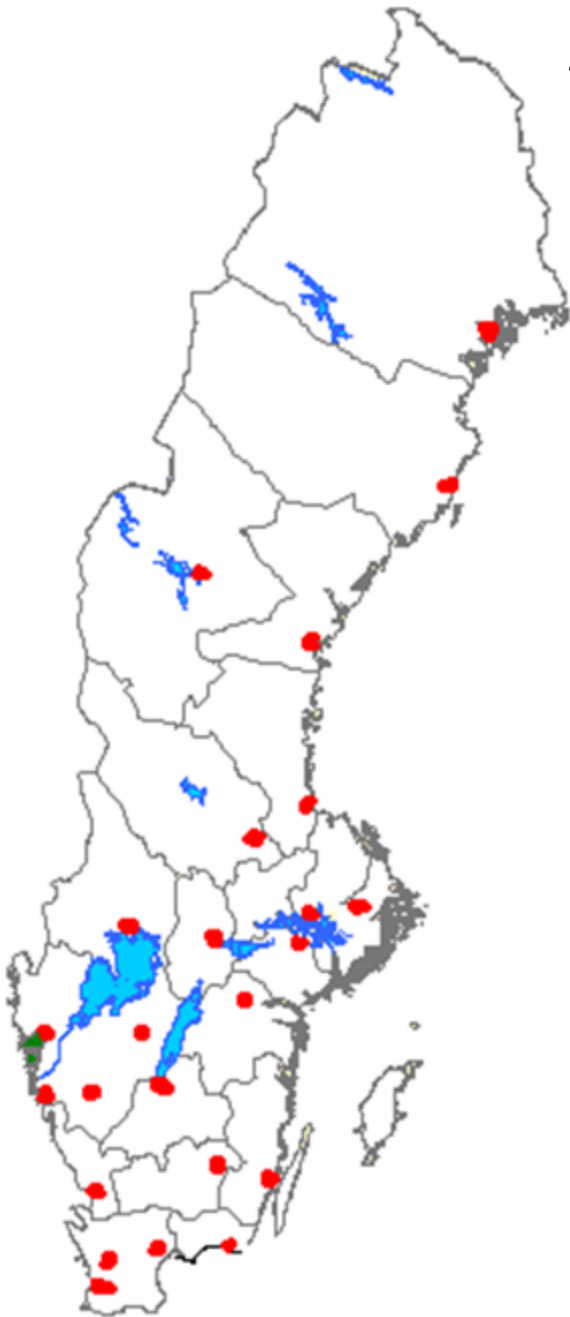


# Swedish strategies to prevent AMR in the hospital setting

[johan.struwe@smi.se](mailto:johan.struwe@smi.se)

The Swedish Institute for Infectious Disease Control

# 21 independent regions/ counties



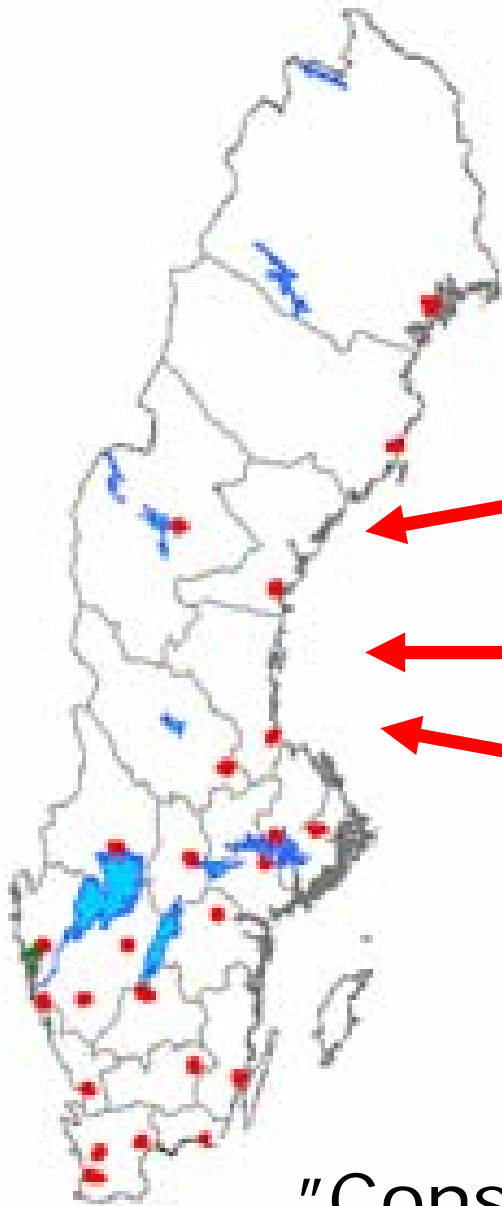
- Clin microbiology
- Infection control
- Clinic for infectious diseases
- Mandatory drug committée
- County medical officer

”Strama”-group



Local level

National level



National Board  
of Health and  
Welfare  
(regulatory)

