and indirect (the "cost of illness" analysis), connected with patient treatment at different stage of disease treatment. Epidemiology of ÍÑÑ in Russia was investigated: prevalence, incidence, structure of disease depending on age, disease progression, and death rate indicators. The expert opinion of real practice of HCC treatment was collected. All these methods allowed to estimate the direct and indirect costs of HCC. **RESULTS:** HCC incidence rate was 2.4 patients per 100,000 population (85% in the structure of primary liver cancer). HCC incidence rate index was 8658 patients as of 2008. In the HCC, structure intermediate stage prevails—61%, the terminal and local stages—30% and 9% correspondingly. HCC treatment costs were 2370 bln RUB (€67.7 mln) (2008). Direct medical costs were 2208 bln RUB (€63.1 mln) including inpatient care (90%), outpatient care (6.6%), and diagnostics (3.4%). Indirect costs were 0.161 bln RUB (€4.6 mln) including GDP loses (26%) and payment related with temporary disability (74%) The current HCC treatment standards do not correspond to international approaches. Very few patients with primary liver cancer get target pharmacotherapy. The analysis of actual practice of managing patients with HCC shows prevalence of drugs with no indications for usage from the point of view of the existing standards and recommendations (form 33% according to regional reimbursement to 58% according to Federal reimbursement). **CONCLUSIONS:** Developing of new standards of HCC treatment including target therapy can reduce the cost of illness by reducing off-label use and optimizing the treatment strategy.

PCN54

HOSPITAL UNDERTAKING OF PATIENTS WITH A RESECTION OF LUNG TUMOR IN FRANCE

Cancalon C, Schmidt A, Bénard S
St[è]Ve Consultants, Lyon, France

OBJECTIVES: With 30,651 new cases diagnosed in 2005, lung cancer is the fourth most frequent cancer in France and the first in terms of mortality, with 26,624 deaths per year. The survival rate at 5 years is less than 15%. The purpose of this study was to describe the 2 years hospital undertaking of patients with a resection of lung tumor and to estimate associated hospital costs. **METHODS:** The 2006 to 2008 PMSI French hospital databases were used. Patients with a resection linked to a lung cancer (ICD10 diagnoses: C33* and C34*) in 2006 were identified and followed up during 2 years. Hospital stays, chemotherapy, and radiotherapy sessions were extracted and associated costs (excluding expensive drugs) were assessed using DRG. Kaplan Meier method was applied to estimate associated costs over time, by taking into account survival probabilities. **RESULTS:** In 2006, 8798 patients were hospitalized for a resection of lung tumor of which 75.8% were men. Mean age at inclusion was 62.4 years; 2343 patients (26.6%) died in hospital during follow-up. The mean number of hospitalizations for repeated surgery was 0.11 per patient, 2.00 for radiotherapy sessions, 2.99 for chemotherapy sessions, and 2.57 for other hospitalizations. Total mean hospital cost per patient was estimated at €16,169.89 for the 2 years follow-up. First surgery account for 48%, repeated surgeries for 6%, radiotherapy session for 2%, chemotherapy sessions for 8%, and other hospitalizations for 37%. First month of first year supported half of the total cost, and first year bore 86% of it. **CONCLUSIONS:** In France, lung resections for cancer represent a heavy charge for hospitals. During the follow-up period, major burden is dedicated to hospital stays especially for the first months. These results could be relevant to estimate the impact of coming drugs which will be associated to resection of lung tumor.

PCN55

COST OF TREATMENT OF BREAST CANCER IN RUSSIA

Yagudina R, Kulikov AU, Nguyen TTT
Moscow Medical Academy named after I.M.Sechenov, Moscow, Russia

