were validated by an individual interview, the use of the material and facilities was valued according to management data, and time was valued according to the local salaries for each profession.
Results: A good compliance was obtained (98 answers out of 99 questionnaires sent). Education is performed by 67 % of physicians, 86% of nurses, 14 % of other professionals, and 2% of administrative managers in the institution. In time spent, student training came first with 95 092 hours per year, then secretarial preparation with 7 936 hours, professional teaching and conferences took 3 508 hours and teaching for University degrees 3060 hours per year.
In terms of cost, the major activity was also student training (7 855 256 French Francs -FF-), then professional education (1 643 689 FF), University degrees (1 509 304 FF), and secretarial work (1 166 592 FF).
A total of 133 different educational activities were identified, for a total cost to the institution of 13 682 996 FF, about 4% of its budget. Transportation costs amount to 2.9% and the use of the center's facilities to 10.7% of this total cost.
In conclusion: Education in a Cancer Center is a major activity which is often underestimated in time spent as well as in cost. This study provides important information that can help make strategic decisions and find adequate means.

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PP7. Economic evaluation of patients (pts) with lymphomas enrolled into phase II-III clinical trials (ct) in an oncology centre

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Background: This abstract shows the preliminary results of an ongoing study aimed at: a) compare the bestowal of sources to PTS with neoplastic diseases and enrolled into phase N-M CT vs. homogeneous PTS not enrolled into CT, who underwent standard therapies; b) comparing the global resources absorbed by both groups with respect to the Diagnoses Related Groups (DRG) tariffs.
Methods: The study started on June 1996 and enrolled all new PTS affected by non-Hodgkin's Lymphomas (NHL) and Hodgkin's Disease (HD) hospitalized at the Division of Medical Oncology of the CRO - Aviano. Information was gathered on: a) sociodemographic conditions, b) diseases' characteristics as diagnosis, histology, stage according to Ann Arbor and histology according to Working Formulation, c) assessment of resources taken up by each patient, (i.e. radiological and radioisotopical test, laboratory test, length of stay in hospital, antiblastic treatment, and all other medical therapies administered during hospitalization), d) DRG tariffs. At the end of February 1997, 82 PTS who satisfied the eligible study criteria were enrolled: 61(74%) with NHL and 21 (26%) with HD. Among them, 53 (65%) PTS were enrolled into CT and 29 (35%) were treated with standard strategies. This 29 PTS have not been enrolled into CT due the subsequent causes: a) early stage disease (in the lack of an active study protocol for stage I NHL) and relapsed diseases (62%)) b) aging > 70 years and poor performance status (15%), C) logistic problems (19%).
Results: The table shows the differences between the two groups PTS regarding the four parameters evaluated:

Direct cost (US$) of:	PTS enrolled into CT mean	PTS not enrolled into CT mean
Antiblastic drugs	848.4	260.5
Radiological tests	358.4	304.4
Radioisotopic tests	138.8	110.6
Hospitalization	3119.5	2752.6

Preliminary results: We estimated that the costs of the management of PTS enrolled into phase II-III CT exceeded of 10-40% the reimbursement indicated by DRGs.

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PP8. The impact of changing the reimbursement system for radiotherapy in Catalonia

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Background: The increasing role of radiotherapy in radical and palliative treatment of cancer was not accompanied by parallel and adequate increases in resources to provide radiotherapy treatments in Catalonia. Furthermore, the existing reimbursement system was based on a low fee per fraction of treatment and could induce a medically unnecessary increase in the number of fractions administered. Moreover, it did not take into account the diverse complexity and cost of radiotherapy treatments.
Methods: A new reimbursement system was designed, tested, and implemented in 1990. The unit of payment of this new system was the whole treatment instead of the fraction and it distinguished 3 levels of complexity each at a different fee. An information system was established to monitor the impact of the new reimbursement system.
Results: Implementing this new reimbursement system has made an impact in the following aspects:
- it has made it possible to learn the number of patients treated per centre and, thus to have a measure of productivity of centre adjusted according to the complexity of treatments
- it has established a basis for discussing the costs of treatments in an ambulatory setting that were analysed to establish new fees per treatment.
- it has made it possible to establish a prospective, activity-based budget for radiotherapy separate to the global budget of the hospital which facilitates converting health care administration priority for radiotherapy into practice at hospital level
- it acknowledges the low payment per case and has lead to a progressive increase of the payment per case treated (mean increase, 152 %, 1990-97); the fee for each level has progressively come close to real cost.

In parallel, the health care administration has made continuous investments in radiotherapy, either acquiring new or replacing old equipment. These measures have had the effect of increasing the number of patients treated by 58%.
Discussion: The reimbursement system can have a substantial impact, positive or negative, on the way health care is delivered. Health care policy makers can and should use the reimbursement system as one of the mechanisms to promote an efficient delivery of high quality services in conjunction with new investments should it be necessary.

