

Incidence of
Methicillin-Resistant
Staphylococcus aureus (MRSA)
in Belgian hospitals:

seven years after introduction
of national guidelines

Scientific Institute of Public Health (IPH), Epidemiology unit and the
Belgian Group for Screening, Study and Prevention of Hospital Infections
(GDEPIH - GOSPIZ)

MRSA-problem in Europe

1994 ¹

Global MRSA-resistance proportion in Europe:	12.8%
Scandinavia	0.1 %
the Netherlands	2 %
Germany	10 %
Spain	30.3%
France	33.6%
Italy	34.4%

¹ Voss A, et al., *Eur J Clin Microbiol Infect Dis* 1994; 13: 50-55.

MRSA-problem in Belgium

Resistance proportion in blood cultures:

• **1983-1985**² 11.3%

• **1988**³ 20 %

• **1991**⁴ 29 %

Resistance proportion (all samples):

• **1995**⁵ 21 %

² Institut d'Hygiène et d'Epidémiologie, Ministère de Santé Publique. Etude des souches hospitalières de *Staphylococcus aureus* isolées en Belgique. 1987.

³ Van der Auwera et al., *Antimicrobial agents and chemotherapy*, nov. 1990, pp. 2260-2262.

⁴ Struelens MJ et al., *Eur J Clin Microbiol Infec Dis*, 1994; 13: 54-63.

⁵ Struelens MJ et al., *Infect Control Hosp Epidemiol* 1996; 17: 503-508.

National consensus conference

1993 ⁶

"Guidelines for control and prevention of MRSA transmission in Belgian hospitals"

- Identification of MRSA
- Surveillance of MRSA
- Identification of reservoirs, sources and transmission modes of MRSA
- Isolation measures and barrier precautions
- Decontamination of hospital environment
- Follow-up and reporting

⁶ GDEPIH-GOSPIZ, *Acta Clinica Belgica*, 1994; 49: pp. 108-113.

MRSA-Surveillance

Since 1994

Continuous multi-centre MRSA-surveillance in acute Belgian hospitals:

- period of data collection: 6 months,
 - participation on voluntary basis,
 - confidentiality,
 - standardised data collection
 - feedback of local data, national comparison

Collected data

- Total number of patients with MRSA* / with *Staphylococcus aureus* -strains
 - Number of new hospital-acquired MRSA-cases from clinical samples / from screening samples
 - Total number of admissions and hospitalisation-days

* Quality of data: each patient is counted only once during the hospitalisation period (exclusion : screening & doubles)

Descriptive statistics

Resistance proportion:

$$\Sigma \text{MRSA} * 100 / \Sigma \text{S.a. -strains}$$

MRSA- incidence:

$$\Sigma \text{nosocomial MRSA} / 1000 \text{ admissions}$$

MRSA- incidence density:

$$\Sigma \text{nosocomial MRSA} / 1000 \text{ hosp-days}$$



Trend analysis

Multiple linear regression for repeated observations for 3 series:

- **Minimum 3 participations (1994 - 1999)**
- **Continuous since January 1996 (cohort '96)**
- **Continuous since June 1994 (cohort '94)**