OBJECTIVES: Estimating the amount and the structure of annual expenses for treatment of breast cancer (BC) at different stages in Russia. **METHODS:** Indentifying the annual direct costs of treatment BC based on the Russian standard of treatment confirmed by Minister of Health of Russian Federation. Direct costs of BC include cost of medical services (MS) (hospitalizations, physician services, diagnosis, surgery, and other supporting services), and cost of pharmacotherapy (PT) (cytostatics, hormones and antihormones, accompanying drugs, and other drugs). **RESULTS:** Annual direct costs of treatment BC totaled 138,680, 1,379,980, and 1,923,050 roubles at stages I–II, III, IV accordingly. With increase in weight of disease, the relative share of expenses for MS decreases and for PT increases. Analyzing the structure of costs at different stages showed that the cost of PT is substantial, especially at metastatic stage. The presence and relative share of components vary at different stages in structure of expenses for MS, in which expenses for radiotherapy share about 60% and 68% at stage III and IV, accordingly. In structure of expenses for PT, the expenses for cytostatics are substantial and take 85% at both stages III and IV. Analyzing the gain of expenses for separate groups of drugs from stage III to IV showed that expenses for cytostatics and accompanying drugs have grown by 43% and 128% accordingly, while expenses for other groups have almost not changed. **CONCLUSIONS:** Expenses for treatment BC at different stages vary in size and structure, and rises with increase in weight of disease. With the amount of 51,865 patients with BC in 2007 (62.3%, 26.3%, 10.5% at stages I–II, III, IV accordingly), we received total expenses for treatment of 33,777.217.655 roubles ($1.125.907.255), in which expenses for treatment of stage I–II, III, IV are 4.481.031.599 roubles ($149,367,120), 18,823,610,290 roubles ($627,453,676), and 10,472,593,166 roubles ($349,860,459), accordingly.

PCN56

CLINICO-ECONOMIC ANALYSIS OF TREATMENT OF CHILDREN WITH RHABDOMYOSARCOMAS ON PROTOCOLS CWS

Teplykh E[1], Zhukovskay E[2]
[1]Children's Oncohematology Center, Chelyabinsk, Russia; [2]State Medical Academy of Chelyabinsk, Chelyabinsk, Russia

OBJECTIVES: To carry out clinico-economic analysis of treatment of children with rhabdomyosarcomas on protocols CWS in Chelyabinsk Region, to estimate medical, social, and economic efficiency of technology. **METHODS:** We reviewed 21 patients <16 years old with rhabdomyosarcomas. All patients received therapy on protocols CWS. We used following methods of clinico-economic analysis: cost of illness, cost-effectiveness analysis, and analysis of the kept years of a life. **RESULTS:** The sum of direct medical expenses for one patient has made US$16,904 dollars, and the total sum of direct medical expenses for treatment of 21 patients included in research, has made US$354,984. The overall survival rate was 52% that testifies to high medical efficiency of applied technology. For all groups of patients, the treatment keeps 694.4 years of a life that makes 33 years of a life on one patient.The parity of a cost/efficiency for one patient has made US$512 dollars for 1 year of the kept life. Considering that in 2008 gross national product has made US$9.5 thousand per capita, an expense for 1 year of the kept life in 18.5 times there is less than parameter of gross national product, means that expenses are justified. Before achievement of a pension age, the survived patients will work 422 years and will make gross national product for the sum US$4009 thousand. The survived patients provide the state with the income 11.2 times the society for their treatment. **CONCLUSIONS:** The clinico-economic analysis has shown high medical, economic, and social efficiency of technology of treatment of children with rhabdomyosarcomas on protocols CWS.

PCN57

EXAMINING PATIENT-BASED COSTS FOR IRINOTECAN CHEMOTHERAPY: UK PRACTICE-BASED MICROCOSTING STUDY

Shabaruddin FH[1], Elliott RA[2], Payne K[1]
[1]Health Sciences—Economics, The University of Manchester, Manchester, UK; [2]University of Nottingham, Nottingham, UK

OBJECTIVES: To conduct a robust economic evaluation, it is necessary to describe current practice and associated costs. Available data on clinical pathways and cost of chemotherapy are clinical trial-based, which may not reflect UK National Health Service (NHS) practice. Practice-relevant costs of drug administration, patient monitoring and management of adverse events, required for a practice-relevant economic model, are not available. This study aimed to inform an economic evaluation by describing patient-based cost of NHS patients with advanced colorectal cancer (CRC) undergoing irinotecan-based chemotherapy. **METHODS:** Resource use data were collected from the medical records of 48 patients prescribed irinotecan-based (IrMdG) chemotherapy at a UK tertiary care center. Using the hospital perspective, data were collected from starting chemotherapy until treatment ended. Unit costs were assigned, based primarily on NHS Reference Costs 2008/09. Data were analyzed using descriptive statistics and variations around the costs were obtained. Predictors of cost were identified from a stepwise multiple regression analysis (ordinary least squares). **RESULTS:** Total cost for 48 patients was £598,765.54 (UK £ 2008/09). Mean cost per patient was £12,474.28 (95% CI: £11,233.24–£13,715.32, median £13,307.82, range £3,024.48–£21,276.18). Cost components comprised: chemotherapy drugs (36.9%), chemotherapy delivery (21.4%), pharmacy cost (15.0%), oncology appointments (9.5%), central line insertion (5.0%), management of complications and comorbidities (5.1%), management of adverse events (4.9%), and imaging (2.2%). Significant predictors of increased cost ($P < 0.05$) identified from the stepwise regression were: number of chemotherapy cycles received (adjusted R^2 0.81), neutropaenia (adjusted R^2 0.83), no prior chemotherapy (adjusted R^2 0.85), and full-dose chemotherapy (adjusted R^2 0.86). **CONCLUSIONS:** This study provides the first data describing patient-based costs associated with current NHS practice in this patient group, derived from a pragmatic observational study with no trial protocol dictating practice. These data should be used in ensuing economic evaluations to ensure relevance to current clinical practice.

