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Meticillin-resistance spread by horizontal gene transfer

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Meticillin-resistant *Staphylococcus aureus* (MRSA) bacteria owe their resistance to a penicillin-binding protein with low affinity for antibiotics, encoded by the *mec*A gene. In a research letter in the May 26 Lancet, Camiel Wielders and colleagues from University Hospital Utrecht, The Netherlands, provide evidence that a new MRSA genotype can emerge *in vivo* by transfer of the meticillin-resistance gene from one staphylococcal species to another.

Wielders *et al*. isolated a successive pair of *mec*A- and *mec*A+ *S. aureus* strains from a baby whose initial meticillin-susceptible infection had been treated with ß-lactam antibiotics, and who then subsequently developed an MRSA infection. Although the two *S. aureus* genotypes were almost indistinguishable, the *mec*A DNA from the MRSA sample was identical to that in a *S. epidermidis* strain isolated from the same baby (*Lancet* 2001, **357**:1674-1675).

Because this *mec*A+ genotype was isolated from an infant younger than 2 months who was neither transferred from a different hospital nor in contact with an MRSA carrier, the authors conclude that resistance was acquired by the horizontal transfer of *mec*A DNA from the *S. epidermidis* strain.

Further evidence from similar cases will be needed to exclude the possibility that the second infection was not picked up from an unknown third person or from the hospital itself.

References

1. Wielders CLC, Vriens MR, Brisse S, de Graaf-Miltenburg, Troelstra A, Fleer A, Schmitz FJ, Verhoef J, Fluit AC: Evidence for in-vivo transfer of *mec*A DNA between strains of *Staphylococcus aureus.* *Lancet* 2001, 357:1674-1675., [http://www.thelancet.com]