Methicilline Resistant Staphylococcus aureus in calves and calve owners

Published: 17-07-2007
Last updated: 10-08-2024

1. estimate the prevalence of MRSA among calve farmers, their families and relevant co-workers at the calve farm;2. determine potential risk factors for MRSA carriage for these groups3. determine the association between MRSA prevalence and types of...

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Bacterial infectious disorders
Study type	Observational non invasive

Summary

ID

NL-OMON31420

Source
ToetsingOnline

Brief title
MRSA in calve industry

Condition

- Bacterial infectious disorders

Synonym
nvt

Research involving
Human

Sponsors and support

Primary sponsor: Universiteit Utrecht
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: animal, human, MRSA, riskfactors

Outcome measures

Primary outcome

Prevalence of MRSA among calve farmers and relevant co-workers

Secondary outcome

Risk factors for MRSA carriage

Study description

Background summary

Staphylococcus aureus represents a colonizer and pathogen for human as well as for various animal species. Prevalence of methicilin-resistant S. aureus (MRSA) in human medicine has constantly increased in many parts of Europe. In the Netherlands the occurrence of MRSA among clinical isolates is still <1%, among the lowest in Europe. In the south of Europe this can be 20-50%. The low prevalence in The Netherlands can largely be explained by our national search and destroy policy, in combination with restrictive antibiotic use. This low antibiotic pressure in the Netherlands, probably limits the selection of resistant micro-organisms, including S. aureus. Since 1995, the Netherlands has been confronted with a few MRSA outbreaks that could not be related to patients with known risk factors for MRSA carriage as indicated. If MRSA strains are circulating in the community outside the hospitals, the risk factors would not be sufficient for a successful search and destroy policy, and further outbreaks might be the consequence.
Companion animals such as dogs, cats an horses, have been implicated more frequently in recent years as potential reservoirs of MRSA. Initially, MRSA infections were sporadically described in companion animals but the number of reports has markedly increased in the last few years. Various case reports have documented MRSA infections in dog owners associated with colonization by genetically related strains in their dogs. Genetically related MRSA isolates have also been reported in horses and pigs in-contact humans. Transmission of Staphylococcus Aureus has been reported between owners and their pets. The occurrence of MRSA in dogs and cats has been reported with frequencies between 1% and 10% of samples . Although mucosal carriage of MRSA has been demonstrated in individual pets, horses and veterinary staff few data exist on the prevalence of MRSA in these

groups.
In 2004 a possible relationship
between pig and calve farming and a higher risk of MRSA carrier ship was found in the Netherlands. A recent study of slaughterhouse pigs showed a prevalence of 39%. In France also a relation between pig farming and MRSA carrier ship was found because of strain exchanging with swine. Wulf et al., found recently a prevalence of 3.9% in veterinary students and 4.6% in veterinarians which indicate that people who are in close contact with livestock are at higher risk.
The transmission of MRSA primarily takes place of colonized or infected persons to others. The bacteria spread between air channels, dust and skin particles. Infection is especially dangerous for people with diminished resistance e.g. operated people. A healthy person can be infected with MRSA but most probably will not notice the infection. This healthy person can become a carrier. The potential source of contamination of animal and farmers by MRSA strains is not yet investigated. Possibly personal hygiene may play a role.
Another explanation of MRSA transmission could be the fact that MRSA organisms can travel within bioaerosols. Chapin et al., found a high level of multidrug-resistant bacteria in the air of a concentrated swine feeding operation. These findings therefore suggest that inhalation of air from these facilities may serve as an exposure pathway for the transfer of multi-resistant bacterial pathogens from swine to human. Recently Gibbs et al found that high levels (comparable as within the facility) of antibiotic resistant bacteria (inclusive MRSA) persist to (at least) 150 meter downwind of the swine facility. This indicate that those who working inside the facility and those living in close proximity downwind of the facility could be at risk for adverse human health effects associated with exposure to large numbers of antibiotic resistant organisms.

Little is known about the epidemiology of MRSA-infections in animals in the Netherlands. Also not much is known about the risks of transmission of MRSA between animals and humans. Therefore an epidemiological study in a defined population of calvefarmers. Risk factors should be determined including the prevalence of MRSA in animals. This could lead to a risk assessment of the MRSA spread of animals to humans.
The main aim of this study is to assess the prevalence of MRSA carrier ship in these study population and to determine the risk factors and transmission patterns.

Study objective

1. estimate the prevalence of MRSA among calve farmers, their families and relevant co-workers at the calve farm;

2. determine potential risk factors for MRSA carriage for these groups

3. determine the association between MRSA prevalence and types of MRSA in calve

farmers and calves

4. Is the nasal swab sufficient enough to detect MRSA contamination in calves?

5. Is there an association between specific facility characteristics and MRSA contamination.
6. What are the transmission pathways of MRSA?
7. When is a facility contaminated with MRSA?
8. How develops a MRSA contamination on a calve facility over time?

Study design

A Random sample of 100 calve farmers out of all Dutch calve farmers will be taken. Calve farmers will be invited to participate to the study using a letter signed by the researcher and theri own proffesional bodies. A brochure with information about the study and an informed consent form will be attached. The farmers will be asked to join the study by telephone. At a preffered time, an appointment will be made to take noseswabs of study subjects, to complet the questionnaire and doing the air sampling in and outside the calve barns.

Study burden and risks

A researher will vistit the farm and swab all persons who gave informed consent. The visit will take 30 min, depending on the number of study participants, to complete the questionnaires. (1 per participant).

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adolescents (12-15 years)
Adolescents (16-17 years)
Adults (18-64 years)
Children (2-11 years)
Elderly (65 years and older)

Inclusion criteria

owning, living or working at a calvefarm in The Netherlands

Exclusion criteria

none

Study design

Design

Study type: Observational non invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Basic science

Recruitment

NL

Recruitment status:	Recruitment stopped

Start date (anticipated):	01-08-2007
Enrollment:	400
Type:	Actual

Ethics review

Approved WMO Date:	17-07-2007
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Utrecht (Utrecht)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL17195.041.07