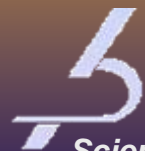




Unit of Epidemiology



Scientific Institute  
of Public Health

NSIH - MRE program:  
Surveillance of  
multi-resistant micro-organisms  
in Belgian hospitals:  
*ESBL-producing Enterobacter aerogenes,  
Escherichia coli and Klebsiella pneumoniae*

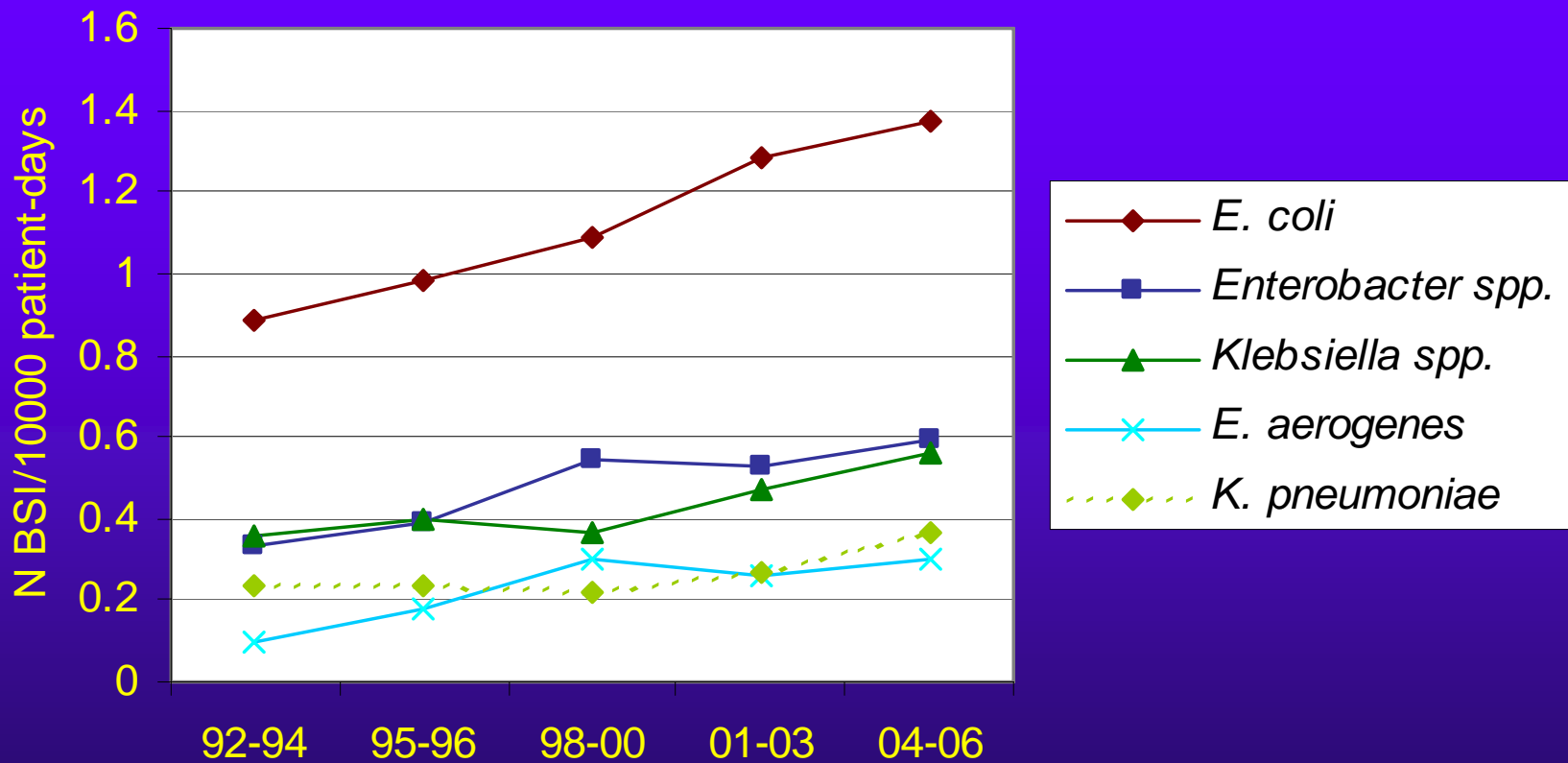
B Jans, C Suetens<sup>1</sup>, Y Glupczynski<sup>2</sup>

<sup>1</sup>Epidemiology unit, Scientific institute of public health, Brussels

<sup>2</sup>Microbiology department, National reference laboratory, UCL- Mont Godinne

*In collaboration with the Belgian Infection Control Society  
and with the support of the Belgian Antibiotic Policy Coordination Committee*

# Incidence of BSI with enterobacteriaceae in Belgian hospitals ( $n=94$ ) NSIH-SEP: 1992-2006



# NSIH- surveillance program

1996 in: GOSPIZ-letter, november 1996.