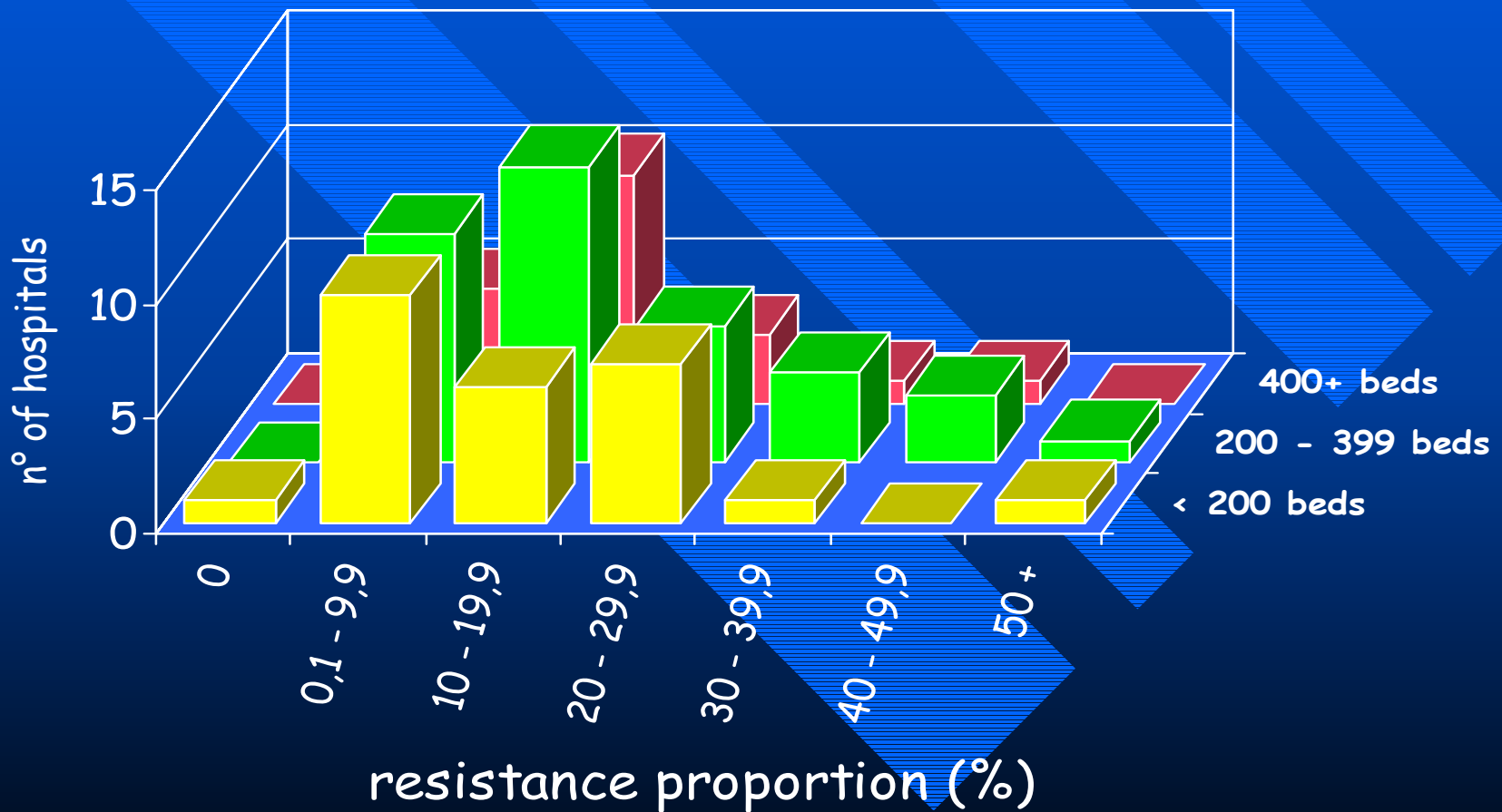
Results

Min. 1 participation: **80%** Belgian hospitals

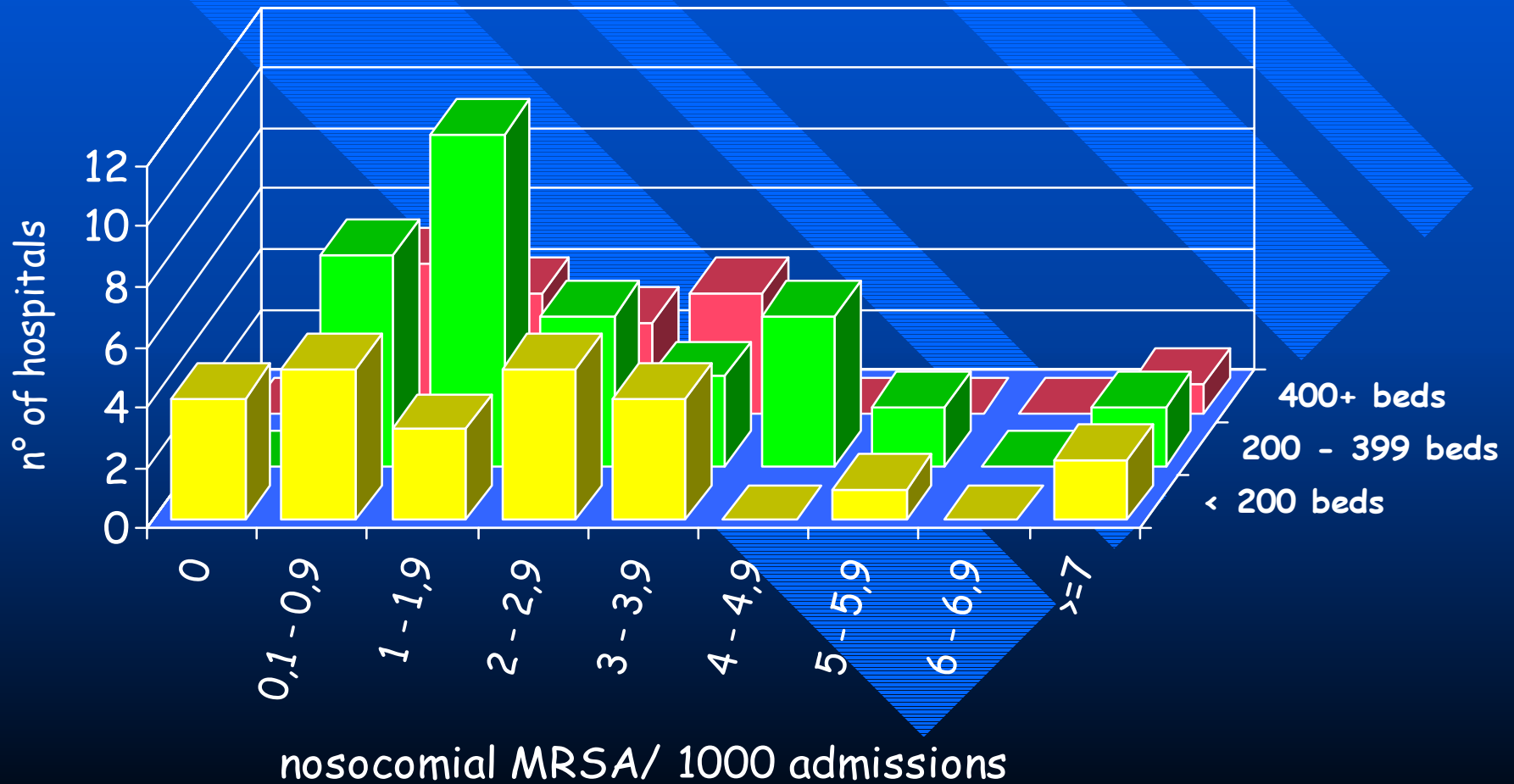
Results 1999, last semester:

- Resistance proportion: 18 %
- MRSA incidence: 2.4 / 1000 admissions
- MRSA incidence density: 0.3 / 1000 hosp-days

