Medically sound, cost-effective treatment for pelvic inflammatory disease and tuboovarian abscess

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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Antibiotic regimens for the treatment of pelvic inflammatory disease and tuboovarian abscess (TOA).

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Female patients hospitalised for treatment of pelvic inflammatory disease and tuboovarian abscess.

Setting
Hospital. The economic study was conducted at the Hutzel Hospital, Detroit, Michigan, USA.

Dates to which data relate
Effectiveness and resource use data were obtained from a single study conducted between 1 January 1993 and 30 April 1997. The price year was not stated.

Source of effectiveness data
Effectiveness data were derived from a single study.

Link between effectiveness and cost data
The costing was undertaken prospectively on the same patient sample as that used in the effectiveness study.

Study sample
Out of a total of 203 consecutive patients admitted with a diagnosis of pelvic inflammatory disease, 179 women treated for a minimum of 48 hours were included in the analysis. Patients were treated with cefotetan plus doxycycline (n=103), clindamycin plus gentamicin (n=46), and ampicillin plus clindamycin plus gentamicin (n=50). For inclusion in the analysis, patients diagnosed with pelvic inflammatory disease demonstrated all of the following: lower abdominal tenderness, adnexal tenderness, and cervical motion tenderness. In addition, one of the following was present: oral temperature > 38 degrees C, mucopurulent cervical discharge, or cervical infection with N. gonorrhoea or C. trachomatis detected by deoxyribonucleic acid probe. Patients excluded from analysis were those with ruptured tuboovarian abscess on admission to the hospital (n=2), change of antibiotic regimen within the first 24 hours on the basis of physician preference (n=5), the use of an investigated quinolone (n=2), and those patients who received five different
combinations of antibiotics (n=15). All patients were premenopausal with a mean age of 26.1 years. Twenty-six percent of women had a prior episode of pelvic inflammatory disease, 21% had gonorrhea, 23% chlamydia and 5% syphilis. Power calculations to determine the sample size were not reported.

**Study design**
This was a retrospective cohort study carried out at a single centre. The duration of the follow-up was a minimum of 48 hours. There was no loss to follow-up.

**Analysis of effectiveness**
The analysis of effectiveness was based on intention to treat. The primary health outcomes examined included effectiveness of antibiotic choices, response to changes in therapy, hospital stay and operative interventions. The authors did not report whether, at analysis, patient groups were comparable in terms of demographic characteristics.

**Effectiveness results**
For tuboovarian abscess, triple therapy was significantly more effective (87.5%) than cefotetan plus doxycycline (34%) and clindamycin plus gentamicin (47%), (p=0.001). In group 1, hospital stay was 5.5 and 8.7 days, for women with no TOA and with TOA, respectively. In group 2, hospital stay was 4 and 9.15 days, for women with no TOA and with TOA, respectively. In group 3, hospital stay was 0 and 2 days, for women with no TOA and with TOA, respectively. Hospital stay was prolonged by about 3 days in women failing to respond to initial antibiotic therapy. Fifteen women with TOA responded to a change to triple therapy alone. Operative interventions were required in 7 of 30 cefotetan-plus-doxycycline treated women with TOA, 13 of 28 clindamycin-plus-gentamicin treated women with TOA and 2 of 16 treated with triple therapy.

**Clinical conclusions**
All three antibiotic regimens demonstrated comparable efficacy in treating pelvic inflammatory disease not complicated by TOA.

**Modelling**
No modelling was undertaken.

**Measure of benefits used in the economic analysis**
No summary benefit measure was used in the analysis and as such the authors conducted a costs and consequences analysis.

**Direct costs**
Discounting was not undertaken due to the short study period. Quantities and costs were not reported separately. Direct costs included pharmacy costs and physician charges. The quantity/cost boundary adopted was that of the hospital. The estimation of quantities and costs was based on actual data. Hospital charges and cost data were obtained from the accounting offices of the Detroit Medical Center. The price year was not stated.

**Statistical analysis of costs**
Continuous variables were analysed with analysis of variance. A one-sided p value of <0.05 was considered significant.

**Indirect Costs**
Not included.
Currency
US dollars ($).

Sensitivity analysis
Not reported.

Estimated benefits used in the economic analysis
See "effectiveness results" above.

Cost results
Mean costs were $4,337 for triple therapy, $3,681 for cefotetan plus doxycycline and $3,616 for clindamycin plus gentamicin, (p<0.05). Surgeon charges for patients with TOA were $4,000 for triple therapy, $9,400 for cefotetan plus doxycycline and $15,100 for clindamycin plus gentamicin. The mean charge for cefotetan plus doxycycline and clindamycin plus gentamicin in patients with therapy failure was $14,128 and mean cost was $7,846.

Synthesis of costs and benefits
Costs and benefits were not combined.

Authors’ conclusions
Cefotetan plus oral doxycycline is the most cost-effective regimen for treating uncomplicated pelvic inflammatory disease, whereas triple-antibiotic therapy is the treatment of choice in women with tuboovarian abscess.

CRD COMMENTARY - Selection of comparators
The reason for the choice of comparator is clear. Triple therapy, cefotetan plus doxycycline and clindamycin plus gentamicin represent standard antimicrobial therapies for pelvic inflammatory disease. You, as a user of this database, should consider whether these antibiotic regimens are relevant to your own setting.

Validity of estimate of measure of benefit
No ummary benefit measure was used in the analysis and as such the authors conducted a costs and consequences analysis. The data do not appear to have been presented selectively. As no sensitivity analysis was conducted, the results need to be treated with some caution.

Validity of estimate of costs
Calculations for hospital cost were made on the basis of hospital charges which may not reflect true opportunity costs. The costing methodology lacked some details, in particular the price date was not stated. No sensitivity analysis was conducted to test the robustness of the cost estimates.

Other issues
The authors’ conclusions are likely to be justified given the uncertainties in the data. The study suffers from a small sample size for certain subgroups. The authors did not examine the generalisability of the results to other settings or countries. However, appropriate comparisons were made with other studies in terms of clinical characteristics, treatment efficacy and costs.

Implications of the study
Further analysis is required in considering surgical interventions after 45 to 72 hours, and the use of other antibiotics (primaxin, metronidazole).

Source of funding
None stated.
Bibliographic details

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Other publications of related interest


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