PP23. An early economic evaluation of a therapeutic innovation in the field of cancerology: the case of the peripheral blood progenitor cells (PBPC) allogeneic transplantation

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Background: Ongoing economic evaluation starting as early as possible throughout the "Research and Development" and diffusion process can provide important data on therapeutic use. Peripheral Blood Progenitor Cells (PBPC) allogeneic transplantation consists in a therapeutic innovation in alternative of the Bone Marrow (BM) allogeneic transplantation. To date, no clinical study including an economic comparison of BM vs PBPC allogeneic transplantation has been reported.
Patients and methods: We compared a group of 10 patients allografted with PBPC in a pilot study to an historical control group of 21 patients who received BM transplantation with HLA identical siblings. Patient characteristics are comparable in terms of median age, diagnosis, sex, conditioning regimen and Graft Versus Host Disease (GVHD) prophylaxis. Direct medical costs were estimated for all patients on the basis of the quantities reported in the patient medical records, from the admission in the Transplantation Unit until day 100 after transplantation (PBPC or BM cells collection were included). Monetary values were attributed to all these quantities on the basis of unit costs (average 1996 French prices).
Results: The median number of days to a platelet count $>25x10^9$/L, independent of platelet transfusion, was significantly shorter in the PBPC group compared with the BM group (in median, 15(10->60) vs. 30(15->68), $p<0.05$)). Average total cost in PBPC group on the first 100 days is significantly ($p=0.02$) lower than that in BM group ($42,790 vs. $64,937), mainly due to a decrease of the initial hospitalization cost (more than 70% of the total cost in both groups).
Discussion: Our clinical and economic comparison was in favor of PBPC allogeneic transplantation even if we consider additional costs due to follow-up between discharge and day 100. Our analysis based on a pilot study shows the ability of economic evaluation to be very early throughout the development process of a medical innovation, which is unfortunately too rare in the field of technology assessment in health care.

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PP24. The cost of the radiotherapy (RT): a Piedmont regional experience

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Because of the 502/92 law that changes the medical structures financing method from productive factors compensation to effectively distributed performance compensation, in 1995 an integrated task-force among radiotherapists and administratives of the Piedmont Region has been formed, in order to estimate the RT costs. In this study, University of Turin, University of Novara, Ivrea, Asti and Pinna Pintor Clinic (Turin) RT units have take part. The work has consisted on 6 steps: 1) the nomenclator, 2) the list of the standard resources, 3) the control of the resources effective consumption, 4) the comparison between 2) and 3), 5) the determination of rates and times; 6) the determination of the quality criteria. These 6 steps have been performed by a technical group and/or a central group. The nomenclator indicates 13 main activities (e.g. roentgentherapy, telecobaltotherapy, linac low energy & high energy, special techniques, brachytherapy, hyperthermia, simulation, dosimetry, customized shieldings, immobilization devices, examination, biological RT). Each main activity is divided in sub-activities (e.g. telecobaltotherapy: flash, one fixed beam, two opposite beams, more than two, etc). The examinated productive factors have been: a) the personnel, b) the employed material; c) the investments; d) the costs of the service; e) the general costs. The cost of the personnel (main cost) has been divided in: A) the common activity; B) the activity in favour to other units; C) the congress activity; D) the research. The times for individuel performances have been estimated, according to professional roles (medical doctor, physicist, technicist, nurse, administrative) for each sub-activities. The RT services cost experimentally estimated is resulted the following, according to submodalities:

PERFORMANCE	COST/SESSION ($)* ± 3%
Roentgentherapy	15
TCT	from 30 to 55
Linac, energy < > 10 MeV	from 38 to 60
Special techniques	from 931 to 2.314
HDR	from 878 to 1.515
Hyperthermia	285
Simulation	from 50 to 292
Dosimetry	from 52 to 286
Examination, treatment planning, follow-up, etc.	from 24 to 59
Immobilization devises, photographic documentation, etc.	from 3 to 66

The quality criteria determination deals with clear definition and documentation of the medical, sanitary and physical personnel; the high energy equipments; the treatments planning; the 3D dosimetry. Thanks to our work, RT national rates have been defined by the Italian Ministry of the Health in 1996 July. Considerations on discrepancies between calculated costs and ministerial rates will be made.