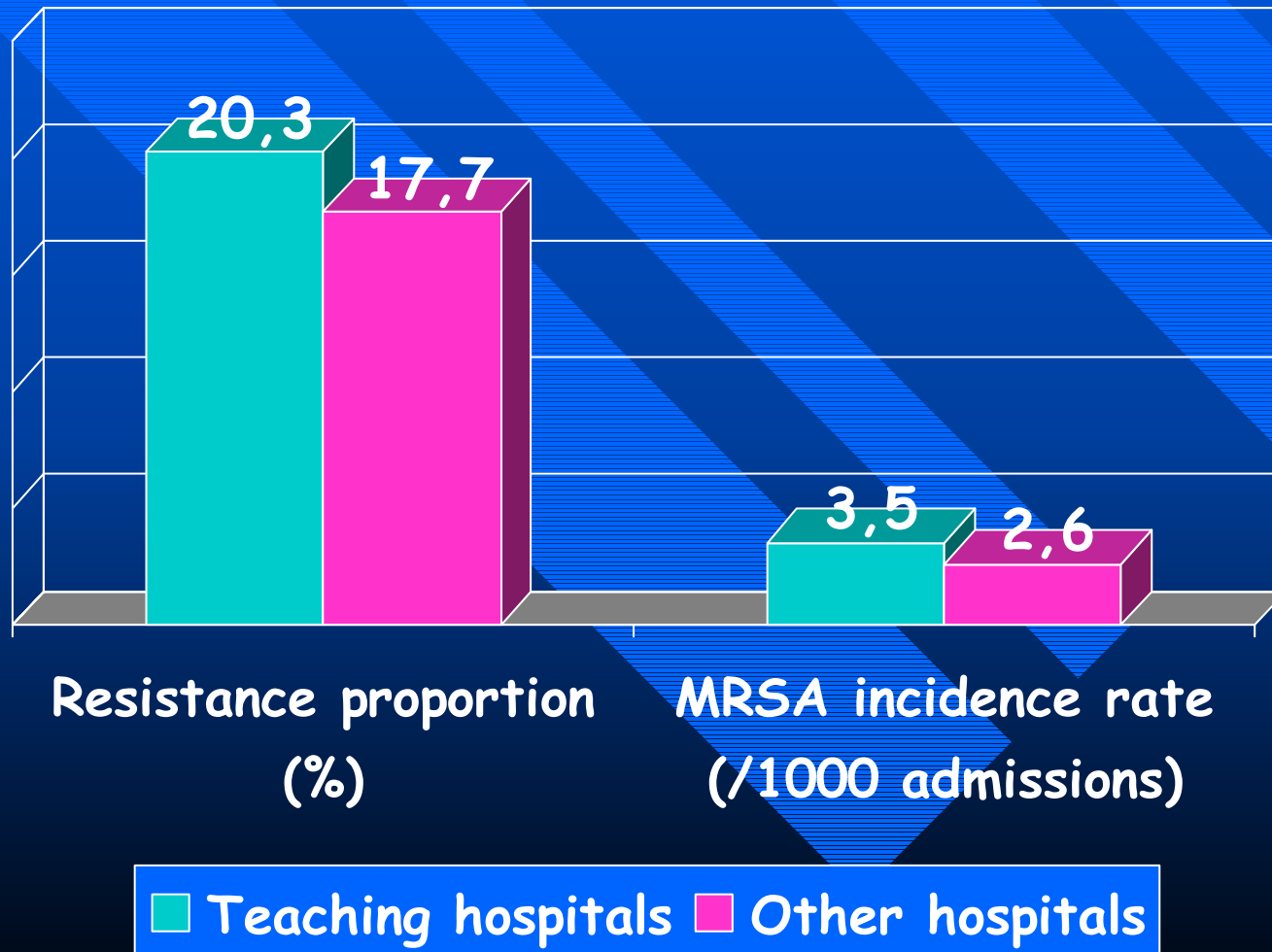
Methicillin resistance proportion, 1999



