being collected on both resource use by patients and patients' utility values. The data collection process had to be designed such that direct contact between patients and study nurses is limited (to avoid introducing bias into the care of patients) and is therefore dependent on self-administered questionnaires.
The second study is designed to assess the size and scope of the use of health care and other services by women with advanced breast cancer. This is a longitudinal cohort study and will enrol 130 women at two Ontario centres. The study will contribute to the development of an assessment instrument to predict the health care needs of patients in an attempt to reduce the number of unplanned health care encounters. The economic component of the study will assess both the costs of treating women with advanced breast cancer and will facilitate modelling the potential economic impact of the assessment instrument. The study has been designed to deal with the many data collection problems associated with a patient group expected to become terminally ill during the course of the study. Potential improvements to the quality of data collected by increasing the number of patient interviews, have to be weighed against the need to reduce respondent burden and minimise missing data.
Discussion: The NCIC is becoming increasingly interested in the application of health economics to studies of cancer control strategies. The two studies outlined illustrate the potential variety of study designs and questions which may arise as interest in the economics of cancer care increases. Specific problems within the design of the studies have had to be addressed. The success of these initiatives will assist in the design of future studies, particularly involving terminally ill patients and patients cared for in the community. The studies will provide information to address the fundamental economic questions raised. In addition, they will provide original data on both the costs and utility values of women at differing stages of breast cancer progression. Such data will be extremely useful for further research.

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PP16. Multi-centre economic evaluation of chart in the treatment of patients with head and neck cancer and carcinoma of the bronchus: Lessons for future studies

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Background: We conducted a cost-effectiveness analysis of an innovative approach to treating cancer patients with radical radiotherapy. The study was conducted alongside a multi-centre randomised controlled trial and used patient specific data and stochastic statistical analysis. In addition to the results, important issues for future stochastic economic analyses are explored.
Methods: Two multi-centre clinical trials were conducted comparing conventional therapy and continuous hyperfractionated accelerated radiotherapy (CHART) in patients with head and neck cancer and carcinoma of the bronchus. Patient specific resource use data were available for 526 head and neck patients (314 CHART and 212 conventional) and 286 bronchus patients (175 CHART and 109 conventional). We compared the total treatment costs for each regimen. In addition, we explored the degree of variation in costs between treatment centres and the quality of reporting of community service resource use from two alternative sources: patients and GPs.
Results: For head and neck cancer patients, CHART cost £ 1092.13 ($p<0.0011$,95 % CI £ 763 to £ 1421) more than conventional therapy. For bronchus patients, CHART cost £ 697.79 ($p<0.001$, 95 % CI £ 392 to £ 1003) more than conventional therapy. No differences between regimens in long-term morbidity or quality of life were found. Survival was greater for bronchus patients treated by CHART - 30 % at two years compared to 20 % ($p=0.006$). There was only a small and non-significant improvement in disease free survival for head and neck patients, although there was a trend for those patients with more advanced disease (T3 and T4) to gain benefit. Costs varied significantly within each treatment-disease site sub-group. For patients treated by CHART, there was large variation between treatment centres. However, for conventionally treated patients variation in costs occurred within treatment centres rather than between centres. GPs returned significantly fewer community services forms than patients. There was statistically significant differences between community resource use as reported by the patient and by the GP. GPs reported greater GP-patient contacts but fewer contacts with other community services.
Conclusions: Although more costly, given its survival benefits CHART should be a cost-effective therapy for patients with carcinoma of the bronchus. In addition, it may be cost-effective for patients with advanced head and neck cancer. Variation in costs between centres was only significant in the experimental treatment (CHART). The most significant factors accounting for the degree of variation related to logistical issues in the management of care: provision of hostel facilities, timing of treatment, methods of reimbursement for out of hours therapy. Thus, although variation between centres occurred it is likely that it may be reduced once centres adopt more efficient methods of care. There were differences in both the quality of reporting of community resources and the quantities of resource use reported. In this case, differences did not effect the study's results. However, in future studies the potential impact of alternative sources of resource use may be considered. Study results may be pertinent to economic analysis conducted alongside clinical trials.

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PP17. An economic comparison of inpatient versus outpatient treatment of febrile neutropenia in a pediatric oncology ward

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Objectives: To document the cost implications of a switch to OPAT for third party payers and patients in a pediatric oncology department.
Background: Several trials have described the safety and clinical efficacy of outpatient parenteral antibiotic treatment (OPAT)[1] and the conditions for OPAT management of such patients to be successful[2]. OPAT has also potentiel economic advantages by lowering the cost of treatment,
Methods: In order to document the cost implications to third party payers and patients of a switch to OPAT in a pediatric oncology department of a teaching hospital, a quasi experimental before-after design was used. Patients were divided in to 2 groups: a retrospective control group consisting of the cases seen over the last 6 months (N=1 1) and a prospective intervention group consisting of all new patients admitted for FNE (upo to N=30) after implementation of the new policy starting in june 1997.
The cost of inpatients were assessed through their billings, with all expenditures allocated on a daily basis including additional patient out-of-pocket expenses . The chosen once-daily antibiotic treatment for OPAT consists of Ceftriaxone® as single agent or in combination with an aminoglucoside or with Teicoplanin® in case of suspected gram positive strain.
Results: Results from the retrospective control group show a median inpatient length of stay (LOS) of 8 days. The minimum LOS was 5 days and the maximum 12 days. The average total per diem cost varied between 20,929 BF (±1622) and 24,441 BF (±2265) with however a slight increase observed on day 3 related to swithching to a more expensive antibiotic therapy for some patients.
These cost estimates will be compared with the preliminary cost estimates of the prospective OPAT group in which each OPAT patient will serve partially as his own control (inpatient treatment during the first two days versus outpatient treatment during next days).
Discussion: Although OPAT is in theory a less costly alternative than traditional hospitalitzation, potentiel savings for the health sector from a switch to OPAT have to take into account complementary costs of outpatient management and possible shifts of costs to the patients which should be compensated for.

