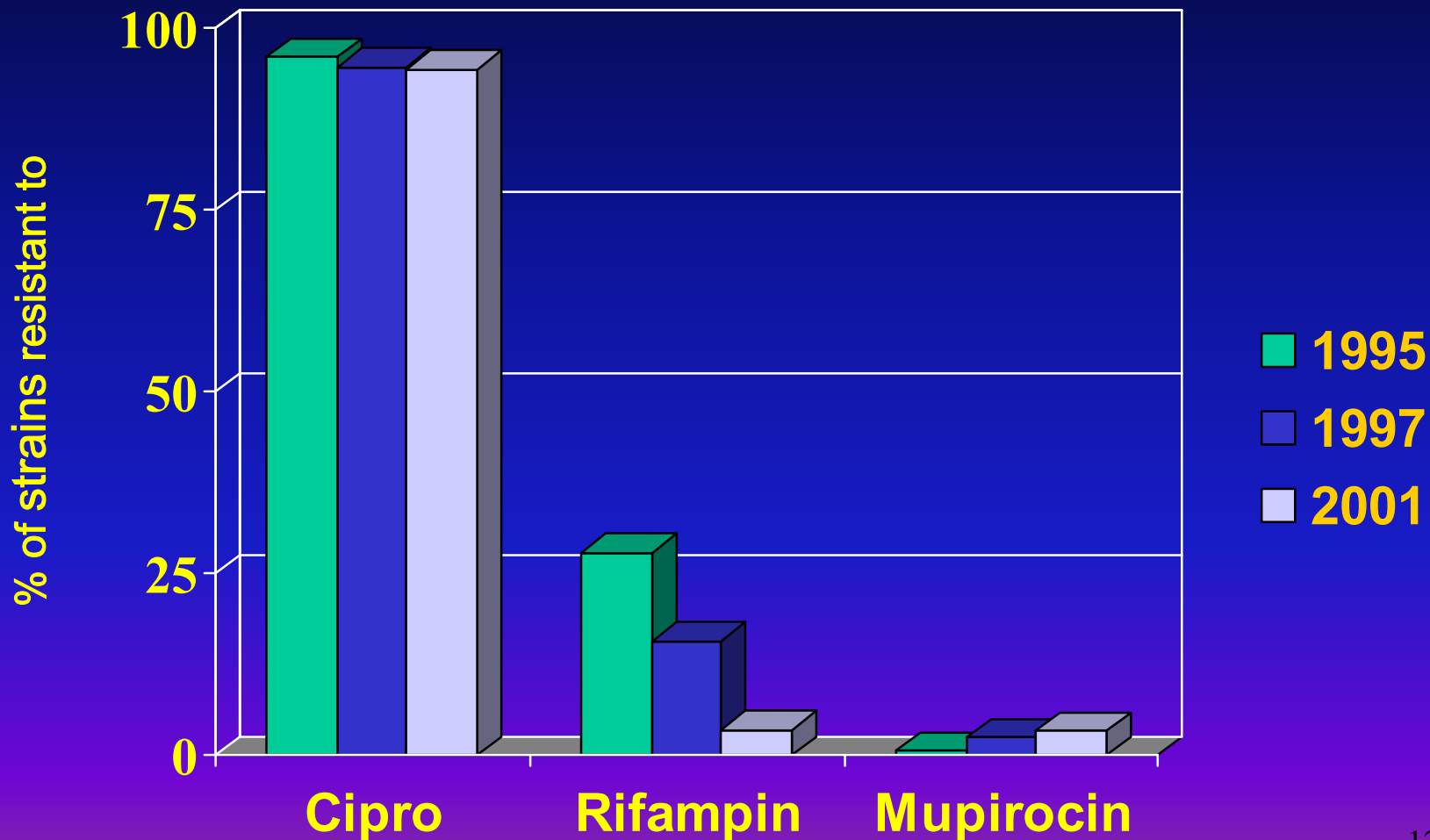
# Proportion of MRSA strains resistant to aminoglycosides, Belgium, 1995-2001