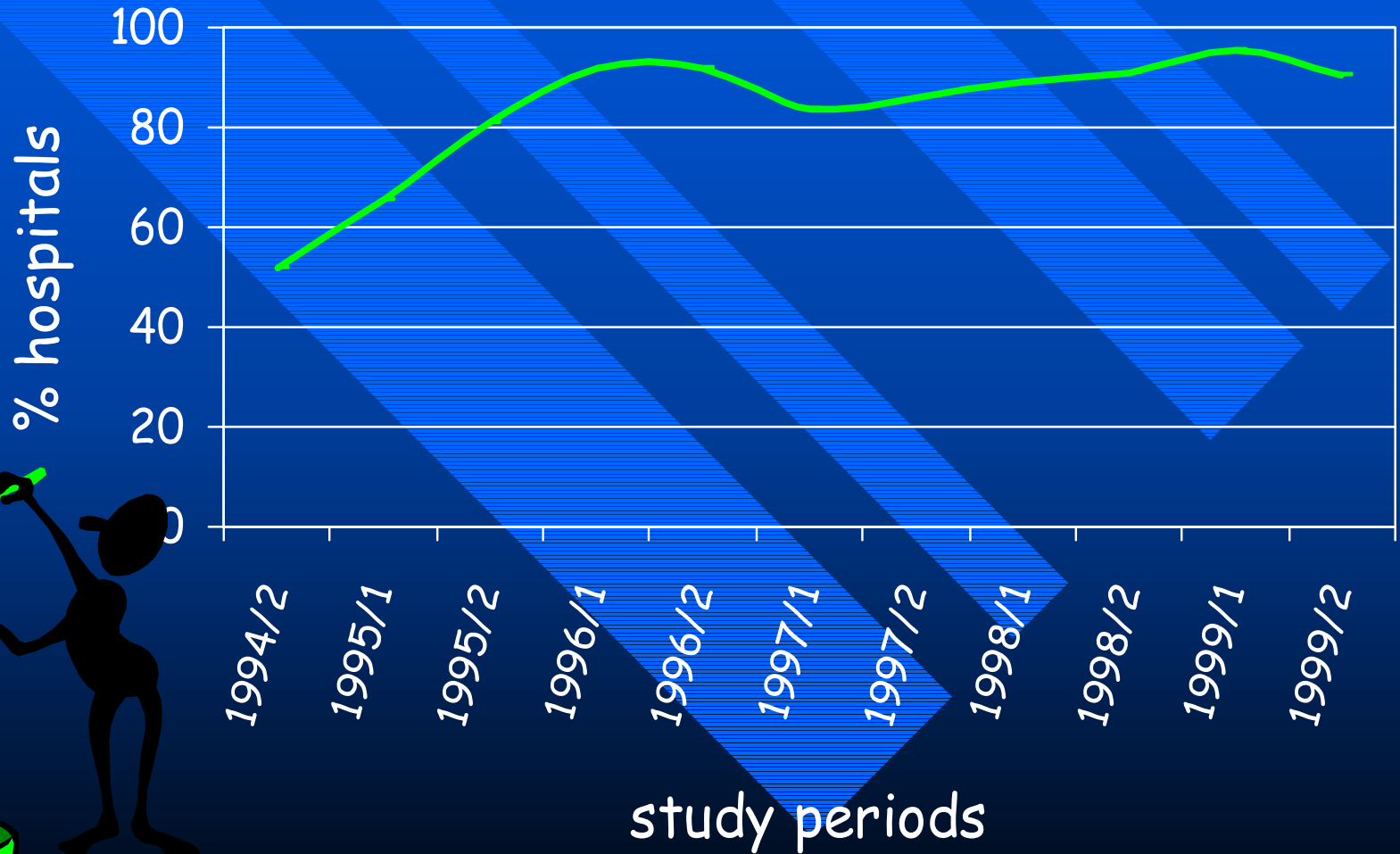
Nosocomial MRSA incidence rate, 1999



