Poster Presentations (Sat, 24 Sep, 09:30–12:00)
Public Health, Health Economics, Policy

3600 POSTER

Costs of Adjuvant Chemotherapy With Oxaliplatin in Stage III Colon Cancer – Comparing the Three Schemes Standards: FOLFOX-4, FLOX and XELOX

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Introduction: The adjuvant chemotherapy for stage III Colon Cancer is based in oxaliplatin for 6 months. FOLFOX-4, FLOX and XELOX were very similar results in efficacy and safety. There are some differences in total doses and form of the application. We present the differences in direct and indirect costs of the 3 schemes.
Material and Methods: We analyzed 130 patients with stage III Colon Cancer treated in the NCI of Mexico, from January 2004 to August 2010. The body surface mean was 1.62 and the costs were calculated based on current prices-government in November 2010. We considered the following costs: (1) Chemotherapy/BS, (2) Prophylactic anti-emetics, (3) Use of central catheter (patients with XELOX, not used catheter), (4) Medical offices, (5) Laboratory tests, (6) Adverse events grade 3–4 [using the frequencies reported by Andre T 2004 (FOLFOX), Kuebrer JP 2007 (FLOX) and Schmoll HJ 2007 (XELOX)] and (7) Number of visits to the Hospital and indirect costs at each visit (cost for visit was $39.68 US). All costs are reported in US dollars (12.50 Mexican pesos = 1 US dollar).
Results: The estimated costs incurred by adjuvant chemotherapy regimen are reported in the table.

	Costs		
	FLOX	FOLFOX-4	XELOX
Chemotherapy	$ 13,348.98	$ 13,684.86	$ 15,365.12
Anti-emetics	$ 325.92	$ 432.68	$ 287.78
Subclavian catheter-maintenance	$ 237.24	$ 237.24	$ 0.0
QT – application	$ 763.58	$ 1,432.83	$ 352.17
Blood tests	$ 422.44	$ 563.20	$ 375.52
Medical offices	$ 405.36	$ 526.88	$ 364.80
Adverse events (gde 3–4)	$ 726.51	$ 568.15	$ 370.65
Hospital visits (number)	40	61	17
Indirects costs for visit	$ 1,587.20	$ 2,420.48	$ 674.56
Total	$ 17,817.23	$ 19,866.32	$ 17,790.60

Conclusion: Of the two most popular schemes FOLFOX and XELOX, the FOLFOX scheme was more expensive with the highest number of hospital visits. The scheme XELOX is more practice, less expensive, less visit at the hospital with less impact on lifestyle.

3601 POSTER

Managed Clinical Network (MCN) Gynaecology – Improved Treatment of Ovarian Cancer in the North of the Netherlands

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Objective: Increasing the disease free, overall survival and quality of life for patients with ovarian cancer through optimally performed surgical procedures and treatment at 16 hospitals in the North of the Netherlands.
Background: Ovarian cancer (ca. 150 patients/year in the 16 hospitals) is the most frequent cause of death among gynaecological malignancies. As a result of the absence of specific symptoms, 70% of patients are diagnosed with advanced disease. Median progression free survival: only 18 months. Accurate surgical staging and/or optimal debulking surgery are important prognostic factors for disease free and overall survival. Adequate surgical staging for early stage ovarian cancer and optimal debulking surgery in advanced disease is best performed by a gynaecologic oncologist. In our region with 16 hospitals, there are 4 gynaecologic oncologists, working in the University Medical Center Groningen (UMCG).
Methods: In 2008 a Managed Clinical Network (MCN) was formed to reach the highest quality level of care for all ovarian cancer patients in the North. As part of the MCN all participating hospitals signed a contract that they would actively follow up the agreements within the MCN.
An important agreement is that every patient with a high likelihood of having ovarian cancer needs to be discussed with a gynaecologic oncologist, presented in a multi site and multi disciplinary tumour board, and registered in a secure webbased database. In this multi disciplinary board a patient tailored strategy is chosen. Based on clinical impression and risk of malignancy index two decisions will be made. First, whether or not a gynaecologic oncologist needs to be involved in the surgical procedure. The second issue is to perform the surgery on location or to refer the patient to the expert center (UMCG).
Results: Regional consensus was achieved on the quality standards and process of care for ovarian cancer patients. The implementation process started in September 2008. Within half a year most of the targets were reached. Using a web based database, patient characteristics, treatment procedures and final outcome of treatment are being monitored. One of the results in this network of 16 hospitals is the increase in percentage of surgery performed by one of the 4 gynaecologic oncologists from 62% in 2007 to about 90% in 2011.
Conclusions: The results in this project show that the method of obligatory agreements within a Managed Clinical Network, even with 16 hospitals, can be successful. Complex low-volume tumours often can not be treated on the highest quality level in every hospital. The MCN-concept makes it possible to develop uniform patient-pathways for all participants in which centralised decision making on treatment takes place for every patient, whereas parts of the care (high volume – low complex) take place in the hospital nearest to the home of the patient, and other parts of treatment (low volume – high complex) for quality reasons is concentrated in an expert center.

