The real costs of emesis: an economic analysis of ondansetron vs metoclopramide in controlling emesis in patients receiving chemotherapy for cancer

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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
Two medications, ondansetron and metoclopramide, used for controlling emesis in patients receiving chemotherapy for cancer.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
32 patients aged over 18 years receiving their first course of cisplatin or other highly emetogenic chemotherapy. The majority in both groups were male and the mean ages were 50 years and 56 years. Patients who had previously received chemotherapy treatment were also eligible as long as they had not experienced chemotherapy-induced emesis on a previous course.

Setting
Acute hospitals in the UK.

Dates to which data relate
No date was stated for the effectiveness analysis or the collection of resource use data. Drugs costs were from 1991. Material costs were from 1986/87 with adjustments for inflation. No date was stated for staff costs.

Source of effectiveness data
Single study.

Link between effectiveness and cost data
The time period of the costing study was not stated but it seems that the costing was undertaken prospectively on the same patient sample as that used in the effectiveness study.

Study sample
32 patients entered the study: 14 received ondansetron and 18 metoclopramide. Sample size was not determined by a power calculation. Patients were randomised to receive either ondansetron, (8mg intravenously at 0, 4 and 8 hours post chemotherapy) or metoclopramide (3mg/kg/h intravenously for 8 hours). No details were given on how or from where the sample was selected or on how they were randomised. No information was given on whether patients declined to
participate nor the percentage of patients who were excluded, (although a list of reasons for exclusion was given).

**Study design**
The study was an open, multicentre randomised, parallel group study. The number of centres involved was not stated. The duration of the study was 24 hours. The subject allocation method was not stated. No mention was made of loss to follow-up. No blinding methods were reported.

**Analysis of effectiveness**
The analysis was based on intention to treat. The health outcomes used in the analysis were (1) significant emesis and (2) adverse events to study medication. The majority of patients in each treatment arm were men: 75% in the ondansetron arm and 72% in the metoclopramide arm. The groups were stated to be similar with respect to mean age (49.8 years vs. 55.7 years) and weight (74.6kg vs. 68.0).

**Effectiveness results**
Patients were regarded as having been successfully treated if they experienced no significant emesis (defined as no more than 1 emetic episode experience) and no adverse events. 50% of patients who received ondansetron were successfully treated. 22% of the patients who received metoclopramide were defined as successfully treated cases. The median number of emetic episodes suffered by the ondansetron treatment group as a whole was 1 compared with 4 for those receiving metoclopramide. 2/14 patients receiving ondansetron experienced adverse events from the medication compared to 5/18 in the metoclopramide group. No confidence intervals or p-values were given.

**Clinical conclusions**
In this small group of patients ondansetron appeared to be more effective and to be associated with fewer side-effects, although the differences between the arms were not tested for significance.

**Measure of benefits used in the economic analysis**
The outcome measure used in the economic analysis was the proportion of patients'successfully treated'.

**Direct costs**
Costs were not discounted. Quantities and costs were not analysed separately. Costs were obtained by combining the acquisition price for each study drug with (1) the expenditure on those items required to administer the two drugs, (2) with the prices and administration costs of 'rescue' medication and medication used to treat adverse events and (3) with the material, nursing and medical time costs involved in caring for patients experiencing emesis or adverse events. Only health service costs were included in the analysis. Drug costs were derived from the monthly index of medical specialties (1991) and the British National Formulary. Material costs were derived from the Health Service Costings Returns (1986/7), with adjustments for inflation, and staff average hourly rates were obtained from the Department of Health.

**Currency**
UK Pounds Sterling (£)

**Sensitivity analysis**
No sensitivity analysis was carried out.

**Estimated benefits used in the economic analysis**
Patients receiving ondansetron were twice as likely to avoid significant emesis compared to those receiving
metoclopramide. Patients were followed up for 24 hours. The side-effects of treatment were included in the economic analysis.

**Cost results**
The mean utilisation cost (including treatment of side-effects) associated with ondansetron was 47.60; the corresponding figure for metoclopramide treatment was 20.28. The duration of the cost analysis was 24 hours and the costs of any adverse events were included.

**Synthesis of costs and benefits**
The cost per successfully treated patient was 95.20 and 92.18 for the ondansetron and metoclopramide groups respectively. These figures did not take into account the benefits to patients of avoiding emesis.

**Authors' conclusions**
Ondansetron and metoclopramide emerged as equally cost-effective antiemetic options when all utilisation costs and outcomes were taken into account, even though ondansetron carried a higher basic NHS price.

**CRD Commentary**
This was a pilot study with a small sample of patients. It is not clear how many centres were involved in this multicentre study and which patients were treated in which centre. No dates for the study period were given. No information on loss to follow up was provided and it is not clear whether all patients who were eligible for the study were actually entered. No statistical analysis (p-values or confidence intervals) or sensitivity analysis were provided for any of the results. The synthesis of costs and benefits was based on the cost per 'successfully treated' patient as defined by the authors. The results presented did not quantify the benefit to patients of avoiding significant emesis. The quantities of resource use were reported to have been measured but were not stated.

**Source of funding**
None stated

**Bibliographic details**

**Other publications of related interest**

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Antineoplastic Agents /adverse effects; Comparative Study; Cost-Benefit Analysis; Drug Costs; Drug Utilization Review; Female; Great Britain; Hospitals; Humans; Male; Metoclopramide /therapeutic use /economics; Middle Aged; Ondansetron /therapeutic use /economics; Treatment Outcome; Vomiting /chemically induced /prevention & control /economics

**AccessionNumber**
21995007121