

# Does nasal colonization with Methicillin-resistant *Staphylococcus aureus* (MRSA) in pig farmers persist after holidays from pig exposure?

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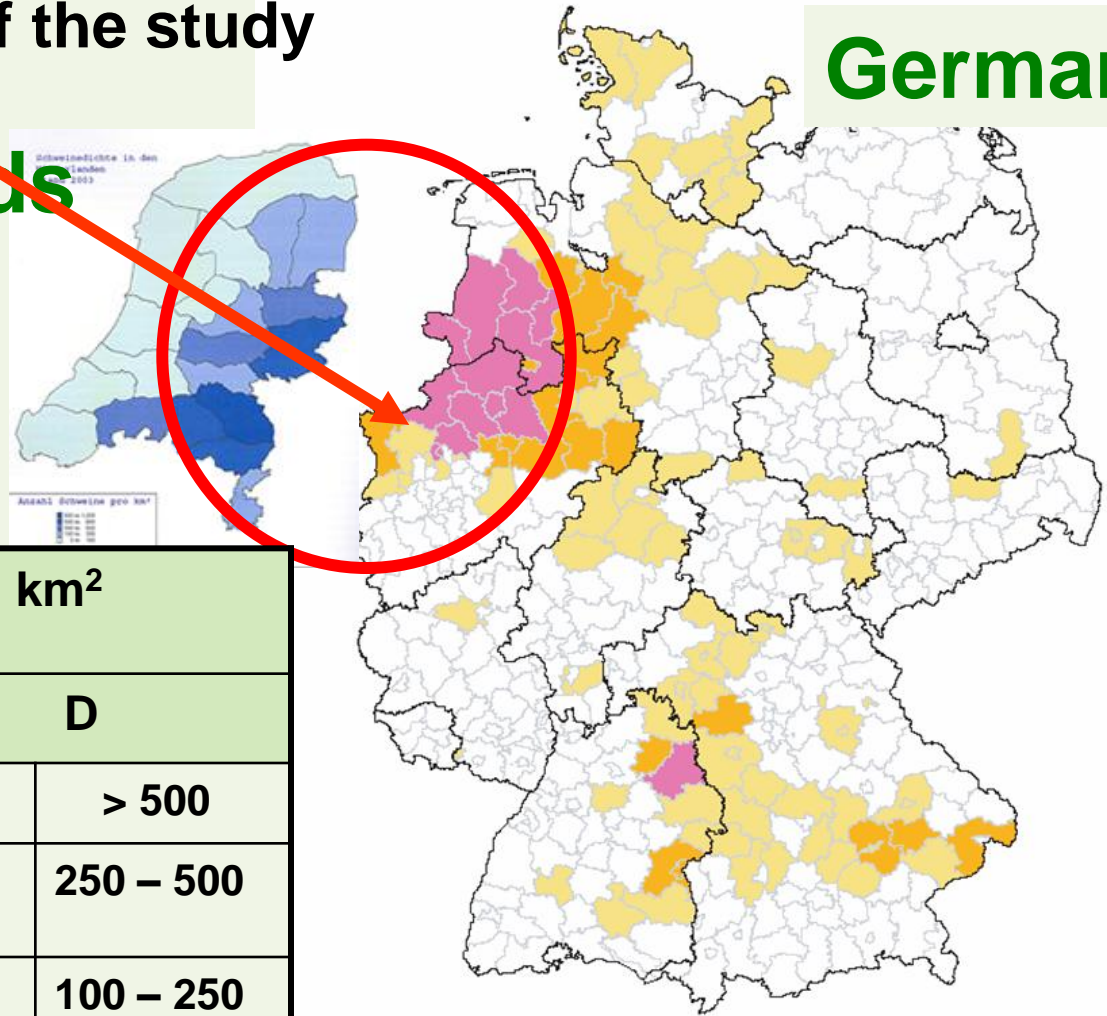


