

A long lasting outbreak of methicillin-resistant *Staphylococcus aureus* (MRSA) in a Dutch nursing home

E. Weterings¹ J. Kluytmans^{1,2}, M. van Rijen¹, T. Bosch³, F. Landman³, L. Schouls³, P. de Laet⁴, P. van Keulen¹

¹Laboratory for Microbiology and Infection Control, Amphia Hospital, Breda, The Netherlands
²Julius Center for Health Sciences and Primary Care, UMC Utrecht, Utrecht, The Netherlands

³National Institute for Public Health and the Environment, Bilthoven, The Netherlands
⁴Nursing Home Eben Haezer, Middelburg, the Netherlands

Esther Weterings
eweterings@amphia.nl

Background

Due to the successful **Search and Destroy (S&D)** policy for methicillin-resistant *Staphylococcus aureus* (MRSA) the prevalence of MRSA in the Netherlands is still very low (0,11% on admission to hospitals^a).

Outbreaks occur sporadically in hospitals and most of them are relatively easy to control. However, outbreak control is much more difficult in nursing homes (NH) due to **prolonged length of stay, limitations with the implementation of isolation measures and restrictive use of diagnostics.**

Objective

To describe a large and difficult to control outbreak in a Dutch NH.

Methods

- Contact tracing among 20 residents and 94 health care workers (HCWs). Nose, throat and perineum were screened.
- HCWs wore personal protective equipment (PPE) when delivering care to all residents in the NH.
- MRSA positive HCWs were suspended from work.
- MRSA positive residents were placed in a cohort in a separate location in the NH with dedicated nursing staff.
- NH was closed for admissions from September 2014 to april 2015.
- All isolates were genotyped by molecular typing using multiple locus variable number of tandem repeat analyseis (MLVA).
- A subset of 24 isolates was subjected to whole genome mapping (WGM), a high-resolution typing technique based on the restriction map of the bacterial chromosome.
- MRSA positive HCW and residents were treated for MRSA carriage in accordance with the national guideline.

Reference

^aBode LG, Wertheim HF, Kluytmans JA, Bogaers-Hofman D, Vandenbroucke Grauls CM, Roosendaal R et al. Sustained low prevalence of methicillin-resistant *Staphylococcus aureus* upon admission to hospital in The Netherlands. J Hosp Infect 2011.

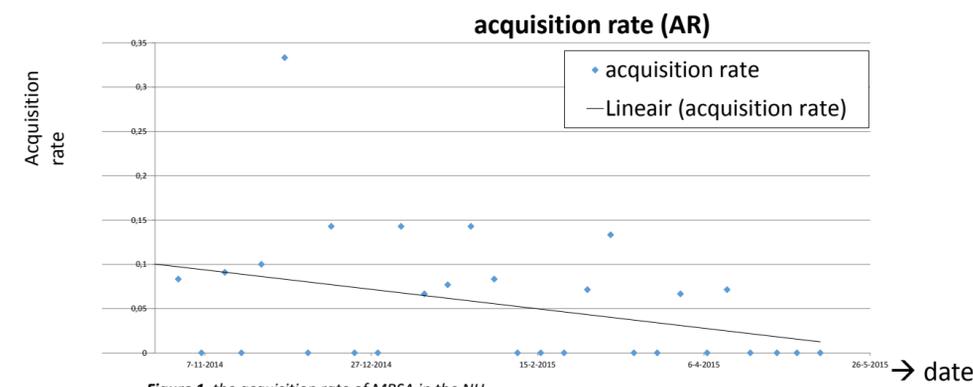


Figure 1 the acquisition rate of MRSA in the NH

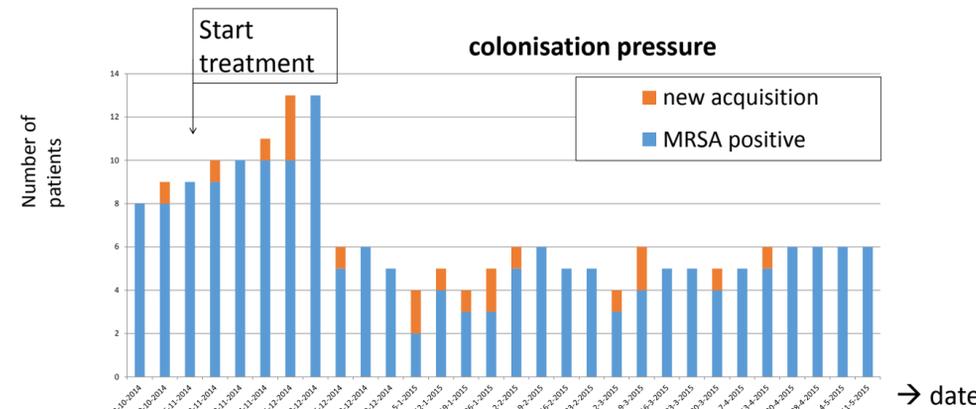


Figure 2 the weekly distribution of patients colonised with MRSA and the MRSA colonisation pressure in the NH

