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## THE CZECH BURDEN STUDY: SUBGROUP ANALYSIS (BURDEN AND QUALITY OF LIFE IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE EXACERBATION)

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**OBJECTIVES:** To estimate 6 months costs and quality of life (QoL) of patients with moderate to very severe COPD (GOLD criteria) who experienced a COPD exacerbation in comparison with control groups of similar COPD severity without exacerbation. **METHODS:** COPD in- and outpatients (Grade II = 28; III = 31; IV = 31) with exacerbation (EXA-groups) were assessed retrospectively (3 month prior to exacerbation) and prospectively (3 month after exacerbation) and compared to controls (CO-groups) of similar disease severity but stable health (3 month retrospective assessment). Direct costs included hospitalization, outpatient visits, laboratory tests, imaging, medication and rehabilitation. Indirect costs included short and long term disability payments. All costs were converted to a period of 180 days; health care costs used 2008 prices from the payer's perspective. A validated translation of the EQ5D was completed at inclusion day (all groups) and at final visit (EXA-groups). **RESULTS:** About 18% of grade-II and 75% grade-IV exacerbations were hospitalized, resulting in increased costs with COPD severity (6-months median: Grade II = €846; III = €2159; IV = €3856; all $p < 0.05$). Median 6-months costs in CO-groups were lower, although increasing from moderate to very severe COPD (Grade II = €567; III = €1610; IV = €2084; all $p < 0.05$). Exacerbation accounted for 8% (grade-II) to 31% (grade-IV) of total 6-months costs. Mean EQ5D utilities in the CO-groups and in the EXA-groups at final visit were comparable (moderate: 0.589 vs.0.636; severe: 0.623 vs. 0.591; very severe: 0.524 vs. 0.479; NS). Mean EXA-groups utilities at inclusion were significantly lower compared to final assessment ($p < 0.001$) and decreasing with COPD severity (moderate: 0.524; severe: 0.390; very severe: 0.230), reflecting QoL impairment during COPD exacerbation and natural disease course. **CONCLUSIONS:** The BURDEN study confirmed for the Czech Republic a considerable economic burden of COPD. In accordance with international literature we found increased costs and decreased QoL for 1) COPD exacerbation vs. control in stable state, and 2) COPD progression.

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## MEDICAL AND PRODUCTIVITY COSTS ATTRIBUTABLE TO OBESITY IN WORKING ADULTS WITH ASTHMA IN THE U.S.

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**OBJECTIVES:** To estimate annual medical and productivity costs attributable to obesity in working U.S. adults with asthma. **METHODS:** This study applied a cross sectional design using the 2003–2006 Medical Expenditure Panel Survey. Asthma patients (18–64 years old) were identified by self reported diagnosis or ICD-9-CM code of 493. Patients with pregnancy, malignancy, kidney dialysis, immunodeficiency, chronic obstructive pulmonary disease, low body-mass-index(BMI) <18.5, or unemployed status were excluded. To investigate the impact of obesity, patients were classified as normal (BMI: 18.5- <25) or obese(BMI: ≥30). Medical costs included all medical costs except for treatment costs of dental problems or injuries. Medical costs were estimated using a generalized linear model with a log link function and a gamma distribution. Loss of productivity was measured through the loss of workdays due to illness or injury for one year and valued using the hourly wage. Values of productivity loss were estimated using the two-part model. Costs attributable to obesity were estimated by the differences between actual and expected costs, holding the distribution of covariates obtained from the normal and obese patients in the model. All costs were converted to 2008 U.S. dollars using price indices. **RESULTS:** Among a total of identified 4,317 working adults with asthma, prevalence of normal weight is 34% while obese was 32%. The costs attributable to obesity were $2,384 (95%CI:$2,232–$2,536) for total medical treatment costs and $215 (95%CI $189–$241) for costs associated with productivity loss. The missed working days attributable to obesity were 2.4 days/year/patient (95%CI:2.1–2.7 days). The attributable costs to medical and productivity loss increased as patients became older or were female patients. **CONCLUSIONS:** Obese asthma patients have significantly higher costs associated with medical treatment and greater productivity loss compared to normal-weight asthma patients. Education aimed at weight control in asthma patients could result in a significant reduction in the economic burden of treating asthma patients and enhance productivity.

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## NEW PHARMACOECONOMIC MODEL OF ASTHMA MAINTENANCE TREATMENT (OPTIMA) IN RUSSIA. TO TREAT OR NOT TO TREAT: MAINTENANCE TREATMENT VS. NO MAINTENANCE TREATMENT