« *Enterobacter aerogenes*: a new emerging nosocomial pathogen »

Y. De Gheldre, P. De Mol, Y. Glupczynski, O. Ronveaux and MJ Struelens

2000

Surveillance multiresistant *Enterobacter aerogenes* (MREA)

2002/2

+ ESBL- producing MREA

2005/2

+ ESBL- producing *Escherichia coli*

ESBL- producing *Klebsiella pneumoniae*

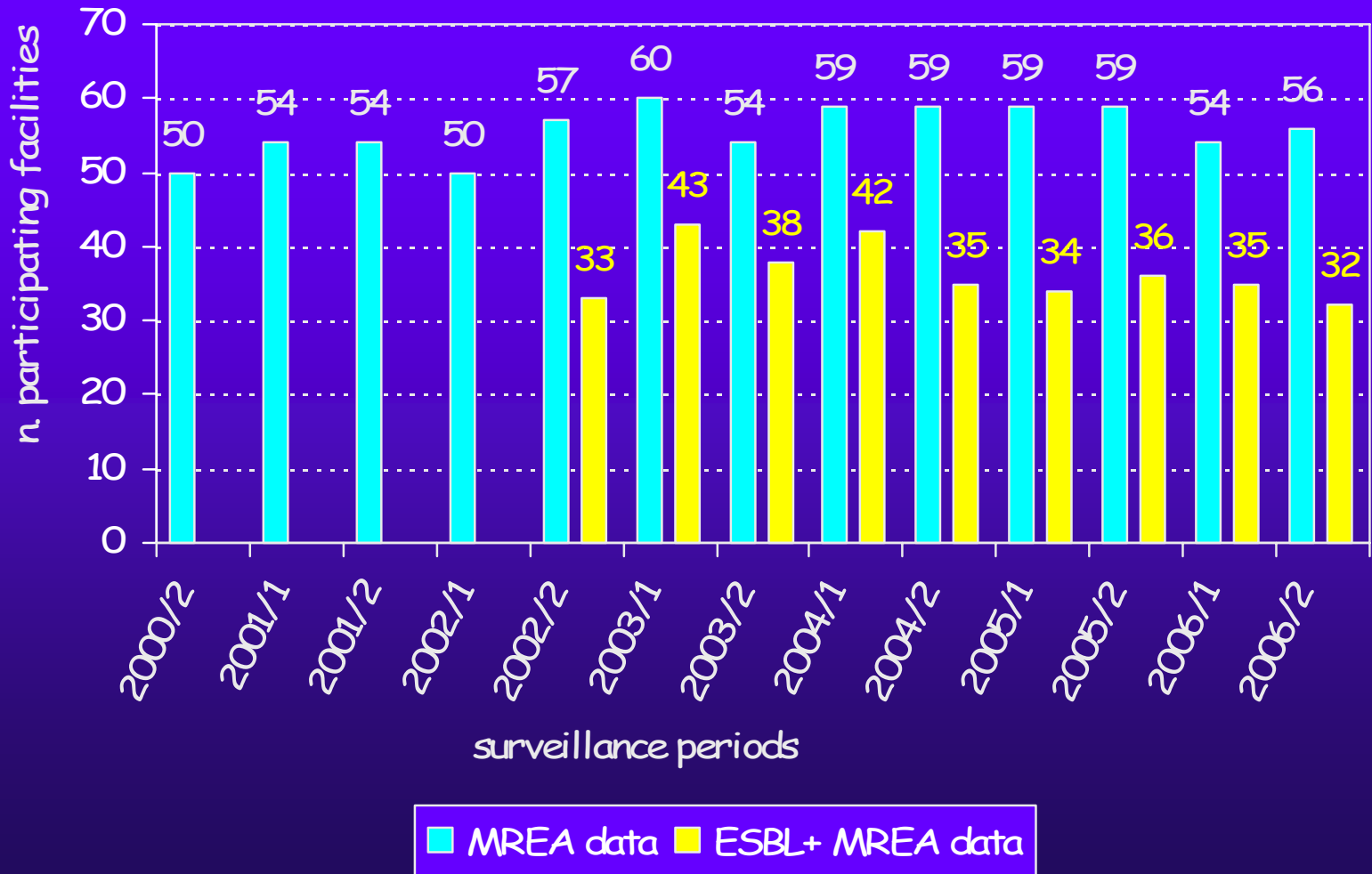


A petri dish containing a bacterial culture on a dark, agar-based medium. The culture shows a dense, confluent layer of small, dark, irregular colonies that have spread across the surface of the agar. The colonies appear to be multi-resistant *Enterobacter aerogenes* and ESBL-producing MREA.

