

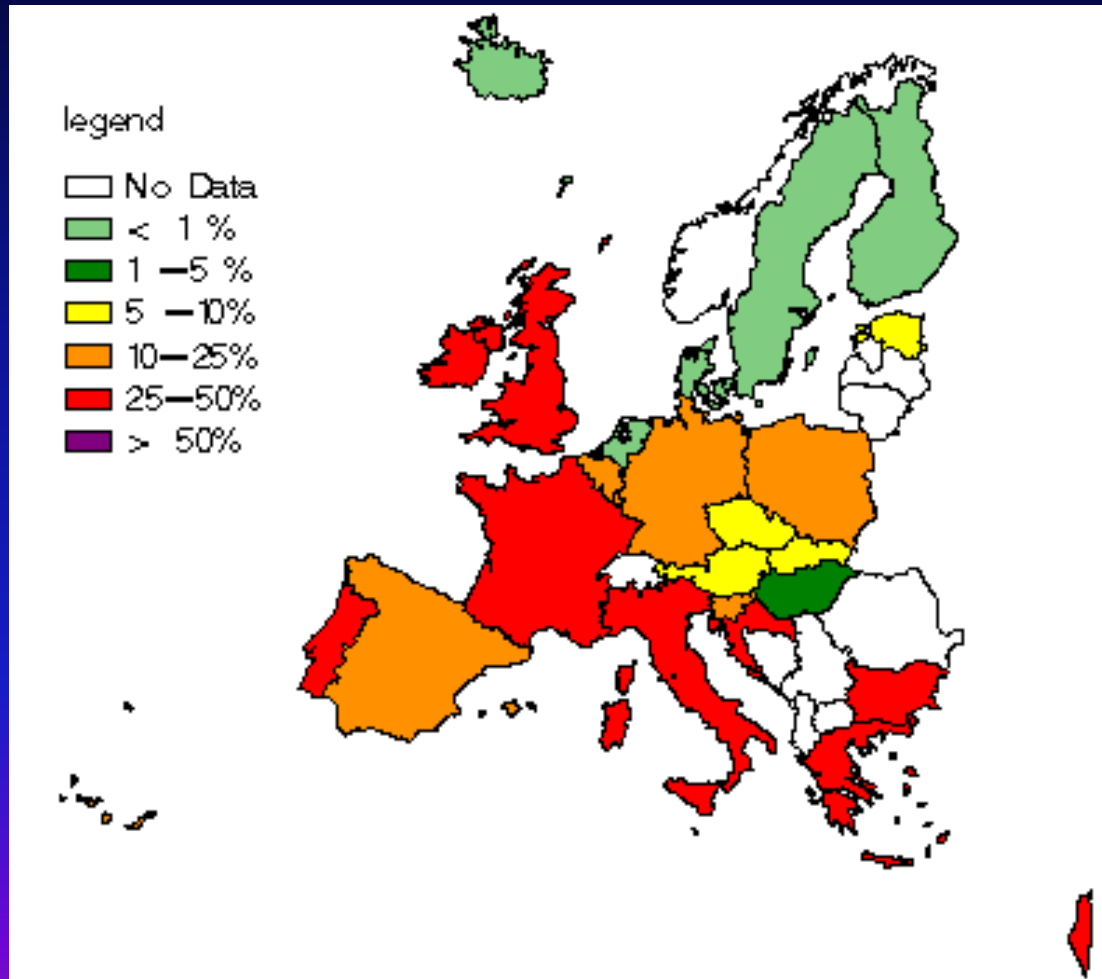


National microbiological surveillance of methicillin-resistant *Staphylococcus aureus* (MRSA) in Belgian hospitals in 2001

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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

