Short- versus long-course antibiotic therapy for acute pyelonephritis in adolescents and adults: a meta-analysis of randomized controlled trials


CRD summary
This reasonably well-conducted review compared short and long-course treatments with the same antibiotic in the treatment of acute pyelonephritis. The authors concluded that there were no significant differences in efficacy or tolerability between the two courses. This conclusion is based on a small number of patients but is otherwise likely to be reliable.

Authors’ objectives
To compare short-course (seven to 14 days) with long-course (14 to 42 days) treatment with the same antibiotic regimens in the treatment of acute pyelonephritis.

Searching
PubMed, Cochrane Central Register of Controlled Trials and SCOPUS were searched from 1966 to March 2008. Search terms were reported. References of identified studies were also checked.

Study selection
Randomised controlled trials (RCTs) which compared short-course (seven to 14 days) with long-course (14 to 42 days) antibiotic treatment with the same agent and dose in the treatment of acute pyelonephritis in adults or adolescents (aged at least 15 years) were eligible for inclusion. Primary outcomes were clinical success, bacteriologic efficacy, relapses, recurrences, adverse events and patient withdrawals due to adverse events. Studies in which results for a subgroup of patients with acute pyelonephritis were reported separately were eligible for inclusion.

Included trials used the following antibiotic regimes: intravenous fleroxacin followed by oral fleroxacin; oral ampicillin or oral trimethoprim plus sulfamethoxazole; oral pivampicillin plus pivmecillinam; or intravenous gentamicin or tobramycin followed by one of three antibiotics orally. Doses and regimens varied between the studies. Duration of short courses was seven, 10 or 14 days; duration of long courses was 14, 21 or 42 days. The majority of patients in all studies were women.

Two reviewers independently assessed the studies for inclusion in the review.

Assessment of study quality
The studies were assessed for validity using the Jadad scale which awards up to 5 points based on the criteria of randomisation, blinding and treatment of withdrawals and dropouts. Studies scoring 3 or more points were considered to be of adequate quality.

The authors did not state how many reviewers performed the validity assessment.

Data extraction
Both intention-to-treat (ITT) and per-protocol data were extracted along with timing of the test-of-cure visit and the follow-up evaluation and outcome data.

The authors did not state how many reviewers performed the data extraction.

Methods of synthesis
Pooled odds ratios (ORs) with 95% confidence intervals (CIs) were calculated using a Mantel-Haenszel fixed-effect model unless statistically significant heterogeneity was detected by a X² test, in which case a DerSimonian and Laird
random-effects model was used. Publication bias was assessed using a funnel plot.

Results of the review
Four RCTs (n=283) were included in the review. One trial had a Jadad score of 5 points, 2 scored 3 points, and one scored 2 points. Duration of follow-up varied from two weeks to six months.

There were no significant differences between the groups in clinical success, bacteriologic efficacy, relapse, recurrence, adverse events or withdrawals due to adverse events.

Authors’ conclusions
No significant differences between short and long-course treatments with the same antibiotic were found for efficacy or tolerability.

CRD commentary
The review question and the inclusion criteria were clear. The authors searched three relevant databases but did not report systematic attempts to identify unpublished studies, which may have increased the chance of publication bias. Publication bias was reported to have been assessed, although this is difficult where study numbers are low. No assessment results were reported. Rigorous methodology was reported for the selection of studies but not for the assessment of validity or the extraction of data. The validity assessment used appropriate criteria. The use of meta-analysis appeared appropriate, although the use of a heterogeneity assessment to determine the employment of a fixed-effect or random-effects model may not have been advisable. The authors’ conclusions accurately reflected the results of the review and appear likely to be reliable, but the small number of patients on which they are based, acknowledged by the authors, should be borne in mind.

Implications of the review for practice and research
The authors did not state any implications for practice or further research.

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