



Use of antibiotics in Swiss hospitals: investigation of a sentinel monitoring

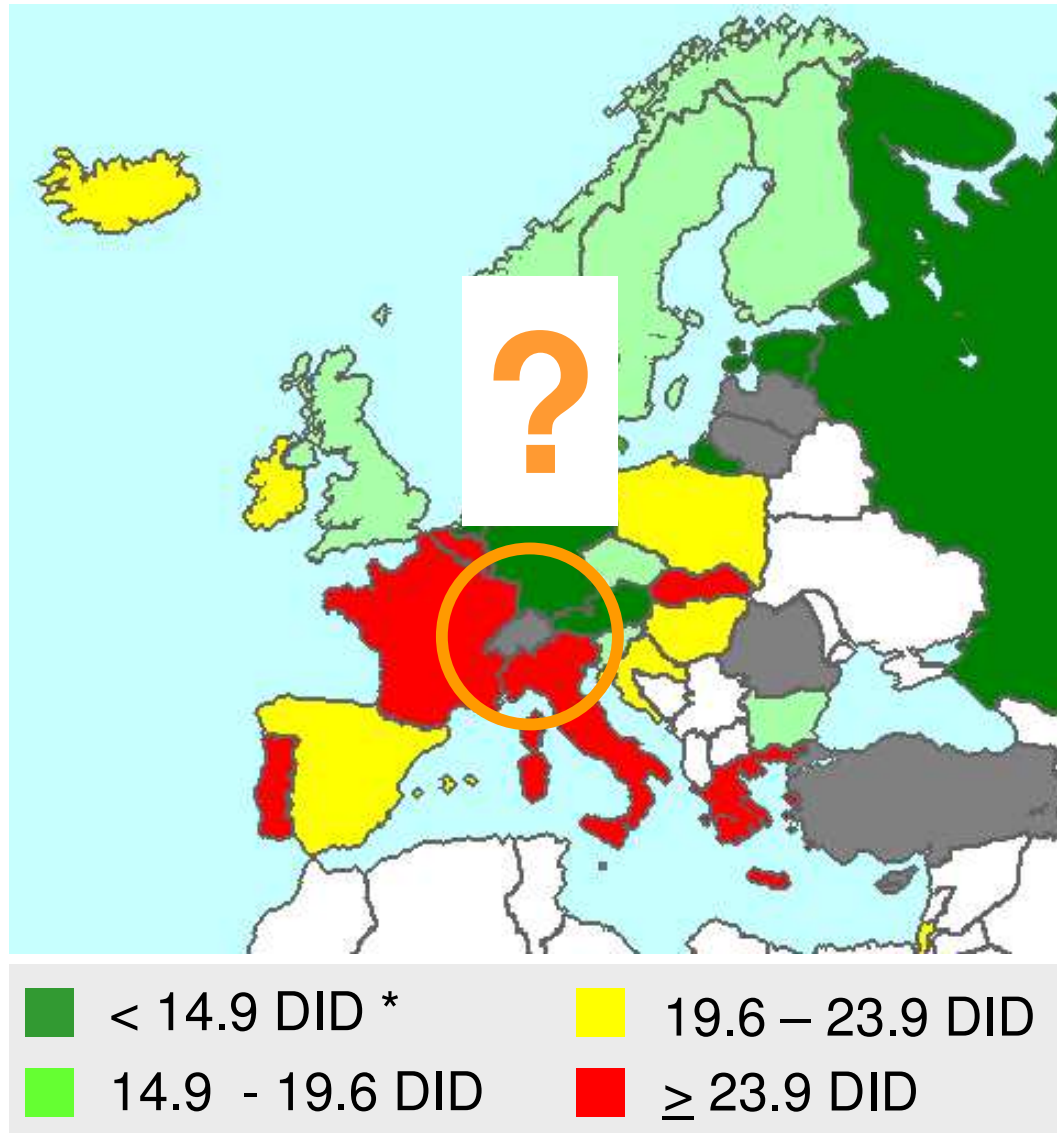
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Rationale for monitoring

- To understand the main determinants of bacterial resistance
- To predict the evolution of resistance
- To choose interventions fostering rational use
- To measure the impact of interventions

Example of monitoring in Europe



Only continuous source in CH:
→ **IMS Health**

- Private data provider
- Market-oriented
- Manufacturers' sales data

* Defined daily doses per 1'000 inhabitants per day

Study goals

- To implement a sentinel monitoring of antibiotic use in Switzerland based on pharmacy delivery data:
 - Hospitals: Swiss Society of Hospital Pharmacists (GSASA)
 - Community: Swiss Society of Pharmacists (SSPh)
- To compare sentinel data with Swiss market data (IMS):
 - Validity
 - Added value: density of antibiotic use
 - adjustment to covariates (*e.g. to hospital size*)
 - ward-specific consumption in hospitals
 - ...