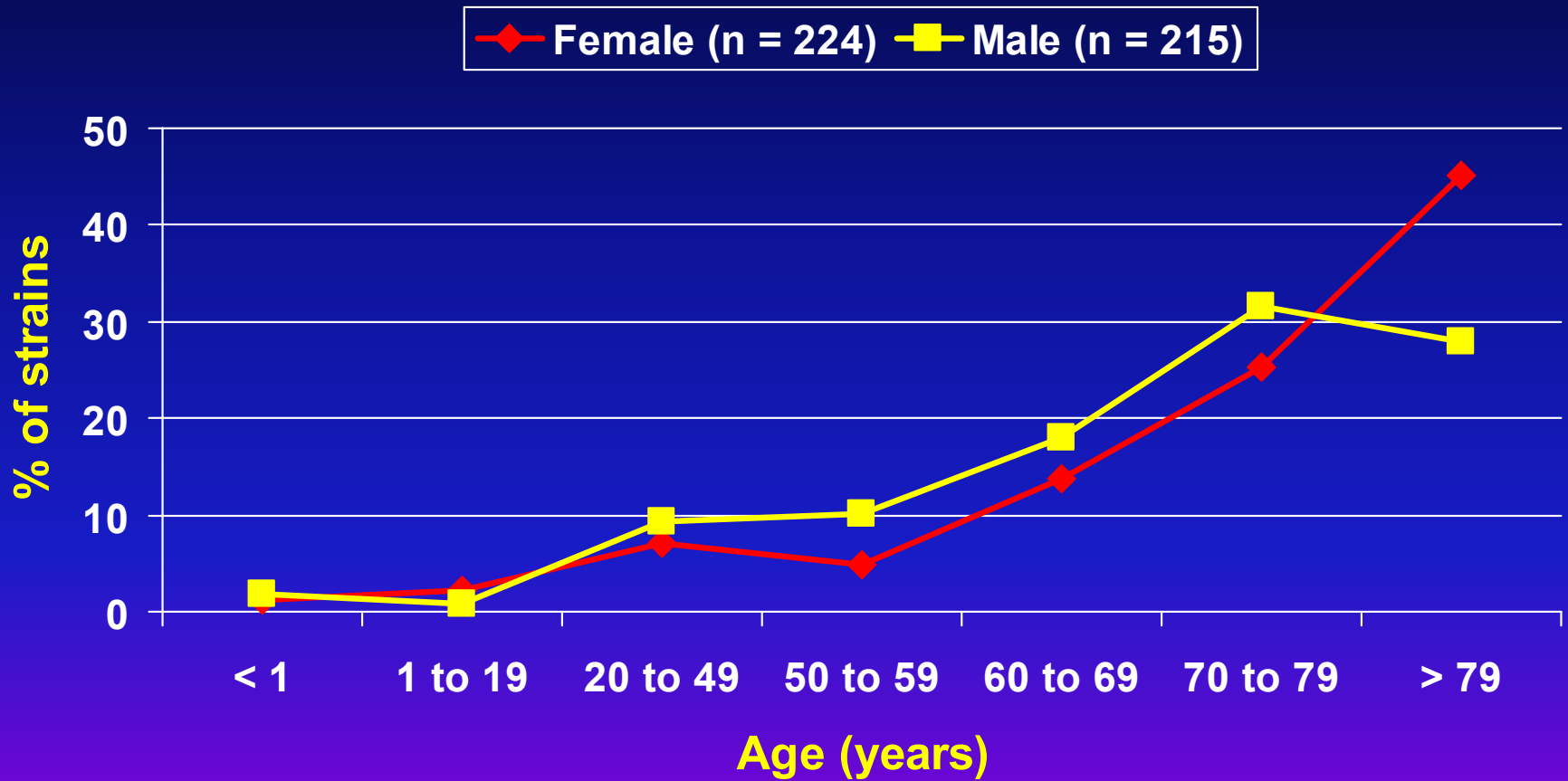
Material & Methods

- 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)