Multi-resistant *Enterobacter aerogenes*  
and ESBL- producing MREA

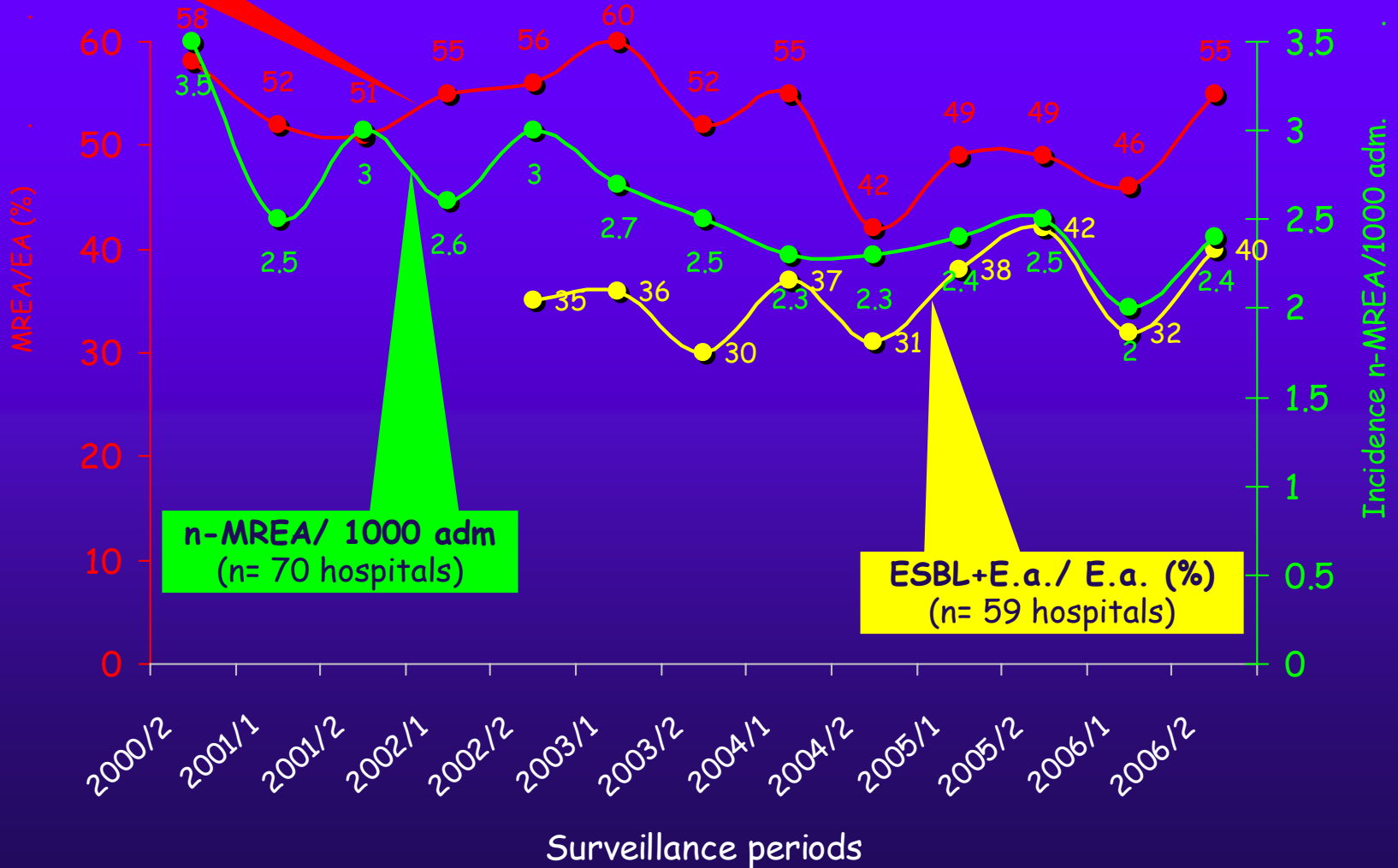
# Participation MREA- surveillance

	MREA (since 2000/2)	ESBL+ MREA (since 2002/2)
Min. 1 participation	116 facilities	77 facilities
Continuous participation	8	9



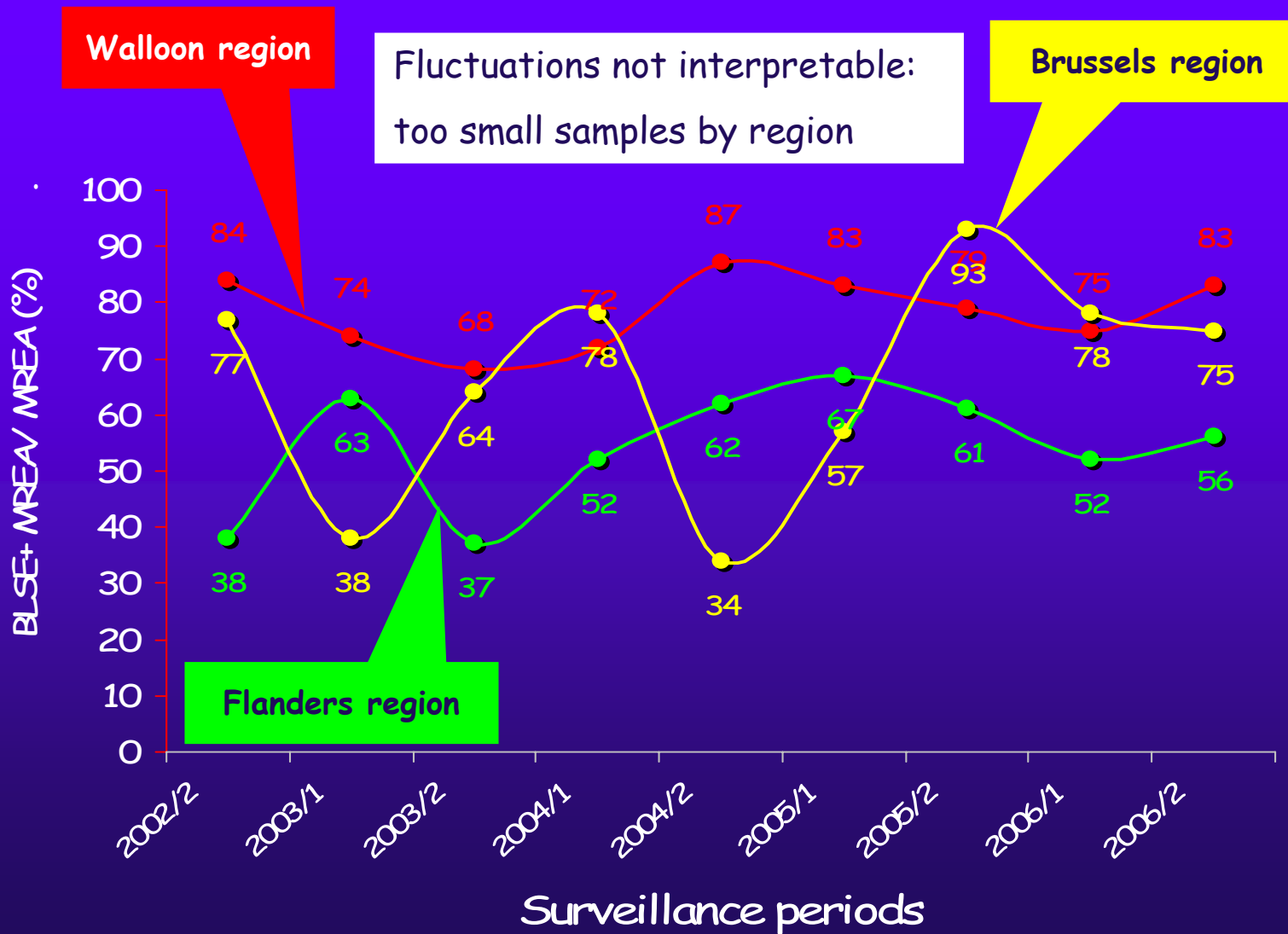
# Enterobacter aerogenes: resistance, ESBL- production & incidence of nosocomial MREA min. 3 participations