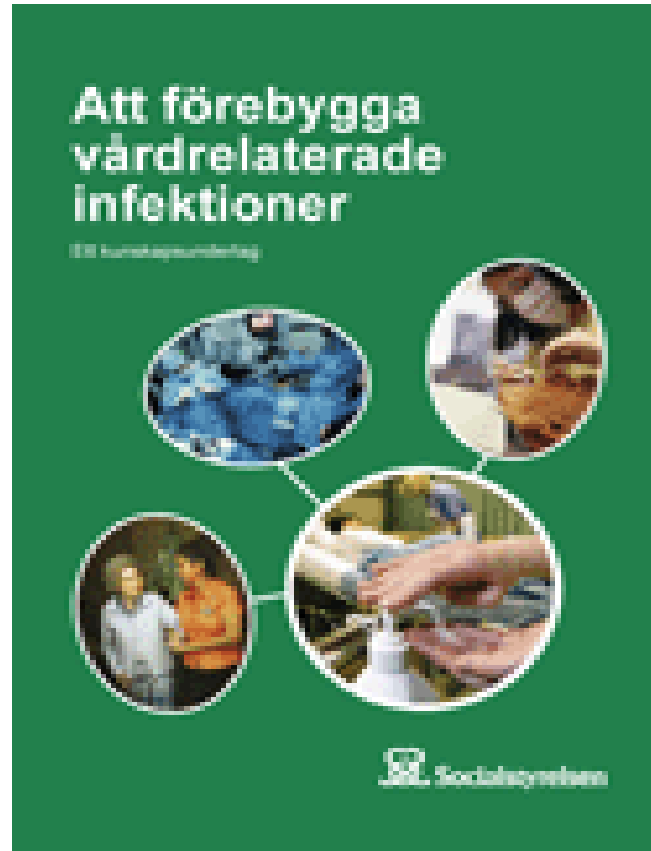
Swedish Institute  
for Infectious  
Disease Control  
(expert)

Strama  
-Strategic  
Programme  
Against  
Antimicrobial  
Resistance

"Consensus solutions" - credibility

# 1. Infection control

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Hand-book, evidence-based measures to organize infection control and prevent HCAI, 1st edition 1959

# Evidently...

Regulation on basal hygiene 2007:

 Socialstyrelsen

SOSFS 2007:19 (M)  
Föreskrifter

Basal hygien inom  
hälso- och sjukvården m.m.

