Mupirocin for preventing exit-site infection and peritonitis in patients undergoing peritoneal dialysis

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CRD summary
This review concluded that mupirocin prophylaxis was effective in prevention of exit-site infection and peritonitis due to *S. aureus* and other organisms in patients who underwent peritoneal dialysis. This review was generally well conducted and the conclusions are likely to be reliable.

Authors' objectives
To determine whether mupirocin is effective for the prevention of exit-site infections and peritonitis in patients undergoing peritoneal dialysis.

Searching
MEDLINE, EMBASE, The Cochrane Library and Science Citation Index were searched for full-text studies published in English up to March 2009. Search terms were reported. Reference lists of retrieved articles were screened.

Study selection
Randomised controlled trials (RCT) and cohort studies that compared mupirocin to placebo or no treatment in adults (aged at least 18 years) who underwent peritoneal dialysis were eligible for inclusion. Studies needed to report data on the difference in rate of *Staphylococcus aureus (S. aureus)* infection (ESI or peritonitis) as the primary outcome measure.

Some studies only enrolled patients with *S. aureus* nasal colonisation. Mupirocin was administered as a cream or nasal ointment. There was variability between studies in the site, frequency and duration of administration.

The authors did not state how studies were selected for inclusion in the review.

Assessment of study quality
Two reviewers independently assessed study quality with the five-point Jadad scale of randomisation, blinding and handling of withdrawals. Disagreements were resolved through consensus.

Data extraction
Two reviewers independently extracted data on numbers of events and participants in the intervention and control groups and used these to calculate relative risks (RR) together with 95% confidence intervals (CIs). Disagreements were resolved through consensus.

Methods of synthesis
Summary relative risks were estimated using the fixed-effect model (in the absence of heterogeneity) or the DerSimonian and Laird random-effects model (in the presence of heterogeneity, p<0.05). Heterogeneity was assessed using the *X*² and *I*² statistics.

Sensitivity analysis was conducted by restricting the analysis to recently published studies and to RCTs. Publication bias was assessed using funnel plots and the Begg test.

Results of the review
Fourteen studies reported in 13 articles (n=2,450) were included: three RCTs and 11 historical cohort studies. All RCTs were of medium to high methodological quality.

Application of mupirocin resulted in a significant decrease in the risk of exit-site infection (RR 0.28, 95% CI 0.19 to
0.40) for infections due to *S. aureus* and infections due to all organisms (RR 0.43, 95% CI 0.34 to 0.54).

Mupirocin also resulted in a significant decrease in the rate of peritonitis caused by *S. aureus* infections (RR 0.30, 95% CI 0.19 to 0.48, heterogeneity p=0.02) and all organisms (RR 0.59, 95% CI 0.46 to 0.76). There was substantial heterogeneity for all analyses (p≤0.03).

Restriction of the analysis to more recently published studies and to RCTs produced similar results with one exception: the analysis based on peritonitis due to all organisms was no longer significant when restricted to RCTs (p=0.56).

There was no evidence of publication bias.

**Authors' conclusions**

Mupirocin prophylaxis was effective in preventing exit-site infection and peritonitis due to *S. aureus* and other organisms in patients who underwent peritoneal dialysis. The optimal strategy for using this topical antimicrobial and minimising the emergence of resistance remained unclear.

**CRD commentary**

The review addressed a focused question supported by clearly defined inclusion criteria. Relevant sources were searched. Restriction of the review to published English-language studies raised the possibility of language and publication biases (assessed in the review). Appropriate steps were taken to minimise bias and errors in data extraction and quality assessment; it was unclear whether such steps were taken during study selection. Study quality was assessed with some relevant criteria for RCTs, but the results were reported only as a general rating of quality rather than a description of individual items fulfilled. No details on the quality of the cohort studies were presented. Methods used to pool studies were appropriate and included some relevant stratification to investigate heterogeneity, which included restriction to the RCTs. It would have been helpful if the authors had included some details on the level of heterogeneity when the analysis was restricted to RCTs. The authors' conclusions were supported by the data presented and are likely to be reliable.

**Implications of the review for practice and research**

The authors did not state any implications for practice and research,

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