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PP9. Cost-quality of life study in inflammatory breast cancer (IBC) out patients receiving high dose intensity chemotherapy with RH-GCSF and stem cell support (PEGASE 2)

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Background: The aim of this study was to evaluate chemotherapy side-effects, quality of life (QL) and monetary costs of a French national protocol (cycle 1: Cyclophosphamide (C) 6gr/m², Doxorubicin (D) 75mg/m²; cycle 2: C 3gr/m², D 75mg/m²; cycle 3: cycle 2 + 5FU 2500mg/m²; cycle 4 cycle 3; mastectomy; radiotherapy) proposed to IBC

patients (pts), in order to complete its clinical evaluation. Contrary to conventional graft, this intensive chemotherapy may be administered in outpts.
Methods: Pts were included in this study between 12/94 and 09/96. Physical symptoms due to chemotherapy were assessed in terms of frequency, duration/severity and distress using a self-administered questionnaire including 19 side-effects and completed by pts at the 4th cycle. The multidimensional QL was evaluated by means of the EORTC QLQ-C30 administered : (a) prior the start of the treatment (b) at the 4th cycle of chemotherapy and at the end of radiotherapy (c) 1 month after the treatment and every year until 3 years. Variables for the evaluation of monetary costs were collected both in case report forms and by using a specially designed indirect cost form completed by pts at the end of the treatment and during the 3 years follow-up.
Results: 100 pts were included in the protocol. The current estimation of the return rate of questionnaires is 84% during the treatment and 65% during the follow-up. At the 4th cycle, tiredness, alopecia, lack of appetite, nausea, vomiting, change in taste, fever and weight loss were reported by 96 % to 63% of pts. Most of symptoms were distressing for patients, the most distressing being mucitis, vomiting, change in taste and stomach pain. At the end of chemotherapy the scores of the EORTC functioning scales (physical, role, cognitive, social and global QL) were statistically significantly lower than baseline scores. At the end of radiotherapy, these scores regained baseline values except for physical and role scores ($p<0.05$). One year after inclusion in the treatment, all functioning scores were not statistically different from pre-treatment values excepted role score ($p<0.05$).
Discussion: The protocol proposed to pts had an important adverse effect on QL, but this effect disappeared at the end of radiotherapy for several QL dimensions and for nearly all QL dimensions 1 year after inclusion. The cost study will be performed on the 100 pts, when all case report forms will be filled, to assess the ratio cost-effectiveness of this therapy. These results will be compared with those of 2 historical groups of IBC pts treated by high dose chemotherapy with conventional graft or by conventional chemotherapy + radiotherapy sequence.

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PP10. Economic evaluation of adjuvant treatment for early breast cancer

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Background: The Adjuvant Breast Cancer (ABC) trial is a national collaborative randomised controlled trial to determine the value of adding cytotoxic chemotherapy and/or (in pre/perimenopausal women) ovarian suppression to prolonged adjuvant tamoxifen. The cost-effectiveness of this potential advance in cancer treatment will be critically dependent on a number of factors, including patient selection, the methods of treatment delivery and the impact of the treatments on quality of life.
Methods: The approach taken was that of a pre-trial modelling exercise, using available data and 'expert' opinion, to determine the key determinants of the cost-effectiveness. Further data collection can then be concentrated on these key parameters during the trial. Thus data collection during the trial is kept to a minimum. A discrete event simulation model has been built describing the treatment pathways and possible progression of the disease. The events modelled are the administration of adjuvant treatment, local-regional recurrence, bone and non-bone metastases. Four categories of both menopausal and toxicity side-effects of the adjuvant treatments have been modelled as attributes, and cost and quality of life attributes have been attached to the events. The study is now at the stage of testing the sensitivity of cost-effectiveness to the values of the model parameters.
Discussion: Although the methods presented are applied specifically to the ABC trial, the approach is applicable to economic evaluations integrated into clinical trials generally. One of the main advantages of the approach is seen as reducing the time and effort needed to collect large amounts of data and thus minimising disruption to everyday clinical activity. It does, however, require close collaboration between the health economists and modelling analysts.

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PP11. Summary recommendations from the conference on purchasing oncology services: Methods & models in the marketplace

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Background: The annual cost of cancer care (prevention through terminal care) in the United States has been estimated to exceed more than $ 100 billion. The aging population is expected to significantly increase cancer incidence and associated costs. Accordingly, there is considerable concern about the high cost of oncologic services among purchasers and suppliers. Furthermore, there is currently very limited information regarding the clinical content of and quality of care reporting requirements within risk/capitated oncologic service contracts. In order to improve information flow between purchasers and suppliers of oncologic services, the American Cancer Society and the Kerr L. White Institute for Health Services Research have organized a multidisciplinary conference to synthesize clinical evidence, patient preferences, system performance and resource constraints to develop recommendations to assist health care purchasers in making better informed decisions when procuring benefits packages for oncologic services.
Methods: A two-day conference will be held in Chicago, Illinois, on September 11-12, 1997 that will include presentations and discussions focused on developing recommendations for purchasing oncologic services. The conference attendees will include health care purchasers and suppliers, clinicians, insurance companies, and members of the academic community. A multidisciplinary task force is responsible for planning the conference and writing the summary recommendations and papers describing current methods and models for purchasing oncologic services. These papers will be published in the peer-reviewed literature in a supplement to the journal *Cancer*. The task force members will include purchasers of oncologic services including government and private sector employers; suppliers of oncologic care such as clinicians, managed care organizations, and cancer centers; insurance companies; evidence-based health care methodologists; and consumer/advocacy groups.
Results: The conference will conclude with a presentation of the summary purchasing recommendations and discussion. This summary report is intended to aid purchasers by recommending basic guiding principles to be used in defining oncologic benefits packages and will incorporate a purchaser's view from a population-based perspective. At the First European Conference on the Economics of Cancer, we propose to describe the methods and models for purchasing oncologic services that are being employed across the United States and the implications of the American experience for the European Community.

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PP12. Decision model for the cost of using opioids to treat cancer pain

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Background: Patients requiring treatment for cancer pain often require strong opioids. A number of different drugs and delivery systems are available and patients may be switched between different forms during the course of their illness. The acquisition cost of opioids represents only a small part of the true cost. We are therefore developing a model to