# Pig density in the border region

Region of the study

Germany

The Netherlands



Pigs / 100 ha or 1 km <sup>2</sup>			
NL		D	
> 500			> 500
300 – 500			250 – 500
100 – 300			100 – 250
0 – 100			0 – 100

# Introduction

- **MRSA has emerged in pigs:**

CC 398 Livestock-associated (LA)-MRSA (PVL negative)

Survey in 2007: 70% positive (40 farms)

EFSA baseline study: D 43.5% positive breeding holdings

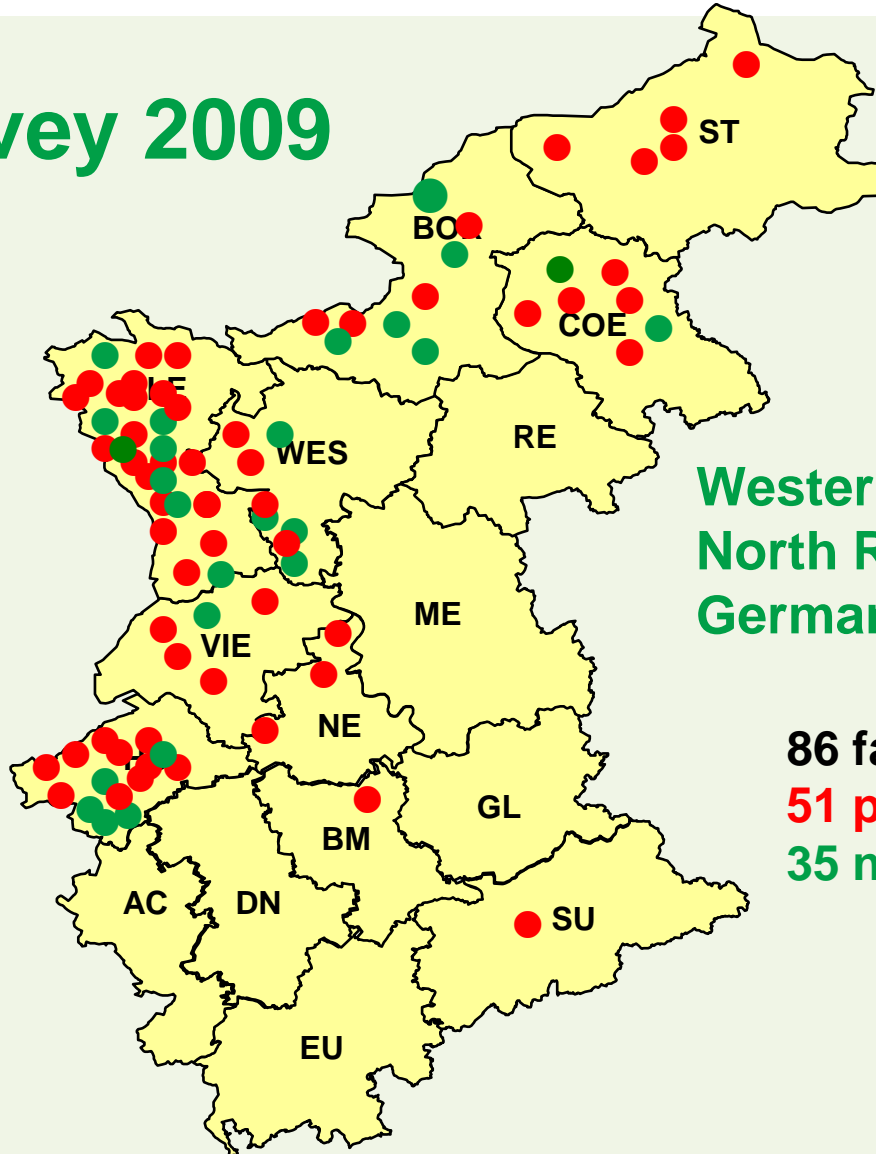
CC 398 is transmitted to farmers

86% farmers from positive units are positive

- **In 2009: During farm visits of animal health services**

**Five dust samples (sterile wipes sampling 50cm<sup>2</sup>)**

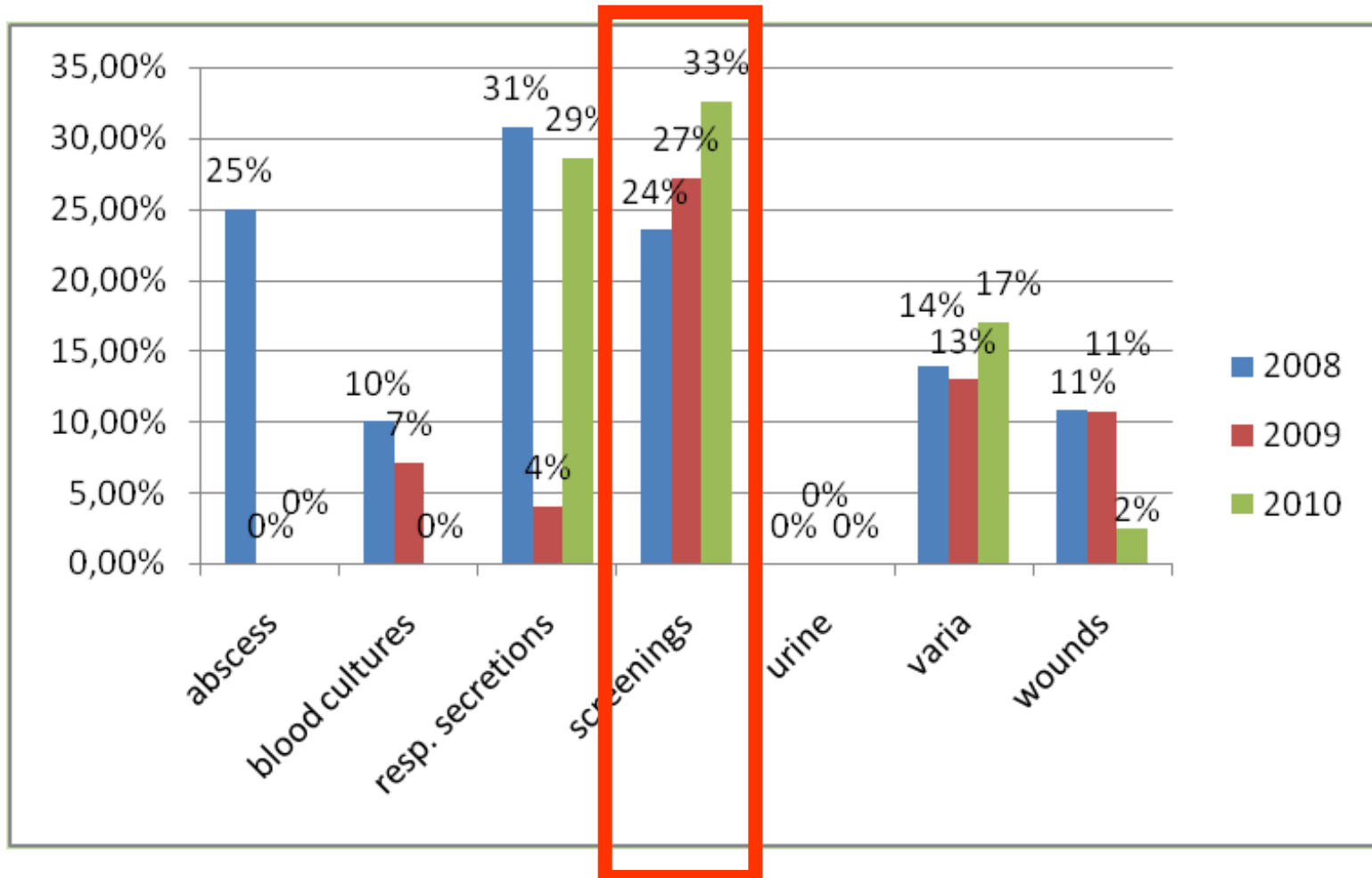
# Survey 2009



Western part of  
North Rhine-Westphalia,  
Germany

86 farms (5 dust samples)  
51 positive 59,3 %  
35 negative 40,7 %

# Import of LA-MRSA in human hospitals



# Investigations

## Goal:

**Assess risk for farmers with  
direct and regular contact to pigs:**

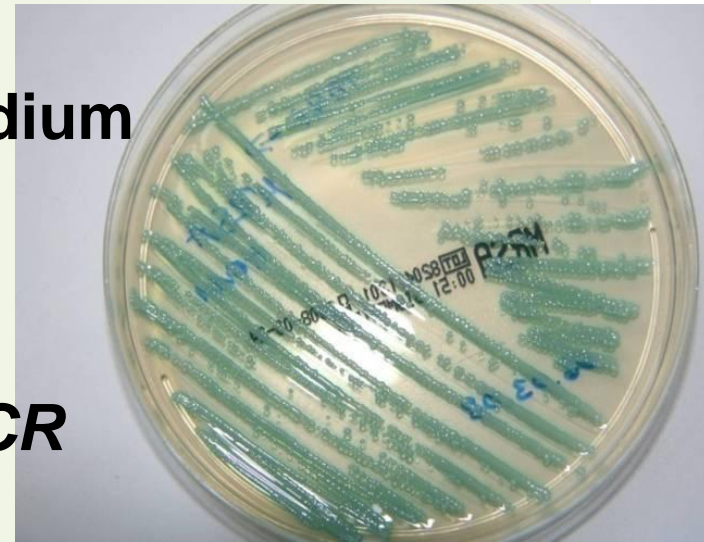