PCN58

SURVEY AND ANALYSIS OF THE COSTS OF METASTATIC COLORECTAL CANCER TREATMENT IN BULGARIA

Rutkowski J[1], Haldas M[1], Jedynasty K[2]
[1]HTA Consulting, Krakow, Poland; [2]Amgen GmbH, Headquarters Office for CEE, Vienna, Austria

OBJECTIVES: To describe chemotherapy regimens used in the first, second, third, and fourth line of treatment in patients with metastatic colorectal cancer. Costs of chemotherapy regimens used as well as supportive care and medical procedures in Bulgaria will be estimated (as part of a multinational central European study). **METHODS:** This opinion-based study collected required data by online questionnaire. All information concerning treatment of colorectal cancer was based on experts opinion from four oncology centers in Bulgaria. Oncologists had access to medical records of approximately 1220 patients treated in year 2008. **RESULTS:** The leading first line regimen (60% of patients) was FOLFOX 4 (oxaliplatin, calcium folinate, and fluorouracil). The most commonly prescribed second-line regimen (50%) was FOLFIRI (irinotecan, calcium folinate, and fluorouracil). Capecitabine was the most popular in both the third- (26%) and fourth-line (4%) settings. The percentage of patients receiving supportive care increased with disease stage, from 1% in the first,

21% in the second, 53% in the third, and 94% in the fourth line. The most common treatment algorithm (18%) was FOLFOX, FOLFIRI and supportive care in the first-, second-, and third-lines, respectively. Mean regimen costs per patient were estimated from a public payer perspective. The most expensive first, second, third and fourth-line regimens were FOLFOX 4 (€14,200), FOLFIRI + bevacizumab (€7912€), cetuximab + irinotecan (€7237) and capecitabine (€2609), respectively. **CONCLUSIONS:** The most common regimen in the first line was also the most expensive one. New chemotherapeutic agents are associated with improvements in survival time but also with substantial costs. Factors influencing the selection of chemotherapy included: previous therapies, course of the disease, the patient's performance status, adverse events after previous chemotherapies, and concomitant diseases. However, open-ended coverage policies for new chemotherapeutic agents may prove difficult to sustain as costs continue to rise.

PCN59

COST OF MANAGEMENT OF BREAST CANCER WITH BRAIN METASTASES USING FRENCH HOSPITAL PATIENT CHAINING SYSTEM

Benjamin L[1], Cotté FE[1], Vainchtock A[2], Mercier F[3], Vidal-Trécan G[4], Durand-Zaleski I[5]
[1]GlaxoSmithKline, Health Outcome Studies, Marly le Roi, France; [2]HEVA, Lyon, France; [3]StatProcess, Port-Mort, France; [4]Hôpital Cochin, Unité de Santé publique, Paris, France; [5]Hôpital Henri Mondor, Service de Santé publique, Créteil, France

