



Nursing home characteristics associated with METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) BURDEN AND TRANSMISSION

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While several studies suggest that nursing homes have a higher prevalence of MRSA compared to hospital settings (wards/intensive care units), the reasons for this are not well understood. This study sought to measure MRSA burden and identify facility and resident characteristics associated with high MRSA burden and transmission.

Methods:

The study¹ was conducted across a sample of 26 out of the 72 nursing homes in Orange County, California, United States, from October 2008 to May 2011. In each nursing home, nasal swabs of up to 100 residents were performed to measure:

- **Admission prevalence (MRSA importation):** The percentage of residents swabbed within three days of nursing home admission that were found to be MRSA carriers.
- **Point prevalence (MRSA burden):** The percentage of residents found to be MRSA carriers when swabbing a representative sample of residents on a given day.
- **Transmission:** An estimated facility-specific transmission risk based on the calculated difference in percentages between admission and point prevalence divided by the percentage of residents admitted without MRSA.

Using nursing home administrative data (i.e., 2009's Minimum Data Set), facility characteristics associated with MRSA point prevalence and estimated transmission risk were identified and analysed.

Results:

- Mean MRSA point prevalence was significantly higher than mean MRSA admission prevalence despite similar length of stay in nursing homes among MRSA positive and negative residents.
- MRSA point prevalence was associated with annual admissions from acute care hospitals and the percentage of residents with select comorbidities (i.e., diabetes, indwelling devices, skin lesions and faecal incontinence).

- Facility social engagement scores were negatively associated with MRSA transmission risk.
- Higher MRSA point prevalence was associated with higher MRSA admission prevalence and a higher percentage of residents with indwelling devices or faecal incontinence.

Discussion:

- MRSA importation was a strong predictor of higher MRSA prevalence in nursing homes caring for residents with more medical devices. These devices may be portals of entry for pathogens, or it may reflect a higher degree of chronic illness in the facility resulting in an increased vulnerability for the acquisition of pathogens.
- Further research is needed to understand whether differences in MRSA burden versus importation are driven by facility practices (i.e., infection control policies, environmental cleaning protocols, etc.).
- Nursing homes with a higher proportion of residents with diabetes had higher estimated MRSA transmission, suggesting that comorbidities are a marker for vulnerability.
- A high degree of social interaction among residents was protective of MRSA transmission, suggesting that residents healthy enough to engage in group activities were able to overcome transmission risks due to social contact.
- Nursing homes that were able to maintain MRSA burden levels at or near importation levels may be employing successful strategies to prevent MRSA levels from rising beyond the importation level.

Conclusion:

Nursing homes may be able to mitigate the spread of MRSA and other pathogens by identifying the characteristics of nursing homes at risk for high MRSA burden and tailoring infection control policies accordingly.

¹Limitations of the study can be found on page 6 of the journal article.

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