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## Meta-analysis of parenteral clindamycin dosing regimens

*Rovers J P, Ilersich A L, Einarson T R*

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### Authors' objectives

To evaluate the differences in clinical outcomes for 2 different dosages of parenteral clindamycin, 600 and 900 mg, both 8 hourly, in adult patients with intra-abdominal infection or female pelvic infection.

### Searching

MEDLINE, EMBASE and International Pharmaceutical Abstracts were searched for English language articles describing clindamycin use in humans. Additional sources were personal and drug information centre files, and the reference lists of retrieved papers.

### Study selection

#### Study designs of evaluations included in the review

Comparative studies of both open and blind design were included.

#### Specific interventions included in the review

Parenteral dosages of clindamycin, 600 mg or 900 mg 8 hourly. Comparable treatments included any other regimen of clindamycin or equivalent antibiotic therapy.

#### Participants included in the review

Adult patients with either intra-abdominal infection or female pelvic infection were included. Exclusions: seriously ill patients who were expected to die, patients aged less than 18 years, studies including exclusively elderly patients and those receiving clindamycin for infection prophylaxis.

#### Outcomes assessed in the review

Cure, failure, and success were assessed. Cure was defined as the resolution of all clinical signs and symptoms of infection within 96 hours of beginning clindamycin therapy. Failure was defined as the continuation of clinical signs and symptoms of infection after 96 hours of beginning clindamycin therapy. Success rates were calculated from the pooling of data from cured cases and improved cases, where the latter group showed clinical progress that was insufficient for inclusion into the cure category.

#### 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

The authors do not report the method used to assess validity, or how the validity assessment was performed. [A: Quality assessment was not performed.]

### Data extraction

Two investigators extracted the data independently, but unblinded, and later reconciled any discrepancies.

### Methods of synthesis

#### How were the studies combined?

A weighted success rate was calculated (see Other Publications of Related Interest no.1) for each dosage regimen of clindamycin, adjusted for use with a single proportion. Rates of clinical outcomes between dosage regimens for each clinical indication were compared using the non-parametric Mann-Whitney U test.  $p < 0.05$  represented statistical

significance and rates differing by more than 20% were considered clinically significant.

#### How were differences between studies investigated?

A chi-squared test with k-1 degrees of freedom was calculated, k being the number of studies examined. A sensitivity analysis was performed whereby the cure rate was calculated solely for those studies in which the definition of cure coincided with that of the review.

### Results of the review

Abdominal infection: 6 studies (n=312).

Pelvic infection: 17 studies (n=819).

Total: 23 studies (n=1,131).

#### ABDOMINAL INFECTION

Clindamycin, 600 mg, 8 hourly dosage:

mean weighted cure rate (cured patients only) 76% (95% confidence interval, CI: 59, 92%, p=0.03);

mean weighted success rate (cured plus improved patients) 90% (95% CI: 81, 99%, p=0.28).

Clindamycin, 900 mg, 8 hourly dosage:

mean weighted cure rate 91% (95% CI: 85, 96%, p=0.03);

mean weighted success rate 93% (95% CI: 88, 97%, p=0.28).

Sensitivity analysis:

Only one study (600 mg regimen) shared the same definition of cure with the review; this demonstrated a cure rate of 87% and a success rate of 93%.

#### PELVIC INFECTION

Clindamycin, 600 mg, 8 hourly dosage:

mean weighted cure rate 83% (95% CI: 73, 93%, p=0.51);

mean weighted success rate 87% (95% CI: 80, 94%, p=0.51).

Clindamycin, 900 mg, 8 hourly dosage:

mean weighted cure rate 89% (95% CI: 86, 93%, p=0.51);

mean weighted success rate 90% (95% CI: 86, 94%, p=0.51).

Sensitivity analysis:

All studies of the 600 mg regimen used cure definitions similar to that of the review, whereas one study of the 900 mg regimen used a dissimilar definition. When this study was excluded from the analysis, both the cure and success rates were 90%.

Homogeneity of studies:

In most cases, studies were not significantly different from one another, thus permitting the combining of results. The

exceptions were studies of the 900 mg dosage in pelvic infection. The results of the sensitivity analysis suggested that differences between studies were likely to have been caused by random error rather than systematic differences.

### **Cost information**

No (although it is discussed as an issue).

### **Authors' conclusions**

In pelvic infections, an 8 hourly dosage of 600 mg clindamycin appears to be clinically acceptable for all patients. Although clinical outcomes for intra-abdominal infections are similar for both regimens, the significantly higher cure rate with an 8 hourly dosage of 900 mg clindamycin suggests that dosage recommendations should be patient specific.

### **CRD commentary**

Certain aspects of the review are well designed and clearly presented. However, limited information is given regarding participants. Moreover, there is a very limited description of study design and the way in which the studies were selected and assessed. [A: Quality assessment of studies was not performed due to the general poor quality of clinical drug trials in this field]. No attempt was made to locate unpublished literature (the authors acknowledge this) and only English language articles were retrieved. It is, therefore, possible that relevant material may have been omitted from the review.

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

The authors recommended that further research be undertaken to determine acceptable regimens of clindamycin for other indications.

### **Bibliographic details**

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### **PubMedID**

8547731

### **Other publications of related interest**

1. DerSimonian R, Laird N. Meta-analysis in clinical trials. *Control Clin Trials* 1986;7:177-88.

### **Indexing Status**

Subject indexing assigned by NLM

### **MeSH**

Abdomen; Adult; Anti-Bacterial Agents /administration & dosage /therapeutic use; Bacterial Infections /drug therapy; Clindamycin /administration & dosage /therapeutic use; Female; Humans; Infusions, Parenteral; Pelvis; Treatment Outcome

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### **Record Status**

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.