OBJECTIVES: Breast cancer (BC) is the second neoplasm which disseminates brain metastases (BM). We estimated the incidence of patients with BCBM, those overexpressing HER2 (HER2+), and the costs related to their management using the new chaining system of the French hospital information program (PMSI). This was to identify predictors of costs. **METHODS:** A retrospective analysis using the PMSI database (2006–2008) was conducted to estimate the number of public and private stays related to the diagnosis of BCBM. Stays were extracted and chained to patients' identification number to calculate the number of patients concerned by BCBM. The administration of *trastuzumab* was used as a surrogate for the HER2 status. Costs were estimated from the health insurance perspective including health-related group tariff, supplements for intensive care, number and length of stays, and expensive-drugs status. Spearman's rank correlation coefficient and nonparametric test (Kruskal–Wallis) were used for univariate analyses. **RESULTS:** In 2008, 3610 women were hospitalized for BCBM (vs. 3273 and 3523 in 2006 and 2007, respectively) of whom average age was 56.1 years (SD: 13.3). Patients had an average of 4.8 hospitalizations (SD: 6.4) mostly for palliative care (42%), chemotherapy (39%), and radiotherapy (14%). Twenty-one percent of patients suffered from BM only and 79% had multiple metastases; 16% were identified as HER2+. Annual mean cost of care was €8049 per patient with BCBM compared with €19,412 specifically for HER2+ patients (respectively, 11% and 59% were dedicated to expensive drugs). Age ($P < 0.001$), patients with newly diagnosed BCBM ($P < 0.001$), and the number of metastases ($P < 0.001$) were associated with the cost of BCBM. **CONCLUSIONS:** Incidence of BCBM seemed to increase during 2006–2008. BCBM management appeared resource-consuming especially for HER2+ patients. The development of chaining system in PMSI database is an opportunity to estimate economic data accurately as well as to generate epidemiological data from an exhaustive database.

PCN60

CLINICAL AND ECONOMIC OUTCOMES ASSOCIATED WITH ADJUVANT CHEMOTHERAPY IN ELDERLY PATIENTS WITH EARLY STAGE OPERABLE BREAST CANCER

Sail K, Franzini L, Du XL, Lairson D
University of Texas School of Public Health, Houston, TX, USA

OBJECTIVES: Chemotherapy is a major factor contributing to the economic burden associated with breast cancer in the elderly. However, there are no clear recommendations for adjuvant chemotherapy use in elderly women aged 70 and above due to lack of efficacy data in that age group. The study objective was to examine the clinical and economic outcomes associated with adjuvant chemotherapy in elderly patients aged 65 and above with early stage operable breast cancer. **METHODS:** We studied a cohort of 23,110 node positive and 31,572 node negative women aged 65 and over diagnosed with incident American Joint Committee on Cancer (AJCC) stage I, II, or IIIa breast cancer between January 1, 1991 and December 31, 2002 using SEER-Medicare data. Total treatment and chemotherapy costs were estimated from the Medicare payments using the phase of care approach. Cox proportional hazard ratio of mortality was used to determine the effectiveness of adjuvant chemotherapy after adjusting for selected patient and tumor characteristics. a propensity score analysis was also employed to minimize the bias associated with the receipt of adjuvant chemotherapy. **RESULTS:** The difference in the total unadjusted costs for patients who received chemotherapy in contrast with patients not receiving any chemotherapy was $16,795 in node positive patients and $11,882 in node negative patients. Regression adjusted cost estimates for all node positive patients receiving chemotherapy was approximately $6500 and was significantly higher ($P < 0.05$) than for patients not receiving chemotherapy. Mortality was significantly reduced in node positive women aged 65–69 who received adjuvant chemotherapy compared to those who did not receive chemotherapy (HR, 0.66; CI, 0.58–0.74) and in patients aged 70–74 (HR,0.66; CI, 0.59–0.74), after adjustment for factors that may affect survival. **CONCLUSIONS:** Decision makers can use cost and effectiveness estimates from this study to assess relative value of chemotherapy in different age groups.

PCN61

COST IMPACT OF ORAL CAPECITABINE COMPARED TO 5-FLUOROURACIL FOR TREATMENT OF PATIENTS WITH METASTATIC COLORECTAL CANCER

Citarella A, Cammarota S, Riegler S, Putignano D, Menditto E
CIRFF, Federico II University, Naples, Italy

OBJECTIVES: To evaluate the cost of biweekly oxaliplatin plus oral capecitabine (OXXEL) versus oxaliplatin combined with leucovorin-modulated 5-fluorouracil (5-FU) given as i.v. bolus every 2 weeks (OXAFAFU) in patients with metastatic colorectal cancer (MCRC) in Italy. **METHODS:** We conducted a multicenter, retrospective longitudinal treatment-cost analysis. Direct medical costs attributable to MCRC were quantified using 2008 prices and tariffs. The analysis was applied to a time horizon of 6 months. The study was conducted from the perspective of the National Healthcare Service (NHS). **RESULTS:** A total of 322 patients (59.9% males; mean age 65.2 ± 9.4 years) were analyzed. Mean total cost per patient over follow-up period was estimated at €5242.18 ± 2542.06 and €6732.80 ± 3423.72 in the Capecitabine and 5-FU arms respectively ($P < 0.0001$). **CONCLUSIONS:** The study estimated that oral capecitabine administration would produce a saving of €1490.62 to the NHS. The differences in cost between the two arms are determined by the administration route (i.v. vs. oral administration). Therefore, the important economic and practical advantage of capecitabine oral home-based therapy is the reduced number of hospital visit and the relative costs. Avoiding the hospital access fees reduces the impact of higher acquisition cost of capecitabine. Moreover, capecitabine in comparison to the 5-FU regimen was associated with lower complication. Therefore, oral capecitabine may represent a valid alternative in the management of metastatic colorectal cancer.