MREA/ E.a. (%)  
(n= 59 hospitals)



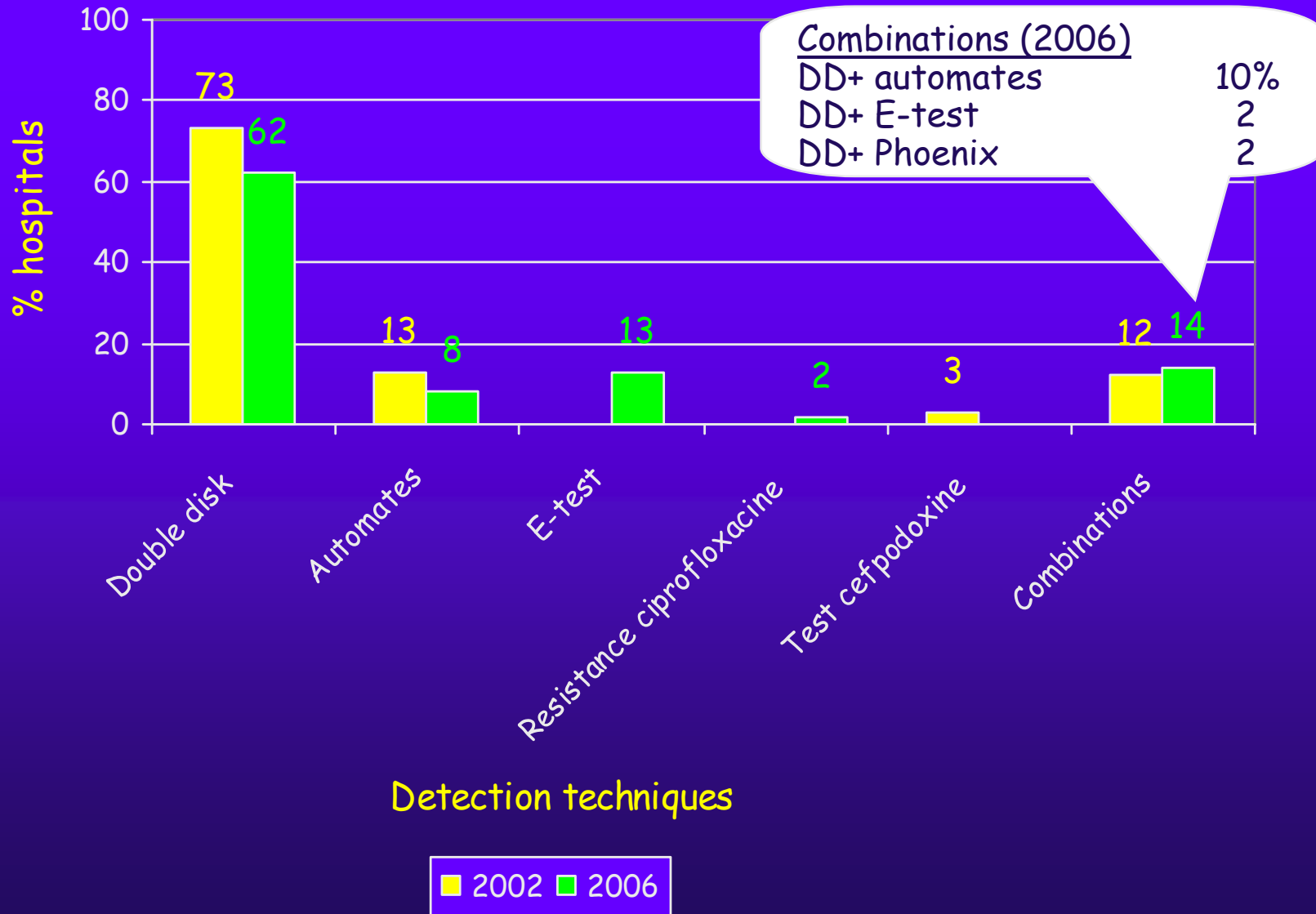
# ESBL+ MREA proportion by region

*min. 3 participations between 2000 - 2006*



# Detection of ESBL+ MREA

(n= 40 hospitals)