Methods

- Survey of pharmacists in Swiss acute care public hospitals
- Collection of 2004 – 2005 data

	Pharmacists (sentinel)	IMS
- Consumption of systemic antibiotics	X	X
<i>Ward in some hospitals (ICU or not)</i>	X	
- Hospital occupancy	X	
- Data management
 - Aggregation per substance (ATC code) and administration route
 - Conversion into Defined Daily Doses (approx. number of treatment days) *

* WHO, www.whooc.no/atcddd/

Hospital consumption

Survey of hospital pharmacists

Heads of hospital pharmacy contacted: 37

↓
Respondents: 33 (89%)

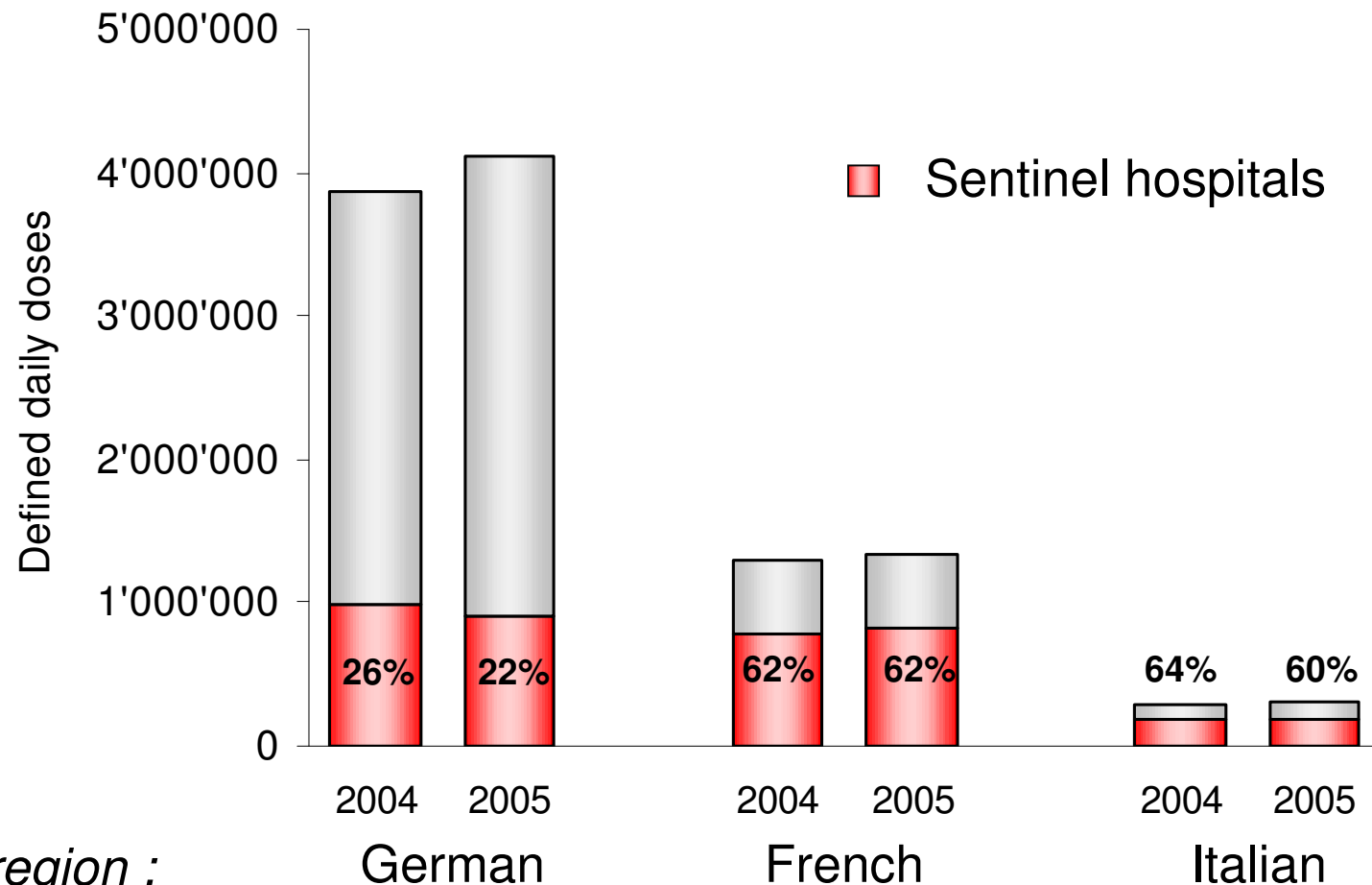
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Participants: 28 (76%)

