Methods: We focused on the choice between two treatments: 5-FU protracted low dose and Irinotecan (CPT-11). First, a panel of oncologists and nurses developed descriptions of the states of health that patients may experience with either treatment: response, stabilization, progression, nausea/vomiting, diarrhoea, febrile neutropenia, mucositis, hand-foot syndrome and alopecia. The health states were described as per dimensions derived from the Health Utility Index (HUI) Mark II and III. Second, 63 nurses from 2 countries were asked to place values on each of the health states. We used standard gambles to elicit these values. Nurses were used as proxies for patients, since eliciting values directly from patients using standard gambles may cause them too much distress. Finally, these values were fed into a model and the outcome of each treatment was measured as a value-adjusted survival (QALY). The comparison of the two value-adjusted survivals calculated by the model predicts the preference for one treatment. The parameters for the model were estimated from the efficacy and toxicity results of a meta-analysis of 5 phase II trials for 5-FU protracted low dose and from the pooled results of 4 phase II trials for CPT-11.
Results: Median survival is estimated to 7.7 months for 5-FU protracted low dose and 9.5 months for CPT-11. Both treatments are well tolerated, but 5-FU is somewhat better tolerated than CPT-11. The model predicts that this potential 2 months difference on survival will drive patients to prefer CPT-11 to 5-FU, with a 0.1 to 1.3 months difference on value-adjusted survival (QALY) in one country, and a 0.3 to 1.3 months difference in the other country. It also predicts that a 1.2 to 1.6 months difference is a threshold difference for patients to prefer CPT-11 to 5-FU, considering the difference on toxicity. This result will be especially useful to interpret the data from the on-going phase III randomized trials comparing 5-FU to CPT-11.
Discussion: Of course, this method does not provide a definitive answer to the question of which treatment to choose. The answer depends on many parameters that could not be entered into the model. But this method provides useful insights into the trade-offs between survival and toxicity that determine patients' choices. And it should help physicians select therapeutic options taking more into account patients' preferences, as it provides a way to reveal patients' values and feelings. The results will be updated when the data from the phase III randomized trials will be available.

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PP57. Economic burden of colon cancer in the US using a national database

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Introduction: Colon cancer is the second leading cause of cancer deaths in the Western world. US annual incidence rates were 200 per million citizens in the early 1990s.
Objective: To evaluate the economic burden of colon cancer and comorbidities utilizing the US Healthcare Cost and Utilisation Project (HCUP) national database.
Methodology: In the 1991 and 1992 releases of the HCUP database, all discharge records for patients with diagnoses of any form of colon cancer were isolated up to fifteen diagnoses for each patient. The following risk factors were also evaluated: Crohn's disease, familial polyposis, a 'family history of cancer' and ulcerative colitis. Colon cancer incidence is age dependent. The economic cost is in seven separate age categories: 0-29 years, 30-39 years, 40-49 years, 50-59 years, 60-69 years, 70-79 years and 80 years and older. Direct charges were provided by the HCUP database. Median length of stay (LOS) values were estimated as conservative estimates of days of lost productivity. We examined costs from the payor prospective as well. Further, the economic consequences of lost work were calculated for average US citizens.
Results: Over one million colon cancer hospital discharges occurred in the US during 1991 (1,091,985 events) and 1992 (1,092,618 events). Median charges per discharge were $14,084 in 1991 and $14,548 in 1992. Median LOS was 9 days in both 1991 and 1992 but was clearly age dependent; thirty year olds medians were 7 days whilst 80 year olds medians were 10 or more. Annually, approximately 3.59% of all US hospital discharges records had a colon cancer diagnosis. Of all familial polyposis diagnoses 10.7% have comorbid colon cancer, but only 1.2% of ulcerative colitis diagnoses are comorbid with colon cancer, 1.6% of family history of cancer diagnoses and 0.35% of Crohn's disease discharges have comorbid colon cancer. Using seven age categories allowed us to observe that a major increase in costs starts in the 50s (charges totaled $275 million in 1991 and $300 million in 1992.) The charges associated with treating colon cancer by payor did not change from 91 to 92 (HMO/PPO median charge 1991= $12,036, 1992=$13,233.) HMOs and PPOs were the principal payors (706,835 cases in 1991 and 666,045 cases in 1992) of colon cancer cases before the age of 60, then Medicaid and then Medicare take over this burden. HMOs and PPOs consistently have the shortest length of stay within all age groups. HMOs had a median 8 day LOS both years, Medicare 10 days 1991 and 9 days 1992. Patients 60 years of age and older, Medicare had 719,040 admissions at a charge of $13,579 per discharge in 1991 and 740,640 admissions at a charge of $15,157 per discharge in 1992. Medicaid had 13,250 admissions at a charge of 13,263 per discharge in 1991 and 14,060 admissions at a charge of $16,251.50 per discharge in 1992. In 1991, we calculate that 9,827,865 days were lost directly due to hospitalization. In 1992, this figure rose slightly to 9,833,562 days.
Discussion: Treating colon cancer is expensive. For the US alone, in 1991, direct charges were over $14 billion with lost wages pushing costs to $16 billion. In 1992, direct charges were over $15 billion. If lost wages are added over $17 billion. A conservative estimate of over 9.8 million work days are lost due to hospitalization for colon cancer annually.

