COST-EFFECTIVENESS OF BORTEZOMIB (VELCADE) FOR
RELAPSED AND REFRACTORY MULTIPLE MYELOMA
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OBJECTIVES: Currently, no active third-line treatment exists for patients previously treated for multiple myeloma, who fail to respond to conventional chemotherapy. A model was developed to evaluate the costs and benefits of a new proteasome inhibitor, VELCADE, relative to best supportive care. METHODS: A two-part mathematical model of survival was applied to individual patient data from the SUMMIT trial, a multi-center phase 2, single arm trial of adult patients with a life expectancy of more than three months; in the first part the time to disease progression for patients was estimated; the time from disease progression to death was estimated in the second part. Several survival estimation techniques were applied. Resource use data from SUMMIT were used to estimate costs from the perspective of the NHS in the UK for VELCADE administration, hospital care, concomitant medications and diagnostic tests and surgical procedures on an individual patient basis. RESULTS: By delaying the rate at which disease progresses, VELCADE produces survival gains relative to Best Supportive Care that range between 7.75 to 12.09 months of life depending on the assumed survival profile. Additional costs (2003 prices) of the novel agent were £17,290 without accounting for additional costs incurred during the extended period of survival or £24,121 if such costs are included. Combining these results with various survival estimation yields an incremental cost-effectiveness ratio (ICER) for VELCADE of the range of £17,161–£33,539 per life year gained. CONCLUSION: VELCADE has been licensed in Europe and hence information with regard to its clinical and cost-effectiveness is timely. The range of ICER estimates obtained (£17,000–£33,000 per additional life year) demonstrate cost-effectiveness of VELCADE as compared with Best Supportive Care. These ICER estimates compare favourably to other salvage therapies currently in widespread use throughout the UK.

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COST-UTILITY ANALYSIS OF ANASTROZOLE VERSUS TAMOXIFEN AS ADJUVANT THERAPY IN POSTMENOPAUSAL WOMEN WITH EARLY BREAST CANCER (EBC): A UK NATIONAL HEALTH SERVICE (NHS) PERSPECTIVE
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OBJECTIVES: This study estimated the incremental cost per quality adjusted life year (QALY) gained for anastrozole compared with tamoxifen from the UK NHS perspective, based upon ATAC trial data (Cancer 2003;98:1802–10). In this trial, anastrozole demonstrated superior efficacy and tolerability versus tamoxifen. Cost-effectiveness analysis found that over 25 years anastrozole had an incremental cost-effectiveness ratio (ICER) of GBP11,747 per life-year gained (LYG) among the clinically relevant population of patients with hormone receptor-positive (HR+) EBC. The model was expanded to include patient utilities to meet NICE and Scottish Medicines Committee preferences for cost-utility analysis and to facilitate comparisons across disease areas. METHODS: Patient utilities were elicited from 23 EBC patients on adjuvant hormonal therapy. Using the standard gamble technique, health states relating to adverse events reported in ATAC and breast cancer disease states were compiled and reviewed by clinicians. Utility values were incorporated into the cost-effectiveness model projecting outcomes for anastrozole and tamoxifen to 25 years, based on probability of side effects (ATAC safety data) and time in a particular health state. All parameters (including utilities) were varied in sensitivity analyses. QALYs and unadjusted LYG were compared with cost outcomes. RESULTS: Patients’ valuation of the different health states ranged from 0.71 to 0.99. Differences between incremental LYG and QALYs for anastrozole and tamoxifen were similar (0.3). The discounted ICER of anastrozole compared with tamoxifen was GBP11,506 per QALY gained (95% CI: GBP1771–GBP22,491). CONCLUSIONS: The incorporation of mean-adjugated utility values resulted in only minor improvement in the ICER in favour of anastrozole. Furthermore, sensitivity analysis showed that the ICER was robust to changes in utility scores and that the greatest impact on the ICER remains the improved disease-free survival with anastrozole. Anastrozole provides QALY gains at acceptable costs compared with tamoxifen in the adjuvant treatment of postmenopausal women with HR+ EBC.

