

Letter to the Editor

***Staphylococcus aureus* Screening and Decolonization in Orthopaedic Surgery and Reduction of Surgical Site Infections**

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To the Editor:

We read the report by Chen and colleagues with great interest. In their study, the authors studied whether *Staphylococcus aureus* screening and decolonization strategy reduce surgical site infections in orthopaedic surgery [3]. This question is of great concern as *S aureus* is a major risk factor for surgical site infections, notably in orthopaedic surgery [2, 6]. Despite some well-conducted studies, we

believe that no clear conclusions can be made because of the inclusion of heterogeneous patients and the types of surgery. Chen and colleagues included 19 studies related to orthopaedic surgery in their review — many with questionable methodologies. The authors concluded that all of the studies showed a reduction in surgical site infections or wound complications by instituting *S aureus* screening and decolonization [3]. We disagree with this analysis. It seems the authors considered the entire data from the Bode et al. study and not data from its orthopaedic population [3].

We conducted a meta-analysis of the randomized trials studying a decolonization strategy in *S. aureus* nasal carriers undergoing surgery, which we will summarize here. The search strategy was conducted using the COCHRANE and MEDLINE databases. Two independent authors (EBN, PV) performed the search, using the following terms: “mupirocin”, “*Staphylococcus aureus*”, “carrier”, and “surgery”. The authors then searched the terms: “chlorhexidine”, “*Staphylococcus aureus*”, and “carrier”. The authors screened the titles and abstracts for relevant studies. The authors also scanned the reference lists of selected papers to identify potentially relevant studies that could be considered for inclusion in the meta-analysis. Only randomized controlled studies with a strategy of decolonization in *S aureus* nasal carriers for reducing surgical site infections (whether the strategy was mupirocin alone or mupirocin plus chlorhexidine) were included. From an initial list of 160 references, the authors retained six studies [2, 4, 6–9].

The effect of the decolonization strategy was first analyzed in overall surgical patients and subsequently in orthopaedic surgical patients.

Our slide (Fig. 1A–B) describes the results of our meta-analysis. When we included all of the surgical specialties in the analysis (Fig. 1A), the decolonization of *S aureus* nasal

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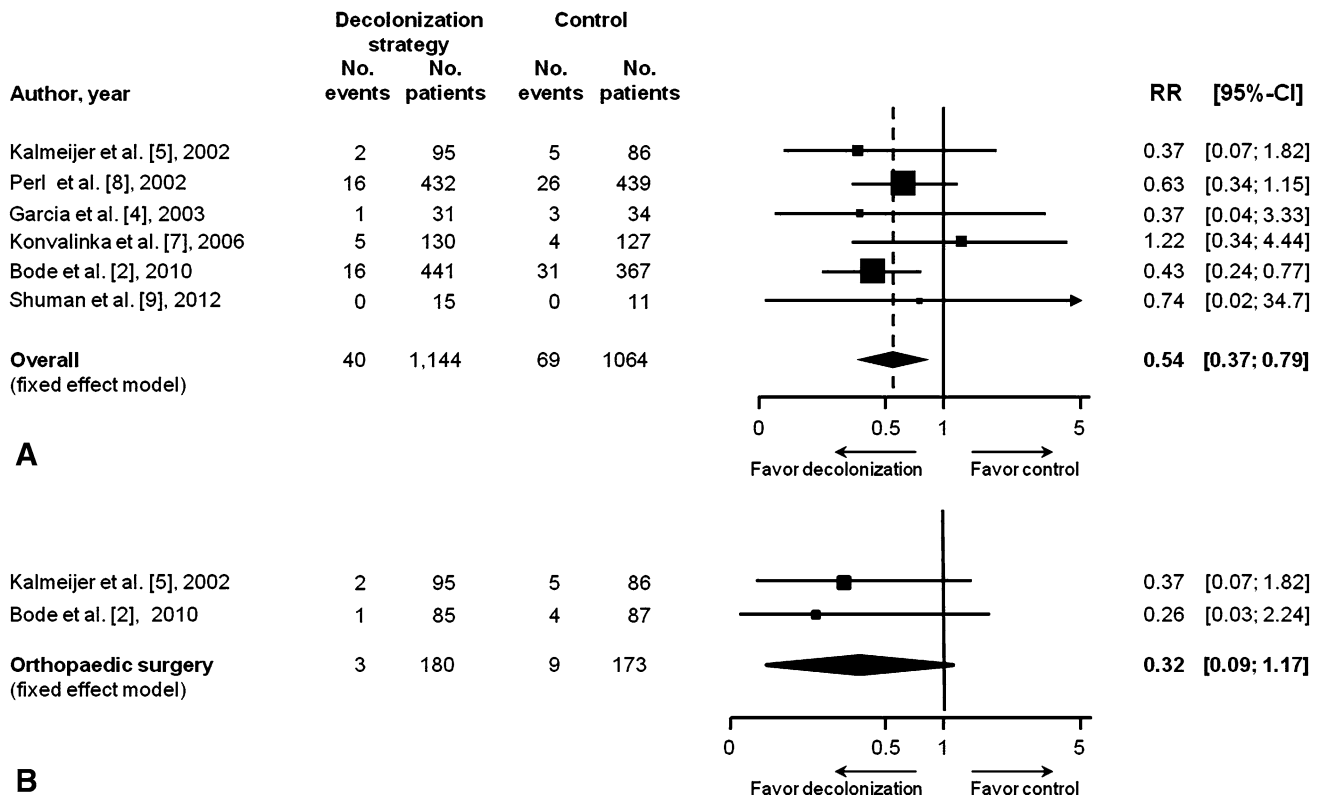


Fig. 1A–B (A) Postoperative *S. aureus* infections among *S. aureus* carriers with whom a decolonization strategy was used in all surgical procedures (B) Postoperative *S. aureus* infections among *S. aureus*

carriers with whom a decolonization strategy was used in a subgroup of orthopaedic surgery. (Reprinted with permission from Verhoeven and colleagues).

carriers was found to be effective in reducing surgical site infections (40 surgical site infections among 1,144 decolonized patients and 69 *S. aureus* surgical site infections among 1,064 patients without treatment, RR = 0.54 (95% CI, 0.37–0.79; $p = 0.001$). It is noteworthy that this statistically significant reduction in favor of decolonization in overall surgeries was largely driven by Bode's study [2], using mupirocin and chlorhexidine bathing for *S. aureus* decolonization, which we believe was a well conducted study. In orthopaedic surgical patients (Fig. 1B), the decolonization strategy did not reach statistical significance in reducing surgical site infections, despite a trend (three among 180 treated patients and nine *S. aureus* surgical site infections among 173 control patients, RR = 0.32 (95% CI, 0.09–1.17; $p = 0.084$). It can be hypothesized that a decolonization strategy in orthopaedic surgery could have an impact on surgical site infections. The fact that only a trend was observed could be explained by a lack of statistical power considering the small number of patients included (353 patients in both studies) [2, 5], and the low prevalence of surgical site infections in orthopaedic surgery. However, currently there are no sufficient data to recommend this strategy in orthopaedic surgery. Therefore,

a mega-trial investigating the effectiveness and cost-effectiveness of a decolonization strategy in nasal *S. aureus* carriers in joint replacement surgery is still warranted.

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