PCN62

SURVEY AND ANALYSIS OF THE COSTS OF METASTATIC COLORECTAL CANCER TREATMENT IN SLOVAKIA

Rutkowski J[1], Haldas M[1], Salek T[2], Jedynasty K[3]
[1]HTA Consulting, Krakow, Poland; [2]National Cancer Institute, Bratislava, Slovak Republic; [3]Amgen GmbH, Headquarters Office for CEE, Vienna, Austria

OBJECTIVES: To describe chemotherapy regimens used in the first-, second-, and third-line treatment of patients with metastatic colorectal cancer and to estimate costs of regimens, supportive care, and medical procedures in Slovakia (part of a multinational study in central Europe). **METHODS:** In this opinion-based study, data were collected by online questionnaire. All information concerning treatment of colorectal cancer was based on expert opinion at three oncology centers in Slovakia. Oncologists had access to medical records of approximately 1600 patients treated in year 2008. **RESULTS:** The most commonly used first-line regimen (27% of patients) was IFL (irinotecan, 5-FU, leucovorin) + bevacizumab. The most commonly prescribed second-line regimen (27%) was cetuximab + irinotecan and capecitabine was the most common third-line regimen (15%). None of patients received supportive care in the first line. The percentages of patients receiving supportive care in the second and third lines were 27% and 45%, respectively. The most common treatment strategy (8%) was first-line capecitabine and supportive care in the second line. Mean regimen costs per patient were estimated from a public payer perspective. The most expensive first-line regimen was IFL + bevacizumab (€36,369). In the second and third lines, modified FOLFOX 4 (oxaliplatin, 5-FU, leucovorin) was the most expensive regimen at €31,318 and €31,572, respectively. **CONCLUSIONS:** More than 50% of patients received an active treatment until the second line. The most common regimen in the first line was also the most expensive one. New chemotherapeutic agents are associated with improvements in survival time but also with substantial costs. Factors influencing the selection of chemotherapy included: previous therapies, course of the disease, the patient's performance status, adverse events after previous chemotherapies and concomitant diseases. However, open-ended coverage policies for new chemotherapeutic agents may prove difficult to sustain as costs continue to rise.

PCN63

SURVEY AND ANALYSIS OF THE COSTS OF METASTATIC COLORECTAL CANCER TREATMENT IN SERBIA

Rutkowski J[1], Haldas M[1], Jedynasty K[2]
[1]HTA Consulting, Krakow, Poland; [2]Amgen GmbH, Headquarters Office for CEE, Vienna, Austria

OBJECTIVES: To describe chemotherapy regimens used and to estimate costs of chemotherapy regimens, supportive care, and medical procedures in the first-, second-, third-, and fourth-line treatment of patients with metastatic colorectal cancer in Serbia (part of a multinational study in central Europe). **METHODS:** An online questionnaire was used to collect necessary information in this opinion-based study. All information concerning treatment of colorectal cancer was based on experts opinion from four oncology centers in Serbia. Oncologists had access to medical records of approximately 1760 patients treated in year 2008. **RESULTS:** The leading first-line regimen (38% of patients) was Mayo (Folinic acid, 5-FU). The most commonly prescribed second-line regimen (46%%) was FOLFOX 4. Modified FOLFIRI (irinotecan, folinic acid, 5-FU) was the most popular regimen in the third line (35%), while FOLFIRI/cetuximab (35%) was the most commonly used fourth-line regimen. The percentage of patients receiving supportive care was 7%, 5%, 10%, and 56% in the first, second, third, and fourth lines, respectively. The most common treatment path (8%) was FOLFOX 4 B in the first line, FOLFIRI B in the second, and Mitomicin mono in the third. Mean regimen costs per patient were estimated from a public payer perspective. The most expensive regimen in the first line was bevacizumab + capecitabine + oxali-