



Case study of *Methicillin-resistant Staphylococcus aureus* (MRSA)

Activity Group 3

Discussion Topic:

- Introduction video: <https://www.youtube.com/watch?v=jFuQqwBmN8A>
- The on-going spread of LA-MRSA in certain high-risk groups of workers, and the on-going spread of MRSA in pigs and other species (RONAFA report).

Livestock-associated methicillin-resistant *Staphylococcus aureus* (LA-MRSA) among MRSA from humans across the EU/EEA, 2013: ECDC survey

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The survey results show more frequent detections and geographical dispersion of LA-MRSA in humans in the EU/EEA since 2007, and highlight the public health and veterinary importance of LA-MRSA as a 'One Health' issue. The ECDC advocates for periodic systematic surveys or integrated multi-sectorial surveillance to facilitate control measures.

Livestock-associated methicillin-resistant *Staphylococcus aureus* (LA-MRSA) poses a zoonotic risk, particularly for those working in close contact with livestock. Nonetheless, surveillance of LA-MRSA in humans in Europe is currently not systematic, but mainly event-based.

In 2014, the European Centre for Disease Prevention and Control (ECDC) initiated a questionnaire survey to collect data on the numbers of LA-MRSA from human samples at national or regional reference laboratories in EU/EEA countries in 2013. ECDC received responses from 28 reference laboratories from 27 (90%) EU / EEA countries.

Overall, respondents reported receiving MRSA isolates from 14,291 patients in 2013, of which 13,756 (96%) were typed. LA-MRSA was identified by 17 (89%) of 19 countries with MRSA typing data. Overall, the percentage of typed MRSA isolates that were LA-MRSA was 3.9% (535/13,756). Seven countries reported that MRSA typing was not performed, in 2013, in the responding reference laboratory.

A need for systematic surveillance

This survey documents the increasing detection and geographical dispersion of LA-MRSA in humans in the EU/EEA since 2007. Moreover, 2014 and 2015 reports from the Nordic countries, Germany, the Netherlands and the UK have subsequently indicated an upward trend in the spread of LA-MRSA across Europe. The absence, in 2013, of MRSA typing in national/regional laboratories in seven countries is therefore of concern.

The results and overall high response rate for this survey highlight both the actual and perceived public health importance of LA-MRSA as a 'One Health' issue in EU/EEA countries. ECDC therefore recommends that EU/EEA countries consider repeating this survey periodically to monitor for changes and systematically map potential reservoirs and transmission pathways. Linkage of multi-sectorial, 'One Health' MRSA data is also encouraged, in order to enable appropriate targeting and monitoring of the effectiveness of control measures.

<https://ecdc.europa.eu/en/news-events/livestock-associated-methicillin-resistant-staphylococcus-aureus-la-mrsa-among-mrsa>



Objectives of the working group activity:

To learn good practices in control measures implemented at national / regional level to prevent and reduce the dispersion of MRSA that affect both animals and humans.

Background

- The proportion of MRSA and 3rd-generation cephalosporin-resistant *Escherichia coli* (3GCR *E. coli*), expressed as two individual numbers have been selected as primary indicator in humans. Both pathogens are of major public health importance. Though management decisions should never be based on these indicators alone but should consider the underlying data and their analysis.
- ECDC survey on Livestock-associated methicillin-resistant *Staphylococcus aureus* (LA-MRSA) among MRSA from humans across the EU/EEA, 2013.
- Funded project PILGRIM focused on one strain, the MRSA ST398, an animal-adapted, zoonotic, resistant pathogen that causes colonisation and infection in humans in community and health care settings.

Expected outcomes of working group:

Identified good practices to reduce MRSA both in public health and veterinary sector.

RONAFA report – page 42:

*The use of pleuromutilins in humans is limited to topical application (e.g. retapamulin); other substances in this class are under development for human use. Use in animals could select for pleuromutilin-resistant staphylococci (e.g. via *cfr* genes), including LA-MRSA. Potentially the spread of resistance genes could compromise treatment of MRSA infections in humans. The reflection paper on pleuromutilins recommended that prevention claims should be removed, except for use in well-defined eradication programmes, and the duration of treatment limited to that for cure of disease. No measures have been implemented to date based on this reflection paper.*

*The Joint Scientific report of ECDC, EFSA and EMA on MRSA in livestock, companion animals and food (EMEA CVMP, 2009) advised that due to the multidrug resistant character of MRSA, effective control measures could not be limited to a specific antimicrobial class, but routine antimicrobial use should be regarded as a risk factor and measures should aim to reduce unnecessary use. **It was suggested that biosecurity and hygiene would be useful measures and transmission via trade should be avoided. Systematic surveillance** for MRSA in humans and animals in order to identify any trends in the spread and evolution of zoonotically acquired MRSA was also recommended.*

National examples:

- **Denmark**, the Joint Antibiotic Resistance Action Plan identifies a need to address MRSA in the pig population, proposing funding to be allocated to the identification of herd-related risk factors to support a risk management strategy, and a coordination group to be established for zoonotic MRSA to improve communication to doctors and households in contact with pig herds.

DANMAP Using Data for Action against Antimicrobial: <https://www.youtube.com/watch?v=1gLTUaLqsDo>
Has done a survey on the prevalence of LA-MRSA in Danish pig herds and in humans. The findings have been used to monitor the impacts of policy interventions.



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- **Norway:** The Norwegian National Strategy against Antibiotic Resistance 2015–2020 has animal sector goals to prevent the establishment of LA-MRSA in the pig population and to reduce ESBL-producing bacteria in poultry to a minimum.
- Some national strategies include risk-based targeting.

Tasks allocated to the groups (total 1h)

- 1 Discuss among the group: ***What measures are you putting in place to control MRSA?*** – 30 min.
- 2 Present conclusions from each group – 5 minutes / group – total of 30 minutes

Summary of conclusions – Tutors 4 and 5 – 10 minutes

Documents of reference:

RONAFA report - <http://onlinelibrary.wiley.com/doi/10.2903/j.efsa.2017.4666/epdf>

ECDC surveillance and outbreak report on LA-MRSA:

<http://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2017.22.44.16-00696>

PILGRIM project - http://cordis.europa.eu/result/rcn/54629_en.html