

January 2007**1. Healthcare-associated infection caused by CA-MRSA: an emerging threat**

Several reports have paradoxically identified "Community-Acquired" MRSA transmission in hospitals. A recent short review summarised the reported outbreaks of genetically distinct community-associated MRSA (CA-MRSA) as a cause of nosocomial and healthcare associated infection (Otter and French 2006). CA-MRSA strains are likely to become increasingly common causes of healthcare-associated infection, which may result in more severe MRSA infections in hospitalised patients, the spread of MRSA to previously spared hospital specialties such as paediatrics and obstetrics, more frequent MRSA infections in less compromised patients and in health-care workers, and the emergence of multiply resistant CA-MRSA strains. This new MRSA epidemiology will require new control measures, both in hospitals and in the community. Urgent research is required to determine the most effective methods for containing the global emergence of CA-MRSA.

2. Does PVL explain the characteristics of CA-MRSA infections?

Most CA-MRSA carry the Panton-Valentine Leukocidin (PVL), but some do not. The status quo is that PVL is a virulence factor, which gives CA-MRSA a selective advantage. However, a recently published paper challenges this position (Voyich et al. 2006). Voyich et al. (2006) investigated the role of PVL in CA-MRSA disease using mouse models of mortality, abscess formation and *in vitro* studies using leukocytes. They compared a group of 11 successful CA-MRSA strains including PVL positive (5) and PVL negative (6) strains. There was no significant difference in disease progression or severity in the mortality or abscess models. The next step was to compare the virulence of wild-type (wt) and PVL knockout strains of two successful CA-MRSA lineages, USA 300 and USA 400. There was no significant difference between the virulence of wt and PVL knockout strains. This suggests that PVL is not the key virulence determinant in CA-MRSA, despite the strong epidemiological association. The authors did not use a mouse model to investigate a potential role of PVL in necrotising disease (e.g. pneumonia / fasciitis), which would have been interesting. Therefore, despite the fact that most successful CA-MRSA lineages carry PVL, the exact role of PVL in CA-MRSA disease remains unclear.

3. MRSA in non-clinical areas

Five UK hospitals recently teamed up to investigate whether MRSA environmental contamination could be identified in non-clinical areas in order to counter a popular conception perpetuated by the media regarding the common presence of MRSA in communal non-clinical areas (Brown et al. 2006). MRSA was not identified on any of the sites sampled in corridors outside wards nursing MRSA patients, outside ICUs and out-patient clinics. Although most studies reporting MRSA environmental contamination have focussed on the immediate environment of MRSA-positive patients, MRSA has been identified in clinical areas surrounding non-MRSA patients, (French et al. 2004) and the hands of healthcare workers can become contaminated through contact with the surfaces surrounding colonised patients (Bhalla et al. 2004; Boyce et al. 1997). Therefore, decontamination efforts should focus on clinical areas and mobile equipment used for both colonised and non-colonised patients.

4. How much do medical staff know about infection?

Two recently published UK studies have investigated the infection control knowledge of medical staff. A questionnaire of medical students identified some worrying weaknesses: for example, only 42% of the 156 students knew the correct indications for alcohol hand gel usage (Mann and Wood 2006). Perhaps even more worrisome was that only 64% of the students reported formal hand hygiene training and only 51% thought that enough emphasis was placed on infection control during their training. In a Scottish study, a questionnaire for all grades of qualified doctor investigated MRSA-specific knowledge (Seaton and Montazeri 2006). 10% of the 304 doctors surveyed disagreed that gloves should be worn when examining MRSA positive patients, 33% did not believe alcohol gels to be as effective as hand-washing for interrupting MRSA transmission and 30% believed that a patient who was medically fit but MRSA positive should not be sent home promptly. These surveys identify large gaps in the infection control knowledge of healthcare professionals and underline the importance of infection control education.

5. And finally...Jack O'Lantern – scarier than you think!

Large pumpkins used to make seasonal lanterns for Halloween can harbour fungi that could be dangerous for immunocompromised paediatric patients according to a recent study from Ireland.(Nagano et al. 2006) At least three genera of fungi that have been implicated as causing infections in immunocompromised hosts were sampled from Jack O'Lanterns. These rather obscure fungi are primarily spoilage organisms that would not represent a risk to healthy individuals, but even so, next time you see a Jack O'Lantern...be warned!

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