*Socialstyrelsens  
författningssamling*



# "SALAR"- The Swedish Association of Local Authorities and Regions Patient safety campaign since 2007



Förebygg vårdrelaterade  
urinvägsinfektioner



NATIONELL SATSNING FÖR  
ÖKAD PATIENTSÄKERHET



Förebygg infektioner vid  
centrala venösa infarter



NATIONELL SATSNING FÖR  
ÖKAD PATIENTSÄKERHET

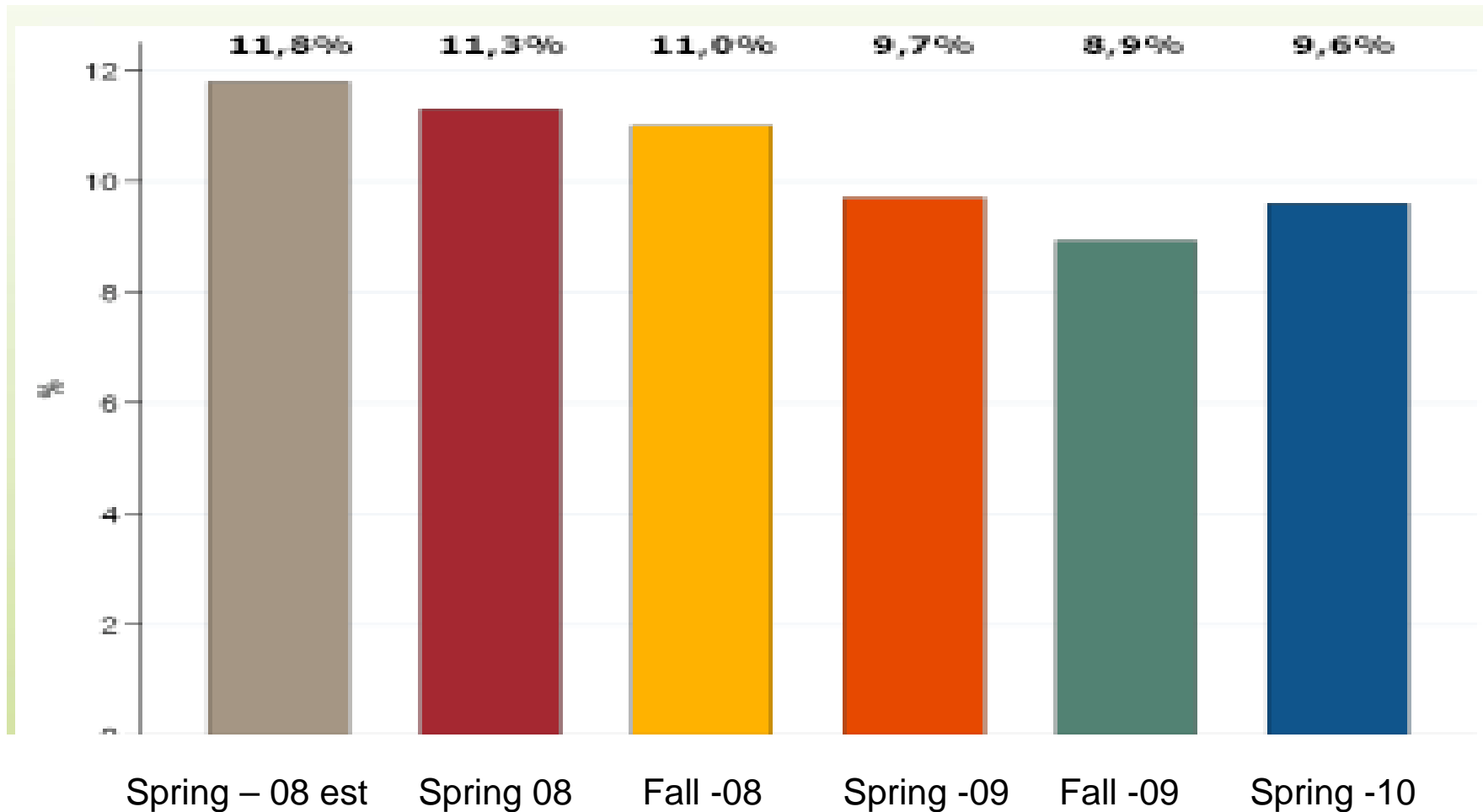


Förebygg  
postoperativa sårinfektioner



NATIONELL SATSNING FÖR  
ÖKAD PATIENTSÄKERHET

# Prevalence of HCAI in hospitalised patients



## 2. Clinical microbiology

Participation in EARSS:  
20/28 labs covering 75 % of population

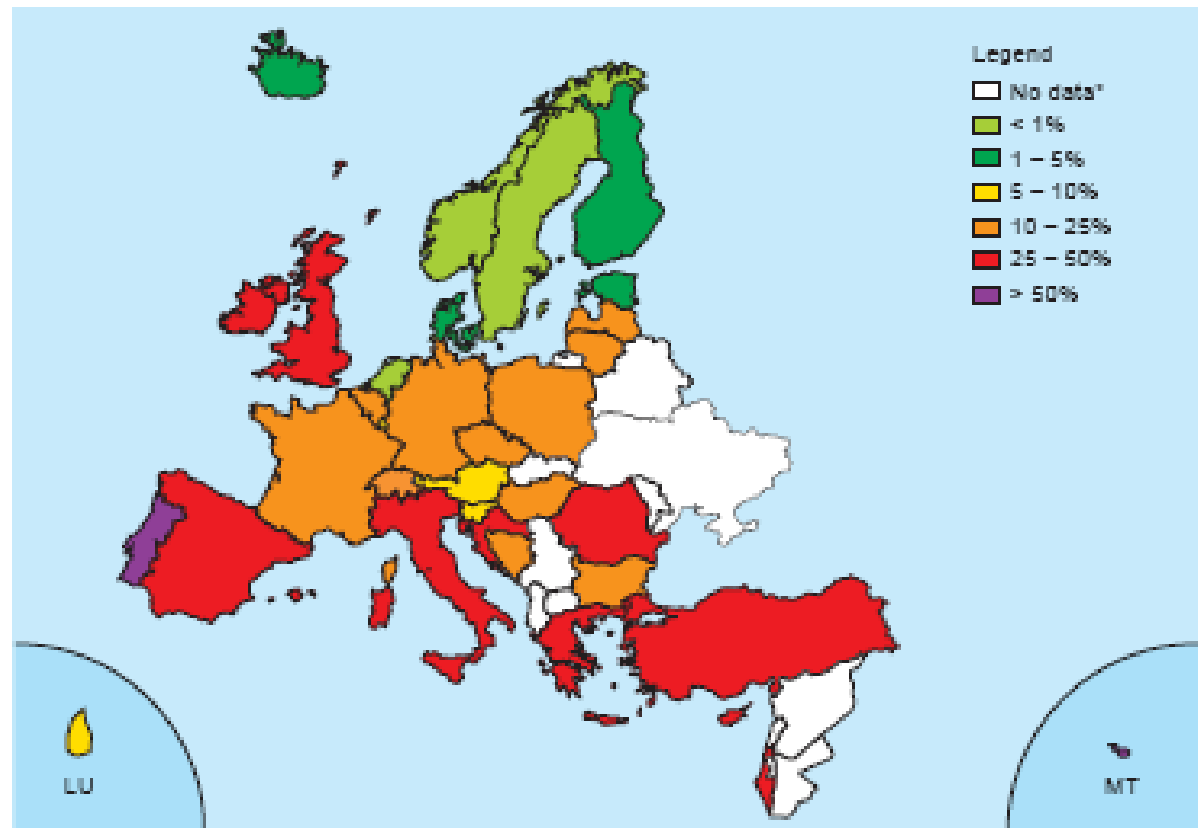


Figure 5.8. *Staphylococcus aureus*: proportion of invasive isolates resistant to oxacillin (MRSA) in 2008.