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PP58. Medico-economic evaluation of colorectal cancer screening programs: The Nord/Pas-de-Calais/Picardie experience

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Background: Since the late eighties, colorectal cancer screening programs have been held in different French regions at an experimental level. In Nord/Pas-de-Calais and Picardie, two regions located north of Paris, recipients of salaried workers health insurance system (covering more than 80% of the total population) may benefit from a free of charge screening program based on the Hemoccult II® test (fecal occult blood test). CRESGE has been involved in the global assessment of these campaigns, particularly in the economic field. We give and discuss the main results of this assessment after 6 years of follow-up.
Methods The evaluation performed by CRESGE can be divided into three main categories
- an "epidemiologic" one assessing the participation rate to the campaign (measured by the number of tests performed divided by the number of individuals concerned by this action),
- a "medical" one consisting of determining both the test-related positivity rate and the nature and results of complementary exams prescribed to those patients with a positive Hemoccult test,
- finally, an "economic" one where costs of the strategy are considered together with its efficacy (e.g. number of cancer detected ...) to produce a cost-effectiveness ratio.
The cost estimation takes into account the following: 1) advertising; 2) printing, packaging and postage of incitative or recall letters; 3) acquisition and reading of Hemoccult tests; 4) printing, packaging and postage of response letters indicating the result of the test; 5) complementary exams. Furthermore we assume that all complementary exams have been performed in an outpatient context. We combine the two indicators of efficacy (number of benign lesions detected, number of cancers detected) to produce a single measure of efficacy taking into account the ability and growth rate of benign lesions to become cancerous ones (notion of "cancer equivalent").
Results: During the second campaign (1993-1995), only 22% of the population did perform the test despite the greater implication of general practitioners (20% in the first campaign). The mean positivity rate is about 4%. 9 out of 10 individuals with a positive test performed a colonoscopy. 750 cancers have been found during the 2 campaigns. From an economic point of view, it costs about

11,000 French Francs (1995) to detect a benign lesion and between 81,000 FF and 96,000 FF to detect a cancer. Taking into account the ability of benign lesions to degenerate, we estimate a cost per cancer equivalent of 60,000 FF to 72,000 FF.
Discussion : The results of this cost-effectiveness analysis have to be considered with caution because of the quality of gathered data and of the assumption made to assess the cost of complementary exams. They do not allow to conclude if colorectal screening is a cost-effective strategy due to the lack of cancer registration in Nord/Pas-de-Calais and Picardie (we assess the cost per lesion detected and not the cost per lesion avoided). Nevertheless these results give some indications to the decisionmaker. A greater participation of the population is required to produce a decrease in colorectal mortality and will undoubtedly increase the value of the cost-effectiveness ratio.

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PP59. Medico-economic evaluation of breast cancer adjuvant treatment

