PCN11

COSTS AND CHARACTERISTICS OF PATIENTS WHO UNDERGO BONE MARROW TRANSPLANT (BMT)

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OBJECTIVES: BMT is an important technology used in the treatment of cancer patients. Cost estimates for this procedure vary, and mostly derive from estimates developed early in the dissemination of the technology. Our objective was to describe the costs associated with BMT.
METHODS: Using 1999 MarketScan data, we analyzed commercial non-Medicare inpatient claims for patients who underwent initial BMT. Costs are comprised of total gross payments to all providers associated with the admission, including physicians and hospital facilities.
RESULTS: 69 patients were eligible for analysis. 42% and 29% of the sample were from the North Central or Southern region of the U.S. Mean age was 44 years. The mean and median total claims paid for BMT were $83,027 and $76,826, respectively (95% CI: $72,520, $93,534). The average length of stay (LOS) was 25.6 days (95% CI: 22.9, 28.4). Average costs increased as LOS increased ($49,501 for LOS 0–15, $74,384 for LOS 16–30, $99,050 for LOS 31–45, and $169,431 for LOS > 45). The most frequent diagnoses for the sample were: multiple myeloma 19%, non-Hodgkin's lymphoma 16%, other types of cancer 13%, myeloma 10%, and chronic myeloid leukemia 9%. The average cost of BMT was significantly more expensive for patients with a diagnosis of leukemia (e.g. chronic myeloid leukemia) ($94,473) versus patients with other types of cancer ($72,535) (95% CI for the difference: $1,639, $42,498). Mean costs were higher for patients who died ($111,025) versus those patients discharged to their home, either under self-care ($80,618) or medical supervision ($65,291).
CONCLUSIONS: We found that costs for BMT vary by diagnosis, LOS, and patient outcomes. Our estimate for BMT appears to be less expensive than initial estimates ($250,000). However, our analysis only included costs for initial BMT whereas other cost estimates include additional costs, such as costs for rehospitalizations, follow-up care and outpatient medications.

PCN12

AN UPDATED RISK THRESHOLD MODEL FOR G-CSF PROPHYLAXIS USE IN CANCER CHEMOTHERAPY: INCORPORATION OF PATIENT OUT-OF-POCKET AND INDIRECT COSTS

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Prophylactic granulocyte-colony stimulating factor (G-CSF) reduces the incidence and duration of chemotherapy-induced neutropenia (CIN), thereby reducing the risk of complications, dose delays, and reductions that may compromise outcomes. A published risk threshold model for the cost-effective use of prophylactic G-CSF used direct costs derived from randomized clinical trials. With direct cost estimates of $1,000 per day, prophylactic G-CSF becomes cost-effective when the risk of hospitalization exceeds 40%, and this value is reflected in current ASCO guidelines for CSF use (Lyman et al, JNCI, 1993). An updated analysis incorporating total institutional costs of $1750 per day reduces the risk threshold to 23% (Lyman et al, Eur J Cancer, 1998).
OBJECTIVE: Utilizing indirect cost estimates for neutropenia obtained from a pilot study (Calhoun at al, The Oncologist, 2001), the risk threshold model was modified to incorporate indirect costs.
METHODS: For parameters describing patients not receiving G-CSF, the indirect costs were fully added to the direct institutional costs. For the parameters describing patients receiving prophylactic G-CSF, the indirect costs were adjusted by the reduced incidence of severe neutropenia (50%), and further by the reduced probability of the development of febrile neutropenia (50%) related to G-CSF use. The new model was evaluated for indirect cost estimates ranging from $1,000 through $5,000 per episode. Patient out-of-pocket and indirect costs for an episode of severe neutropenia were estimated at $5,176 per episode, excluding hospitalizations (Calhoun at al, The Oncologist, 2001).
RESULTS: The addition of indirect costs yields a reduced threshold for prophylactic G-CSF use from 23% (no indirect costs) to 8% ($5,000 indirect costs).
CONCLUSION: The incorporation of indirect costs into economic models provides a more complete assessment of the impact of prophylactic G-CSF from a societal perspective. Additional study of the model assumptions and indirect cost estimates are needed to further improve the decision model.