Number of hospitals represented: 50*

* ~ 49% of all beds in Swiss public acute care hospitals
(~41% of public + private)

Sentinel vs IMS

Global consumption



By linguistic region :

Beds in sentinel hospitals
(% of all public beds)

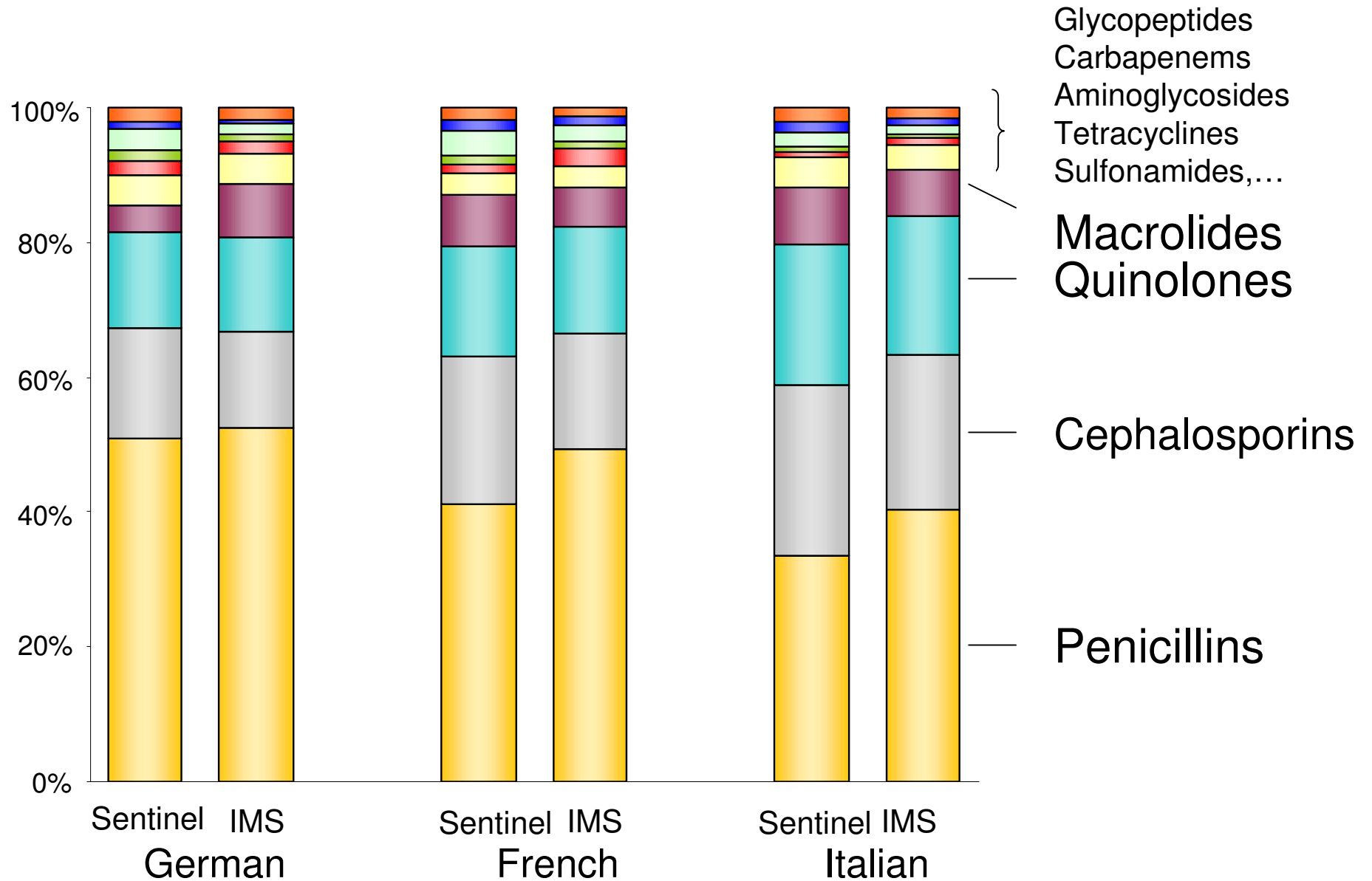
37%

81%

54%

Sentinel vs IMS

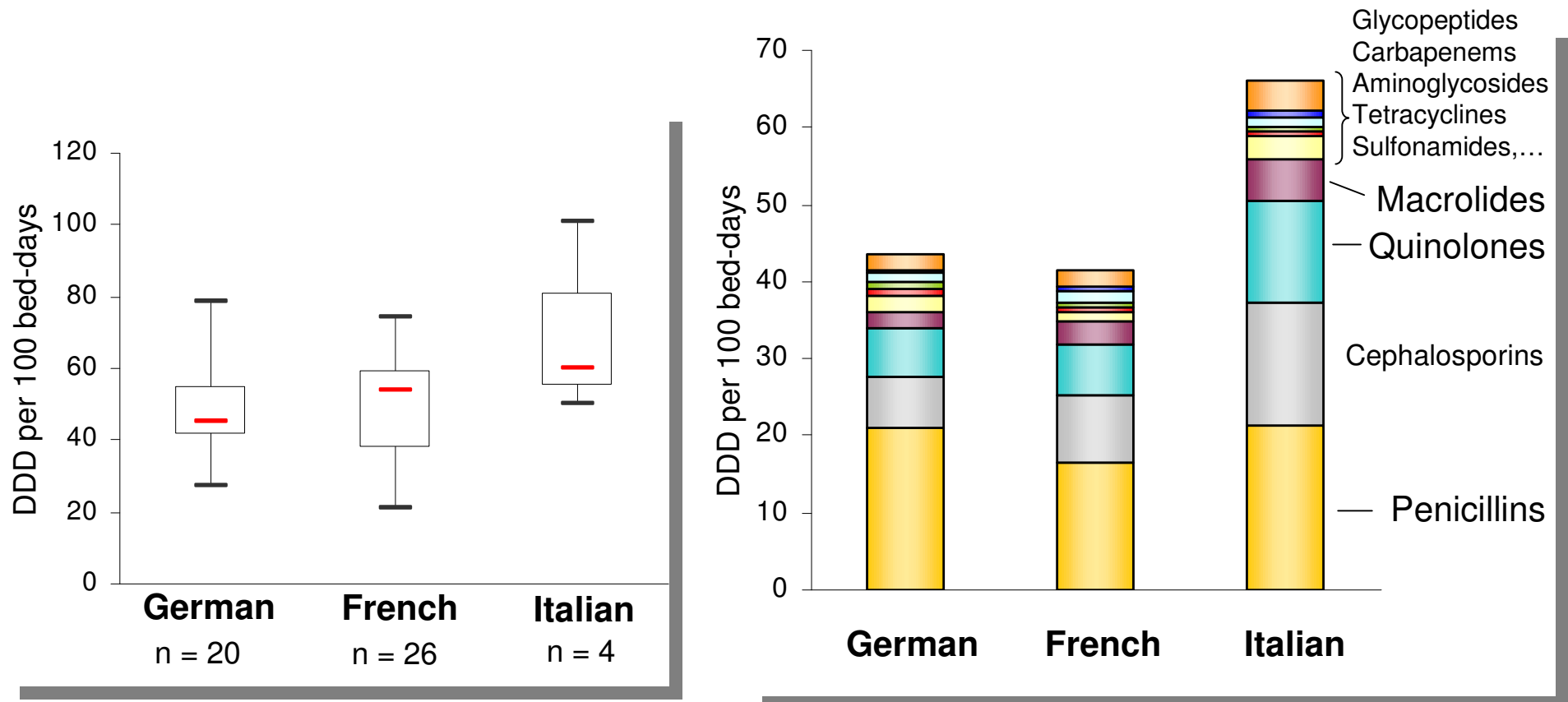
Distribution of antibiotic families



