

E019

## 2-hour Educational Workshop

### Community-acquired MRSA 2015: what, where and why?

#### CA-MRSA definition (CA, HA, LA) and epidemiology

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Epidemiologically, three major types of MRSA are found. Hospital associated (HA), Community associated CA) and livestock associated (LA) MRSA. CA-MRSA can either be defined epidemiologically or using microbiological characteristics, however, there is no single clear definition of CA-MRSA. CA\_MRSA is thus to a large degree defined by absence of risk factors and or strain types classifying a case in one of the other 2 groups.

In nearly three decades methicillin-resistant *Staphylococcus aureus* (MRSA) was closely associated with hospitalization. This changed in the late 1990s where MRSA infections increasingly were seen in patients with no/no recent contact with the health care system. These CA-MRSA infections were caused by a number of strains distinct from the HA-MRSA strain types. CA-MRSA was initially seen spreading in aboriginals in Australia and a common feature for transmission in the community can be defined by the 5 "C" **C**rowding, **C**ontaminated surfaces and shared items, **F**requent skin **C**ontact, **P**oor hygiene/**C**leanliness, **C**ompromised skin, whereas traditional risk factors such as previous hospitalization, central lines or surgical procedure(s) are often not present. CA-MRSA strains most often carry the *mecA* gene in the smaller cassettes (SCC*mec* IV and V) in contrary to the larger SCC*mec* II and III found in HA-MRSA. *CA-MRSA are most often PVL positive and typically causes skin and soft tissue infections often in children and younger adults, however when introduced into the health care setting they may cause severe infections including surgical site infections and bacteraemia.*

In the last 10 years a new reservoir for MRSA in production animals (LA-MRSA) has emerged. This reservoir has expanded explosively and LA MRSA is now found in all continents. A number of different strain types has been found with CC398 being the most abundant in Europe. Pigs is the main reservoir for MRSA CC398 but are also frequently found in veal calves, poultry as well as in horses. Transmission to humans is primarily through direct contact to animals, but from these farmers it disseminates first to family members but also into the general population. Microbiologically, these strains differ not only in being of distinct ST types but also in carrying distinct SCC*mec* cassettes (i.e. 5C2&5) and displaying a difference in phage content i.e. loss of the Sa3 phage

The clinical picture of LA-MRSA infections resembles that of other MRSA and is mainly dependent on who and where MRSA infections is contracted i.e. SSTI in the community but more severe infections including bacteremia in the health care setting.

Whereas HA-MRSA is declining in many European countries, the prevalence of CA-MRSA and LA-MRSA is increasing. This may increase the general prevalence of MRSA carriage thus ultimately threaten control of MRSA in hospitals and other health care settings.