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

determine the cost implications of using different types of opioid including considerations such as staff time involved, management of side-effects, concomitant medication and cost of delivery systems.
Methods: A decision tree is being developed in consultation with a panel of UK experts in palliative medicine, palliative nursing, general practice and pharmacy. The tree represents likely pathways for terminally ill patients from the time they are switched from a weak to a strong opioid, until death. Mean drug dose and duration of treatment are derived from the Mediplus database. This covers 5% of the UK population and provides details of 2000 patients with cancer receiving 11,500 prescriptions for opioids. Mediplus findings have been discussed with and confirmed by the expert panel. Other costs such as time spent by nurses or doctors in administering analgesia and the cost of managing side-effects such as constipation and nausea are based on published studies or consultation with the expert panel.
Results: The findings from this model will be presented at the meeting. The results will show the cost of each treatment option and put the cost of opioids into context in terms of the total cost of palliative care. The model will show that hospice care and hospitalisation are the key cost drivers in managing terminally ill patients. Therefore any opioid that reduces in-patient stay will have a significant impact on these costs.

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PP13. Comparison of the cost of managing constipation in cancer patients receiving oral morphine or transdermal fentanyl

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Background: The acquisition cost of a drug represents only one component of its true cost. The incidence of side-effects and the cost of treating them should be considered when comparing the costs of different types of treatment. Clinical trials have shown that patients receiving transdermal fentanyl suffer less constipation than those taking oral morphine. We used one such trial as the clinical basis for an economic model of the cost of managing this side-effect in patients with cancer pain.
Methods: A large-scale randomised, cross-over comparison of sustained-release oral morphine and transdermal fentanyl was used to provide data on the incidence of constipation associated with the two treatments. Patients received either morphine (MST Continus) or fentanyl (Durogesic) for 15 days and then the alternative treatment for a further 15 days. Short-acting oral morphine was available throughout the study for breakthrough pain. Pain scores in the two groups were comparable. Health service resource use for preventing and treating constipation were gathered from interviews with investigators from UK palliative care centres and then valued in monetary terms. Sensitivity analysis was used to assess the effect of variations within the model.
Results: The clinical trial showed that 51% of patients experienced constipation during treatment with morphine compared to 29% during treatment with fentanyl. The mean cost of managing constipation per patient for two weeks was £26.24 for those receiving morphine and £4.47 for those receiving fentanyl. The key cost-driver was hospitalisation for severe constipation. The mean doses in the clinical trial were 98.6mg bd morphine and 63.43µg fentanyl/hour giving mean acquisition costs for the two-week study period of £28.08 and £60.60 respectively. Including the cost of managing constipation reduces the cost difference between the two opioids: the model indicates that the mean cost per patient of two weeks treatment is £54.32 for morphine and £65.07 for fentanyl. The model assumed that 1.5% of patients were hospitalised for severe constipation. If this is increased to 2.5% the total mean cost of treating a patient with morphine exceeds the corresponding cost of treatment with fentanyl.
Discussion: Differences in oral laxative use between the treatment groups did not translate into major cost differences because of their low acquisition cost and the variation in types of laxatives used. Hospitalisation was the key cost-driver in the model. Since cancer patients are often admitted for several reasons it is difficult to estimate the exact contribution of constipation. Only admissions solely for the treatment of constipation were included, and this may therefore be an under-estimate.
Conclusion: Including the cost of treating side-effects may reduce the cost difference of drugs with different acquisition costs such as morphine and fentanyl.

Ref: Ahmedzai & Brooks, Journal of Pain & Symptom Management, 1997, 13:254-61

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PP14. Cost of serious adverse drug reactions related to anti-cancer chemotherapy

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Therapeutic agents used in neoplastic diseases have a narrow therapeutic index which increases the risks of iatrogenic events. The incidence of adverse drug reactions (ADRS) in cancer treatment could impair the efficiency of care and the quality of life of the patients. In order to assess the clinical and economic impact of ADRs in patients treated by anti cancer chemotherapy, we investigated the frequency of serious ADRs (i.e. those leading to hospitalization of the patient or increasing the length of stay/ life threatening ADRs/ ADRs leading to the death) occurring during one year (1995) in a French regional cancer institute.
Patients with a serious ADR were identified by searching the hospital databases using the ICD-9 code of a " noxious effect of a drug ". We found 467 hospitalizations relative to 305 patients. Excess hospital days related to ADRs represented at least 1,300 days (3% of the total hospital days). These ADRs concerned 6.7% of the total of inpatients in 1995. Nine patients died because of the seriousness of the ADR. In almost cases, ADRs were expected side effects of drugs. The average excess cost per patient to treat ADRs was 5,645 French Francs. The highest cost was due to blood transfusions (2,233 FF/patient, 28% of the total blood products cost), followed by pharmaceutical cost (1,620 FF/patient, 4% of the total drug cost) and laboratory cost (1,147 FF/patient). These results emphasize the high incidence and excess costs of ADRs related to anticancer chemotherapy. Use of blood transfusion and drugs such as antibiotics or growth hematopoietic factors represent the major health care costs despite the use of supportive care.

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PP15. Methods for conducting economic analysis of the long-term management of breast cancer: Description of two current Canadian studies

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Background: This paper provides details of two ongoing studies of the long-term management of women with breast cancer. Both studies are funded by the National Cancer Institute of Canada (NCIC) and include a substantive prospective economic component but with markedly different research designs. The studies differ in the phase of cancer studied, in the method of analysis and in the specific health care and economic issues addressed.
Methods: One of the studies is a randomised clinical trial comparing the follow-up of breast cancer patients in remission by either their family practitioner or a specialist physician. The study is multi-centred and a total of 1045 patients will be enrolled. Early stage breast cancer patients are eligible for the study 1 year post initial diagnosis, and are followed for five years. An economic analysis is fully integrated with the RCT and will be conducted on a sub-sample of the study population: 414 women. Data are