Sentinel monitoring

Example of added value

Density of antibiotic use per linguistic region

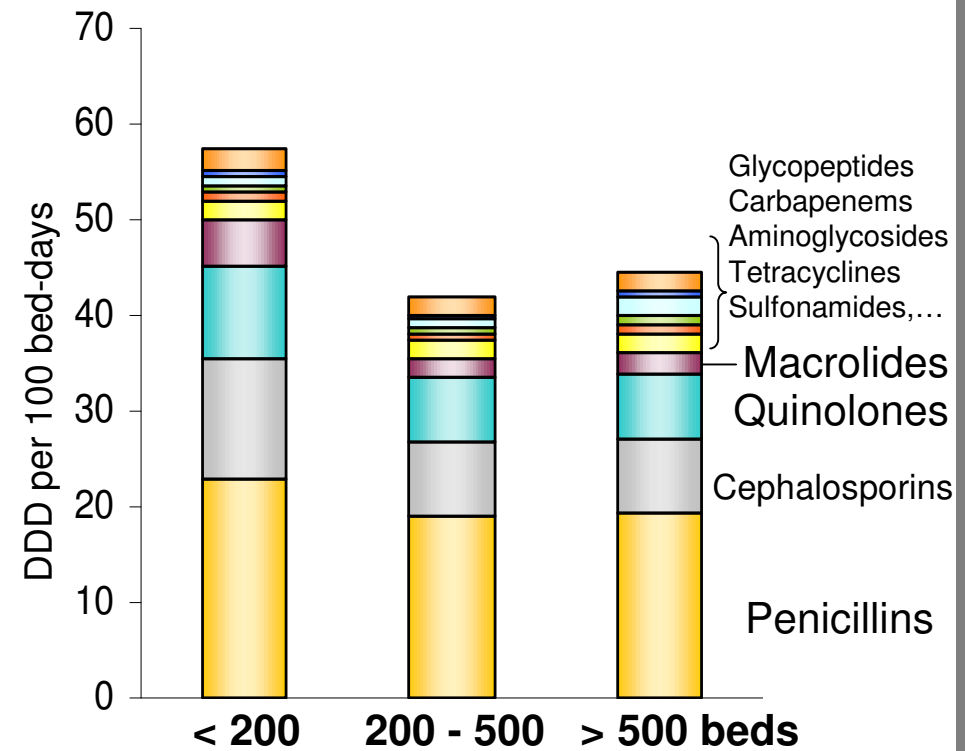
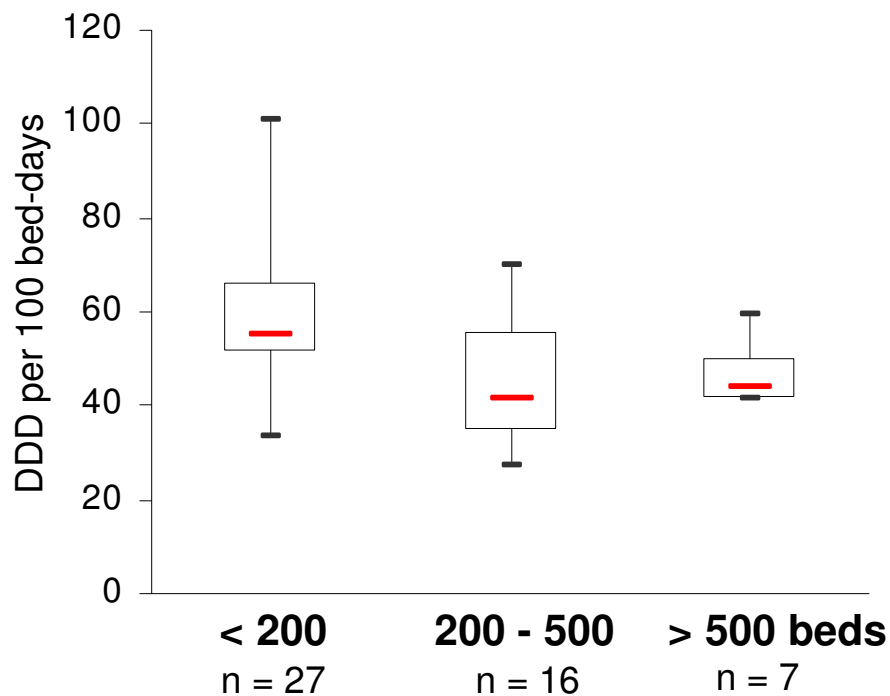


