

Methods: The NHIC price list for a consultation of a gynaecologist for taking a Papanicolaou smear and for the cytologic interpretation is applied to 1.573.000 women aged 25 to 64 years from the Flemish Region. Information on actual attendance to screening and the relative contribution of the involved professional groups, and on the reason for the last cervical smear are derived from a recent cross-sectional study. Corrections are made for women who underwent total hysterectomy. Costs for the organisation are estimated from financial reports of the ongoing Flemish Cervical Cancer Screening Programme aiming to reach 85% of the target population. The total yearly NHIC expenses and the cost per screened woman for both approaches are compared.

Results: About 1,200,000 screening tests per 3 years or 400.000 annual smears are needed to cover the target population at 85 %. The total expenses for all activities are calculated to be 485 million Belgian Francs (BEF, 40 BEF equals 1 ECU), including total estimated costs for the organisation of call-recall and registration. In 1994, about 0.67 million smears (essentially opportunistic) were interpreted from women resident in the Flemish Region. The total NHIC costs of spontaneous screening for that year is estimated at 675 million BEF. The difference between the two approaches is 190 million BEF by year. The proportion of women having had a smear in that period is assessed at about 80 %. The mean annual screening cost by covered woman is 47 % higher in a health system where screening is essentially opportunistic than in an organised context.

Discussion: Health authorities should realise that structural tariff differentiation and integration of cervical cancer screening in primary health care might further increase the cost gap between the spontaneous and the organised alternative.

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PP4. Cost-effectiveness of radionuclide bone scanning to rule out asymptomatic bone metastases in clinically operable non-small cell lung cancer

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Background: In patients with clinically operable non-small cell lung cancer (NSCLC) who have normal serum calcium, alkaline phosphatase (AP) level and upper abdominal computed tomography and no bone pain, routine radionuclide bone scanning (BS) to rule out unsuspected bone metastases has never been shown to be cost-effective. In this study we tried to evaluate the cost-effectiveness of routine preoperative use of BS in patients with NSCLC.

Methods: We performed BS in 34 patients with NSCLC who have no bone pain, normal serum calcium and AP levels. Mean cost of operative procedure including preoperative evaluation, operation and postoperative periods of all patients was calculated. On the other hand we calculated a supposed mean cost assuming all 34 patients were operated without BS and compared to the previous mean cost.

Results: Eight of the patients were stage-I, 3 were stage-II, 23 were stage-IIIa and all considered to be operable before BS. None had bone pain, high serum calcium or AP. We evaluated all the patients with BS and found pathologic activity in 17 of them. The areas of pathologic activities were evaluated with direct X-ray films. In 5 of them bone metastases were confirmed, in 4 benign lesions were diagnosed. Other 8 patients with positive BS but negative x-ray, pathologic activity detected-bone sites were evaluated with computed tomography. Of these 8 patients 5 were proven to be metastatic and 3 were not. As a result in 34 patients considered operable before BS, 10 (29.4%) were found to have bone metastases and remaining 24 were operated with curative intend. Mean cost of actual evaluation of all patients was \$628, whereas supposed mean cost assuming 34 patients were operated without BS was \$803. There was a statistically significant cost difference favoring BS before operation ($p=0.017$). Besides, 10 of the patients were prevented from unnecessary operative mortality and morbidity.

Discussion: With this result, we may recommend routine radionuclide BS in preoperative staging of NSCLC patients.

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PP5. Teicoplanin or vancomycin in febrile neutropenic children with cancer: A randomized cost effectiveness study

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Aim: To compare two antibiotic regimens, one including teicoplanin and the other including vancomycin as empirical therapies for febrile neutropenic children with cancer treated with conventional chemotherapy. The two glycopeptides have equivalent bacterial efficacy. Teicoplanin is more expensive than vancomycin but it is delivered once a day whereas vancomycin is delivered four times per day.

Method: Randomized trial in a department of pediatric oncology. Febrile neutropenic children received ceftazidime (90 mg/kg/day) associated with teicoplanin 10 mg/kg once daily or with vancomycin 10 mg/kg every 6 hours.

Endpoints: Number of hours of sleep per night assessed by nurse during hospitalisation. Cost of the therapy: cost of all the drugs received (acquisition cost, delivery costs) and cost of laboratory and radiological exams. Drug cost included prescription-related supplies, equipment and salaries. Time spent for drug preparation and administration was determined by several direct measures for each drug.

Results: From January 95 to May 96, 67 children were randomized. 65 children were evaluable (32 in the teicoplanin group and 33 in the vancomycin group). The number of hours of sleep per night did not differ between the two groups: 7.0 hours in the teicoplanin group and 7.2 hours in the vancomycin group. The cost of all the antibiotics was higher in the teicoplanin group than in the vancomycin group ($p = 0.006$). The difference of median costs between the two groups was around 1 600 FF for a 6 day median treatment duration. This difference was due to the difference between teicoplanin and vancomycin (drug and delivery costs). The costs related to the other antibiotics did not differ between the two groups. Total costs (drugs and exams) did not significantly differ between the two groups ($p = 0.18$) although the size of the difference in median total costs was around 1 900 FF.

Conclusion: For febrile neutropenic children with cancer treated with conventional chemotherapy, the two antibiotic regimens were not different in terms of sleep but the cost minimization analysis showed that the regimen including vancomycin is better than the one including teicoplanin.

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PP6. Medico-economic evaluation of the cost of education in a cancer center

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Background: Our aim was to identify the cost of educational activities, defined as all time spent by the center for student training, teaching for University degrees, and permanent professional education. Organization, preparation, and examination time was added to the duration of each specific activity, research work was excluded, and so was education when reimbursed by the University.

Method: Data were collected on a questionnaire, sent to each physician, pharmacist, scientist, head nurse, physiotherapist, and manager in the center. Information had to be given retrospectively on the activities of the previous year: from September 1, 1995 to August 31, 1996. The answers

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 radioisotopic test, laboratory test, length of stay in hospital, antitubercular 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
Antitubercular 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 led 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