3602 POSTER

The Number Needed to Treat (NNT) as a Measure of Incremental Drug Benefit: Denosumab Vs. Zoledronic Acid for the Prevention of Skeletal Related Events (SREs) in Castration-Resistant Prostate Cancer (CRPC)

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Background: Intravenous zoledronic acid (ZOL) is the standard of care for the prevention of SREs in advanced prostate cancer. However, monthly subcutaneous denosumab (Dmab) was recently approved as an alternative to ZOL based on the results of a large randomized trial which demonstrated a prolongation in median time to first SRE (HR = 0.82, p = 0.008). This translated to a 4.7% (p = 0.008) absolute reduction in SREs in favour of Dmab over the study period. The challenge for clinicians and payers is how to reconcile the benefits of Dmab with the cost, which is approximately twice that of ZOL in the USA. NNT represents the number of patients that need to be treated in order to avoid one additional event, and is often used in order to make clinical judgement in relation to the efficacy of therapies. In this statistical analysis, the NNT approach was used to assess the incremental benefit of Dmab over ZOL for the prevention of SREs in men with CRPC.
Methods: The pivotal phase III randomized trial of Dmab vs. ZOL in CRPC was reviewed (Fizazi, Lancet 2011). As an alternative to ZOL, the NNT with Dmab to avoid any SRE over 41 months (trial end) of continuous therapy was determined. NNT by type of SRE was also estimated. These consisted of pathologic fractures, radiation to bone, spinal cord compressions and surgery to bone. The calculated NNT represents the incremental benefit provided by Dmab over Zometa therapy.
Results: To avoid a single SRE over 41 months of continuous therapy with Dmab, approximately 22 patients need to be treated. To avoid a single fracture, radiation to bone, spinal cord compression and surgery to bone, 163, 37, 96 and 317 patients need to be treated with Dmab.
Conclusion: The NNT approach is a simple and effective method to express the findings in a clinically meaningful way. In this analysis, the incremental benefit of Dmab can only be realized when a minimum of 22 patients are treated for a long duration. In order to avoid a single fracture, 163 patients need to be treated with Dmab for 41 months. Additionally for those SREs with the most severe clinical and economic burden to patients and society, ie surgery to bone and spinal cord compression, the NNT is high; 96 and 317 patients would need continuous treatment with Dmab to avoid a single event. This marginal incremental benefit needs to be considered alongside the high cost of Dmab.