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PP18. Hospital costs of intensive chemotherapy followed by peripheral stem cell reinfusion

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Background: New therapeutic regimens in hematologic oncology are increasingly aggressive and expensive. In order to be funded, they must prove both their effectiveness and cost-effectiveness. Therefore, economic evaluation becomes increasingly important in decision making. We wanted to analyze the distribution of direct and indirect medical and ancillary costs in peripheral stem cell reinfusion.
Methods: Twelve patients were included in the study (4 leukemias, 4 lymphomas, and 4 multiple myelomas) out of a cohort of 25 patients treated in 1996. Direct and indirect medical and ancillary costs were isolated for each patient according to clinical data retrieved from the chart and cost data from the hospital cost structure. A mean cost was computed for each diagnostic category.
Results: Mean age, length of stay, and ressources consumption were as follows:

Variable	Leukaemia	Lymphoma	Myeloma	Mean	%
Patient number	4	4	4		
Mean age (yr) (range)	33 (19-49)	45 (32-53)	57 (51-65)	45 (19-65)	
Mean length of stay (range)	27.3 (20-37)	21.5 (19-26)	20.3 (19-21)	23 (19-37)	
Direct costs					
Medical	5'404	4'337	4'105	4'615	8.5
Nursing	13'087	10'815	11'477	11'793	21.8
Blood, cell processing	7'866	7'782	10'074	8'574	15.9
Drugs	10'798	8'823	8'857	9'493	17.6
Laboratory	5'352	3'851	4'812	4'671	8.6
Radiology, other serv	1'140	778	769	896	1.7
Miscellaneous serv	1'370	455	1'130	985	1.8
Material	582	389	379	450	0.8
Indirect costs					
Personal	8'145	6'426	6'053	6'875	12.7
Ancillary	6'750	5'326	5'016	5'697	10.5
Total	**60'494**	**48'982**	**52'672**	**54'049**	**100**
Cost per day	**2'216**	**2'278**	**2'595**	**2'350**	

Discussion: Costs of intensive chemotherapy followed by stem cell reinfusion for hematologic malignancies are very similar between leukemias, lymphomas and myelomas. Major centers of charges are direct costs (nursing, blood-platelets-stem cell processing, and drugs). Knowledge of the cost distribution is important in negotiating reimbursement strategies for individual institutions.

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PP19. Pharmacoeconomic evaluation of Etoposide Phosphate vs. Etoposide in small cell lung cancer: A European (five-country) study

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Background: Etoposidephosphate (Etopophost®), a water-soluble prodrug of etoposide, has recently been introduced for the treatment of small-cell lung cancer (SCLC) and other tumor types. Etoposide phosphate shows equivalent efficacy compared to etoposide (as it is converted to the active metabolite *in vivo),* but shows a better safety profile (it does not cause acidosis at high doses because of its formulation). As it can be reconstituted to a concentration of 20 mg/ml, etoposide phosphate has the added advantage of being administered in 5 minutes rather than 30 minutes to 1 hour required for etoposide. These characteristics provided a research opportunity to measure the net health economic impact of substituting etoposide phosphate for etoposide in SCLC treatment.
Methods: The objective of this study was to conduct a comparative economic evaluation of etoposidephosphate vs. etoposide in SCLC chemotherapy in five European countries- Austria, Belgium, France, the Netherlands, and the UK A modeling approach was used to assess the impact of etoposide phosphate since actual usage data was not available. An advisory panel of three practicing oncologists and one health economist was established in each participating country. Clinical practice information obtained from the oncologist panel and literature was used to develop a median treatment algorithm and a "resource utilizationmodel" for SCLC chemotherapy. This model addressed all aspects of care from diagnosis and staging to the final cycle of chemotherapy. Financial data collected from each country was used to value the resource utilization model and a "total expected cost of treatment" was computed for both etoposide and etoposide phosphate-based SCLC chemotherapy. An economic analysis was conducted to determine the net economic impact of etoposide phosphate on SCLC chemotherapy. Finally multiple sensitivity analyses were performed to evaluate the robustness of final results to changes in one or more economic or clinical assumptions inherent to the model.
Results: The results indicated that, in all five countries, the *Total expected cost of* SCLC chemotherapy is similar between an etoposide and an etoposidephosphate-based regimen. The increased agent costs associated with etoposidephosphate usage are offset by a decrease in nursing and outpatient facility costs due to etoposide phosphate's better administration profile. Also, the decrease in nursing and facility costs with etoposide phosphate are more pronounced when chemotherapy is provided in the outpatient setting.
Discussion: In addition to the safety and patient-related benefits associated with its improved administration profile, etoposide phosphate offers a similar total cost of treatment as an equivalent etoposide-based chemotherapy regimen. These results indicate that etoposide phosphate is a viable alternative to etoposide in SCLC chemotherapy, especially in the outpatient setting.

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PP20. Opportunities to reduce the cost of care for breast cancer (BC) in Canada

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Background: Statistics Canada, in collaboration with oncologists, has developed a model of breast cancer management in Canada which incorporates recent information on incidence, diagnosis, treatment, follow-up, disease progression, survival and direct costs by disease stage.
Methods: Incidence data from the Canadian Cancer Registry; staging and treatment information from provincial cancer registries and surveys of oncologists; and length of stay from a national hospitalization database. Direct costs were determined in 1995 Canadian dollars from provincial fee schedules, cancer centres and teaching hospitals.