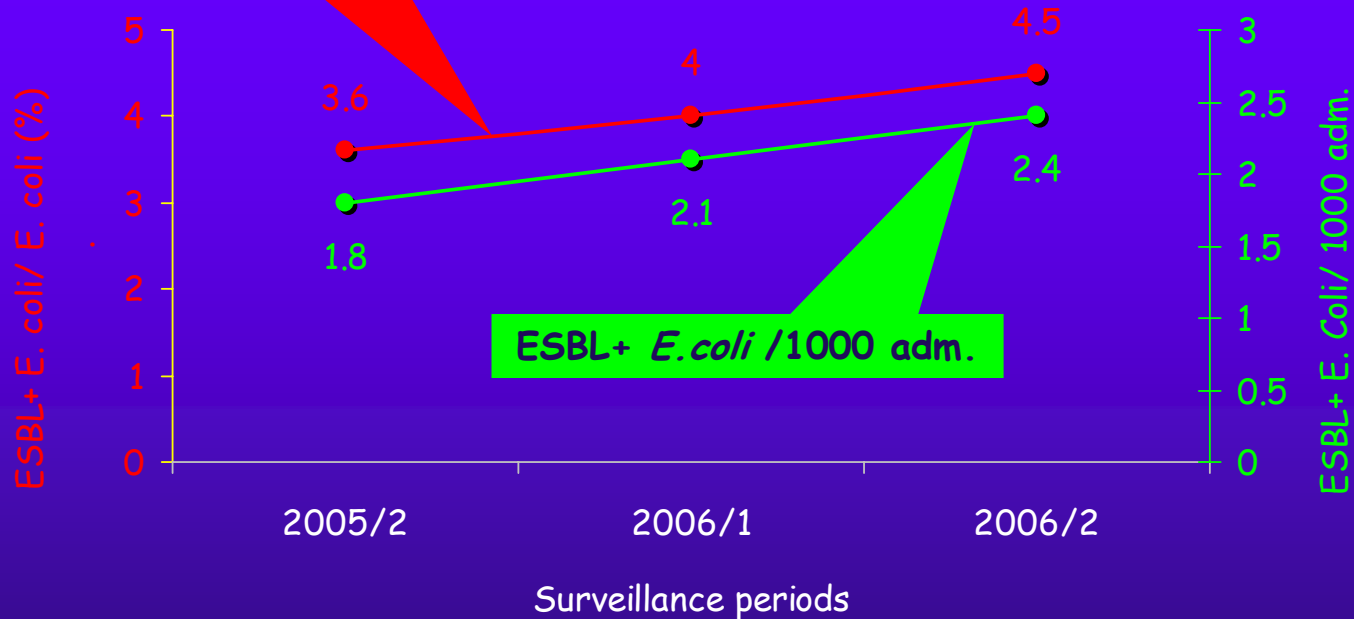


ESBL- producing *Escherichia coli*

	PARTICIPATIONS 2005/2 - 2006
Min. 1 participation	<b>53 facilities</b>
Continuous participation	<b>22</b>

# Proportion and incidence of ESBL+ *E. coli* clinical samples only, all hospitals, 2005/2 - 2006

ESBL+ *E. coli* / *E. coli* (%)