3603 POSTER

The Number Needed to Treat (NNT) as a Measure of Incremental Drug Benefit: Denosumab Vs. Zoledronic Acid for the Prevention of Skeletal Related Events (SREs) in Patients With Other Solid Tumours or Multiple Myeloma

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Background: Intravenous zoledronic acid (ZOL) is used for the prevention of SREs in patients with advanced cancer and multiple myeloma (MM). However, it was recently demonstrated in a large randomized trial that monthly subcutaneous denosumab (Dmab) was comparable to ZOL in median time to first and subsequent SREs (HR = 0.90, p = 0.14). This translated to a 4.9% (p = NS) absolute reduction in SREs in favour of Dmab over the two year study period. The challenge for clinicians and payers is how to reconcile the benefits of Dmab with the cost, which is approximately

twice that of ZOL in the US. NNT represents the number of patients that need to be treated with a new therapy in order to avoid one additional event, and is a useful approach to assess the relevance of therapies in the real life clinical setting. In this statistical analysis, the NNT approach was used to assess the incremental benefit of Dmab over ZOL for the prevention of SREs in patients with other solid tumours and MM.
Methods: The pivotal phase III randomized data for Dmab vs. ZOL was reviewed (US PI, 2010). As an alternative to ZOL, the NNT with Dmab to avoid any SRE at 24 months was determined. NNT by type of SRE was also estimated. These consisted of pathologic fractures, radiation to bone, spinal cord compressions and surgery to bone. The calculated NNT represents the incremental benefit provided by Dmab above and beyond Zometa therapy.
Results: To avoid a single SRE at 24 months of continuous therapy with Dmab, approximately 21 patients would need to be treated. To avoid a single fracture, radiation to bone and surgery to bone, 56, 36 and 167 patients need to be treated with Dmab over a 24 month period. In addition, Dmab was unable to offer any incremental benefit over ZOL in terms of avoiding spinal cord compressions.
Conclusion: The NNT approach is a simple and effective method to express the findings in a clinically meaningful way. In this analysis, the incremental benefit of Dmab would only be realized when a minimum of 21 patients are treated for 24 months in order to prevent 1 additional SRE. For those SREs (i.e. surgery to bone and spinal cord compression) that are typically considered the most clinically and economically severe events, 167 patients would need continuous treatment with Dmab to avoid one surgery to bone event, while Dmab offered no incremental benefit in terms of avoiding spinal cord compressions. These marginal incremental benefits need to be considered alongside the high cost of Dmab.

3604 POSTER

First-line Bevacizumab Plus Taxane-based Chemotherapy for Metastatic Breast Cancer (mBC): Cost Minimisation Analysis

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Background: Bazan *et al.* assessed first-line bevacizumab plus taxane-based chemotherapy for metastatic breast cancer (mBC) and showed no difference of Progression Free Survival (PFS) between two treatments (bevacizumab plus docetaxel − BD *versus* bevacizumab plus paclitaxel − BP), with median values of 10 months [8−13] (HR = 1.32 [0.81–2.17], p = 0.26) (Abstract submitted ECCO 2011 by Bazan et al.). In the context of rational decision-making in health care, the purpose of this study is to carry out a cost minimisation analysis including a comparison of the costs to the French Public Health Insurance arising from first-line treatment by BD *versus* BP for patients with mBC.
Material and Method: Of 86 patients included in the Bazan *et al.* study and for which effectiveness data were analyzed, 7 patients are always treated and are thus excluded from economic analysis. It took into account costs related to drug acquisition, hospital care for chemotherapy administration and for toxicity and transport. Hospital resources cost was based on the French public Diagnosis-Related Group database. Drug acquisition costs (bevacizumab, docetaxel, paclitaxel) and transport were respectively drawn from French official sources (reference 2011). As our study took place over a limited period of time, no discounting was performed. Costs are expressed in euros (€). To gain insight into the uncertainty around the total cost difference, standard non-parametric bootstrap stimulations were conducted (10,000 replications).
Results: The number of chemotherapy administration was significantly higher for patients treated by BP compared patients treated by BD. No difference was observed in terms of hospitalization for toxicity. First-line BP chemotherapy for mBC was associated with a mean total cost higher than first-line BD chemotherapy, respectively 49,299±33,026 versus 54,710±31,423, ie. an differential cost of 5,411€. The chemotherapy cost represents respectively 84% and 80% of the total cost. Sensitivity analysis confirmed robustness of results, with a saving cost of 5,359€ per patient treated with BD ($p < 10^{-4}$).
Conclusion: In lack of difference of PFS between two treatments (BD versus BP), our cost minimisation analysis tends to show a significant cost decrease associated with first-line treatment by BP for patients with mBC, candidate for one of these treatments.

