Azithromycin compared with clarithromycin in the treatment of patients with acute purulent tracheobronchitis: a cost of illness study

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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
Azithromycin or clarithromycin in the treatment of acute purulent tracheobronchitis in adult patients. Clarithromycin (250mg twice daily) was given for 7 to 10 days. Azithromycin was given for 3 days (500mg once daily) or 5 days (500mg once daily on the first day; 250mg once daily for the next 4 days).

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Professionally active patients with acute purulent tracheobronchitis.

Setting
Hospital. The economic study was carried out in Brussels, Belgium.

Dates to which data relate
The main effectiveness data were extracted from a clinical trial conducted in 1993. Resource and cost data were mainly derived from 1993 sources. Resources were measured in 1993 values.

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
The study sample was a cohort of 134 adult, professionally active patients with acute purulent tracheobronchitis. 65 were treated with azithromycin (38.7 +/- 1.27 years, 66% male) and 69 with clarithromycin (40.4 +/- 1.23 years, 52% male). Power calculations to determine the sample size were not stated. Patients were excluded if they had received any antibiotics during the past two weeks. Pregnant women or women of childbearing age without reliable means of contraception were excluded.
Study design
The study was a randomised controlled trial. The follow-up was 5-6 and 14-21 days. Two patients treated with azithromycin were excluded from analysis as they did not return for follow up.

Analysis of effectiveness
The analysis of the clinical study was based on treatment completers only. The primary health outcomes used in the analysis were clinical response, time to clinical improvement, efficacy of treatment as assessed by physicians and patients' evaluations of treatment, and adverse events. The clinical characteristics of the two groups were similar.

Effectiveness results
The time to clinical improvement was significantly shorter for the azithromycin group than for the clarithromycin group. Both treatments were of equivalent efficacy. The number of cures, improvements, failure+relapse+indeterminate outcomes were 44, 15 and 4 in the azithromycin and 38, 24 and 7 in the clarithromycin group, respectively. Some 64% of the clarithromycin patients and 48% of the azithromycin patients reported adverse events, (P=0.062). 42 patients in the azithromycin group assessed treatment efficacy as very effective, 17 as not very effective and 2 as not effective. 48 patients in the clarithromycin group assessed treatment efficacy as very effective, 19 as not very effective and 2 as not effective.

Clinical conclusions
Both azithromycin and clarithromycin treatment regimens seem to be of equivalent clinical efficacy when used for the empirical treatment of acute purulent tracheobronchitis in adults. The median time to improvement of symptoms was significantly shorter in the azithromycin group than in the clarithromycin group.

Measure of benefits used in the economic analysis
The measures of benefits were total time when patients were unable to work (lost working days) and the associated costs.

Direct costs
Medical services and drug consumption were considered. Discounting was not undertaken. Quantities were analysed separately from prices. The quantity/cost boundary adopted was the hospital. The price date was 1993.

Statistical analysis of costs
Not undertaken.

Indirect Costs
Lost working days' costs were considered. Discounting was not undertaken. Quantities were analysed separately from prices. The quantity/cost boundary adopted was the hospital. The date of the price data was 1993.

Currency
Belgian francs (Bfr).

Sensitivity analysis
No sensitivity analysis was performed.

Estimated benefits used in the economic analysis
Some 77% of azithromycin patients and 78% of clarithromycin patients had at least 1 day when they were unable to work. The crude time patients were unable to work was significantly shorter (P=0.043) for azithromycin patients than for clarithromycin patients. The net time patients were unable to work was not significantly shorter for azithromycin (3.02 days) than for clarithromycin (3.55 days), (P=0.081). The net time patients were unable to work did not correlate with the length of treatment. The mean costs of being unable to work for 1 day were Bfr5,316 Bfr (US$146) for azithromycin and Bfr5.088 (US$140) for clarithromycin treated patients.

Cost results
The total direct costs were Bfr101,115 (Bfr23,340 for medical services and Bfr77,775 for drug consumption). Direct costs were comparable for both treatment groups and represented 5% of the total costs of a bronchitis episode. The indirect costs were Bfr2,070,985 (Bfr924,057 for the azithromycin group and Bfr1,146,928 for the clarithromycin group).

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

Authors’ conclusions
The two treatments were similar from both the medical and economic viewpoints. Clinical improvement was more rapid with azithromycin. It remains to be confirmed whether this property might lead to a reduction in the indirect, productivity-related costs of bronchitis.

CRD COMMENTARY - Selection of comparators
The comparator (azithromycin) was chosen since it allowed shorter treatment times than the standard method (clarithromycin) which can result in a shortening of the time during which patients are unable to work.

Validity of estimate of measure of benefit
The estimate of measure of benefit used in the economic analysis is likely to be internally valid.

Validity of estimate of costs
The data have not been used selectively, adequate details of methods of quantity/cost estimation were given and important cost items were not omitted. As noted by the authors, the duration of treatment in both groups was mainly influenced by the prescribing physician's choice and was not related to the severity of infection. Furthermore, the study included only professionally active patients with an income from work which could be measured. The costs generated by sick children, mothers, students, unemployed and retired persons were excluded.

Other issues
The issue of generalisability to other settings was not specifically addressed. The results were not presented selectively but it should be noted that a sub-population of professionally active subjects was employed.

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