# Proportion of MRSA strains resistant to MLS, Belgium, 1995-2001

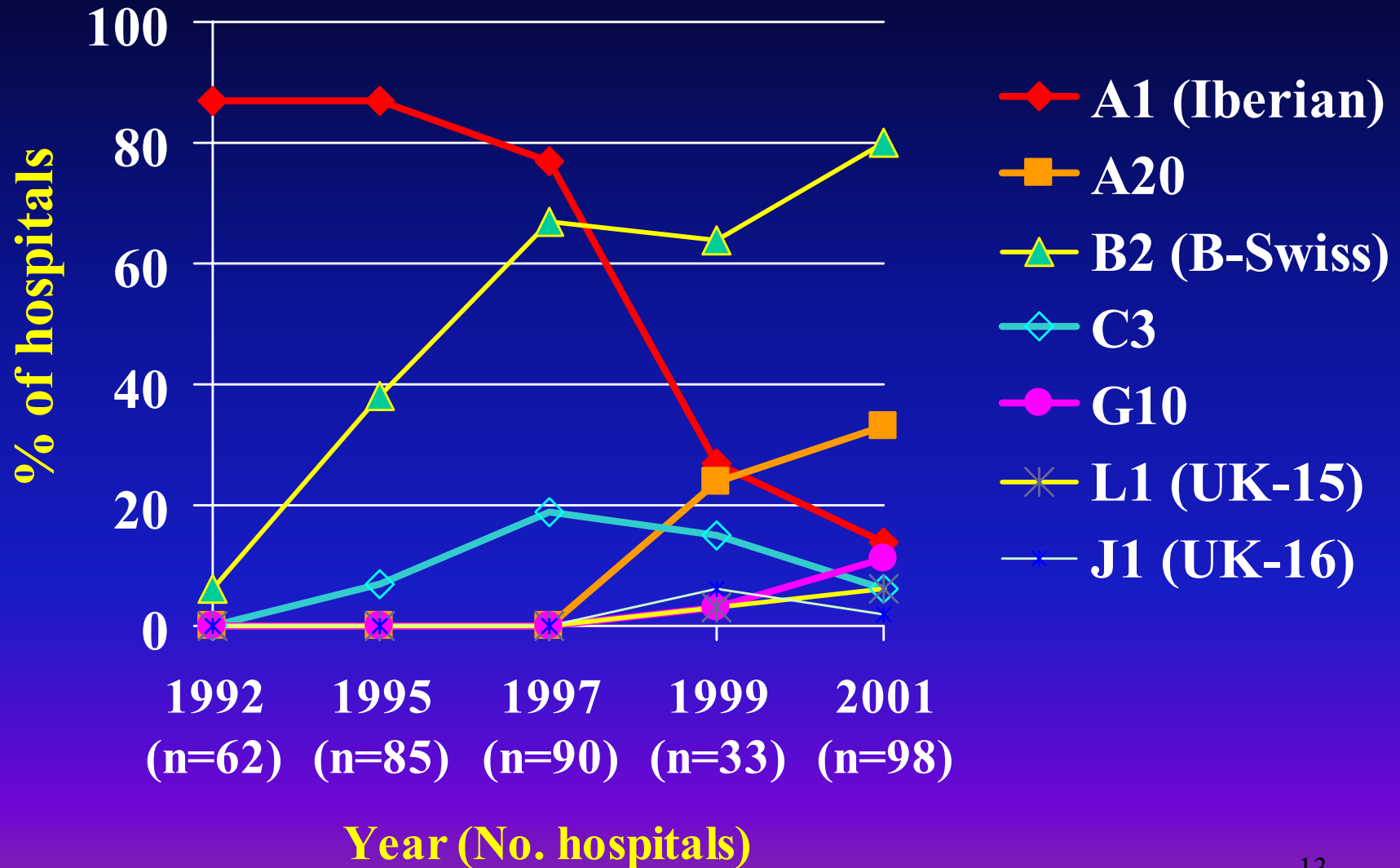


# Proportion of MRSA strains resistant, Belgium, 1995-2001

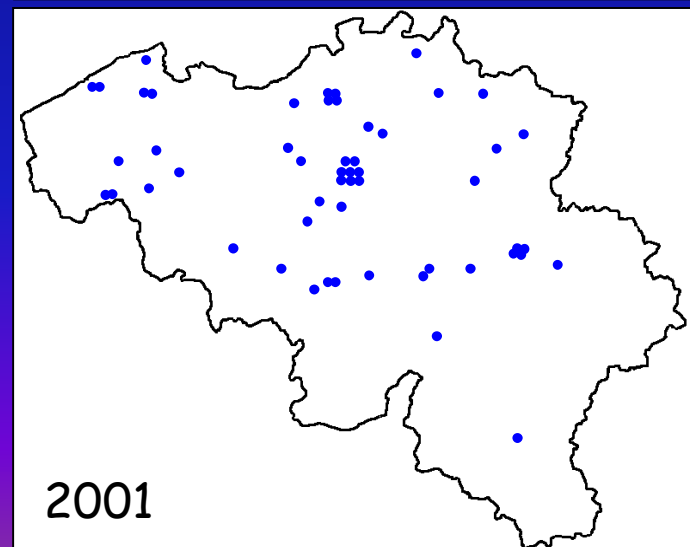
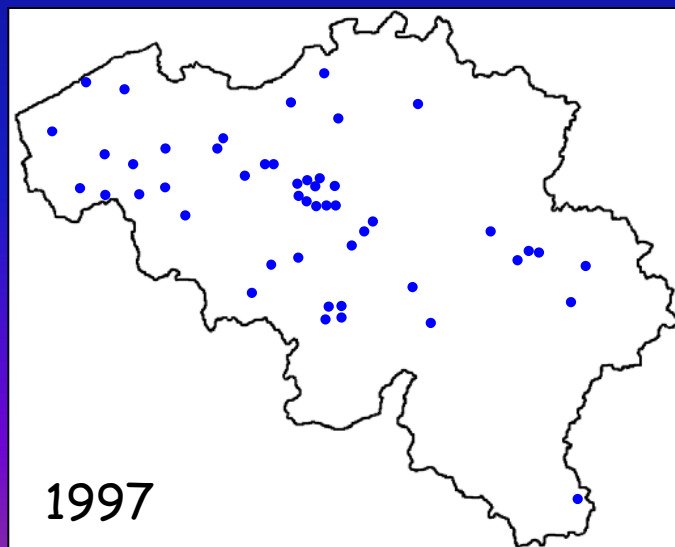
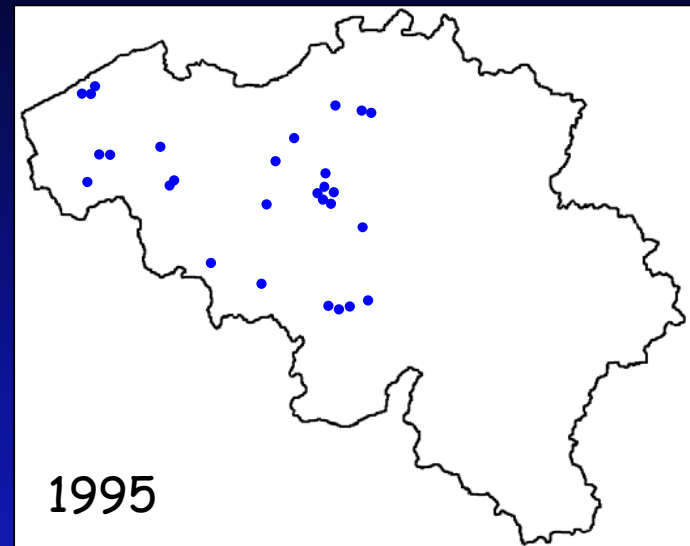
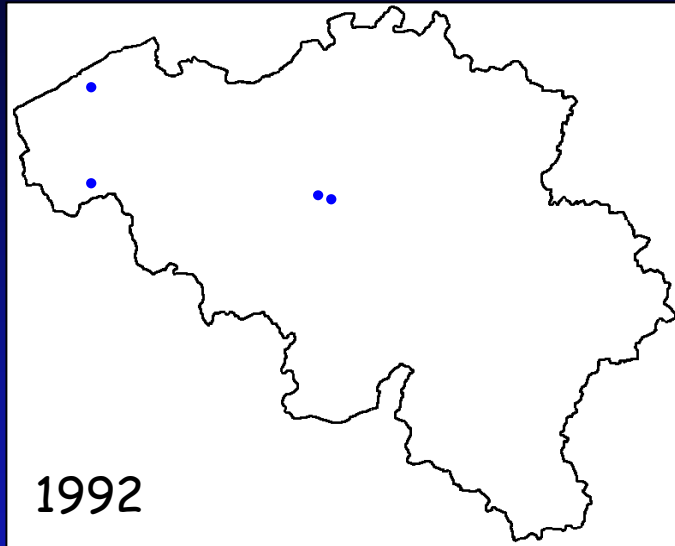


# National Surveillance by PFGE Typing

## MRSA Surveys, Belgium, 1992-2001



# Evolution of the geographical distribution of MRSA B2 type strains, 1995-20001



# Conclusions

- Decreasing resistance trend to non-betalactam antibiotics, including aminoglycosides, rifampin and MLS
- Decreasing prevalence of epidemic genta-R clone A1
- Emergence and introduction of new epidemic clones more susceptible to antimicrobials
- No glycopeptide resistance

# Conclusions

- Increasing proportion of MRSA imported cases
- Increased reservoir of chronically-ill, elderly MRSA carriers
- Nursing home reservoirs ? (Hoefnagels-Schuermans *ICHE* 2002;23:546)
  - 4.9 % prevalence of MRSA carriage in 17 nursing homes in Flanders, 1997
  - PFGE: predominance of clone B2 (77 % of total; epidemic in 5 institutions) and clone C3
- Community reservoirs ?

# Perspectives

- Continued surveillance in hospitals
- Epidemiologic surveys in nursing homes and the community
- Update of national guidelines (2003)

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