Global consumption
($p = 0.02$)

Distribution of
antibiotic families

Example of added value II

Density of antibiotic use per hospital size

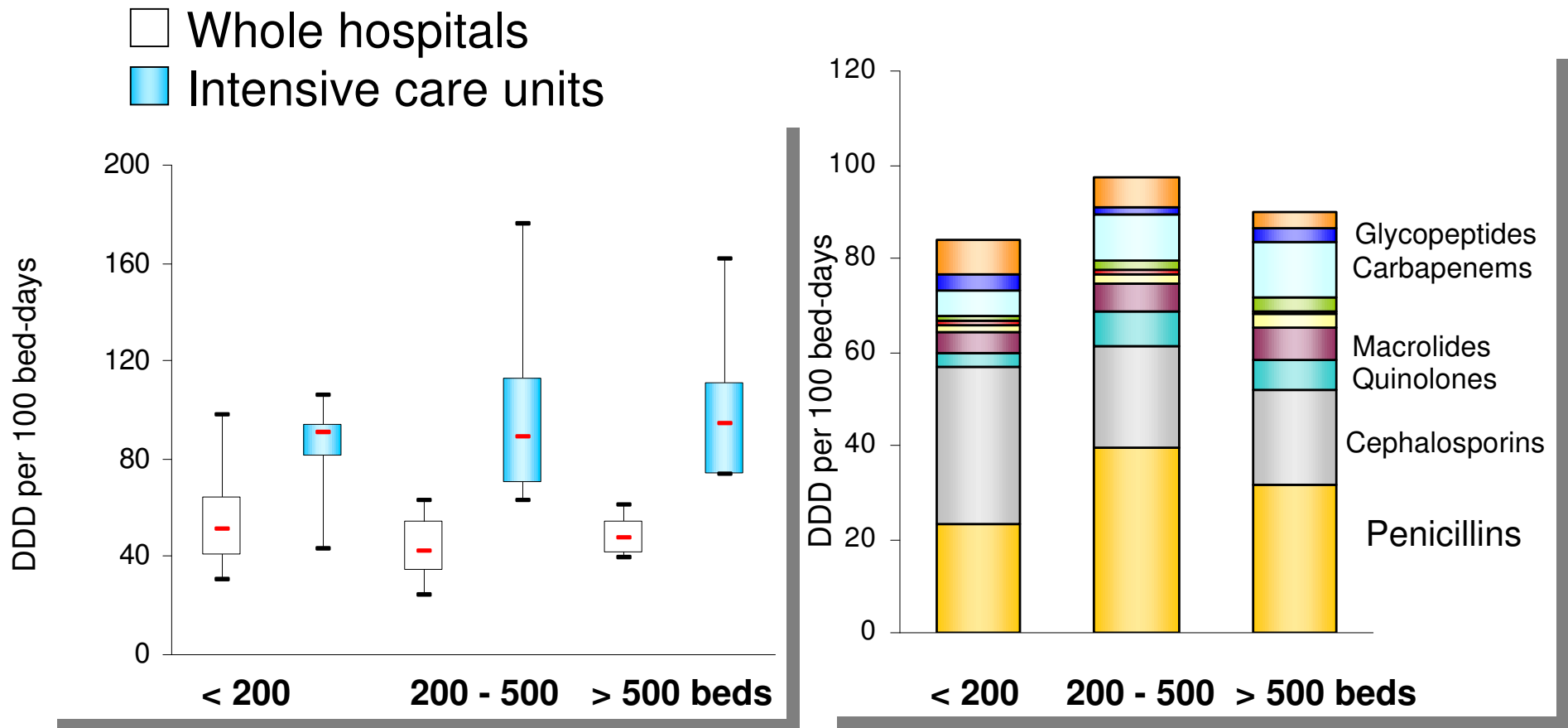


Global consumption
($p = 0.05$)