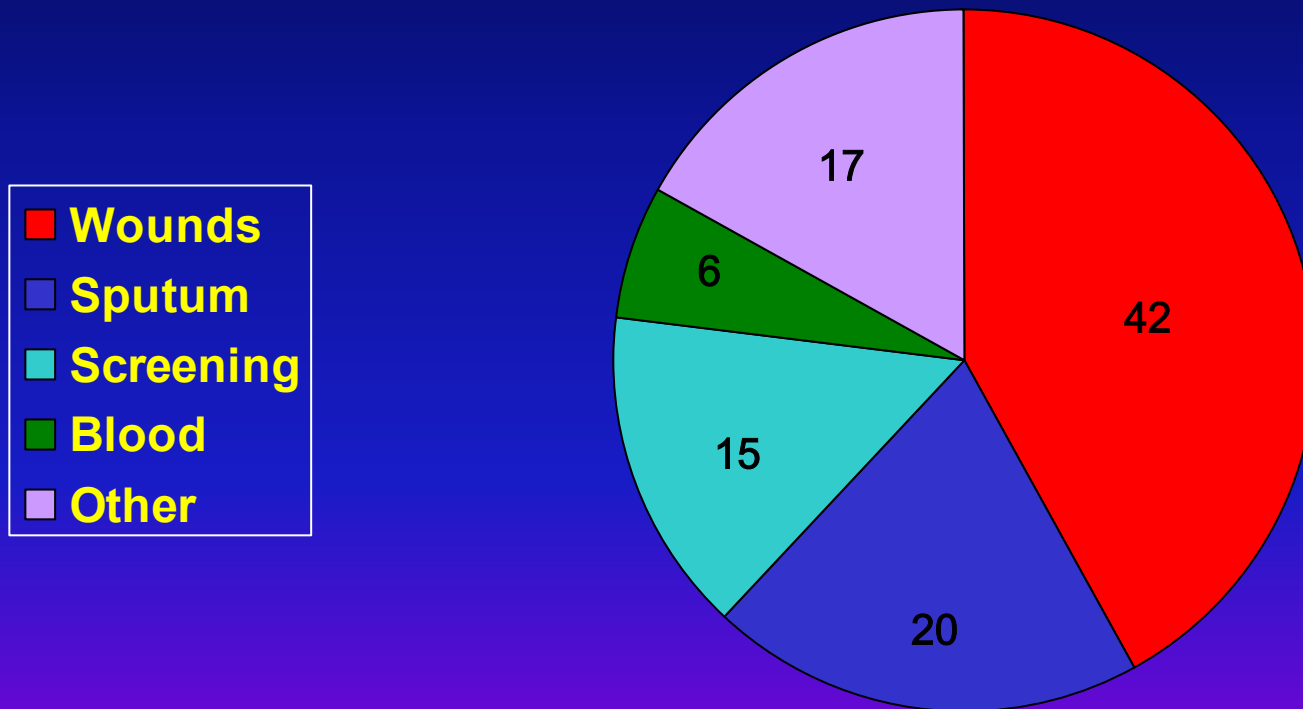
Microbiological methods

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

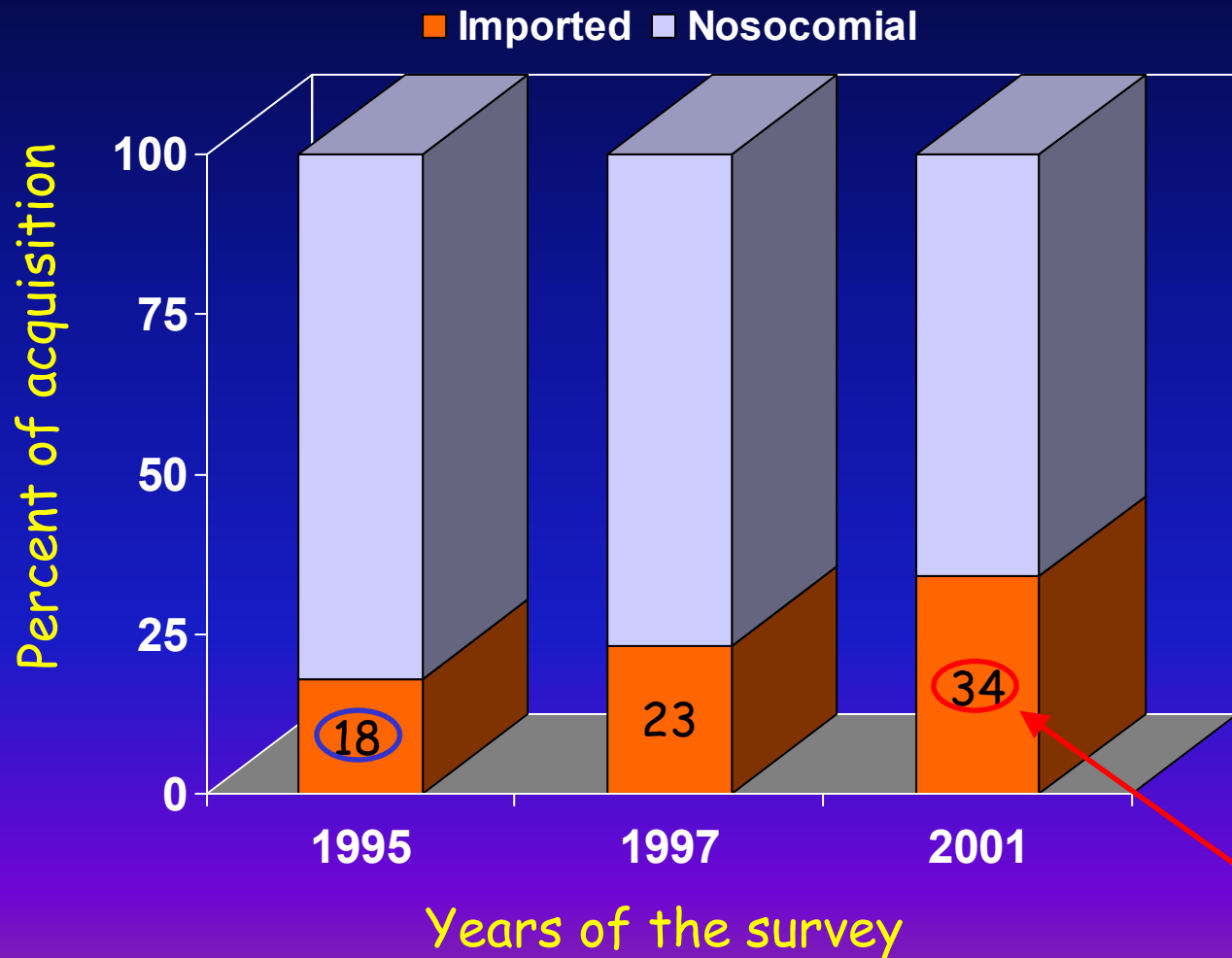
Proportion of MRSA strains by age and sex, Belgium, 2001