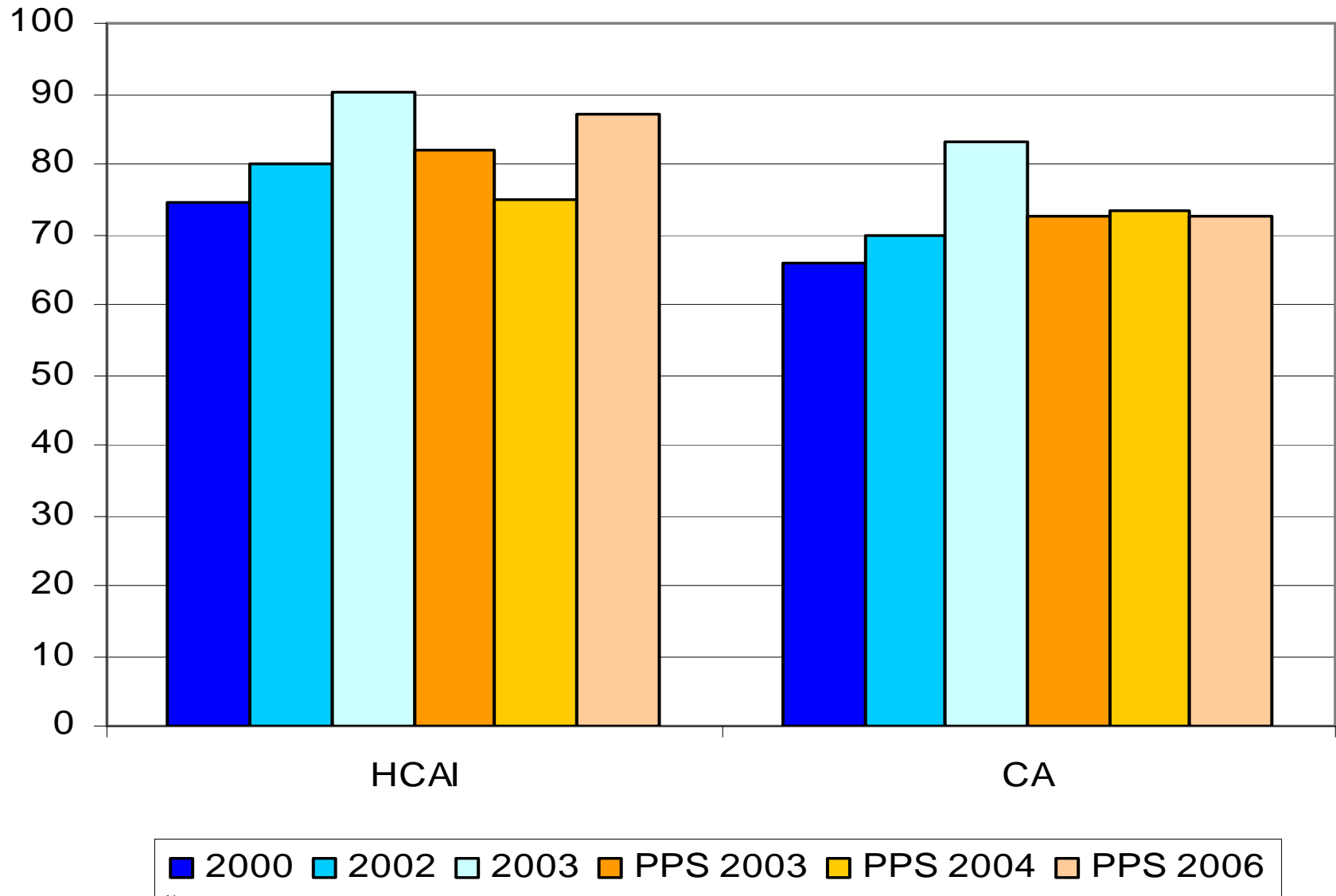
\* These countries did not report any data or reported less than 10 isolates.





# Culture before treatment ?

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# 3. Sales and marketing issues

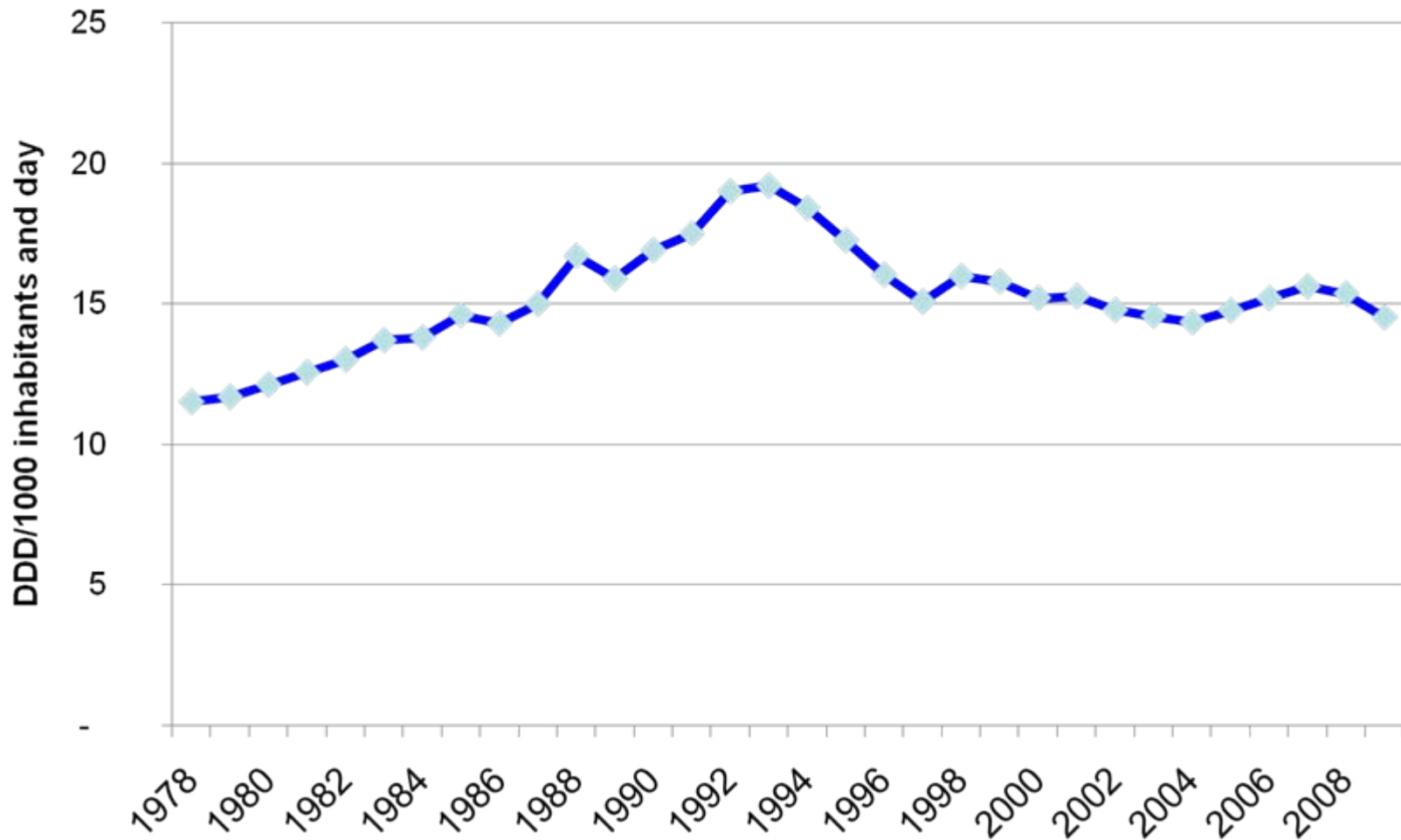
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- Antibiotics only available on prescription
- Mandatory, independent drug committees
- Independent treatment guidelines  
(MPA/Strama, infectious diseases society)
- Marketing and interaction doctors/ industry is regulated