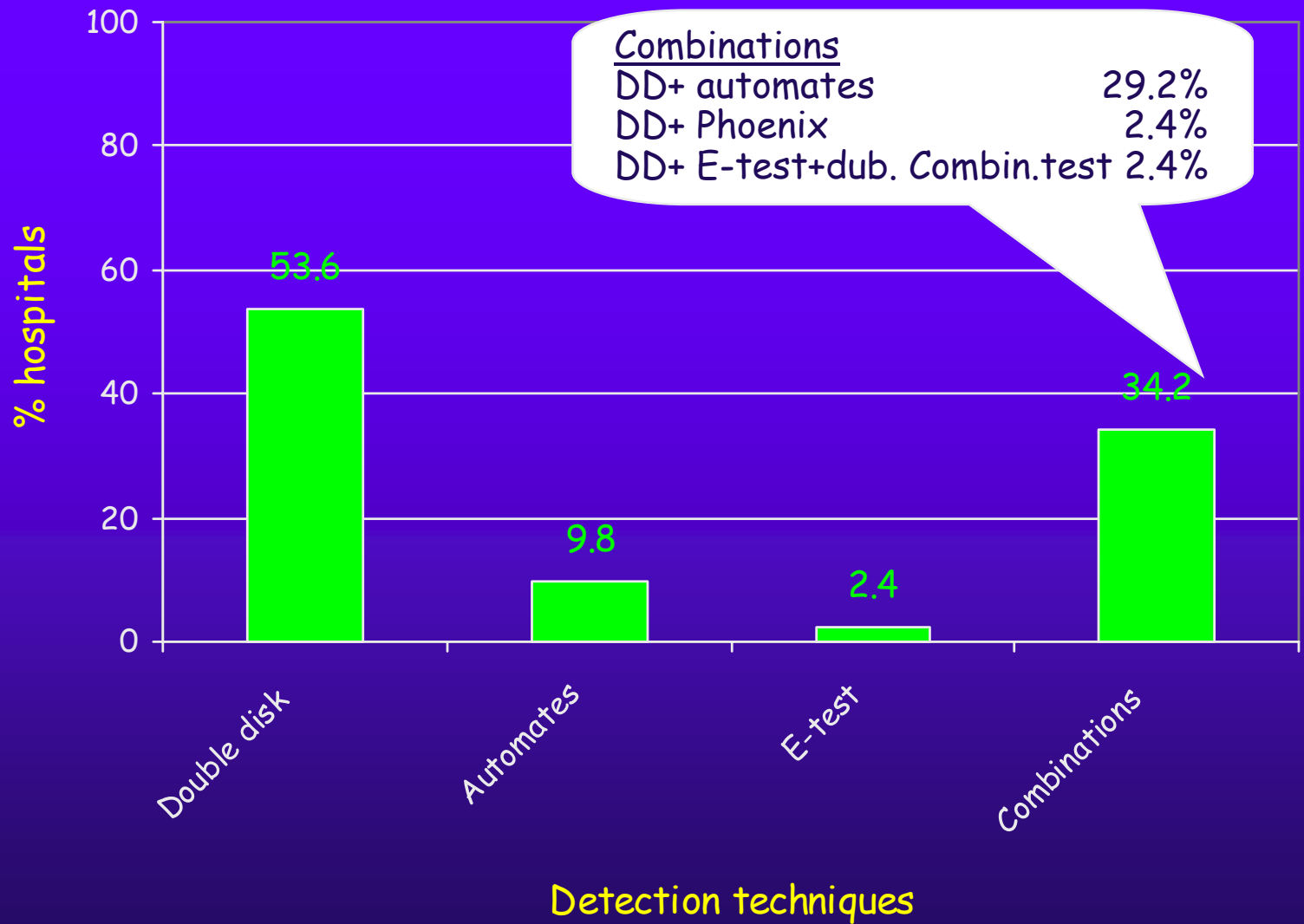


ESBL+ *E. coli* / 1000 adm.



# Detection of ESBL+ *E. coli*

(n= 41 hospitals)