**Persistent colonization or contamination?**

## Testing of 35 farmers before and after their holidays:

- **Nasal swabs 3 days before holidays**
- **Nasal swabs 3 days after holidays**
- **Swabs were taken in the morning before pig contact**
- **Sent by mail to the lab**

## Methods

- 24-h double enrichment culture in selective broth
- Culture on MRSA chromatic medium
- MRSA confirmed with VITEK2 automated system and *mecA-PCR*
- The first MRSA isolates were *spa* sequence-typed
- Cluster formation was done by BURP



# Results

3 days before holidays	3 days after holidays	N = 35 farmers
+++	+++	16
+++	- - +/- +++/- + -	4
- - +/- + - +	- - +/- + -	2
++ -	- +++	1
+ - + / + - - / - - +	- - -	3
- - -	- - -	8
- - -	+++	1

# Results

- ***spa* types**

**t011 (63%), t034 (22%), t 108 (7%), t 1197 and t 1451**

- **BURP indicated that all belong to one group**

- **77% of the farmers were positive**

- **29% were negative after the holidays,**

**but only for a short time**

# Conclusions

- **The prevalence on pig farms in the Euregio is high**
- ***Spa* types t011 and t034 are still predominant**
- **All MRSA were associated with CC398**
- **Farmers are more colonized than contaminated**
- **Decolonization therapies are necessary**
- **In addition they should not have pig contact**

# Future Activities

- Education of farmers
- Web-site (FAQ's/folder)
- Reduce the colonization of humans
- The risk of nosocomial spread of CC398
- Need to reduce the prevalence in livestock
- Identification of virulence markers
- Early warning system for hypervirulent strains



# Acknowledgements




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A close-up photograph of a pig with a large, prominent pink nose and black and white patches on its face. The pig is looking over a wooden fence. A yellow speech bubble is overlaid on the right side of the image, containing the text "Any comments or questions?".

**Any comments  
or questions?**

*Thank you for your attention*