Distribution of MRSA strains by sample category, 2001



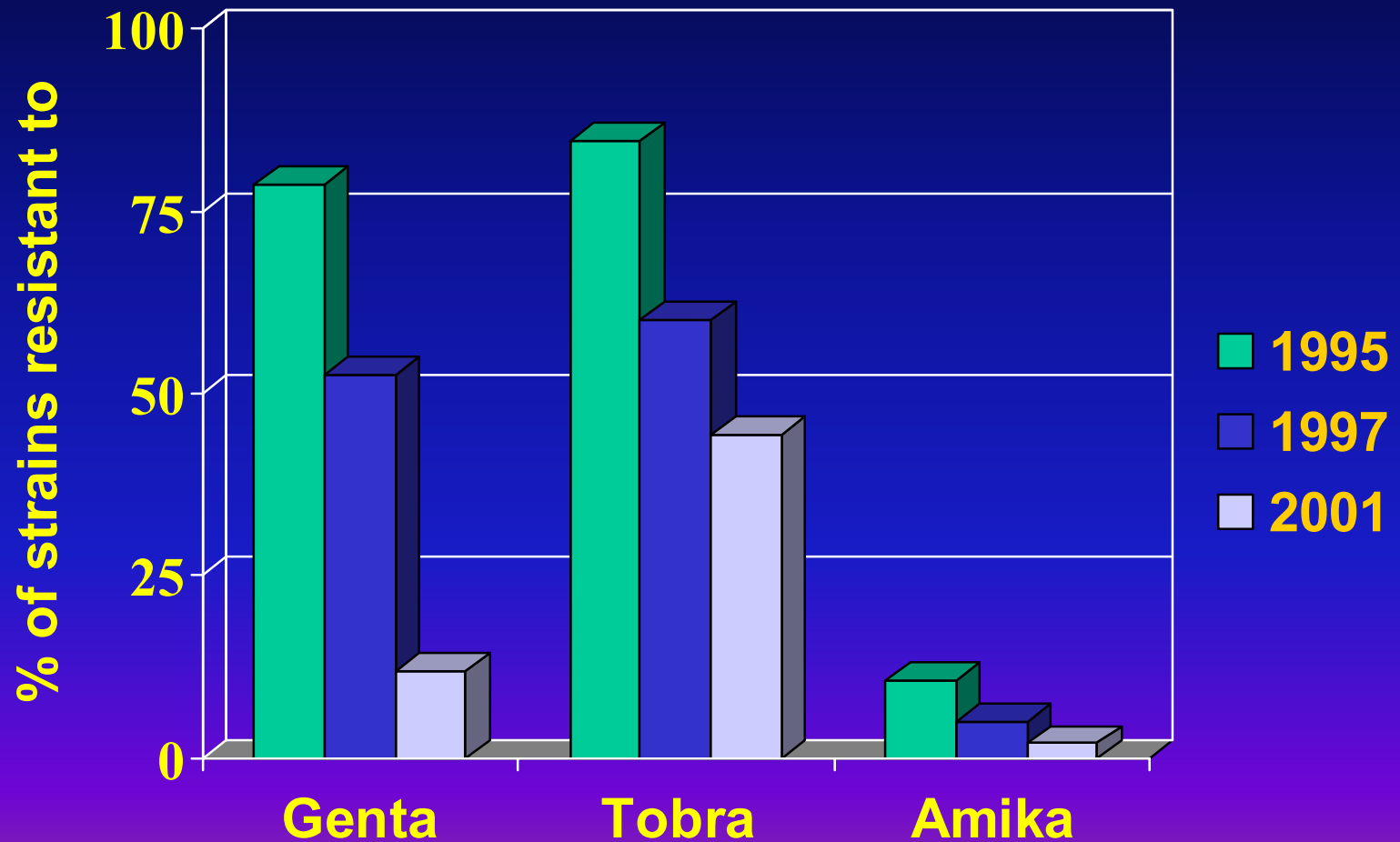
Proportion of imported vs nosocomial MRSA, National Survey, 1995-2001