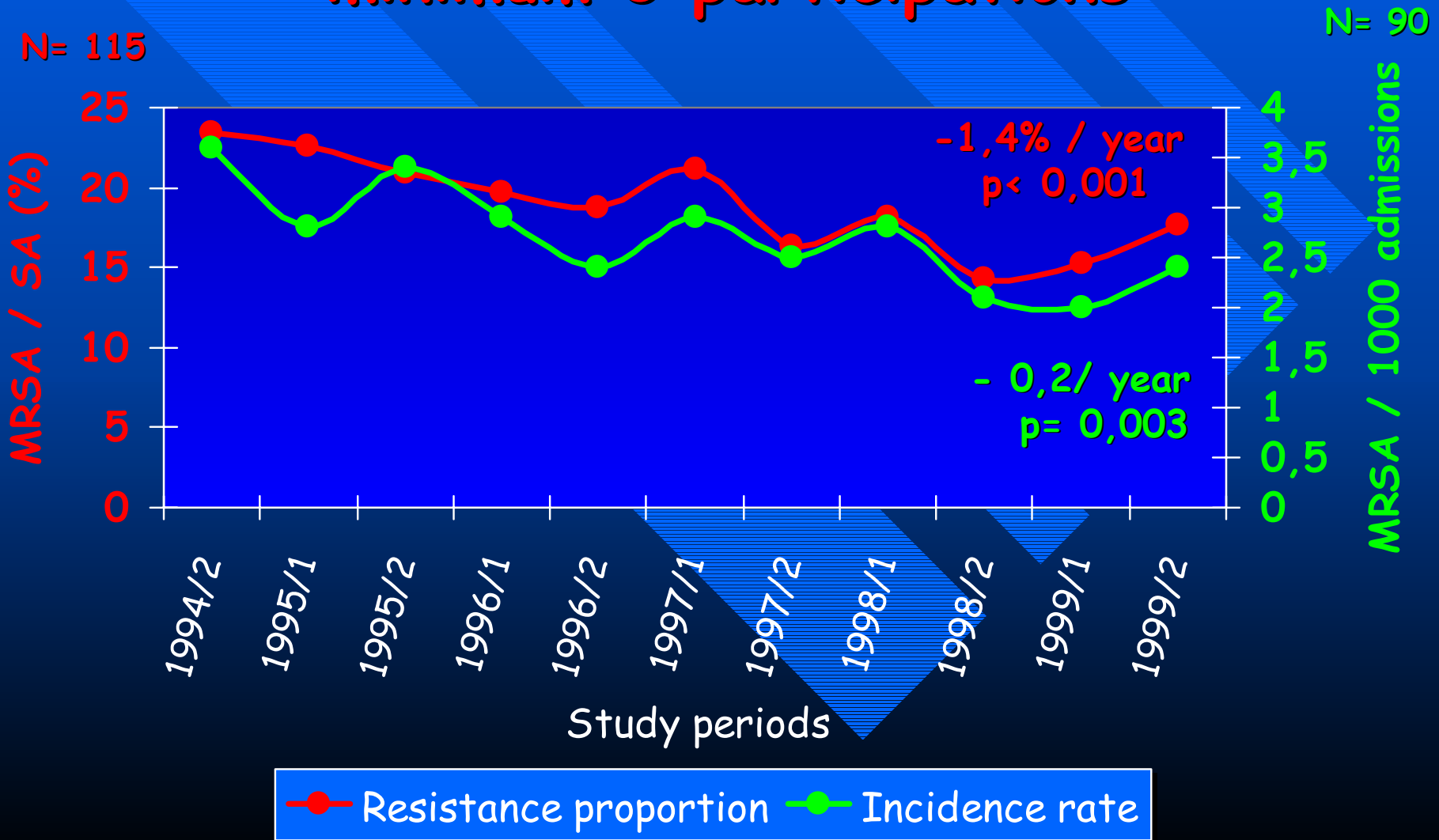
Resistance proportion, MRSA incidence rate and hospital status