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Background: The aim of the study was to evaluate the medico-economic interest of adjuvant treatment in the management of breast cancer. Four different therapeutic strategies could be administered: chemotherapy (CT), hormone therapy (HT), both treatments (CT+HT) or no adjuvant therapy.
Methods: The number of patients for each situation on the decision tree was defined through a Markov statistical model, combined with the Monte-Carlo method. The assessment of specific outcomes was done using published clinical data. The different situations were: well (no disease), loco regional recurrence operated or not, distant recurrence, complete response, partial response, no change, progression and death. The model was developed for a ten year period, with six months intervals.
Three types of costs were identified : the Investment Costs of the strategy (IC), the Total Cost (TC) of management for a 10 year follow-up (taking into account the costs of recurrences), and the difference between both (TC* = TC-IC). IC in the hospital were estimated according to the type of adjuvant treatment and to the patient monitoring carried out during the period without recurrence. A prospective survey was performed to quantify the costs external to the hospital. TC* was evaluated from the medical history of patients having presented distant metastases or local recurrence followed or not by metastases and we checked that the frequency of the metastatic risk is negligible beyond 5 years after the local recurrence. Costs were expressed in 1995 French Francs (FF), according to the collectivity point of view, with an accounting rate of 5.5% per year.
Results were expressed according to two ratios: the incremental cost-effectiveness ratio representing the cost of one additional unit of efficacy, and the incremental cost-benefit ratio i.e. the monetary benefit (or avoided cost) per FF invested in each adjuvant strategy. A sensitivity analysis was also performed.
Results: Respective incremental costs due to adjuvant treatment compared to no adjuvant treatment were 5 125 FF for HT, 25 302 FF for CT and 31 266 FF for CT+HT. The mean costs of each type of recurrence were 175 168 FF [95% C.I. ± 25 337 FF] (n=99) for metastatic recurrence, and respectively 287 284 FF [95% C.I. ± 60 937 FF] (n=21) and 115 698 FF [95% C.I. ± 30 244 FF] (n=26) for local recurrence followed or not by metastases (1US$ ≡ 5.8 FF 1997). Integrating the results of clinical trials, each life year saved had a cost of respectively 7 356 FF, 68 501 FF and 16 459 FF for HT, CT and CT+HT. The monetary benefits were 4,06 and 1.21 FF per FF invested in HT and CT+HT strategy, and no benefit was observed for CT (-0.28 FF per FF invested).
Conclusion: This study showed that all adjuvant strategies are cost-effective compared to no adjuvant treatment, especially HT. Conversely, the cost benefit analysis emphasizes the fact that adjuvant chemotherapy is not economically favorable, since the clinical results have no impact on avoided costs.
In order to help medical decision on adjuvant treatments, further analysis using this model will be performed, taking into account the prognostic factors for each patient.

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PP60. Cost and outcome in UK palliative care services

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Background: The development of palliative medicine and of specialised palliative care provision has been considerable. It is an area in which the UK is widely acknowledged to be at the forefront. The first modern hospice, opened in London in 1967 and the first recognition of the specialism of Palliative Medicine (1987) provide examples. Specialist provision is overwhelmingly concentrated on the palliative needs of people with cancer. As yet there has been no published data on cost that incorporates all three main sites of palliative care delivery, hospitals, hospices and the community. Cost effectiveness analysis has been restricted to new services in single settings and narrow geographic areas. Further, outcome studies include very few Randomised Control Trials and no clear agreement about which measures to use in an area where the patient is near death.
Method: The UK Department of Health commissioned a study to gather data on cost and effectiveness of palliative care. Eight health districts were selected as representative of England and Wales both in age structure and in degrees of social deprivation. Data were collected during six months of 1994 from hospitals, hospices and community care services in each region. A total of 661 patients were interviewed, 87% had a diagnosis of cancer. In addition 235 lay carers were interviewed. Cost data was assembled from each treatment site and in addition patients were asked who they had seen and for what length of time. Outcome data included Quality of Life - EORTC QLQ-C30: Hospital Anxiety and Depression Scale: Satisfaction with care.
Results: Mean costs per week of receiving palliative care in the community £146 (+ drug costs), hospital £1067, hospice £1462. The three settings offer different services, they are not comparable. A typical patient history would see them receiving care in each setting depending on clinical need and treatment severity. Costs of informal care are not included in the above although the study did record time committed by informal carers. Presence of a carer reduced length of inpatient care. Outcome measures on the first week of palliative care showed patient rated Quality of Life improving only in hospice patients. Symptom improvement in all areas in hospices, pain and dyspnoea improved in hospitals, fatigue and constipation in community. Anxiety and depression improved in hospice. Satisfaction with Care was high in hospice and community.
Discussion: Our data allows us to compare patient characteristic, both biographical and diagnostic, and outcome in each setting. Likewise some calculation of cost in each setting can be identified. Cost and outcome can be combined in such a way as to inform health care planning re the optimum balance between community, hospital and hospice and the efficacy of referral to specific setting when linked with symptom and patient characteristic. Patients in this study, and overwhelmingly in specialist palliative care, have cancer. Given both demographic and epidemiological trends and the increasing ability of palliative care to effectively treat symptoms one can hypothesise that demand for such services will increase. This study contributes to the existing data set on cost and outcome and offers methodological pointers for the future.

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