malignancies (colon, breast and lung cancer) and three supportive care measures. Total cost results are given below:

TREATMENT	HOME CARE	AMBULATORY CARE
5-FU+Leucovorin (5 days)	$799	$151
Cyclophosphamide+Doxorubicin	$797	$249
Cisplatin+Etoposide	$2196	$1096
Cisplatin, Mitomycin+Vinblastine	$2063	$1107
Hydration	$308	$151
Transfusion	$435	$359
Amphotericin	$277	$181

In each treatment type, home care was more expensive when compared with an ambulatory setting in which economies of scale could be realized (mean: 109% more expensive, range 21% to 429%, $p<0.05$). To control for lower drug costs found in the ambulatory setting, costs were also examined independent of pharmaceuticals; home care remained more expensive (mean 140%, $p<0.05$). Patients receiving ambulatory chemotherapy and supportive care measures were surveyed to determine satisfaction and related parameters. Patients were highly satisfied with ambulatory care (median rating 98 on a 100 mm VAS). While both ambulatory and home care are alternatives to inpatient treatment, we conclude that an efficient ambulatory setting is associated with greater cost savings and high patient satisfaction.

Grusenmeyer PA, Ochsner Cancer Institute, 1516 Jefferson Highway, New Orleans, LA 70121, USA

PP29. Economic evaluation of the use of prophylactic Clodronate to treat multiple myeloma

Bruce NJ[1], McCloskey EV[2], Kanis JA[2], Guest JF[1].
[1]CATALYST Healthcare Communications, London, UK; [2]University of Sheffield Medical School, Sheffield, UK

Background: The aim of this study was to establish the economic implications of using prophylactic clodronate therapy in patients with multiple myeloma, using the results of the MRC VI myelomatosis trial as the clinical basis of the study. The trial examined the effect of oral clodronate on the incidence of skeletal morbidity in a double-blind placebo controlled trial. A total of 612 patients were randomised at the time of diagnosis to receive either clodronate (1 600 mg daily) or an identical placebo in addition to chemotherapy and radiotherapy. Treatment was continued indefinitely or until the patient showed evidence of progressive osteolytic lesions or developed hypercalcaemia that was unresponsive to a high fluid intake and cytotoxic chemotherapy. Patients were followed up for four years.
Methods: This was a retrospective cost and consequences analysis based on clinical data from the MRC VI myelomatosis trial. A model of National Health Service (NHS) resource use and costs was constructed using the clinical data and information obtained from interviews with trialists (n=10) who treated 30% of the trial patients. The model compartmentalised the standard management of multiple myeloma into eight discrete stages: diagnosis; diagnosis to first plateau; diagnosis to death; first plateau to first relapse; first relapse to second plateau; first relapse to death; second plateau to second relapse; and second plateau to death. Information on patient management including NHS resource use, length of time in each stage and transition probabilities was obtained from each trialist. Additionally, patient management and NHS resource use for managing severe hypercalcaemia, vertebral fractures and non-vertebral fractures was collected. The average cost of managing the cohort of patients with multiple myeloma with and without clodronate during the MRC VI trial was calculated by combining the clinical and resource use data.
Results: The study will show the average cost of managing a patient in each disease state and the average cost of managing an episode of severe hypercalcaemia; a vertebral fracture and a non-vertebral fracture. The average cost for standard management of multiple myeloma together with the average cost of managing adverse events will be provided for the whole cohort of patients in the trial. The analysis will put the cost of clodronate into context by comparing the average cost of managing patients in the trial with and without clodronate. The additional cost of clodronate over four years will be compared with the cost of managing adverse events over this period for those patients who received clodronate compared to those who received placebo.

Guest JF, CATALYST Healthcare Communications, The Folly, Pinner Hill Road, Pinner, Middlesex HA5 3YQ, UK

PP30. Economic assessment of Clodronate in the preventive treatment of bone resorption in patients with metastatic breast cancer