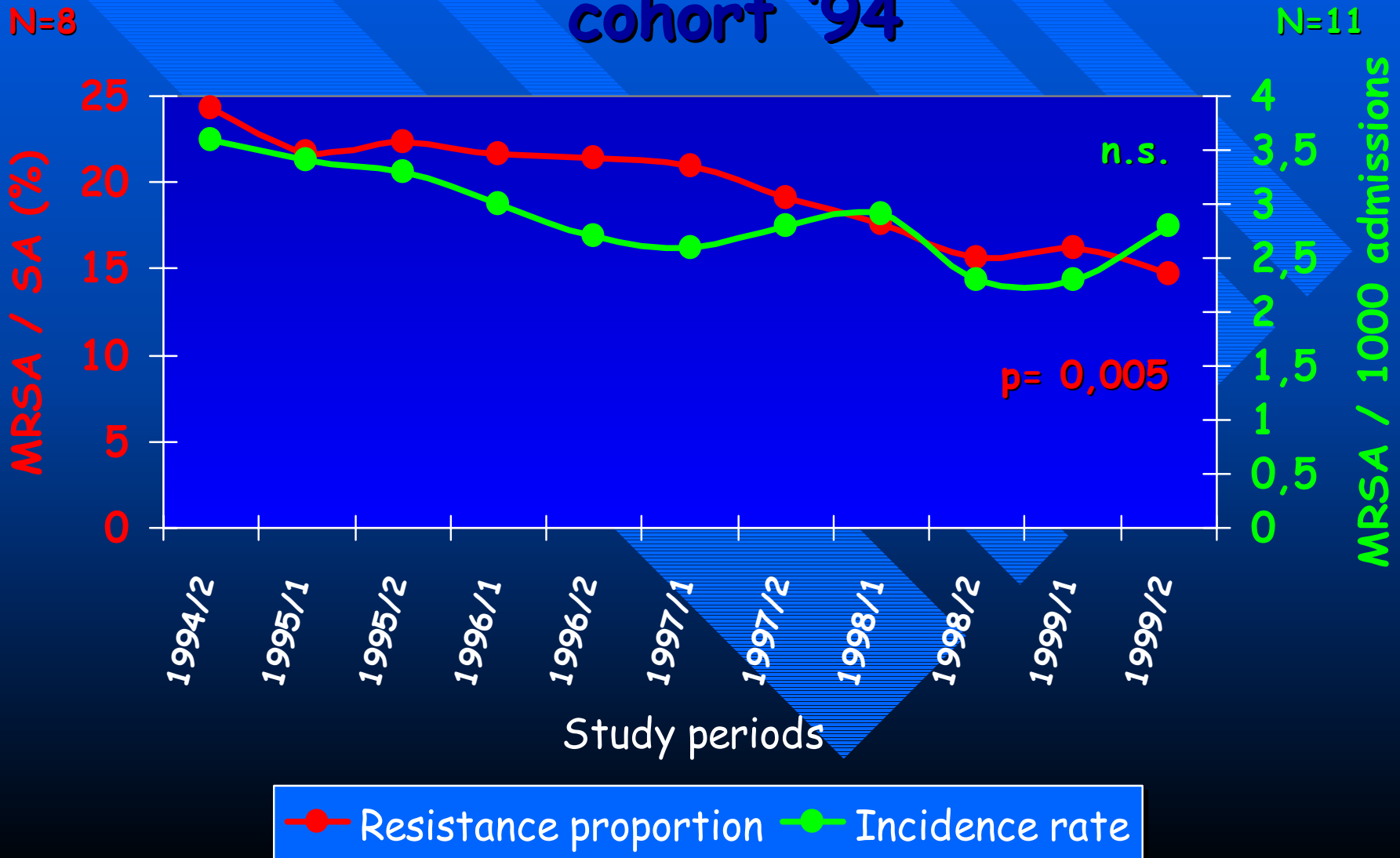
Quality of data collection



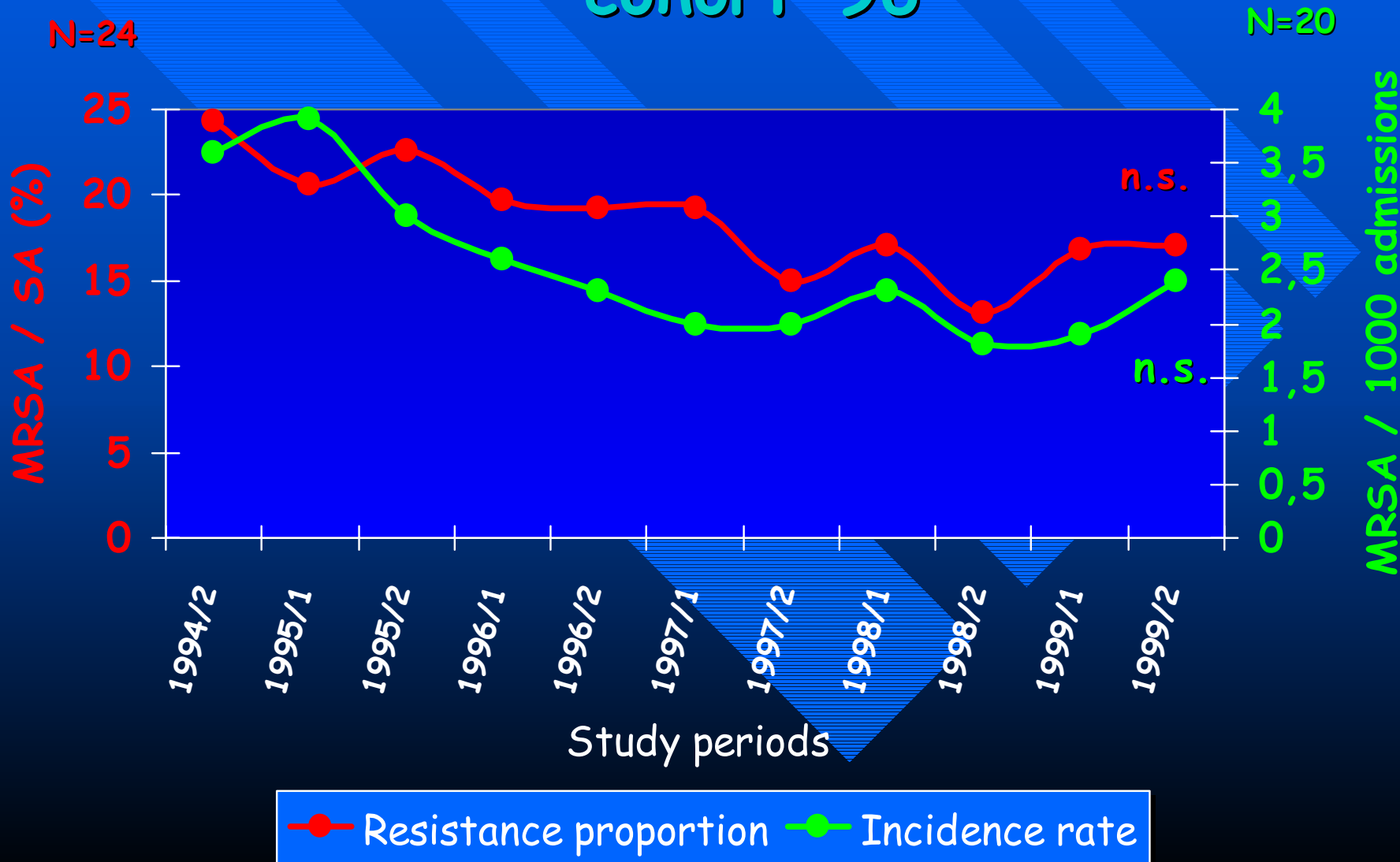
Mean resistance proportion, Nosocomial MRSA incidence rate minimum 3 participations



Mean resistance proportion, nosocomial MRSA incidence rate cohort '94



Mean resistance proportion, nosocomial MRSA incidence rate cohort '96



Conclusions

- dynamic participation
- slow, significant decrease of the rates

BUT

- importance to remain alert
- importance of a national approach

Thanks to all Belgian hospitals !



Their devoted work over the field contributed to the success of this project.

Mean resistance proportion, MRSA incidence rate (2000) minimum 3 participations