3605 POSTER

Health Resource Utilization and Costs Associated With Gastric Cancer − Results From a US Claims Database

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Background: While gastric cancer (GC) is a worldwide problem, there is little information regarding its economic burden from a payer perspective. The objectives of this study were to estimate real-world costs associated with GC, specifically metastatic disease.
Materials and Methods: Retrospective analysis of direct costs and healthcare services use in GC patients and controls using IMS LifeLink™ Health Plan Claims (US) Database. Cases were ⩾ 18 years of age and newly-diagnosed with GC in 2007–2009 (first GC diagnosis as index date). Cases were excluded if they had evidence of cancer in the 360 days prior to index or evidence of cancer other than gastric 4 weeks after index. Controls (individuals without GC) were matched 1:1 with cases (98.4%) on age, gender, region, health plan and payer type, and length of follow-up. Costs are reported as monthly means. Patients were classified as metastatic if they had a claim for a secondary malignant neoplasm (ICD-9-CM 197.x, 198.x) in post-index period.
Results: A total of 303 GC cases were identified and matched to a control. Mean age of the sample was 58 and 55% were male. Median follow-up was 364 days. Total mean monthly costs were significantly greater for cases ($10,653 vs. $571) as were hospitalizations, emergency room visits, physician office visits, laboratory and radiology procedures, and pharmacy services ($p < 0.0001$). The most pronounced difference was for inpatient services with 75% of cases hospitalized during follow-up vs. 9% of controls ($p < 0.0001$), resulting in a 35× greater cost for inpatient care ($6,511 vs. $182). When stratifying our overall GC sample, metastatic patients (N = 90, 30% of GC sample) incurred disproportionately higher costs on all utilization variables. Cost differences between metastatic and early stage patients were found for outpatient pharmacy services ($1727 vs. $293), inpatient services ($10,282 vs. $4918), and ancillary services ($2560 vs. $882). Overall, the mean monthly cost to treat a metastatic patient was more than 2x greater than the cost to treat an early stage patient ($17,289 vs. $7849).
Conclusions: The mean total monthly healthcare cost for newly diagnosed GC patients was 18 times higher than matched controls without GC. The largest difference was in inpatient costs, followed by drug and radiology costs. Interestingly, metastatic disease costs were more than double those for early stage GC patients, largely due to pharmacy, ancillary, and inpatient services. On a monthly per-patient basis, GC is associated with significant costs especially in metastatic patients.

3606 POSTER

Incidence of Costly Cancer Treatment in Two Health Care Services

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Background: The equitable access to medical treatment accordingly to individual needs is an important issue to discuss taking into account that resources are limited.
In this study we describe the incidence of costly cancer drugs with antitumour effect in a Social Healthcare Service with national coverage and 350000 beneficiaries and in a Private Medical Insurance Company with 500000 affiliates, from January 2010 to December 2010.
Material and Methods: Retrospective study. Source: clinical history and files from patients on anticancer treatment from January 2010 to December 2010.
Results: In the Social Healthcare Service, 7.22% of the total cancer patients (1281) received costly cancer treatment. The most used therapies were: Rituximab (31.5%), Bevacizumab (16.85%) Trastuzumab (16.85%). The most frequent cancers that received costly cancer drugs were haematological (32.5%), breast (22.5%), colorectal (13.5) and lung (11.2%).
In the private Medical Insurance sector, with over 500.000 affiliates, 0.86% received pharmacological treatment for solid tumours.
101176 pharmacological units were dispensed. From this, the Top 3 High Cost treatment dispensed by units were: Trastuzumab with 5.26% of units and 31.1% of the total cost; Bevacizumab with 4.3% of units and 12.8%