Distribution of
antibiotic families

Example of added value III

Density of antibiotic use in adult intensive care units



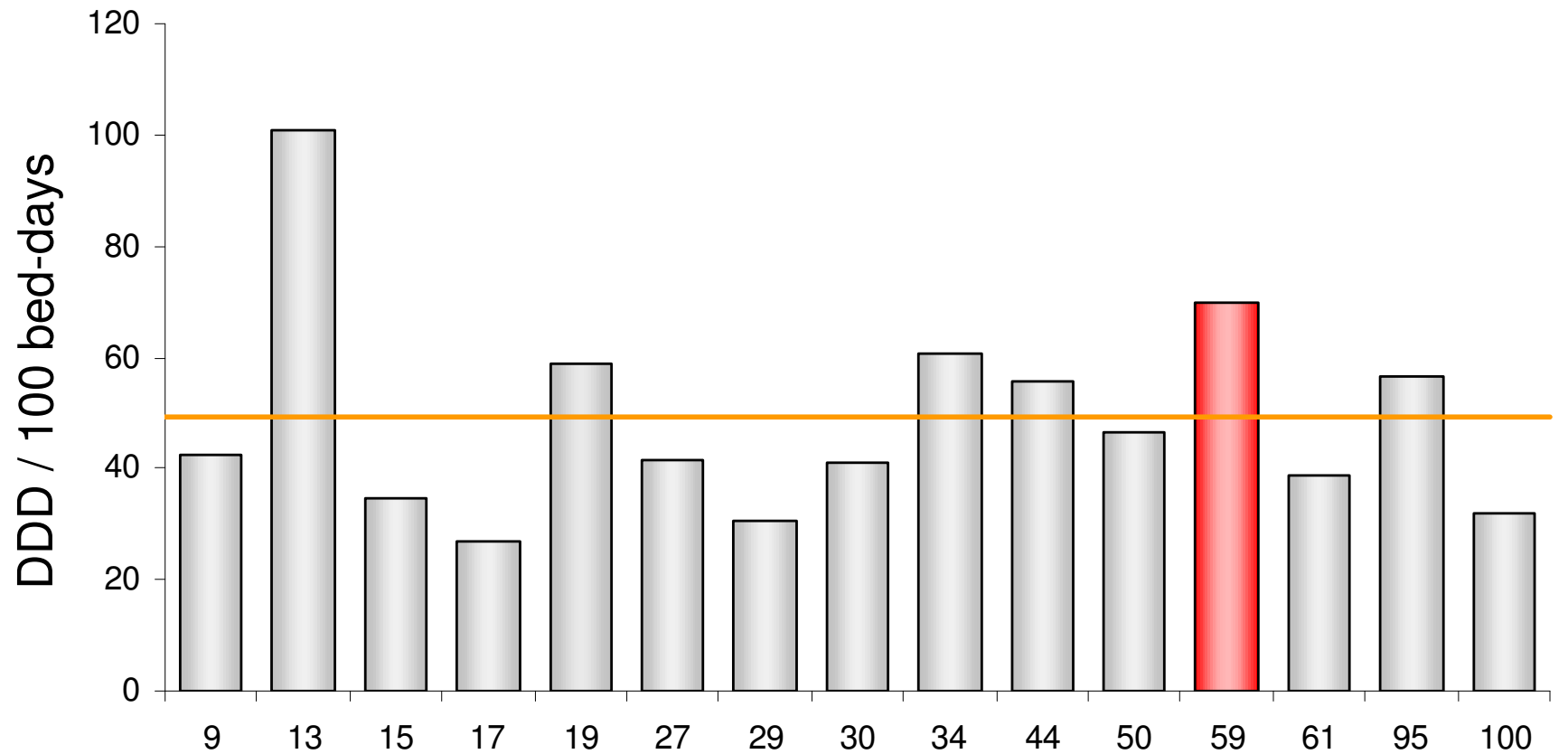
Global consumption
($p < 0.001$)

