Efficacy of prophylactic antibiotics in arthroscopic surgery

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
The use of prophylactic antibiotics in arthroscopic surgery

Type of intervention
Primary prevention.

Economic study type
Cost-effectiveness study.

Study population
Male and female patients undergoing arthroscopy. The average age was 31, with a range of 13 to 70 years. Patients with penicillin or cefazolin allergy were excluded, as were patients requiring metal implants.

Setting
Hospital. The economic study was conducted in Pensacola, Florida, USA.

Dates to which data relate
Effectiveness data were collected between February 1991 and March 1993 for the single study element and 1973-93 for the review. Costs data relate to 1988. No price year was given.

Source of effectiveness data
Effectiveness data were derived from the current study and a synthesis of previous studies.

Link between effectiveness and cost data
Costing was done on the same sample as the effectiveness data. The time frame of costing was unclear, but appears to be retrospective.

Study sample
Subjects were randomly assigned to cefazolin or placebo. Sample size power calculations were not discussed. The reason for the elimination of patients requiring metallic implants was not explained, but is assumed to be because they are already known to require prophylactic antibiotics. Of the 437 subjects enrolled, 199 were randomized to cefazolin and 238 to placebo. The number of subjects who refused enrollment or were eliminated due to exclusion criteria were not discussed.

Study design
Randomized, double-blinded, controlled, single center trial. The period of follow-up was 10-14 days and 6 weeks post-operation. No loss to follow-up was recorded.

**Analysis of effectiveness**
Effectiveness was analysed based on intention to treat. The health outcomes assessed were the rate of infection and the incidence of adverse events.

**Effectiveness results**
There were zero deep infections in either group. The placebo group had one superficial infection, requiring treatment. There was one adverse event, in the cefazolin group, requiring treatment. A statistical analysis was not carried out.

**Clinical conclusions**
The authors concluded that there was no evidence that cefazolin prophylaxis reduces the rate of infection after arthroscopic surgery.

**Outcomes assessed in the review**
The infection rate.

**Study designs and other criteria for inclusion in the review**
Retrospective case reviews and a prospective randomized study.

**Sources searched to identify primary studies**
Not given.

**Criteria used to ensure the validity of primary studies**
Not described.

**Methods used to judge relevance and validity, and for extracting data**
Not described.

**Number of primary studies included**
6 studies were included.

**Methods of combining primary studies**
Not combined.

**Investigation of differences between primary studies**
Not done.

**Results of the review**
The infection rate without prophylactic antibiotics was approximately 0.2% (0.2, 0.23, 0.7, 0.7 and 0.8 as recorded in studies with specific results).
Measure of benefits used in the economic analysis
The benefits assessed were the rate of infection and the incidence of adverse events. The method of valuation of these was not stated, and is assumed to be the surgeon involved in the case, of which there were six possibilities.

Direct costs
Costs were not discounted. The cost of treating the single case of infection was reported. The cost of using cefazolin as prophylaxis was reported as an estimated cost. The costs were reported from the hospital’s perspective. The dates of the price data are assumed to be 1991 to 1993 for the single study and 1988 for the review.

Statistical analysis of costs
Not carried out.

Indirect Costs
Not considered.

Currency
US dollars ($)

Sensitivity analysis
Not carried out.

Estimated benefits used in the economic analysis
The health outcomes assessed were the rate of infection and the incidence of adverse events.

Cost results
Intervention costs reported in the placebo group were for treatment of a single superficial infection only, at $52.80. For the cefazolin group, costs were estimated at $1.95 million per 100,000 arthroscopies.

Synthesis of costs and benefits
The costs and benefits were not combined. Incremental analysis was not performed.

Authors’ conclusions
The authors concluded that the use of prophylactic cefazolin in arthroscopic surgery was not cost-effective.

CRD COMMENTARY - Selection of comparators
The choice of comparator was appropriate as the active treatment was compared with a placebo.

Validity of estimate of measure of benefit
A statistical analysis could have been carried out on the data, as well as a sample size calculation in order to increase the validity of the results.

Validity of estimate of costs
Not all costs were considered. The costs of adverse events reported were not included. Costs of prophylaxis were estimated, rather than derived from the study population and data. The costs presented were not specified and may well only include drug costs.
Implications of the study
Prophylactic antibiotics do not appear to be warranted with arthroscopic surgeries where metallic implants are not involved.

Source of funding
None stated.

Bibliographic details

PubMedID
9048390

Indexing Status
Subject indexing assigned by NLM

MeSH
Adolescent; Adult; Aged; Antibiotic Prophylaxis; Arthroscopy; Cefazolin /therapeutic use; Cephalosporins /therapeutic use; Double-Blind Method; Female; Humans; Male; Middle Aged; Prospective Studies; Surgical Wound Infection /prevention & control

AccessionNumber
21997000375

Date bibliographic record published
30/09/1998

Date abstract record published
30/09/1998