[1]Bash R, Katz J, Cash J, Buchananan G, Safety and cost effectiveness of early hospital discharge of lower risk children with cancer admitted for fever and neutropenia, Cancer, July 1994, vol. 74, n° 1, 189- 196.
[2]Rubenstein EB, Rolsion K, Outpatient management of febrile episodes in neutropenic cancer patients, Support Care Cancer, 1994, 2:369-373.

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.

Results: The average cost per case of initial management of BC ranged from $8.805 (St I > 50 yr) to $11,419 (St III, <50 yr). The cost of surgery/hospitalization made up approximately 35-58% of these costs. The lifetime costs of treating the 17,700 women diagnosed in 1995 in Canada are estimated to be $455.2 million; surgical care and associated hospitalization makes up 19% of this total. A review of the average length of hospital stay (ALOS) for initial surgery revealed a relationship to age and surgical procedure (breast conserving surgery (BCS) vs mastectomy) and significant variability between provincial ALOS. Increasingly, BCS is being undertaken on an ambulatory basis and mastectomy can be performed with minimal requirement for hospitalization. The current ALOS for BCS in Canada is 4- 4.5 days and 5- 6.4 days for mastectomy.
Discussion: If Canadian surgical practice could be modified to reduce the ALOS of BCS to 0 and that for mastectomy to 2 days, then the national burden of breast cancer care could potentially be reduced by as much as $57.1 million. Of course, the early discharge of women from hospital cannot be accomplished without appropriate home-based care services. The costs of these services are as yet unknown, but are very unlikely to equal those of hospital-based postoperative care. These costs need to be measured in order to determine the net savings to the national health care budget. Policy makers must direct resources to the provision of home-based care and to the assessment of its cost-benefit.

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PP21. President Reagan's colon cancer legacy: the long term public health and economic benefits of a discrete event

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Background: Few studies exist that examine a potential relationship between coverage of cancer in the popular press and subsequent public health/economic outcomes. In a novel 1990 study published by Brown and Potosky, "The Presidential Effect: The Public Health response to Media Coverage About Ronald Reagan's Colon Cancer Episode" the authors identified and used three nonreactive measures to evaluate the impact of this July 1985 event. The authors suggest a temporal relationship between this cancer episode and public interest, screening behavior, and incidence of disease. Unfortunately, the authors' analysis was in part limited due to the lack of mortality data and the unavailability of long term public interest, screening, and incidence data. By using long term data now available, we extend this study by evaluating the sustained impact and significance of this episode. We also use mortality data unavailable to Brown and Potosky to develop cost per life year saved estimates.
Methods: Phone calls from the general public to the U.S. National Cancer Institute (NCI) through its Cancer Information Service (CIS) CONCERNED with colon or rectal cancer from 1984 to 1994 are used to measure public interest. Rates of screening utilization obtained from the U.S. Health Care Finance Administration (HCFA) from 1983 to 1994 are used to measure changes in screening. Surveillance data from NCI are used to measure shifts in incidence of early and advanced colorectal cancer from 1980 to 1993. NCI mortality data from 1973 to 1993 are used to determine if the event can be associated with a real public health benefit. Regression analysis including Chow tests are used to evaluate the potential impact of this public health event. Estimates are made of the cost per life year saved suggested by a change in the public's interest in colorectal cancer.
Results: We found a sustained and statistically significant increase in the colorectal cancer related phone calls to NCI coincident with the Reagan episode. The analysis also shows a sustained increase in the utilization of screening and an unexpected statistically significant increase in of early and advanced colorectal cancer incidence rates. In addition, colorectal cancer mortality rates decline at a faster rate subsequent to event. Cost per life year saved associated with this event are estimated for the years 1986-1996 and approach $29,000 in 1996.
Discussion: New evidence suggests that this discrete public health event contributed to a sustained and beneficial impact on public health. Reduced colorectal cancer mortality rates and increased life years saved, appear to be correlated with President Reagan's colon cancer episode.

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PP22. Revealed preferences in clinical trials

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Preferences of patients are a key factor in the evaluation of alternative treatment methods. However, the elicitation of preferences involves methodological as well as practical difficulties. For instance, questions on willingness to pay to avoid particular health risks are subject to the criticism that hypothetical trade-offs are not validated. A practical problem, most prominent in clinical trials, is that patients may be upset being asked about trade-offs, when they in fact have no freedom of choice but to opt out of a trial.
We propose instead a trial procedure, where patients choose the treatment strategy. Such a procedure may not be feasible when a trial aims to determine the independent effect of a particular treatment. But take the case where the trade-offs of alternative treatments are more or less clear, but high uncertainty exists with respect to patients' preferences. Letting patients in this situation decide on the treatment will reveal how they value the trade-offs involved with the alternative treatments.
A revealed preference approach may be particularly suited in therapies where the treatment alternatives do not imply different mortality prospects. An example is breast cancer in early stage where there is no metastasis of the tumor. This cancer can be treated either with breast-preserving surgery, followed by a radiotherapy, or an amputation of the breast. An adjuvant (chemo or hormone) therapy for preventing distant metastases is indicated in both cases, if the histology diagnosis is positive. At this second stage, the patient again chooses the therapy she prefers. While the technologies available at the two stages of the decision process do not significantly differ with respect to survival prospects, they affect various dimensions of quality of life differently. Consequently, the trade-offs in this case involve aspects of quality of life rather than of longevity.
Patients joining the clinical trial would be asked about their willingness to make certain trade-offs, in order to evaluate their risk aversion, time preference and their willingness to substitute one dimension of quality of life with another. Since the decisions of the patients do not only depend on preferences, but also on constraints, the patients are asked to indicate travel and waiting time, insurance coverage as well as income and other socioeconomic factors.
Compared to a traditional evaluation study, the proposed procedure has the following advantages. First, a systematic bias is avoided, if patients, rather than the general public, are asked about health trade-offs. Second, with the revealed preference approach the patients' answers to trade-off questions can be validated. Third, the relative importance of preference characteristics (risk aversion, time preference, preference for various quality of life dimensions) and of constraints (waiting and travel time, income of the patient, etc.) for the treatment decision can be analyzed. Finally, the revealed preference approach allows to study whether decisions of the patients are systematically linked to the hospitals where they undergo treatment.

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