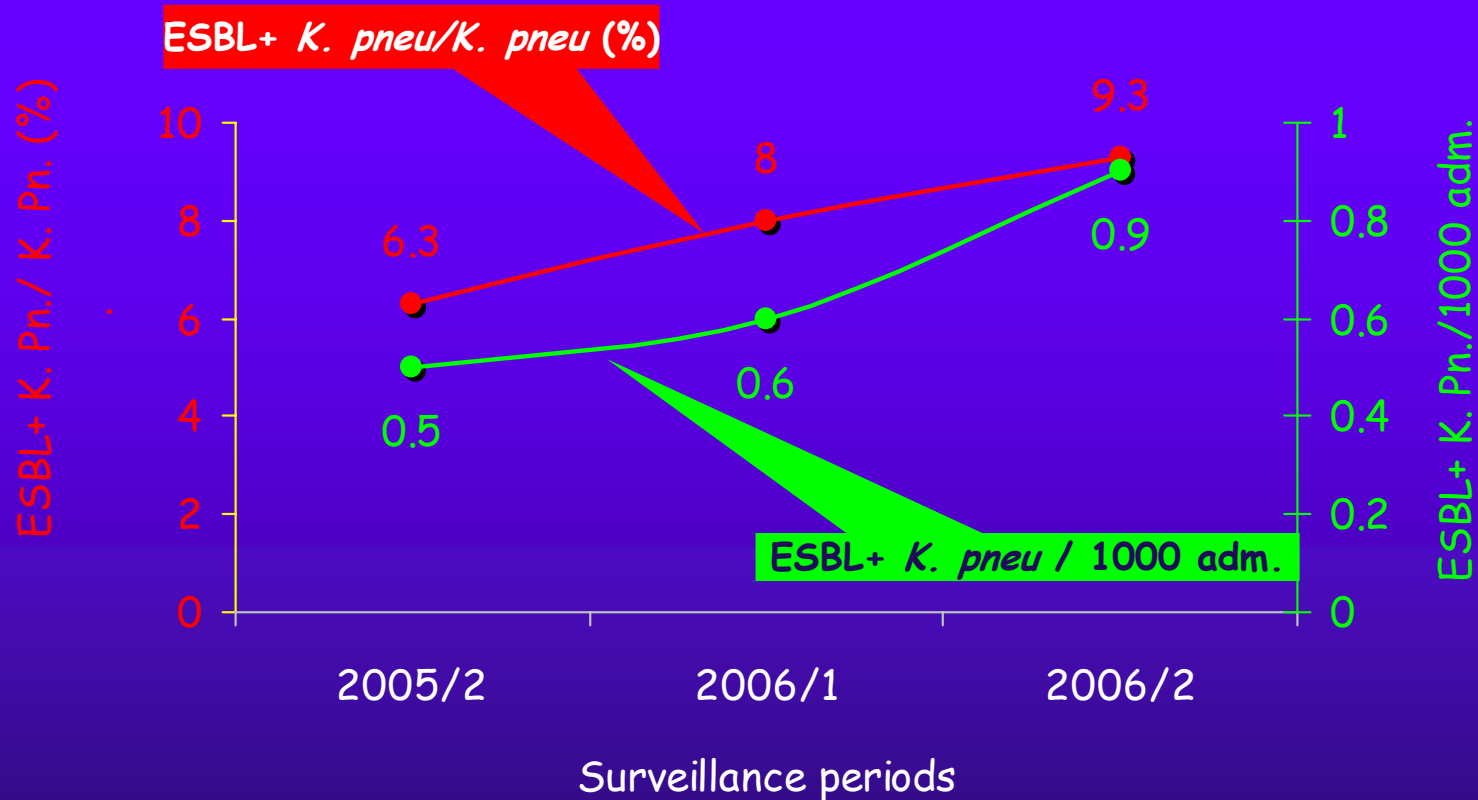


A close-up photograph of a petri dish containing a bacterial culture. The surface is covered with numerous streaks of pinkish-red bacterial growth, likely Klebsiella pneumoniae. The streaks are arranged in a somewhat grid-like pattern, with some areas showing more dense growth than others. The background is a light, off-white color, possibly the agar medium.

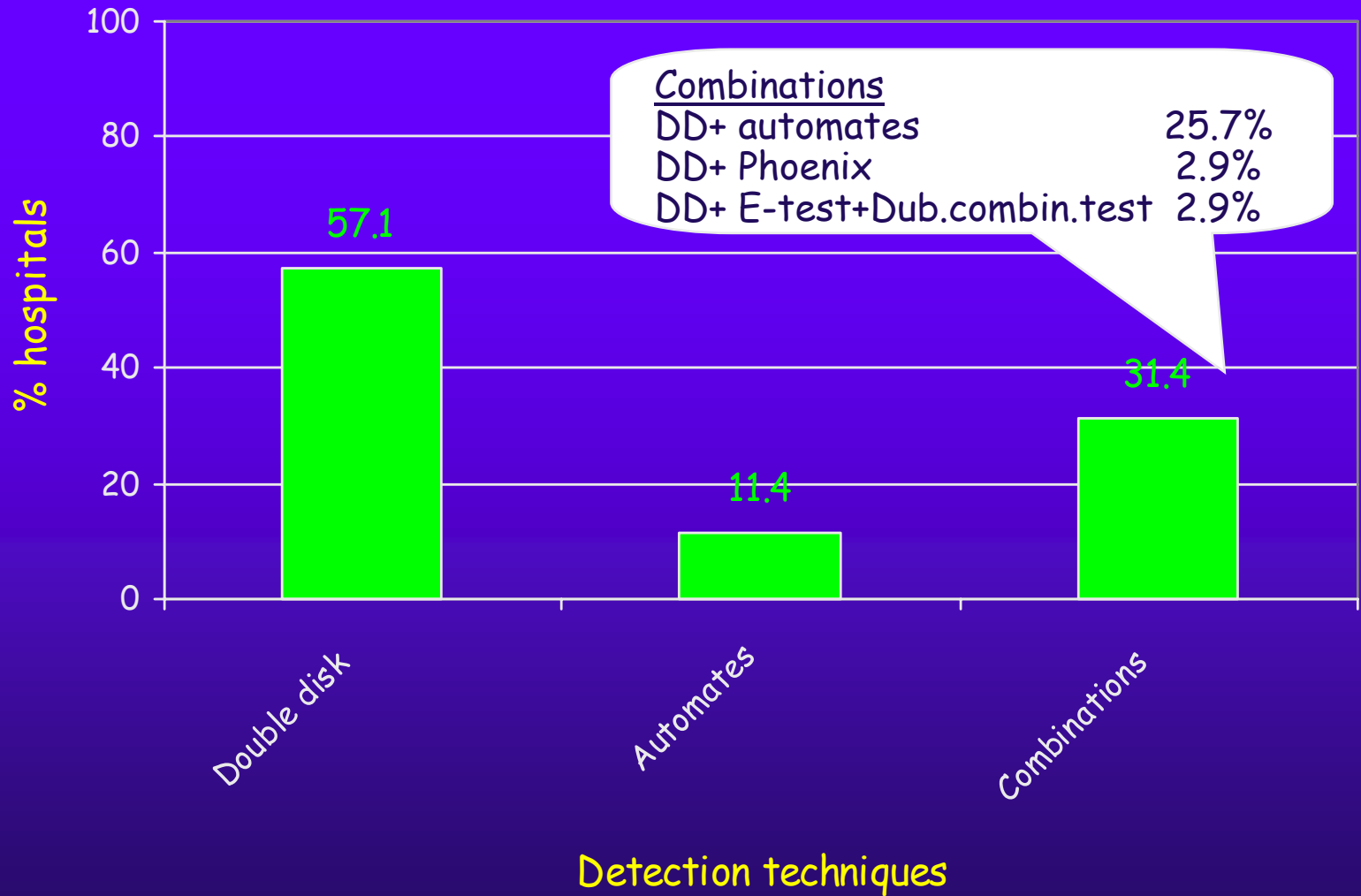
## ESBL- producing *Klebsiella pneumoniae*

