

# Practical 'One Health' work – Roles during an LA-MRSA outbreak in Norway

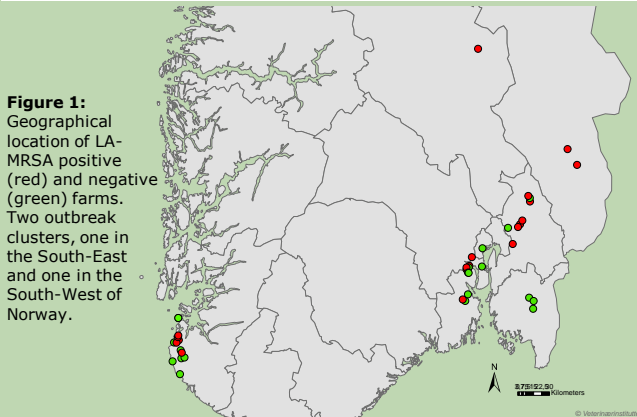
**Mari N. Espetvedt<sup>1\*</sup>, Petter Elstrøm<sup>1</sup>, Jørgen V. Bjørnholt<sup>1</sup>, Bjørn Lium<sup>2</sup>, Solfrid Åmdal<sup>3</sup>, Kjersti Wik Larssen<sup>4</sup>, Anne Jørgensen<sup>5</sup>, Marianne Sunde<sup>2</sup>**  
<sup>1</sup> Norwegian Institute of Public Health, Department of Infectious Disease Epidemiology, Oslo, Norway; <sup>2</sup> Norwegian Veterinary Institute, Oslo, Norway; <sup>3</sup> Norwegian Food Safety Authority, Sandnes, Norway; <sup>4</sup> MRSA Reference Laboratory in Norway, St Olavs Hospital, Trondheim, Norway; <sup>5</sup> Norwegian Meat and Poultry Research Centre, Oslo, Norway. \*E-mail: make@fhi.no/mariespetvedt@hotmail.com

## Introduction

The burden of Methicillin resistant *Staphylococcus Aureus* (MRSA) in the human population is low in Norway compared to the majority of other European countries. Livestock-associated MRSA (LA-MRSA) that circulates in animal populations can transfer to humans, contributing to the total antimicrobial resistance burden. Upon sampling from one abattoir, LA-MRSA was detected for the first time in pigs in Norway in 2011. In 2013 two geographical distinct outbreak clusters associated with pig farms were identified. The Norwegian pig industry is relatively small, is exposed to minimal live import, has a favourable status for infectious diseases, and on the whole, has low antimicrobial usage.

## Objective

To describe the One Health approach governing the efforts to contain the two LA-MRSA outbreaks, avoiding widespread establishment in the Norwegian pig industry. The roles of the various parts involved in the outbreak containment are described here. The work is still ongoing.



## Animal Health Officials

- The Norwegian Food Safety Authority (NFSA) coordinates the outbreak work.
- NFSA veterinary inspectors carry out tracing and sampling of pig farms and abattoirs.
- Farms found positive for LA-MRSA are issued movement restrictions and sanitary measures are carried out.
- Sanitary measures: Ordinary slaughter for slaughter units and depopulation for breeding units. Cleaning and disinfection of buildings, an empty period and re-sampling to declare MRSA freedom before re-stocking.
- Follow-up sampling at intervals after re-stocking, e.g. 3, 6 and 9 months for breeding units.

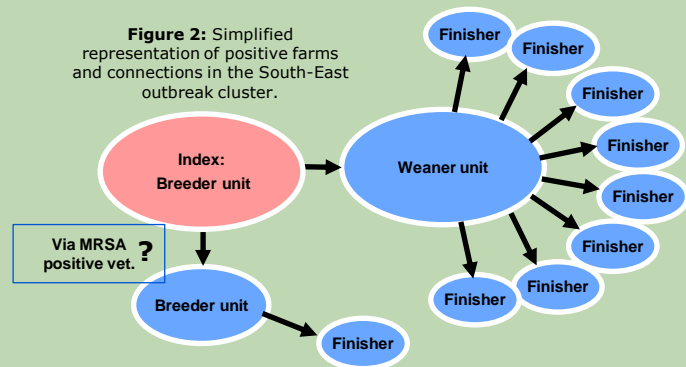
## Public Health Officials

- Human carriage or infection with MRSA are notifiable to the Norwegian Institute of Public Health (NIPH).
- District Medical Officers (DMO) are contacted by the NIPH to inform about the LA-MRSA outbreak and positive farms.
- DMO trace and contact humans associated with farms or abattoirs under investigation, and delegate testing to general practitioners.
- Persons found positive for MRSA are offered decolonisation treatment.
- Risk of spread to the human health care system is followed-up.

## The Industry

- Representatives from the pig industry's research and breeding associations, in regular contact with producers, participate in the outbreak management group.
- Publish information about the outbreak situation and guidelines to farmers on how to avoid the introduction of LA-MRSA in herds.

**Figure 2:** Simplified representation of positive farms and connections in the South-East outbreak cluster.



## Laboratories

- Advice on sampling from animals and their environment is given by the Norwegian Veterinary Institute (NVI) in Oslo.
- Skin samples from animals and their environment, taken with wipes, are analysed by the NVI following the MRSA protocol described by the European Food Safety Authority.
- Confirmation and genotyping of isolates are done at the MRSA reference laboratory (St Olavs Hospital, Trondheim).
- Outbreak profile: Sequence type 398, *spa* type mainly t034, and some t12359 and t12877.

## Conclusion

A high level of dedication, exchange of knowledge and collaboration between the human and animal health sector have been characteristic of the work to contain these first registered outbreaks of LA-MRSA in Norway. It is too early to conclude, but the goal is to secure that the pig industry in Norway will continue to pose an insignificant public health risk for antimicrobial resistance.

