

Spread of Staphylococcus aureus in a nursing home

prospective network study with social network methods and biological assessment



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Background

Infections spread by social contacts. Staphylococcus aureus (SA) is a micro-organism which can cause serious infections, especially in the vulnerable group of elderly living in crowded settings of long term care facilities (LTCF).

Methods

We conducted a prospective cohort study among personnel and residents of three wards in a LTCF in The Netherlands, October through November 2008. The aim was to identify spread of SA in social contact networks by gathering social and biological network data. (1) Personnel registered hygiene practices and amount and intensity of their contacts with residents and colleagues for one to four subsequent days. Group activities among residents and visits from relatives and friends were registered. (2) At week 0, 1 and 5 biological material from nose and hand was taken.

Molecular typing will be done on positive samples.

To identify contact patterns and hygiene practices, SA carriage and their relation, we used social network analyses methods (UCINET), and epidemiological methods including (logistic) regression analyses.

Results

Response was high; 91% (71 staff, 60 residents) were biologically tested and 87% reported their contacts. SA persistent carriage was 30% in nose and 17% on hands. Transient carriage was 18% in nose and 26% on hands.

One MRSA was found. Analyses reveal dense contact patterns with several persons serving as bridge persons between the wards. Results from SPA typing will detail the role of specific contact patterns in SA spread. Few risk factors were identified, also indicating relatively uniformly distributed infection patterns. Longitudinal analyses are underway.

Conclusions

Combining social and molecular network data will reveal unique and important insight in transmission patterns and can be used to construct a model for infectious diseases spread in LTCF.

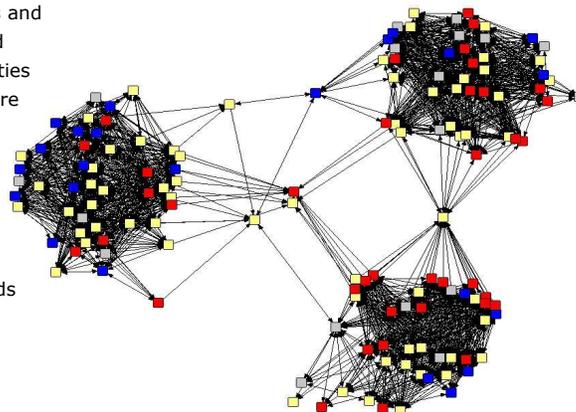


Figure: health care workers and residents of three LTCF wards
Yellow= SA non-carriers
Red= SA persistent carriers
Blue= SA transient carriers
The lines between the dots demonstrate the contact patterns.

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