# 4. Surveillance of antibiotic consumption/ use

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# Benchmarking antibiotic use

## example Strama-ICU

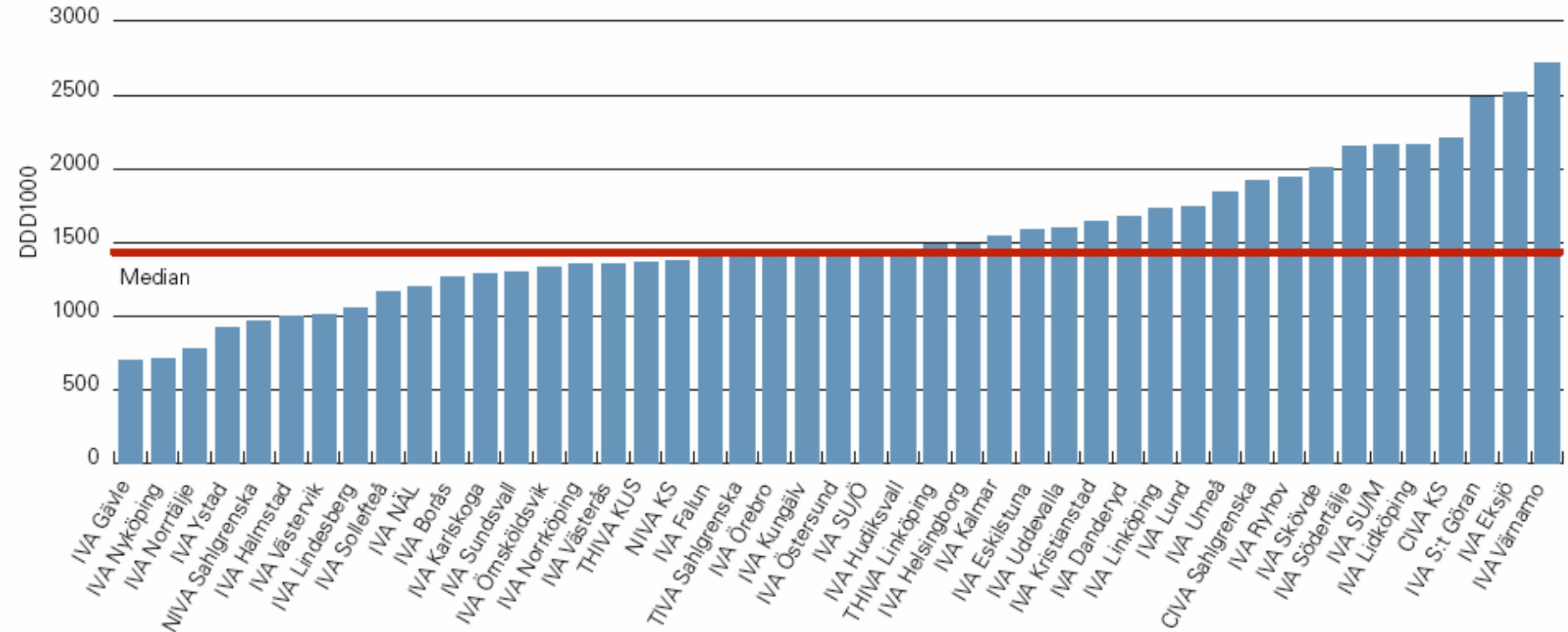
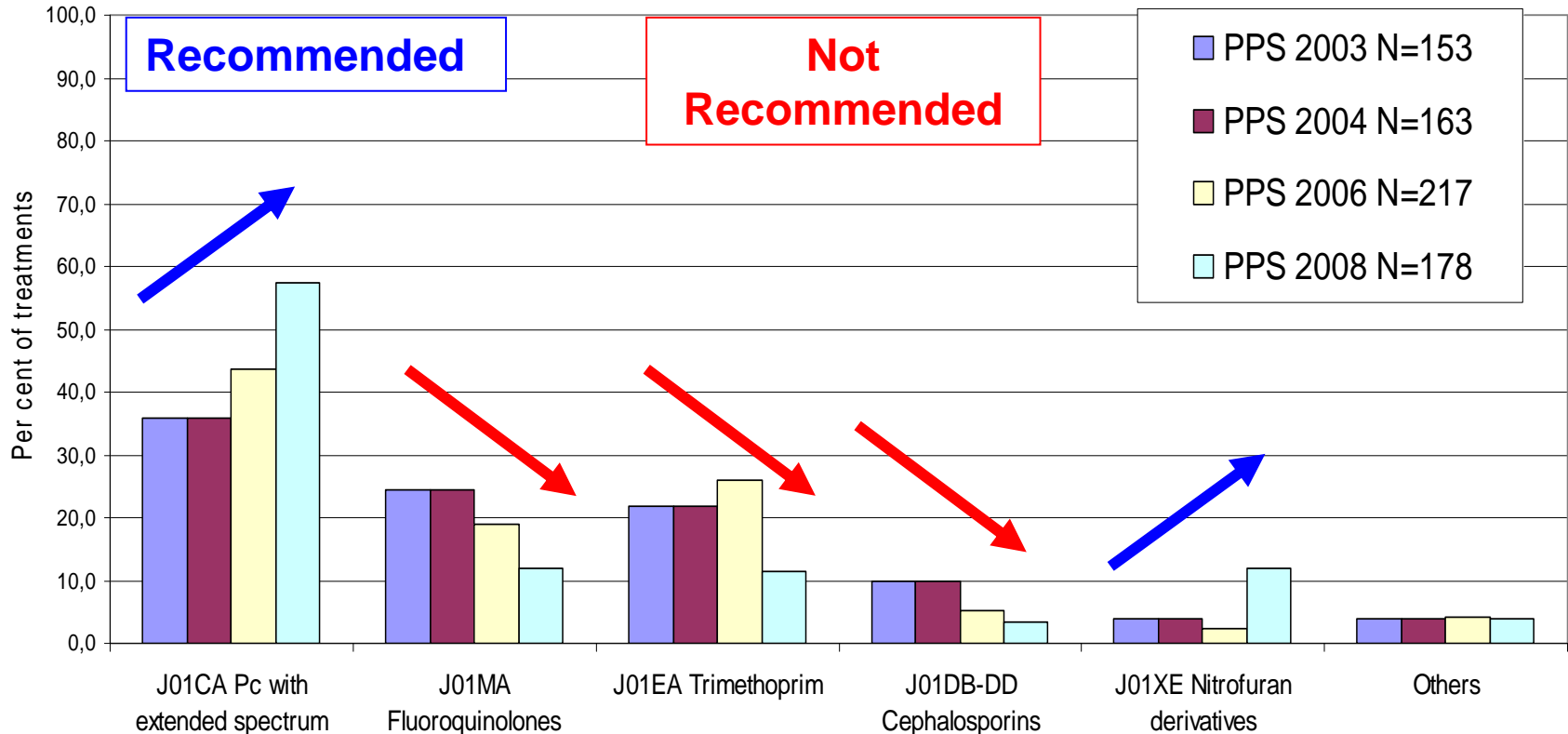


