Recombinant human granulocyte colony-stimulating factor (filgrastim) following high-dose chemotherapy and peripheral blood progenitor cell rescue in high-grade non-Hodgkins lymphoma: clinical benefits at no extra cost


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 haematopoietic growth factors following high-dose chemotherapy (HDCT) and peripheral blood progenitor cell (PBPC) rescue.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients with high-grade non-Hodgkin's lymphoma (NHL).

Setting
Hospital setting. The study was carried out at the Christie Hospital NHS Trust, Manchester, UK.

Dates to which data relate
Effectiveness and resource use data were collected between May 1993 and September 1995. 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 on the same patient sample as that used in the effectiveness study. The costing was carried out prospectively alongside the effectiveness study.

Study sample
24 consecutive patients aged less than 60 years with poor prognosis high-grade NHL were entered into the trial. One patient was randomised incorrectly before receiving chemotherapy and was excluded from the trial.12 patients received PBPC alone and 11 patients received PBPC+G-CSF after HDCT. No power calculations were reported.

Study design
The study was a prospective randomised controlled trial carried out at a single centre. Patients were followed-up until hospital discharge.

**Analysis of effectiveness**

The analysis was based on the intention to treat principle. The primary health outcomes studied included time to achieve a granulocyte count greater than 0.5x10^9 l^-1, duration of hospital stay, recovery period, days of fever, documented episodes of bacteraemia, antimicrobial drug usage and platelet/red cell transfusion requirements. Patient characteristics at diagnosis were provided for both groups.

**Effectiveness results**

The mean number of days to a granulocyte count greater than 0.5x10^9 l^-1 was less in patients receiving G-CSF (9.7 days (9-11)) than in those not receiving G-CSF (13.2 days (10-16); p<0.0001). The mean number of days to a granulocyte count greater than 1x10^9 l^-1 was less in patients receiving G-CSF (10.1 days (9-12)) than in those not receiving G-CSF (14.7 days (11-17); p<0.0001). Patients receiving G-CSF exhibited significantly less variation about the mean number of days (p=0.002, F-test). No difference was detected in terms of the time to an unsupported platelet count greater than 20x10^9 l^-1, the number of platelet transfusions, the number of units of red blood cells transfused, the number of febrile days or days on antibiotics, antifungal or antiviral therapy, or the number of positive blood cultures. Patients receiving G-CSF were discharged from hospital significantly earlier (12 days (11-14) after PBPC reinfusion) than patients not receiving G-CSF (15 days (13-22); p=0.001).

**Clinical conclusions**

After HDCT and PBPC rescue, the use of G-CSF leads to more rapid haematological recovery periods and is associated with a more predictable and shorter hospital stay.

**Modelling**

No modelling was undertaken.

**Measure of benefits used in the economic analysis**

No single effectiveness measure was put forward by the authors. Hence, this analysis qualifies as a cost-consequences analysis.

**Direct costs**

Costs were not discounted given the short time frame of the study (less than 1 year). Quantities and costs were not reported separately. Direct costs included costs of nursing and medical staffing, anti-microbial drug usage, blood product requirement, and G-CSF usage. The quantity/cost boundary adopted was that of the hospital. The estimation of quantities and costs was based on actual data. The source of cost data was the Christie Hospital NHS Trust. The price year was not stated.

**Statistical analysis of costs**

Not reported.

**Indirect Costs**

Not included.

**Currency**

UK pounds sterling (£).
Sensitivity analysis
Not reported.

Estimated benefits used in the economic analysis
Not applicable.

Cost results
Mean total costs for patients receiving G-CSF were 6,500 (range: 5,465 - 8,101) compared to 8,316 (range: 5,953 - 15,801) for patients not receiving G-CSF.

Synthesis of costs and benefits
Not applicable.

Authors’ conclusions
The use of G-CSF in this setting leads to an improved outcome for the patient at no extra cost to the health care system.

CRD COMMENTARY - Selection of comparators
The rationale for the choice of the comparators was clear.

Validity of estimate of measure of benefit
The relevant effectiveness measures were examined. The small sample size may explain why, in some cases, no statistically significant results were found. The authors did not examine long-term health outcomes and survival rates that may have been relevant.

Validity of estimate of costs
Only direct costs were included. No statistical analysis was conducted although reported ranges do not overlap. However, it is difficult to assess the robustness of the cost results.

Other issues
The authors did not examine the generalisability of the results to other settings or countries.

Implications of the study
The findings suggest the intervention proposed is dominant as it brings extra benefits at a lower cost.

Source of funding
None stated.

Bibliographic details

PubMedID
9579836

Other publications of related interest
G. Barbui T. Granulocyte colony-stimulating factor (G-CSF, Filgrastim) after or during an intensive remission induction therapy for adult acute lymphoblastic leukaemia: effects, role of patient pretreatment characteristics, and costs. Leukemia & Lymphoma 1997;26(1-2):153-161.


Indexing Status
Subject indexing assigned by NLM

MeSH
Adult; Antineoplastic Combined Chemotherapy Protocols /therapeutic use; Bleomycin /therapeutic use; Cost-Benefit Analysis /economics; Cyclophosphamide /therapeutic use; Doxorubicin /therapeutic use; Etoposide /therapeutic use; Female; Filgrastim; Granulocyte Colony-Stimulating Factor /economics /therapeutic use; Hematopoietic Stem Cell Transplantation; Hospitalization /economics; Humans; Length of Stay /economics; Lymphoma, Non-Hodgkin /economics /pathology /therapy; Male; Middle Aged; Neoplasm Staging; Prospective Studies; Recombinant Proteins; Vincristine /therapeutic use

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