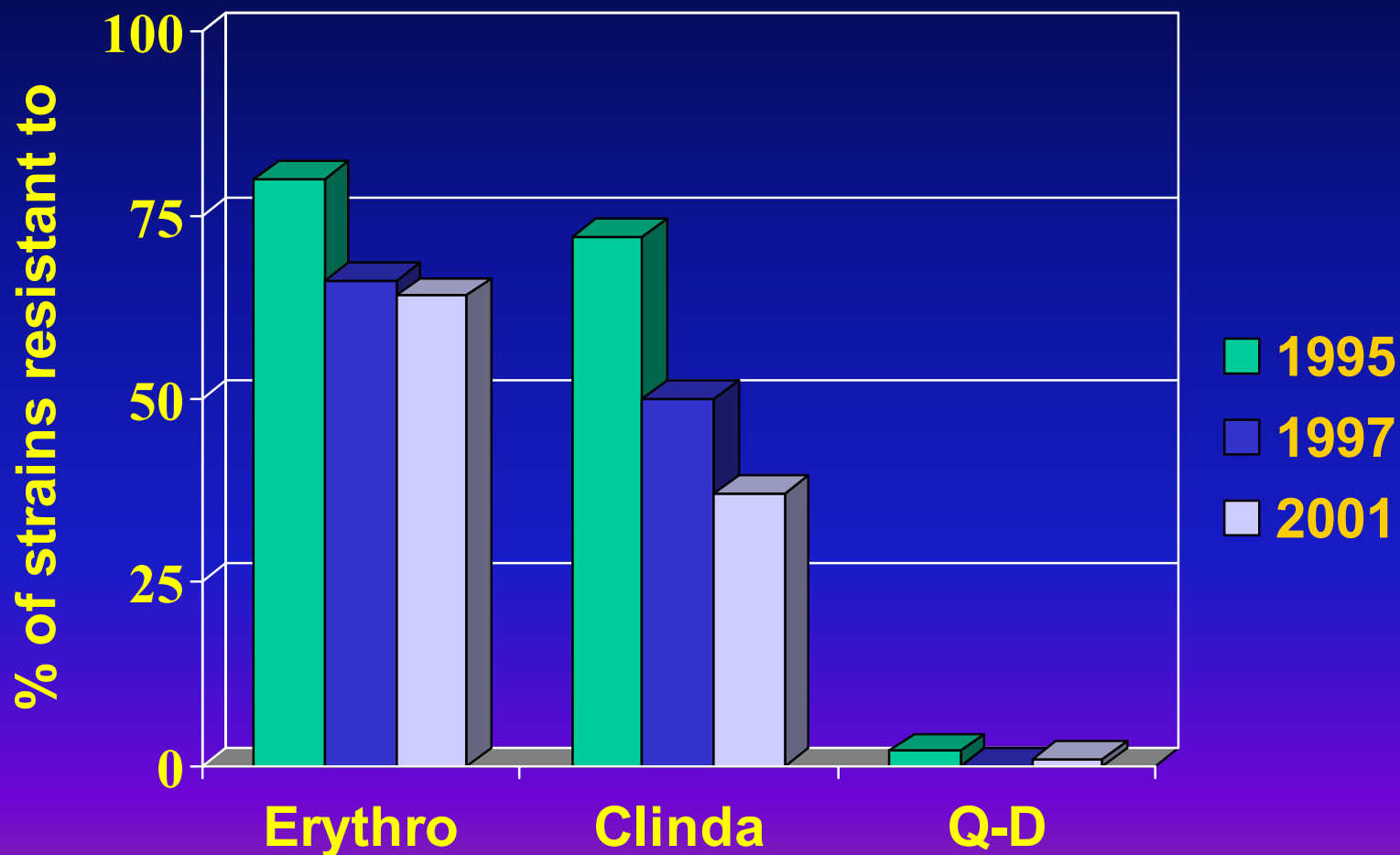
Proportion of non susceptible MRSA strains, Belgium, 1995-2001