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(* 1$ = 1700 Italian Liras)

PP25. Resource use in the management of patients with Dukes' C colon carcinoma

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Background: A pilot study was undertaken to ascertain medical care patterns and resource use in the management of patients with Dukes' C colon carcinoma.
Methods: Structured interviews of 19 healthcare providers, including surgeons, oncologists, gastroenterologists and nurses, were conducted in 11 hospitals/clinics and four specialist cancer centres in France. Interview questions covered resource use during initial diagnosis and treatment, routine surveillance, disease progression and palliative care.
Results: Patients are primarily referred to gastroenterologists or surgeons by general practitioners (GPs). Following resection and staging of the cancer, patients are usually referred to an oncologist for adjuvant chemotherapy; however, elderly patients (≥80 years) with a poor performance status and who do not wish to undergo such therapy are not always referred to an oncologist for treatment. At the centres with many such patients, only an estimated 30% receive adjuvant chemotherapy, most typically 5FU/Leucovorin for 6 months. Following chemotherapy, patients are managed by their oncologist and/or gastroenterologist, who sees them approximately 3 to 4 times during the first two years and once every 6 months thereafter until the 5th year when patients are referred back to their GP. Surveillance consists of ultrasound or CT examinations and blood analysis, including CEA; colonoscopies and an X-ray are performed once a year. Disease progression is usually detected during follow-up examinations, and an estimated 30% of patients are symptomatic between these visits. These healthcare providers estimated that 50% of these patients will have disease progression, with 80% occurring within two years of resection. If progression is detected within 6 months of adjuvant chemotherapy, either CPT-1 1, 5FU/oxaliplatin or continuous infusion 5FU is given, and if detected beyond 6 months, bolus 5FU/Leucovorin is administered. Progression is most frequently hepatic (>60%), with little

chance of resection (<10%), followed by local recurrence (30%). Palliative care for pain is managed with paracetamol, progressing to morphine. Physiotherapy for the patient and psychological support for both the patient and relatives are offered. Many terminally ill patients (>75%) spend their final days (last 2 weeks) in hospital rather than at home, despite the extensive 'at home hospitalisation' program to support these patients with daily visits from nurses and GPs.

Discussion: One concern identified during this pilot study is the logistical challenge of following the patient population. Both the patient referral system and the number of centres involved in the care of these patients in France may contribute to the difficulty of measuring resource use in these patients. The data collected in this pilot study will be used in planning a large formal resource utilisation and costing study in patients with Dukes' C colon carcinoma.

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PP26. Comparing the costs and cost-effectiveness of new chemotherapy regimens for treating non-small cell lung cancer (NSCLC).

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Several new chemotherapeutic regimens for NSCLC have become available in the 1990s. These regimens have been reported to have favorable results in initial trials. Randomized studies have been conducted with some of the agents, while only phase II results are available for several regimens. Nonetheless, many regimens are currently in widespread use. The objectives of this analysis are to compare the costs (including drugs, supplies, disposal, overhead, personnel) and cost-effectiveness (in years of life gained compared with either supportive care [BSC] or with the lowest cost regimen in this analysis) of these newer regimens. Survival rates were based on reported randomized and phase II studies, and on the recent meta-analysis (Brit Med J, 31 1, 1995) which evaluated survival in BSC. Costs were based on an average of 4 months of treatment with chemotherapy given on an ambulatory basis (shown in a large randomized study to be comparable to inpatient treatment, Mor et al, J Epid, 1988). Results (with costs in US dollars, K = X 1000) (vs Lowest Cost Reg = vs LCR):