Distribution of
antibiotic families

Sentinel monitoring

Example of benchmarking

Density of total antibiotic use per hospital

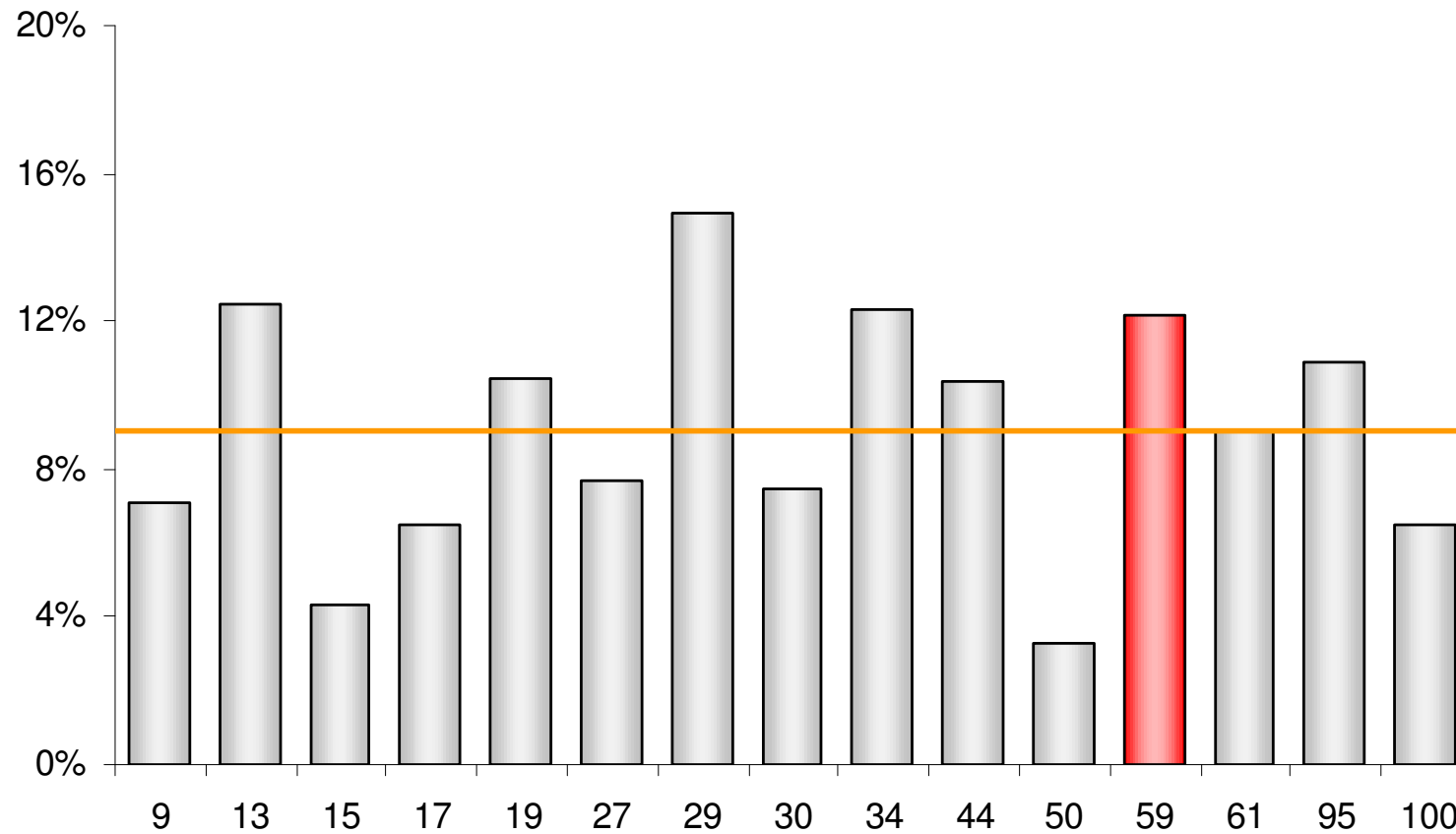


medium-size hospitals

Sentinel monitoring

Example of benchmarking II

Proportion of very broad spectrum antibiotic use



medium-size hospitals

Limitations

- DDD value
 - based on adult dosage
 - based on average dose for moderate infections
- Bed-days
 - depend on length of stay
 - alternative : number of admissions

Limitations II

	Sentinel pharmacists	IMS
• Expensive		X
• Distant from clinical practice		X
• No adjustment to hospital activity		X
• Representativity	X	
• No adjustment to case-mix	(x)	X

Conclusion

A sentinel monitoring based on hospital pharmacy delivery data

- Seems to be feasible
- Provides access to in-depth analyses
- Shows the patterns of hospital antibiotic use in Switzerland
- Allows to benchmark the use of similar-size hospitals

Future prospects

- The monitoring is going on
- Enhancement of the representativity
- Correlation between antibiotic use and resistance (SEARCH project)
- Investigation of determinants of use
- Participation to international projects : e.g. ESAC

Thanks