| 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 |

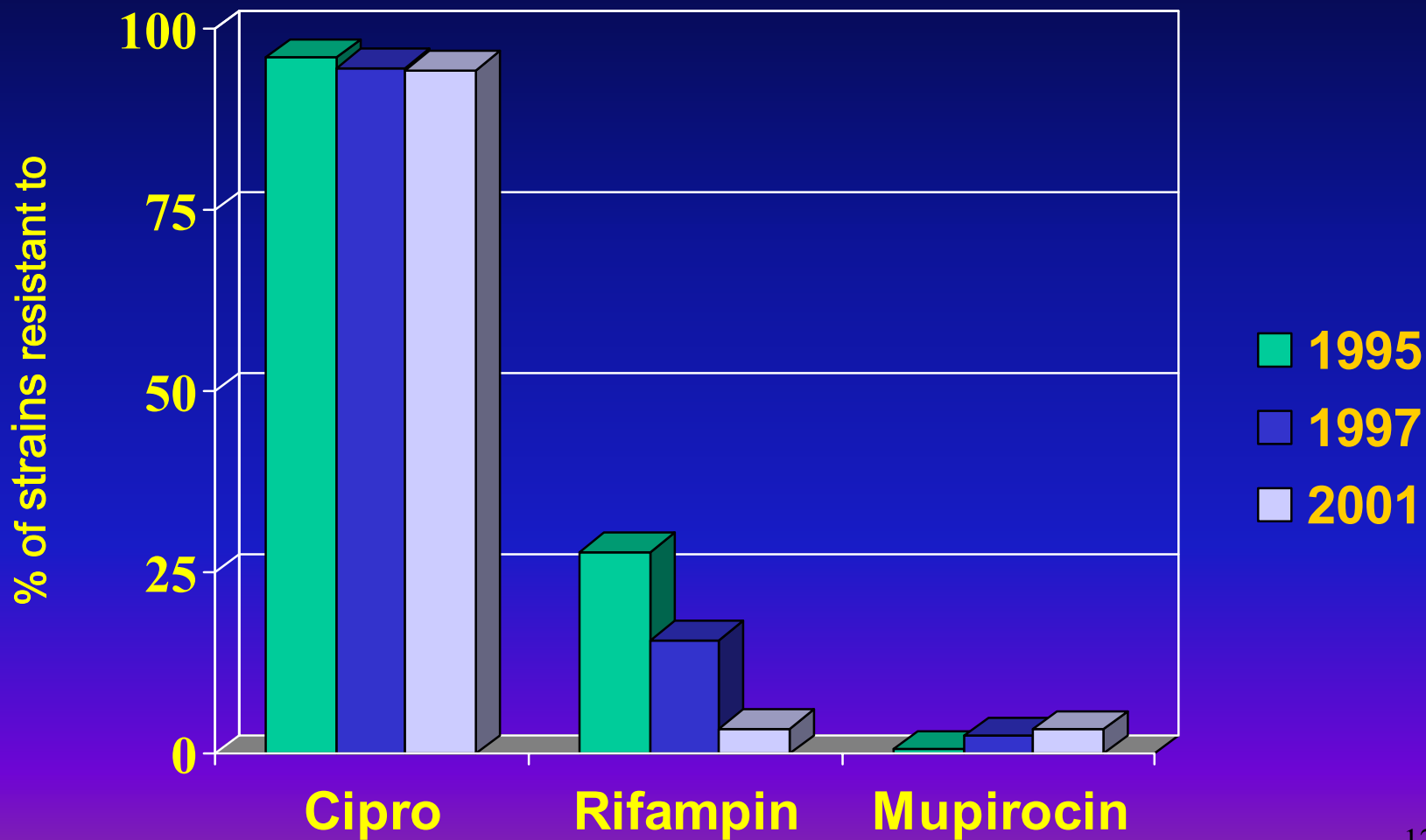
Proportion of MRSA strains resistant to aminoglycosides, Belgium, 1995-2001