FIGURE 5.1.2. Median antibiotic consumption (DDD<sub>1000</sub>) for individual ICUs during 2008.

# Strama's nation-wide point prevalence surveys of antibiotic use in hospitals

## Example treatment of community acquired cystitis in adult women

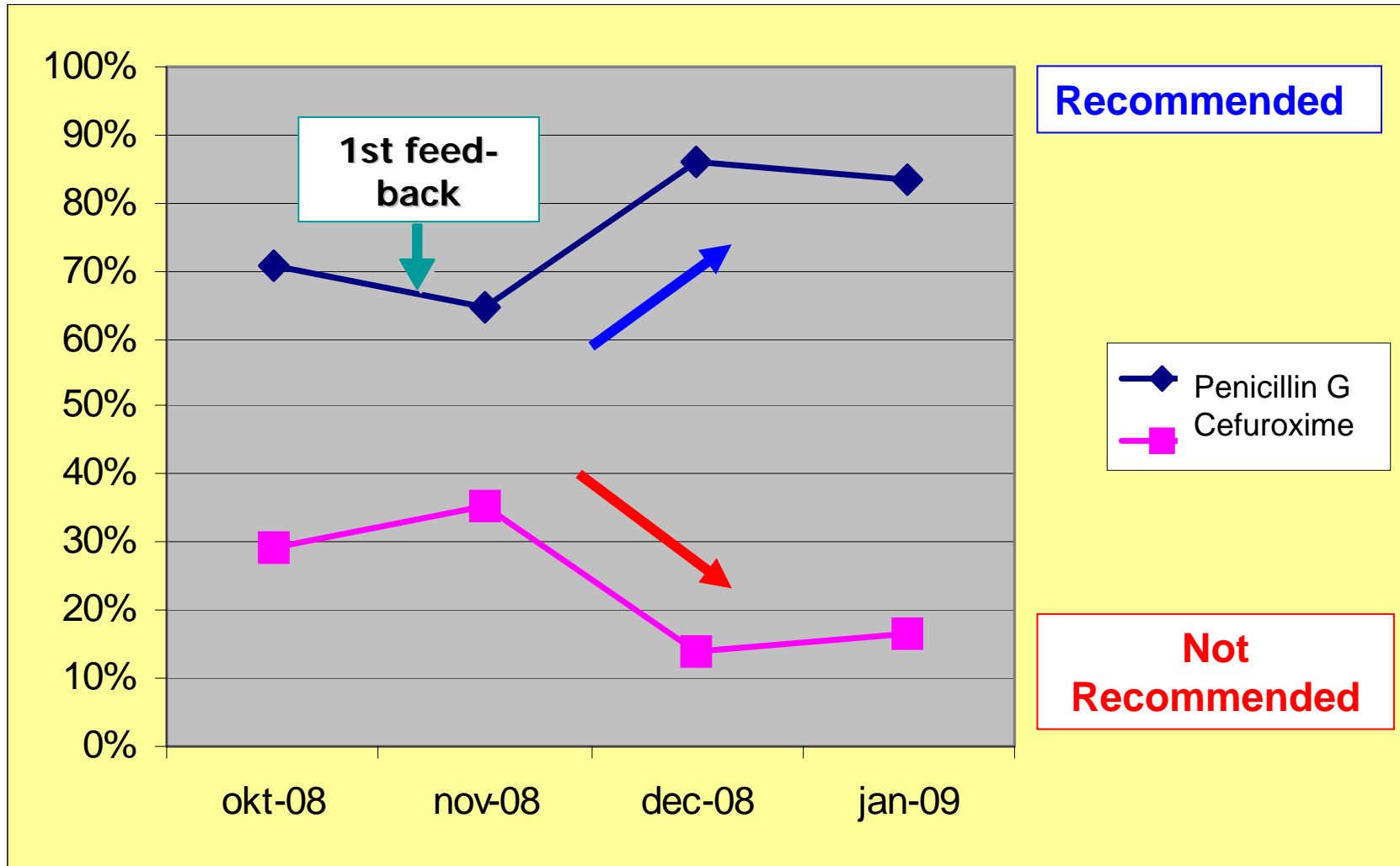


# 5. Feed-back of local data and antibiotic use



# IT-supported feed-back, Borås hospital

example community acquired pneumonia, penicillin recommended



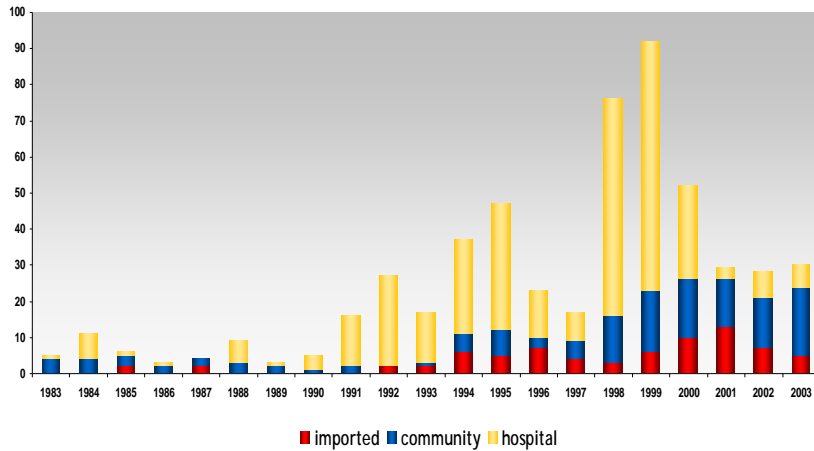