Guignard E, Dardenne J, Pelc A
IMS France, Health Economics Department

Osteolytic bone metastases are frequent in patients with breast cancer and cause a severe morbidity, due to tumour-induced bone resorption, such as bone pain, pathological fractures, and hypercalcemia. This leads to an important medical care consumption, particularly in hospitalisation and antalgic radiotherapy. The aim of this study was to assess and compare, over a 1-year period, the different medical resources consumptions between patients with metastatic breast cancer treated by clodronate and those followed up by a watchful waiting strategy but not preventively treated by clodronate.
We carried out a retrospective study based on the medical files of 57 patients included in a randomised clinical trial comparing clodronate (n = 29) to a placebo (n = 28). All these patients were surviving at 1 year. We assumed that the placebo strategy was close to the "watchful waiting" strategy. We used a standardised questionnaire form to collect the different medical resources used : outpatient consultations (reason, number), drugs prescribed (brand names, posology, length of treatment), laboratory tests, X-rays and CT scans, bone scintigraphies, echographies, hospitalisations (nature of ward, reason, length of stay) and radiotherapy on bones for pain relief. These items were collected during the 12-month period following the inclusion of the patient in the trial, and if they were related to bone resorption consequences or to a side-effect of clodronate. Treatment for the primary malignancy was not considered.
Patients treated by clodronate were less often hospitalised (24,1 % versus 42,9 %;p: 0,13), and their average length of stay was shorter (2,6 days (d.) versus 9,1 d; p: 0,11), than patients not treated. They had also less antalgic radiotherapy on bones (17 % versus 39 %; p: 0,06). Consumption of the other medical resources was comparable in the two groups. These differences resulted in a cost reduction of 12,107 FF for hospitalisation (5635 FF versus 17742 FF) and 1659 FF for radiotherapy (895 FF versus 2554 FF). Overall, the total cost per patient was higher for those treated with clodronate (48,036 FF versus 40,060 FF), but it must be compared to the incremental gain in efficacy: the clinical results showed that clodronate significantly delayed the occurrence of bone events (244 d. versus 180 d.) and increased the percentage of patients without bone event one year after the treatment (30 % versus 21 %). Cost-effectiveness ratios were in favour of the preventive treatment by clodronate.
This study was the first one which provided information on the 1-year cost of care for bone resorption in patients with metastatic breast cancer. Its results suggest that the preventive treatment by clodronate should be considered for these patients as it reduces hospitalisation and antalgic radiotherapy.

Guignard E, IMS France, Health Economics Department, 345, avenue Georges Clémenceau, 92882 Nanterre, France

PP31. The relative economics of screening for colorectal cancer, breast cancer and cervical cancer

Gyrd-Hansen D
Centre for Health and Social Policy, Odense, Denmark

Background: This paper presents previous works by the author on the economics of colorectal cancer screening, breast cancer screening and cervical cancer screening. The technologies analysed are the unhydrated

Hemoccult II test, one-view mammography and the Pap-smear test. The paper discusses the characteristics of each of these tests along with the natural history of the cancer diseases in a comparative analysis. The aim is to give the reader an intuitive understanding of the advantages and disadvantages of these screening technologies. Evidence from recent trials is used when available.

Methods: For each of the screening modes a cost effectiveness analysis is presented. The analyses are based on simulated costs and effects using evidence from existing screening data and generalising these by way of mathematical modelling. In this paper focus is not on the detailed characteristics of the model, but rather on the results of each cost effectiveness analysis. In each evaluation the costs and effects of a series of mutually exclusive screening programmes were simulated for various target groups and screening intervals. Within each set of mutually exclusive programme setups, programmes were identified which at each level of cost maximises life-years gained. Each efficiency curve constitutes this subset of dominating programmes.

Results: The relative positioning and the shape of each of the efficiency curves are discussed in light of the respective disease- and test characteristics. Efficient colorectal cancer screening programmes are characterised by being less effective but more cost effective relative to mammography and cervical cancer screening. The efficiency curve is relatively linear showing very little tendency to curve upwards with incremental costs ranging from $2625 to $6570. The incremental cost range for efficient mammography screening programmes as well as cervical cancer programmes is much wider with maximum incremental costs of $79,870 and $77,290, respectively.

Discussion: For colorectal cancer decreasing the screening interval has no significant effect on cost per additional life-year because the number of cancers detected is increased considerably when the screening programme is intensified. The reason being that the Hemoccult II test is inexpensive, has a low sensitivity and the latency period of the disease is short. The steep slope of the cervical cancer screening curve is explained by the long sojourn time and the high sensitivity of the screening test which renders it unnecessary to screen frequently. Incremental costs rise markedly if the screening interval is reduced beyond 4 years. For mammae cancer the slope is likewise steep which is also explained by the high sensitivity of mammography, the length of the average sojourn time and a relatively low specificity. However, since the latency period for this type of cancer is considerably shorter than for cervical cancer, it is reasonably cost effective to screen as often as every 2 years. This paper suggests that in a Danish setting an optimal programme constellation would be to introduce annual colorectal cancer screening of the 50-74 year olds along with biennial mammography targeted at the 50-69 year olds and cervical cancer screening every 4 years for the 25-59 year olds. This would entail an overall maximum cost per life-year of $9060.