	<b>PARTICIPATIONS</b> 2005/2 - 2006
<b>Min. 1 participation</b>	53 facilities
<b>Continuous participation</b>	16

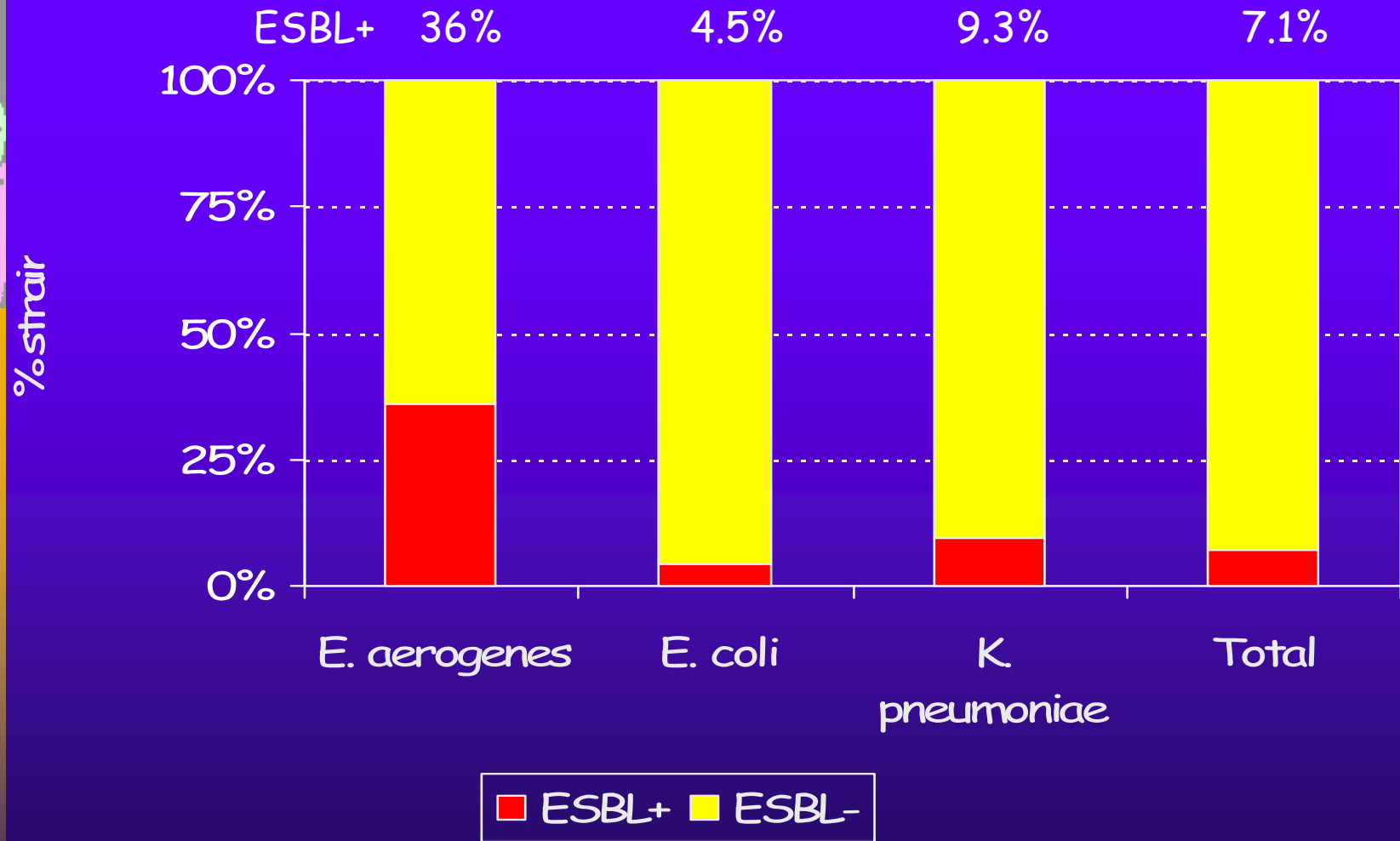
# Proportion and incidence of ESBL+ *K. pneumoniae* : clinical samples only, all hospitals, 2005/2 - 2006



# Detection of ESBL+ *K. pneumoniae* (n = 35 hospitals)



# Proportions of ESBL+ strains in *E. aerogenes*, *E. coli* and *K. pneumoniae*



# Discussion

## ❖ ESBL-production

Important, increasing problem, requiring follow-up

## ❖ Detection-methods

- Are not routinely performed or standardized in all hospitals
- The number & type of tested antimicrobials differs between hospitals

## ❖ NSIH- MRE surveillance

- Recently started surveillance: not yet reached optimal performance
- Exclusion of doubles in numerator and denominators = time consuming and difficult if manual procedure
- Decision nosocomial origin of the strains: systematic specific screening for MREA, ESBL+ MREA, E. coli and K. pneumoniae is rare -> difficult to exclude non-nosocomial acquisition
- Comparisons by region and hospital size = not reliable (small numbers in subcategories)





Thanks for participating at this surveillance !