**Recommended**

—◆— Penicillin G  
—■— Cefuroxime

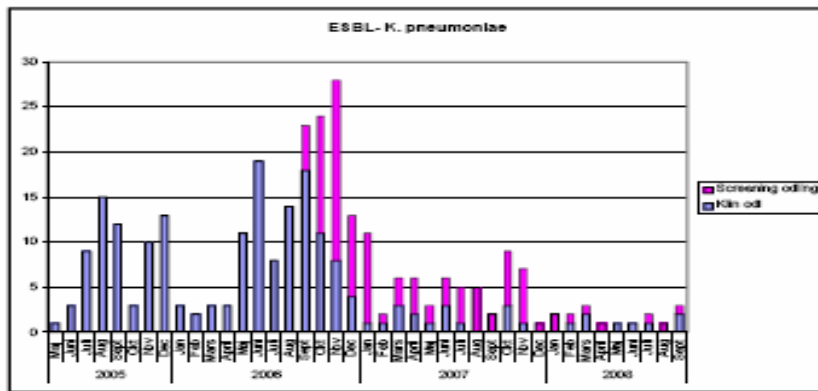
**Not  
Recommended**

# 6. Sharing lessons from outbreak management

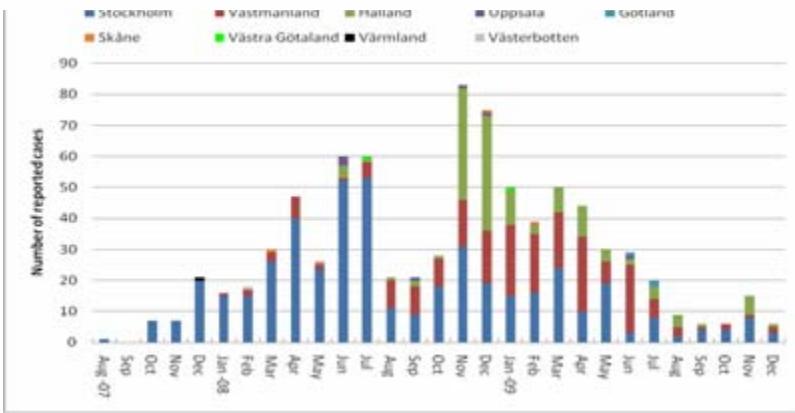
MRSA in Gothenburg 1991-2003



Klebsiella producing ESBL in Uppsala 2005-2008



Vancomycinresistant enterococci -nationwide 2007-ongoing





# Success factors for outbreak control

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Included in communicable diseases act