PCN13

COST-EFFECTIVENESS OF RITUXIMAB IN DIFFUSE LARGE B CELL LYMPHOMA

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OBJECTIVES: Rituximab (MabThera) combined with CHOP chemotherapy (R-CHOP) significantly prolongs event-free and overall survival of patients with diffuse large B-cell lymphoma (DLCL) (GELA LNH 98–5 Study). We estimated the cost-effectiveness of R-CHOP.
METHODS: The analyses were based on a randomized-controlled trial comparing R-CHOP with CHOP, from a French health system perspective. Patients (n = 399) were

eligible if age 60–80 years, had stage II-IV DLCL, and had ECOG performance status of 0–2. Mean patient survival in each treatment arm and chemotherapy costs during treatment (q3 weeks × 8 cycles) were estimated from trial data. The longest duration of follow-up was 34 months. We estimated survival and cost-effectiveness up to a time horizon of 10 years. Survival for each IPI strata was estimated using the Kaplan-Meier method; survival after the longest observed time in the trial was estimated using published mortality rates (Shipp, NEJM, 93). French DRG payments were applied to trial data on hospital use and treatments for adverse events. French drug prices and drug administration costs were used to estimate the costs of R-CHOP and CHOP regimens. Costs and survival were discounted at 3.0%. R-CHOP increased survival from 56% to 63% at the time of last follow-up (34 months).
RESULTS: The mean duration of survival was 820 days for R-CHOP and 721 days for CHOP, resulting in a mean increase in survival of 0.27 years. Extrapolating to 10 years, R-CHOP is projected to increase discounted mean survival by 0.54 years. Therapy-related cost during the trial period was 15,000 euros higher with R-CHOP, with a cost per life-year gained (LYG) of 55,300 euros. Over 10 years, total added cost per patient was 15,270 euros and the estimated cost per LYG was 28,410 euros.
CONCLUSIONS: R-CHOP increases chance of cure compared with CHOP and is cost-effective compared with other treatments in widespread use.

PCN14

GENDER, FAMILY HISTORY AND OPTIMAL LIFETIME SCREENING PROGRAMS FOR COLORECTAL CANCER: A MODEL BASED ECONOMIC EVALUATION

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OBJECTIVE: Our aim is to describe a model that can be used to calculate the costs and life-years gained from any given screening program, and for any particular combination of risk factors for colorectal cancer (CRC). A trial cannot evaluate more than a handful of these programs, which suggests there may be a role for mathematical modeling techniques in identifying the designs worth evaluating in an interventional study.
METHODS: We used a Markov process model with time-dependent transition probabilities to generate data on the cost-effectiveness of various lifetime screening programs. Our model represents the evolution of colorectal cancer by five states; polyp-free colon, colon with benign tumor(s), asymptomatic carcinomic colon, symptomatic colonic cancer and death. We considered that progression is related to prognosis via the Duke's classification system. We have chosen a cycle length of one year for our model. The outcome measure used is life expectancy from birth.
RESULTS: Our results suggest that with frequent screening the detrimental effects of genetic risk on life expectancy can be almost completely countered. Screening can actually be cheaper than not screening, when costs of treatment are included, especially for high-risk individuals. Hemoccult followed by colonoscopy if positive is much cheaper than colonoscopy alone and, if carried out frequently, almost as effective. Altering the age of first screening has a much less important effect on costs and benefits than altering the frequency. In order to counter the effect of genetic risk on mortality, screening has to begin much earlier for men than women.
CONCLUSIONS: Hemoccult followed by colonoscopy if positive is a favorable strategy, even for high-risk groups, but that the optimal frequency of screening is likely to depend on gender and genetic susceptibility. These results may be useful in designing future CRC screening trials.

PCN15

CLINICAL AND ECONOMIC OUTCOMES ASSOCIATED WITH METASTATIC COLORECTAL CANCER IN MANAGED CARE POPULATIONS: CAPECITABINE (XELODA®) VERSUS COMPARISON THERAPIES

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OBJECTIVE: To examine and compare treatment outcomes and economic benefits in metastatic colorectal cancer with an oral fluoropyrimidine, capecitabine, versus comparison therapies.
METHODS: A retrospective, matched-cohort study design was used to abstract medical and retail pharmacy claims records of 271 metastatic colorectal cancer patients from a managed care, disease management database over a 30-month period. Patients were matched in two study cohorts based on their treatment, capecitabine (n = 78) vs. 5FULV +/– irinotecan (CPT) (n = 193). The 5FU comparison cohort was comprised of three therapy sub-groups: 5FULV (n = 78), 5FULV then CPT (n = 78), and 5FULV plus CPT (n = 37). Time to treatment discontinuation and survival were compared between cohorts. The total direct cost of cancer care was captured through reimbursement claims. Cost-effectiveness (cost per treatment duration) was calculated for both cohorts.
RESULTS: Patients were well matched by age, gender, metastases and co-morbidity status. Time to treatment discontinuation with capecitabine was not significantly different than the comparison cohort (79 days vs. 104 days). Median estimated survival for capecitabine was favorable relative to the comparison cohort (599 days vs. 530 days, p = 0.05). The total direct cost of cancer care per patient was lower for capecitabine ($6,007 vs. $13,339). Consequently cost-effectiveness ratio per patient was lower for capecitabine than for the com-