

**Emerging mupirocin-resistance in staphylococci following the implementation of a new *Staphylococcus aureus* decolonisation strategy**

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**Objective:** The eradication of *Staphylococcus aureus* in pre-operative patients, using nasal mupirocin and chlorhexidine bodywashings, reduces the number of post-operative *S. aureus* wound infections. However, the rapid identification of *S. aureus* carriers is costly and logistically challenging. In this study, we evaluate the effects on resistance in staphylococci, of a new decolonization strategy in which all patients are treated with topical mupirocin and chlorhexidine body washings, irrespective of *S. aureus* carrier status. **Methods:** Patients admitted to three surgical wards, with an expected stay of more than three days, were treated with nasal mupirocin ointment and chlorhexidine soap for five days, irrespective of *S. aureus* carrier status. Nasal swabs were obtained on admission (before start of decolonization treatment) and four days after surgery (one day after completing decolonization treatment). Nasal swabs were inoculated on selective agars containing 8µg/ml mupirocin. All growing staphylococci were identified by MALDI-TOF and resistance for mupirocin was confirmed by E-test. Staphylococci with a minimum inhibitory concentration (MIC) >256 were considered high-level resistant. **Results:** During the five month study period 535 patients were screened, and swabs were obtained for both time points from 334 (62%). Overall, mupirocin resistant staphylococci were detected in 20% of the patients on admission and in 42% of the patients after decolonization (p=0.000). (Table 1) Of the 273 patients without colonization of mupirocin resistant staphylococci at admission, 105 (39%) were colonized with mupirocin resistant staphylococci after decolonization, which leads to a colonization rate of 7.7 per 100 patient days at risk. Overall, 271 mupirocin resistant staphylococci were identified of which 259 (96%) were high-level resistant. Save for one *S. aureus* isolate, all were coagulase-negative staphylococci (CoNS), mostly *S. epidermidis* (251/270, 93%). **Conclusion:** Prevalence of mupirocin resistance was high in coagulase-negative staphylococci before treatment and rapidly increased during treatment. Although mupirocin resistance was rare in *S. aureus* the potential consequences of selection of transferable resistance in CoNS must be assessed carefully.

**Table 1: Mupirocin resistance at admission and after the decolonization treatment**

Patients screened	Mupirocin resistant staphylococci	
	n	n (%)
<b>All patients</b>	<b>535</b>	
<b>Admission</b>	<b>494</b>	<b>97 (20%)</b>
<b>+4 days post surgery</b>	<b>376</b>	<b>157 (42%)</b>
<b>Patients with cultures at admission and +4 days</b>	<b>334</b>	
<b>Admission</b>	<b>334</b>	<b>61 (18%)</b>
<b>+4 days post surgery</b>	<b>334</b>	<b>144 (43%)</b>