Task force, including the hospital manager

Casefinding through contact tracing and screening

Laboratory capacity including typing

Compliance to basal hygiene

Isolation-cohort treatment at I.D. clinics whenever possible

Restrictive (ecologic) antibiotic use

Infection control "contracts" with LTCF/ nursing homes



# ESBL resistance in enteric bacteria

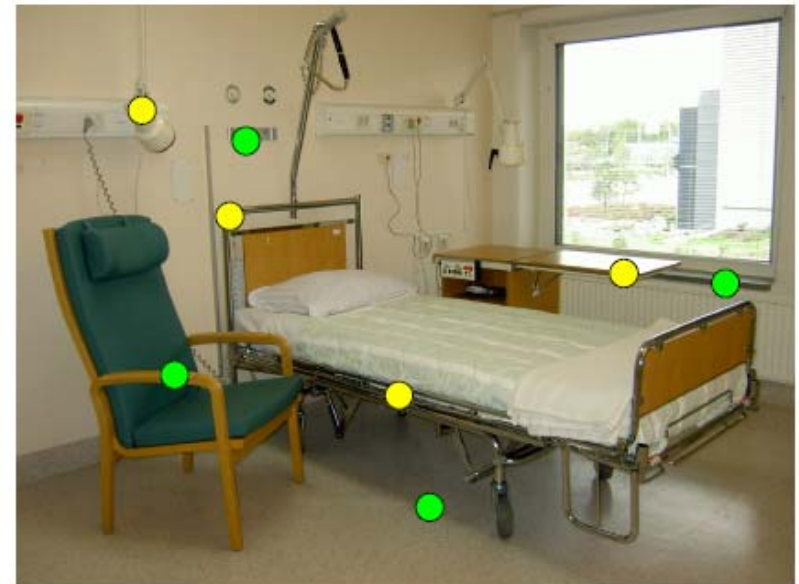
PROPOSED ACTION PLAN – NOVEMBER 2007



# Vankomycinresistenta enterokocker – VRE

VERSION 30 april 2010

FÖRSLAG TILL ÅTGÄRDSPROGRAM  
REFERENSMETODIK FÖR DIAGNOSTIK AV VRE  
BAKGRUNSDOKUMENT  
2010



**Draft**

# 7. Governmental support



Proposed strategy against AMR 2000

## Strategy to prevent antibiotic resistance and healthcare-associated infections



FACT SHEET

Ministry of Health and Social Affairs

No. 8 • May 2006

In order to be able to continue to use antibiotics as effective medicines for treating bacterial infections in humans and animals, coordinated efforts are needed to prevent antibiotic resistance. On 1 December 2005, therefore, the Government approved the Bill Strategy for coordinated efforts to prevent antibiotic resistance and healthcare-associated infections (Govt. Bill 2005/06:50).

The strategy emphasises that municipalities and county councils have particularly important roles in work to promote good standards of hygiene and a rational use of antibiotics. To support their efforts, the Government wishes to clarify the requirements for good hygienic standards in health, medical and dental care.

An important part of the strategy is international cooperation. In Sweden, antibiotic resistance is not as common as in many other countries. To continue to keep the prevalence of antibiotic resistance at a low level, international cooperation is needed to convince more countries to work towards safer use of antibiotics. The fact that people, animals and foodstuffs are now crossing national borders more than ever before also increases the risk of resistant bacteria spreading throughout the world. Because of this, antibiotic resistance is a global problem for public health.

### Use of antibiotics must be possible also in the future

The purpose of the Government's strategy to prevent antibiotic resistance and healthcare-associated infections is to maintain the possibility of using antibiotics effectively to treat bacterial infections in humans and animals. The strategy is part of the Government's efforts to achieve the overall Swedish objective of communicable disease control: to provide for the population's need of protection against the spread of communicable diseases. Good communicable disease control is extremely important for public health.

Antibiotic resistance development can be prevented by limiting the use of antimicrobial agents and by preventing the spread of micro-organisms resistant to antimicrobial agents. Limiting the use of antibiotics is best done by avoiding all unnecessary and ineffective use. Preventing the spread of resistant bacteria is best done by ensuring good hygienic practice where many people (hospitals, institutions, day-care centres etc) or animals (animal husbandry) gather. The risk of transmission is higher in the health and medical care services than in many other environments, since people are in close contact with each other there. Hospital environments are also places in which considerable amounts of antibiotics are used, which increases the risk of resistant bacteria developing and spreading. The risk of being infected by antibiotic-resistant bacteria is thus greater for people working and receiving treatment in such environments.

#### About antibiotic resistance

Antibiotics are medicines against bacterial infections. They belong to the group of antimicrobial medicines.

Antimicrobial medicines can be produced naturally – from bacteria, fungi or plants – and artificially. These medicines kill or inhibit the growth of microorganisms such as bacteria, viruses, fungi and parasites.

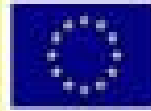
Antibiotic resistance means that bacteria have developed mechanisms which prevent or reduce the effect of antibiotic substances. The prevalence of disease-inducing bacteria and other microorganisms that are resistant to antibiotic substances has steadily increased since antibiotics began to be used to treat bacterial infections at the end of the 1930s.

How does resistance develop? In every strain of bacteria, there are always individuals whose genetic makeup has mutated. Some mutations lead to such a change in genetic makeup that resistance against concentrations of antibiotics that would normally kill these bacteria is built up. In environments where a lot of antibiotics are used, only resistant bacteria survive, while bacteria that are sensitive die. The mechanisms acquired by the resistant bacteria are governed by resistance genes. These genes can spread between bacteria. These factors increase the prevalence of antibiotic resistance.

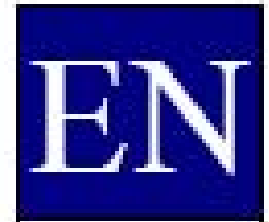
#### What is meant by healthcare-associated infections?

Healthcare-associated infections are conditions that occur in connection with medical examinations, care or treatment in the health and medical services or dental services.

As in many other countries, health and medical care in Sweden is organised in such a manner that patients may have several contacts with different clinics and health care personnel. This increases the risk of micro-organisms being spread between patients and the staff caring for them. The spread of antibiotic-resistant bacteria has very serious consequences and must therefore be prevented.



**COUNCIL OF  
THE EUROPEAN UNION**



## **Council Conclusions on innovative incentives for effective antibiotics**

*2980th EMPLOYMENT, SOCIAL POLICY, HEALTH AND  
CONSUMER AFFAIRS Council meeting*

*Brussels, 1 December 2009*