Gyrd-Hansen D, Centre for Health and Social Policy, Winsløwparken 17,1, 5000 Odense, Denmark

PP32. The impact of cancer on premature death in Japan

Hamashima C[1], Hasegawa T[2]
[1]Keio University, School of Medicine, Dept. of Health Policy and Management, Tokyo, Japan; [2]National Institute of Health Services Management, Tokyo, Japan

Background: The primary cause of death in Japan is by malignant neoplasm, of which 20% is due to gastric cancer. In Japan, cancer accounts for 38% of total premature death among people in the 0-64 age category. The objective of preventing premature death by cancer was a feature of the 1983 Health Care Law for the Elderly. Since the introduction of Health Care Law for the Elderly, screening for cancer has become readily available throughout Japan. Moreover, this law cites the screening of five different types of cancer : gastric cancer, endometrial cancer, lung cancer, colorectal cancer and breast cancer.

Methods: 1) Calculation of potential years of life loss (PYLL) PYLL is calculated by subtracting the age of death from a defined length of life end point. In the present study, the length of life end point was assumed to be 65 years of age. By using the Ministry of Health and Welfare's Vital Statistics, I calculated the PYLL between 1950 and 1993. In order to compare the PYLL between populations of varying size and age structure over the said period, age-adjustment based on the 1993 Japanese population was undertaken.

2) PYLL and medical expenditures

Only direct medical costs were included in the analysis. National Medical Expenditures, taken from government statistics, were assumed to constitute the direct costs. I compared the PYLL with medical expenditures between 1977 and 1993 for the following categories: malignant neoplasm; cardiovascular disease; total disease.

Results: The PYLL attributable to cancer, cardiovascular disease and total disease has been decreasing over time. Since 1972, the PYLL due to malignant neoplasm has exceeded that caused by cardiovascular disease. Moreover, although gastric cancer induced PYLL has been falling, lung cancer-related PYLL has been increasing.

However, the overall reduction in PYLL has coincided with a rapid increase in medical expenditure for the 0-64 age category. Nevertheless, between 1977 and 1993, for the malignant neoplasm and cardiovascular disease categories, the PYLL has decreased in excess of the increase in medical expenditures.

Discussion: A reduction in premature death by cancer is the ultimate goal in cancer control. Japan's rapidly aging population has compounded the problems surrounding premature death. That is, the percentage of the total population that are in a working age group is declining, and therefore the prevention of premature death is an objective that is related to maintaining the productive power of the total population.

In an attempt at measuring the impact of cancer-related premature death, I compared the change in the cancer induced PYLL during the 1950 to 1993 period. Although death by cancer increased in all aged groups, cancer-related premature death decreased. Rising medical expenditures may have contributed to the decrease in the PYLL caused by cancer.

Hamashima C, Keio University, School of Medicine, Dept. of Health Policy and Management 35 Shinano-machi Shinjyuku-ku, Tokyo, Japan

PP33. The benefit of stabilization under chemotherapy in metastatic colorectal cancer patients: A French prospective study

Henry-Launois B[1], Aussage P[1], Becouarn Y[2], de Monts MC[3]
[1]ARCOS, Issy les Moulineaux, France; [2]Institut Bergonié, Bordeaux, France; [3]Laboratoires Rhône-Poulenc-Rorer, Montrouge, France

Background: The clinical benefit of chemotherapy is usually evaluated in terms of major reduction of tumor volume. In metastatic colorectal cancer, however, response rates to second line chemotherapy are usually modest, whereas stabilization is obtained in about half of the patients. To assess whether stabilization brings about palliative benefits notwithstanding possible deleterious toxicity effects, we compared Quality of Life (QoL) and use of hospital resources in a French prospective survey on patients initiating a second-line palliative chemotherapy for metastatic colorectal cancer.

Methods: 80 patients were enrolled in 21 public and private sites between September 1995 and April 1996, and followed up for 4 months. Tumor assessment and symptomatic status were reported at each cycle, allowing dynamic patient categorization from Initial State into Response (R), STable Disease (STD), Progressive Disease (PD) and Terminal state (T). A QoL questionnaire derived from the Health Utility Index (HUI) was self-completed at baseline, week 8 and week 16 and at treatment drop-out. This index includes 6 QoL dimensions –Mobility, Self-Care, Fatigue, Emotion, Perception of the future, Cognition–, and 3 symptoms –Pain, Nausea/Vomiting, Hair Loss–. Hospital stays were recoded into the French Diagnosis-Related Groups (DRG) classification.

Results: Most used regimens were De Gramont, and protracted low dose 5FU, oxaliplatin associations and Irinotecan as single agent. 9 patients responded to treatment, with R lasting more than 4 weeks; 32 patients were stabilized for at least 4 weeks and categorized as STD until progression or death. Mobility, Self-Care and Pain mean scores were significantly better ($p < 0.05$) for STD than for PD; mean Pain scores (6-point scale) decrease from 2.5 ((1,4) at Initial State to 1.6 ((0.6) for R and 2.00 ((1.1) for STD, increasing to 2.8 ((1.2) under PD, and culminating at 4.50 ((0.7) at T.