Prospective evaluation of antibiotic prophylaxis prior to cystometrogram and/or cystogram studies: oral versus intramuscular routes


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 prophylaxis prior to cystometrogram and/or cystogram studies.

Type of intervention
Treatment; primary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
A cohort of male and female patients scheduled for a CMG or cystogram.

Setting
Hospital. The economic study was carried out in Philadelphia, USA.

Dates to which data relate
The main effectiveness data were taken from a clinical trial conducted in 1994. Resource and cost data were mainly derived from 1994 sources.

Source of effectiveness data
An estimate of the probability of complications and patient acceptance were derived from a single randomized controlled trial.

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
A cohort of patients scheduled for a CMG or cystogram. Seventy patients (54 male) were entered into the oral antibiotic group and 72 (53 male) were entered into the intramuscular gentamicin group. The average age was 44.1 years in the oral antibiotic group and 41.3 years in the intramuscular gentamicin group. There were 21 inpatients and 49 outpatients in the oral antibiotic group and 21 inpatients and 51 outpatients in the intramuscular gentamicin group. No power calculations to determine the sample size were made.

Study design
Randomized controlled trial. The duration of the follow-up was 6 months.

**Analysis of effectiveness**
The analysis of the clinical study was based on treatment completers only. The primary health outcomes used in the analysis were an estimate of the probability of complications and patient acceptance.

**Effectiveness results**
Complications were estimated to occur in 14.3% of patients who received oral antibiotics and 10% of patients who received gentamicin. The mode ranking for convenience of antibiotic prophylaxis was estimated to be 4 (good) for the oral group and 5 (excellent) for the gentamicin group (p<0.001). The mode ranking for comfort of antibiotic prophylaxis was estimated to be 4 (good) for the oral group and 5 (excellent) for the gentamicin group (p<0.01).

**Clinical conclusions**
Oral antibiotics and gentamicin have similar efficacy. Patients rated the gentamicin more convenient and comfortable than oral antibiotics.

**Measure of benefits used in the economic analysis**
No summary benefit measure was used in the economic analysis. The benefits were assumed to be the complication rate and patient acceptance determined by means of patients’ responses to a questionnaire.

**Direct costs**
Costs and quantities were reported separately. Discounting was not relevant. The quantity/cost boundary adopted was that of the hospital. The price date was not stated.

**Statistical analysis of costs**
Not undertaken.

**Currency**
US dollars ($).

**Sensitivity analysis**
Not conducted.

**Estimated benefits used in the economic analysis**
Complications were estimated to occur in 14.3% of patients who received oral antibiotics and 10% of patients who received gentamicin. The mode ranking for convenience of antibiotic prophylaxis was estimated to be 4 (good) for the oral group and 5 (excellent) for the gentamicin group (p<0.001). The mode ranking for comfort of antibiotic prophylaxis was estimated to be 4 (good) for the oral group and 5 (excellent) for the gentamicin group (p<0.01).

**Cost results**
The average wholesale price for oral antibiotics ranged from $2.20 to $40.00. The average wholesale price was $1.83 for an 800mg vial of gentamicin.

**Synthesis of costs and benefits**
A synthesis of costs and benefits was not undertaken by the authors. The intervention produced more favourable outcomes, had a similar efficacy but cost less than oral antibiotics thus making it the dominant strategy.

Authors’ conclusions
Gentamicin should be used as the method of choice for CMG/cystogram prophylaxis.

CRD COMMENTARY - Selection of comparators
The reason for the choice of comparator is clear. Intramuscular gentamicin may be equally efficacious while saving time and money by adding flexibility to the system. You, as a user of this database, should consider whether these are widely used health technologies in your own setting.

Validity of estimate of measure of benefit
No summary benefit measure was used in the analysis and as such the benefits are considered to be the same as the outcome measures. However, the data have not been used selectively to prove the effectiveness and patient acceptance of oral antibiotic versus intramuscular gentamicin although a full economic evaluation using one benefit measure would be required to assure greater validity.

Validity of estimate of costs
Adequate details of methods of quantity/cost estimation were given. Important cost items were not omitted.

Other issues
The authors’ conclusions are likely to be justified, given the uncertainties in the data. The issue of generalizability to other settings, however, was not addressed. The authors noted that they have not fully assessed the side effects of both oral antibiotics and gentamicin, and express caution for their use with elderly patients with poor renal function.

Implications of the study
Further studies which address the side effects of these health technologies are required.

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None stated.

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