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

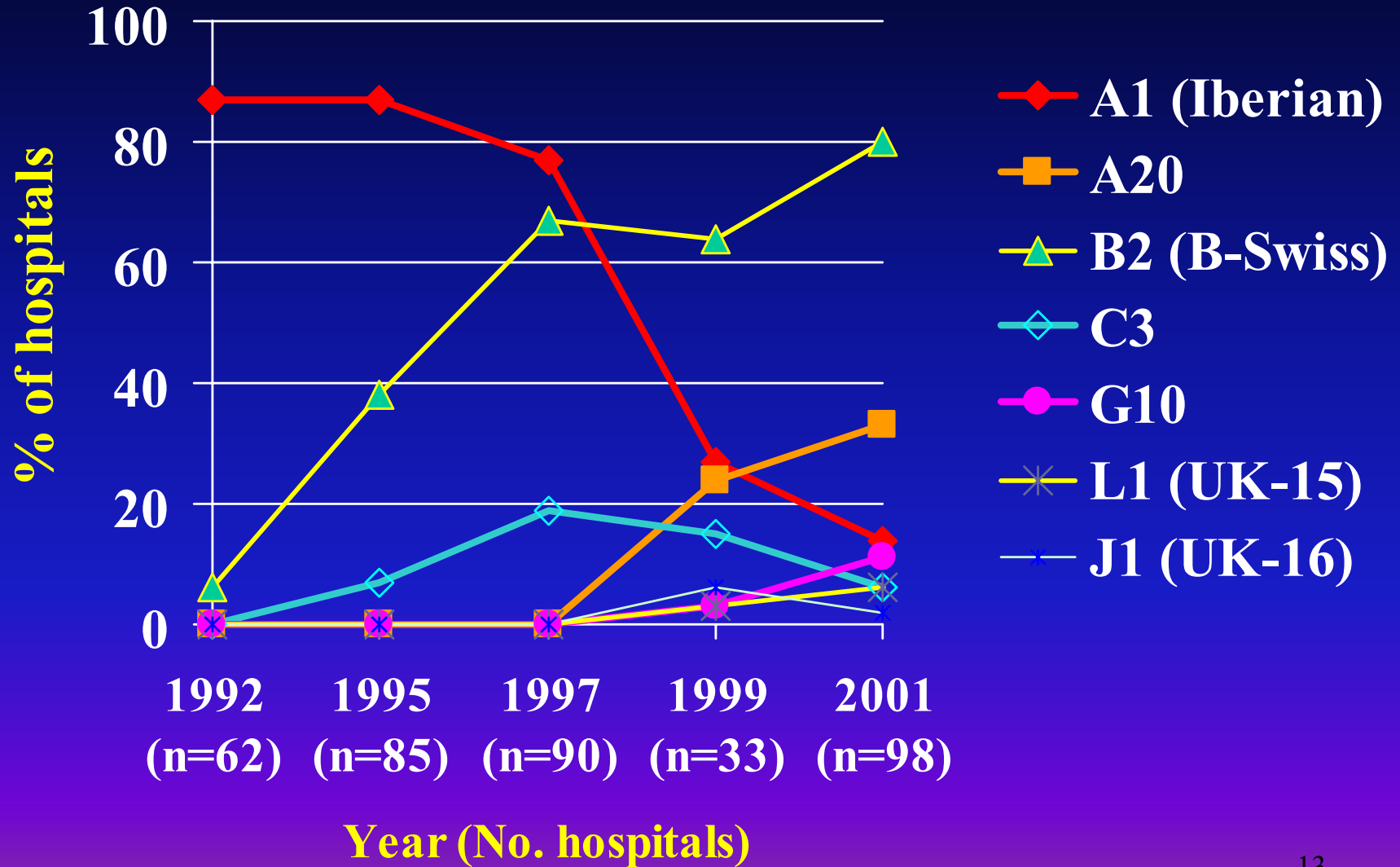


Proportion of MRSA strains resistant, Belgium, 1995-2001

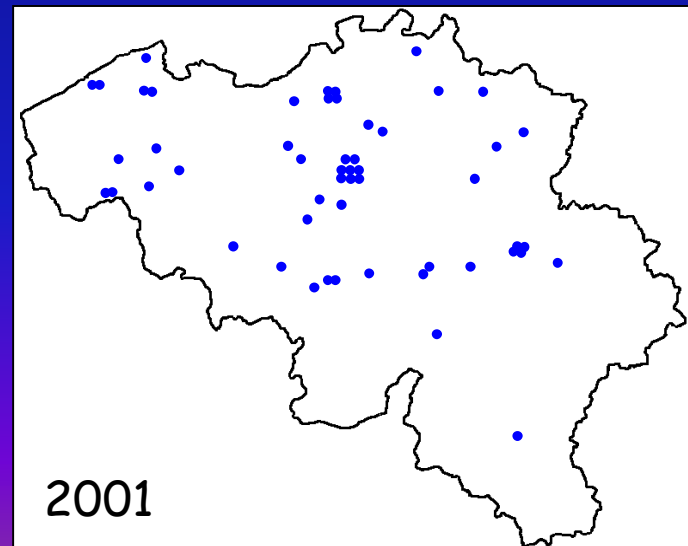
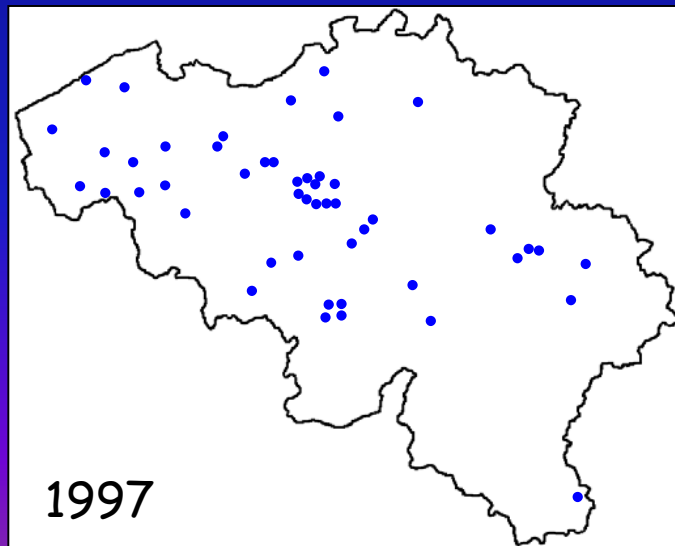
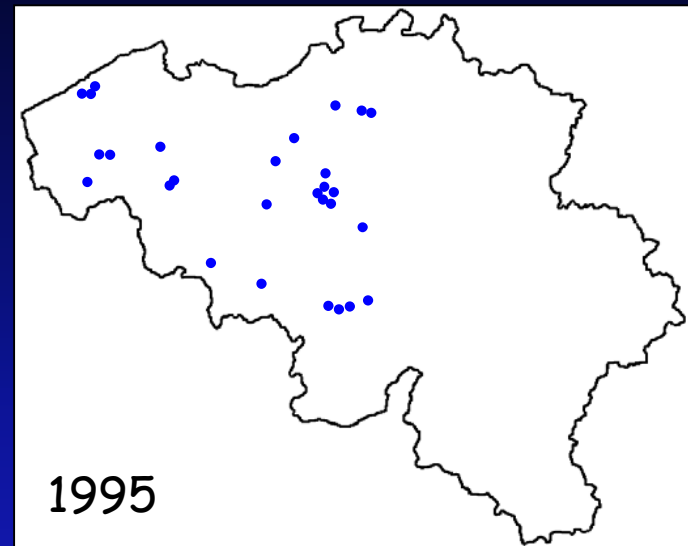
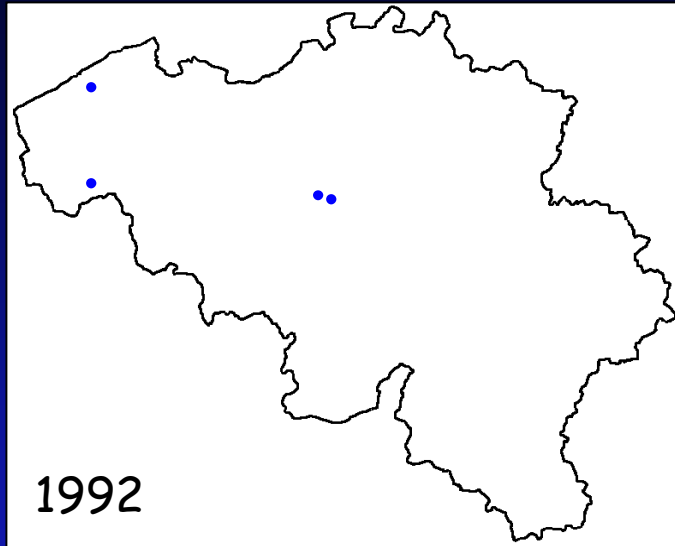


National Surveillance by PFGE Typing

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)

Acknowledgements

*MRSA Reference
Laboratory*

Ariane Deplano
Raf De Ryck
Claire Nonhoff
Sylvianne Rottiers
Ricardo De Mendonça
Marc Struelens

*Scientific Institute of
Public Health*

Erik Hendricks

Institut Pasteur

Raymond Vanhoof

*And all our participating
microbiologist colleagues ...*