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HOSPITALIZATION COSTS OF PATIENTS WITH INFECTIONS WHO HAVE LUNG CANCER OR NEUTROPENIA IN SWEDEN—A RETROSPECTIVE DATABASE STUDY
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OBJECTIVES: To assess the cost-utility of fulvestrant (Faslodex) as a replacement for exemestane (Aromasin) in the second line treatment of postmenopausal women with advanced breast cancer (ABC) in England. METHODS: A Markov model was developed allowing up to three separate lines of treatment. In the scenario studied, patients received fulvestrant or exemestane, followed by megestrol acetate and then a final palliative care package. The clinical pathways and resource use assumptions followed a survey of UK oncologists. The analysis was from the perspective of the UK National Health Service (NHS) and estimated the total cost and benefits, including quality adjusted life years (QALYs), of two patient cohorts. Clinical evidence was taken from published clinical trials. Unit costs were taken from nationally published sources and reported in year 2003 prices. Treatment each month comprised of drug therapy plus other care, including treatment of adverse events and health care professional visits. Costs varied depending on the health state the patients were in during any month. The time horizon of the model was 11 years. All costs and QALYs within the model were discounted at 3.5%. RESULTS: The model was run with a cohort of 100 patients. When compared against exemestane in second line treatment, the 100 patients on fulvestrant gained an extra 8.1 QALYs for an additional cost of £240,705 giving an incremental cost-effectiveness ratio (ICER) of £29,641 per QALY. CONCLUSIONS: Fulvestrant is likely to produce additional benefits compared with exemestane at an acceptable additional cost, illustrated by the ICER of £29,641 per QALY. The health benefit gain from fulvestrant was driven primarily by both a higher proportion of responders and longer time on second line treatment. The findings suggest that fulvestrant is a cost-effective second line option to the NHS in the UK.

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OBJECTIVE: All chemotherapy regimens are associated with some degree of adverse events. The more severe adverse events require hospitalization and may be associated with high costs. One adverse event that may be serious is infection and in particular infection because of neutropenia. The objective of this study was to retrospectively assess the hospitalization costs of infections and neutropenia in cancer patients.

METHODS: Individual patient data on costs, diagnoses, and length of stay were collected from the largest cost per patient inpatient database in Sweden. The time period was January 1999 to January 2000. The hospitals included in the database all have a detailed resource tracking and cost assignment system for determining the individual cost per stay. All non-surgical patients who had the combination of a cancer ICD-10 (C000 to C997) and an infection diagnosis recorded in the database were selected. Patients who also had a neutropenia (D709) diagnosis recorded were selected and studied as a subsample of the whole sample.

RESULTS: There were 2378 patients who had a cancer and an infection diagnosis. Their mean cost was (SEK) 69,700 and the mean length of stay was 12.3 days. The average age was 62 years and there were 59% women. Patients with a principal cancer diagnosis had greater costs than patients with a secondary cancer diagnosis, 85,500 versus 50,600. Out of the 2378 patients there were 52 who had both neutropenia and an infection. Their mean age was 55 years. There were slightly more women than men, 54%. The mean cost was (SEK) 77,900 and the mean length of stay was 12.9 days.

CONCLUSIONS: The hospitalization costs of infections and neutropenia in cancer patients are significant. When assessing the costs of chemotherapy treatments, not only pharmaceutical costs, but also costs of adverse events should be included.

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THE LIFETIME COST OF GEFITINIB (“IRESSA”) IN TREATING PATIENTS WITH NON- SMALL-CELL LUNG CANCER (NSCLC)
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OBJECTIVES: The objective of this study was to determine the lifetime cost of treating NSCLC patients with gefitinib. NSCLC is a fatal malignancy that responds poorly to chemotherapy. Best Supportive Care (BSC) is frequently offered when management with anticancer treatments is not feasible. Gefitinib (“Iressa”) is the first epidermal growth factor receptor tyrosine kinase inhibitor approved for the treatment of patients with locally advanced or metastatic NSCLC.

METHODS: Duration of gefitinib treatment was estimated by the time to progression in IDEAL 2, a phase II clinical trial involving patients with advanced or metastatic NSCLC who had previously received platinum-based chemotherapy. Post progression, patients were assumed to receive BSC. Resource utilization was estimated from the clinical trial. The cost of BSC following chemotherapy was provided by CancerCare Manitoba. Costs were expressed in Canadian dollars (2003).

RESULTS: Patients (n = 102) received gefitinib 250 mg daily. Over 40% of patients achieved a complete response, partial response or stable disease, and clinically significant improvement in disease-related symptoms occurred in most of these patients. Median time to progression was 19.9 months. The median survival time was 7 months. The tolerability profile of gefitinib was mild and there was a low incidence of grade 3/4 adverse reactions. The lifetime cost of treating a patient with gefitinib plus BSC was estimated at $14,496. In sensitivity analyses, that lifetime cost ranged from $13,822 up to $24,915.

CONCLUSIONS: The lifetime cost to treat a patient with gefitinib plus BSC was $14,496, which is comparable to costs for other chemotherapies for NSCLC. For example, the lifetime cost of second-line docetaxel was $17,739 (1999 dollars [$19,389 in 2003 dollars]) and for other chemotherapies, lifetime costs ranged from $24,828 up to $41,178 (1995 dollars [$29,059 to $48,196 in 2003 dollars]). “Iressa” is a trademark of the AstraZeneca group of companies.