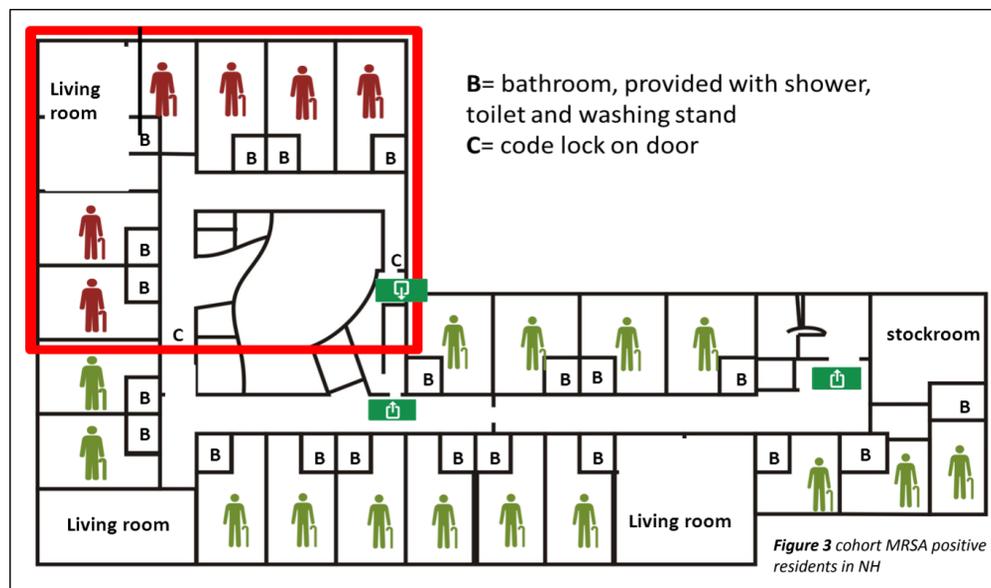


Figure 3 cohort MRSA positive residents in NH

Results

- In September 2014, a resident developed a urinary tract infection, caused by MRSA.
- Contact tracing revealed 30 asymptomatic carriers: 17/20 (85%) residents and 13/94 (14%) HCWs.
- MLVA identified two types, MT0237-MC0008 and MT0491-MC0022.
- WGM was only performed for MT0237-MC0008, the most prevalent MLVA-type.
- WGM of 24 MT0237-MC0008 isolates originating from 12 residents showed indistinguishable maps for 22 of the isolates (>98% similarity), while the two remaining maps were highly related (>97% similarity).
- After treatment 13/13 (100%) of HCWs and 9/15 (60%) of residents were decolonised. Two residents died before the effect of treatment could be determined.
- 6/17 residents remained MRSA positive despite one or more treatments (maximum 3).

Results of WGM

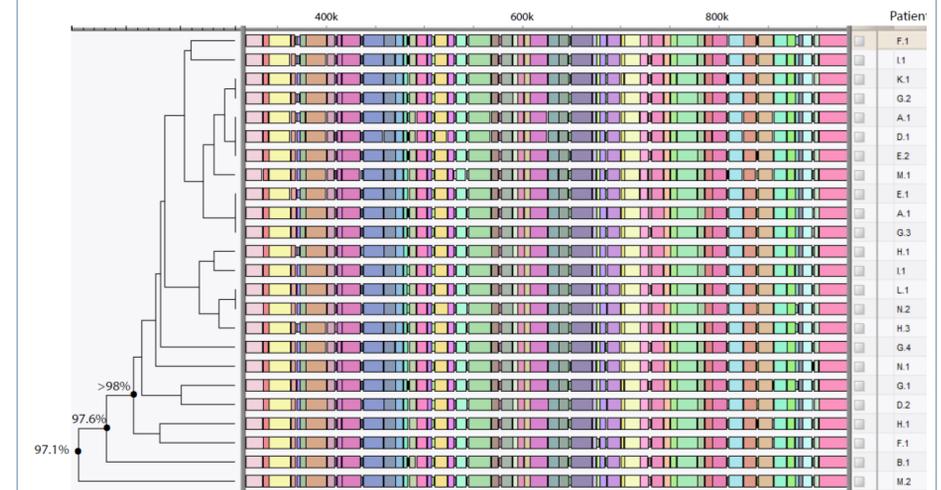


Figure 4 results of WGM

Conclusion & Discussion

The late detection of the outbreak is probably due to the restrictive use of microbiological diagnostics in the NH. The fact that six residents could not be decolonised poses a continuing threat for renewed spread in the NH. This outbreak shows that NH are a potential source of MRSA and that the restrictive use of diagnostics in NH should be reconsidered in the light of the increasing threat caused by antimicrobial resistance.