Antibiotics at the time of induced abortion: the case for universal prophylaxis based on a meta-analysis

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Authors' objectives
To determine the efficacy of periabortal antibiotics in preventing postabortal upper genital tract infection using data from published trials.

Searching
MEDLINE was searched for articles published between January 1966 and September 1994. Keywords used included: 'abortion', 'infection', 'prophylaxis', 'antibiotics', 'pelvic inflammatory disease' (PID) and 'suction curettage'. Bibliographies of review articles were also searched to identify further trials.

The search was not restricted to articles published in English.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were included.

Specific interventions included in the review
Periabortal antibiotics (Tinidazole, penicillin, pivampicillin, lymecycline, metronidazole, doxycycline, erythromycin, ofloxacin) versus placebo.

Participants included in the review
Women undergoing surgical curettage abortion before 16 weeks' gestation were included.

Outcomes assessed in the review
How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
All studies were randomised, placebo-controlled, blinded trials. The percentage of study participants excluded after randomisation was calculated. The authors do not state how the papers were assessed for validity, or how many of the authors performed the validity assessment.

Data extraction
The data were extracted by one author in an unblinded manner on a standardised form. A second author, blinded to journal, year of publication, authors and institution, abstracted data from each of the articles on a separate, identical form. Discrepancies were solved by consensus.

Methods of synthesis
How were the studies combined?
The data were stratified according to antecedent factors associated with a high risk of postabortal infection (ie. history of PID, a positive preoperative chlamydia culture or a pre-operative bacterial vaginosis) or a low risk of postabortal infection (ie. no history of PID or a negative pre-operative chlamydia culture). Women were further stratified by class of antibiotic used and by incidence of postabortal infection in the placebo group, to account for differing baseline risks.
in the population.

Relative risks (RRs) and confidence intervals (CIs) were calculated from original data. The fixed-effect Mantel-Haenszel method was used to calculate summary RR estimates and 95% CIs for each subgroup.

How were differences between studies investigated?
A test of homogeneity, as described by Petitti (1994), was carried out.

Results of the review
Twelve RCTs (n=5,188) were included.

The overall summary RR estimate for developing postabortal upper genital tract infection in women receiving antibiotic therapy compared with those receiving placebo was 0.58 (95% CI: 0.47, 0.71).

Those with a history of PID had a RR estimate of 0.56 (95% CI: 0.37, 0.84). Women with a positive chlamydia culture at abortion had a summary RR estimate of 0.38 (95% CI: 0.15, 0.92).

Of low-risk women, those with no reported history of PID had a summary RR estimate of 0.65 (95% CI: 0.47, 0.90); in women with a negative chlamydia culture, the summary RR estimate was 0.63 (95% CI: 0.42, 0.97).

Heterogeneity was found in most summary estimates.

Cost information
The cost of preventing each case of infection was based on one of the most effective and inexpensive regimens in the cited studies: doxycycline 100mg orally 1 hour before the abortion, followed by 200mg after the procedure. The cost of a course oral doxycycline was estimated at $0.24. The estimated annual cost of treating preventable cases of infection was $195 per case for outpatient therapy.

Assuming a very low incidence of postabortal infection of 1% in the 1.4 million average-risk women undergoing abortion each year in the United States, routine use of periabortal antibiotics would prevent more than 6,500 cases of infection annually. Treating all average-risk women would cost $336,000, but would save more than $965,000 annually in direct costs alone.

Authors’ conclusions
The meta-analysis reveals a substantial protective effect of antibiotics in all subgroups of women undergoing therapeutic abortion, even women in low-risk groups. No more placebo controlled trials should be performed because women assigned to placebo are exposed to preventable risk. Routine use of periabortal antibiotics in the United States may prevent up to half of all cases of postabortal infections.

CRD commentary
A clear and well discussed review that may have been enhanced by greater reporting of the assessment of relevance and validity of the primary studies. However, the use of a fixed-effect model seems inappropriate in light of the heterogeneity found.

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Bibliographic details
Other publications of related interest

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.