TREATMENT	REPORTED MED	COST (4 Months)		COST/YR LIFE GAINED	
OPTION	SURVIVAL in Months	DRUGS in $K	TOTAL in $K	vs BSC in $K	vs LCR in $K
BSC	3 to 5	---	10.0	---	N/A
Nav+DDP	8 to 11	3.3	4.3	-11.4	---
Gem+DDP	8 to 13	7.7	8.8	-2.3	54.2
Txt+DDP	9 to 10	9.4	10.6	1.2	75.1
Tax+DDP	9 to 10	9.2	10.0	1	68.7
Tax+Carbo	9 to 11	15.2	15.8	11.5	137.4
Tax+Carbo+ G	9 to 11	25.4	25.9	31.8	259.4

Although survival differences among the chemotherapy regimens have not been demonstrated to date, the cost-effectiveness analysis is based on a hypothetical one month survival advantage for the higher cost regimens over the lowest cost combination. We conclude that: 1) substantial differences exist in cost and cost-effectiveness among the newer regimens, although survival results to date are similar; 2) most regimens are cost effective vs BSC, but are not cost-effective when compared with the lowest cost regimen; 3) growth factors markedly increase costs without benefit in survival or cost-effectiveness, especially when regimens that are not associated with a high degree of febrile neutropenia are included in the analysis; and 4) it is appropriate to factor cost-effectiveness into study design when testing for meaningful survival differences in planning randomized trials.

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PP27. Cost minimization analysis of treatment of T1N0 glottic squamous cell carcinomas: Comparison between radiotherapy, laser microsurgery and partial laryngectomy

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Background: Radiotherapy (RT), laser microsurgery (L) and partial laryngectomy (PL) are known as equally effective treatment options for T1NO glottic squamous cell carcinomas. In this framework, parameters other than treatment efficacy may be taken into consideration for the choice between one of these options. A cost minimization analysis of these options was thus carried out.

Methods: For each treatment, the various events associated with the diagnostic procedure, the primary treatment, the complications, the local recurrence and the salvage treatment were individualized. For each of these events, the frequency of occurrence based on the standard management procedure used in our institution and review of the published data, was then determined. The cost was then calculated using the billing codes for the "fee for service" established by the National Health Insurance of Belgium or for some specific events, using average cost estimates from a data base developed by the UCL Center for Interdisciplinary Study in Health Economics.

Results: A total cost of 226,250 and 457 kBEF were calculated for RT, L and PL, respectively. For L, cost included the cost of post-operative RT applied to 30% of patients in case of positive margins. For PL, the cost of the primary treatment accounted for 70% of the total cost whereas it only accounted for 47% and 39% for L and RT, respectively. For RT, L or PL, complications accounted for less than 10% of the total cost. The cost of salvage treatment reached 26%, 18% and 6% of the total cost for RT, L and PL, respectively. A sensitivity analysis was performed by varying the frequency of occurrence of some of the events that impacted the more on the total cost, e.g., duration of hospitalization stay, hospitalization cost, recurrence rate, frequency of post-operative RT after L, percentage of in-patients in the RT group. In most situations, the ranking of the cost between the three options was not affected. Interestingly, the cost of laser microsurgery could be substantially reduced even slightly below the cost of RT by decreasing the need for post-operative RT.

Discussion: RT and L have almost the same expected average cost for the treatment of T1NO glottic SCC, whereas PL is twice as expensive. A better selection of the patients referred for treatment by L could decrease the need of post-operative RT and consequently impact on the total cost. Cost-effectiveness analysis (with voice quality as effectiveness parameter) is in progress.

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PP28. Cost considerations in alternatives to inpatient care in the administration of chemotherapy and supportive care

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Two outpatient approaches (home and ambulatory care) were examined to determine which was less costly. In a previous randomized study with 440 patients, administration of chemotherapy in an outpatient clinic setting provided significant cost savings (33% to 50%, p=0.001) with greater patient and family satisfaction than treatment in the hospital (J Epid 1988). Randomized cost comparisons between home care and either inpatient or ambulatory care have not been conducted. In the current study, major cost elements were: personnel (treating and support staff), drugs and supplies, and overhead (space and utilities). We examined four chemotherapy treatments (of short, medium and long durations) given in three common