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**OBJECTIVES:** To compare maintenance (using the fixed combination of Salmeterol + Fluticasone; SAL/FP) and symptomatic (no maintenance) treatments of asthma with a developed transparent pharmacoeconomic model. **METHODS:** Lack of asthma control leads to unscheduled resources utilization and so growth of total cost (direct and indirect). Algorithm of OPTIMA model calculation includes 4 steps: 1) Analysis of weighted average cost of maintenance medicines based on dosing, average prices in reimbursement, and dose distribution in assessing population, and 2) Assessment of cost associated with controlled and uncontrolled asthma based on number of unscheduled resources utilization (emergency service, outpatient visits, inpatient stay, and work-off days) and their unit-cost (sources–current Russian legislation, RosStat data) as well as QoL. 3) Detection of frequency of controlled/uncontrolled asthma in arms based on clinical trials data. 4) Calculation of total cost in arms (cost of drug + % controlled * cost of controlled + % uncontrolled * cost of uncontrolled) and amount of saving. **RESULTS:** Weighted average cost of SAL/FP in Russia was 1672 Rub (~ 40 EUR) per month. Cost associated with controlled and uncontrolled asthma were 320 Rub and 62,753 Rub (~€8 and €1,400) per patient per year, respectively; QoL scores were 0.75 and 0.49 respectively. Frequency of controlled asthma in SAL/FP arm was 75% (GOAL study) and so 25% patients were uncontrolled. Assumed frequency of controlled asthma using symptomatic treatment instead of SAL/FP = 5%. Total costs were 35991 Rub and 59,632 Rub (~€850 and €,1400) in maintenance and symptomatic arms, respectively; average QoL score were 69% and 50.3%. **CONCLUSIONS:** The model allows transparent comparisons of different asthma treatment approaches. Maintenance treatment with SAL/FP was superior (less cost and higher QoL) to symptomatic treatment.

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## COST EFFECTIVENESS OF VARENICLINE COMPARED WITH EXISTING SMOKING CESSATION STRATEGIES IN HONG KONG

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**OBJECTIVES:** Smoking causes serious public health problems in Hong Kong. Effective smoking cessation strategies are required in order to cut public health budgets and save lives. The aim of this study is to estimate the cost effectiveness of a new smoking-cessation agent varenicline compared with the traditional strategies including bupropion, nicotine replacement treatment (NRT) and unaided cessation in Hong Kong. **METHODS:** A previously published Markov state-transition projection model was employed to estimate the life-long costs and effects of smoking cessation using varenicline, bupropion, NRT and unaided cessation from a societal perspective. Based on local epidemiology, a cohort of adult smokers was assumed to have a one-time quit attempt and was grouped by their genders and ages. Management costs and utilities of five smoking related diseases including chronic obstructive pulmonary disease (COPD), lung cancer, coronary heart disease (CHD), stroke and asthma were studied. The participants of each group experienced different transition probabilities based on their age and disease-specific morbidity and mortality rates. Vital statistics, disease-related morbidity and mortality rates were obtained from government statistics. Outcomes of the study in terms of benefits and costs were discounted at 5% after the first year of the study. Probabilistic sensitivity analysis was performed to assess the impact on the model outputs of uncertainty in certain model parameters including efficacies of the smoking cessation strategies, morbidity costs and morbidity utilities. **RESULTS:** Varenicline dominated among all the strategies with –HKD106,573 (–US$13,663, HKD7.8 = USD1)/QALY when compared with bupropion; –HKD246,042 (–US$31,544)/QALY with NRT and –HKD41,426 (–US$5,311)/ QALY with unaided cessation. The probabilities of varenicline being cost-effective were 77.9% when compared with bupropion, 69.3% with NRT and 88.3% with unaided cessation, at a willingness to pay of HKD50,000 (US$6410)/QALY. **CONCLUSIONS:** From the current study, varenicline appears to be a cost-effective smoking-cessation strategy when compared with the other existing strategies in Hong Kong.

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## COST-EFFECTIVENESS OF RESPIRATORY SYNCYTIAL VIRUS PROPHYLAXIS WITH PALIVIZUMAB FROM THE PERSPECTIVE OF A SOUTHERN US MEDICAID AGENCY

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**OBJECTIVES:** To calculate the cost-effectiveness of palivizumab for the prevention of respiratory syncytial virus (RSV) hospitalization by risk group, using real-world cost and incidence estimates. **METHODS:** Decision trees were used to calculate incremental cost effectiveness ratios (ICERs) as the direct medical cost required to prevent one RSV-related hospitalization within 8 risk groups based on indication. Risk groups were defined by age and combinations of comorbid conditions (chronic lung disease [CLD], congenital heart disease [CHD], or prematurity up to 32 weeks' gestational age), in accordance with treatment guidelines. Cost and incidence parameters were derived from Florida Medicaid claims data (October 2004 to March 2005) using ICD-9 and national drug codes; palivizumab effectiveness was estimated from clinical trial data. **RESULTS:** Among 611,451 infant-months, 9,805 had claims for palivizumab. Mean cost for a single dose ranged from $1347 [95% confidence interval (CI): 1336–1358] for infants under 6 months to $2096 [CI: 2081–2110] for children 1–2 years of age. Seasonal 6-month RSV hospitalization rate ranged from 1.25% [CI: 0.6–2.0] in children without indication to 8.13% [CI: 4.3–13.9] in premature infants with CHD. ICERs for palivizumab prophylaxis ranged from $246,719 [CI: 109,376–877,173] for premature infants up to 6 months old to $1,796,002 [CI: 656,705–9,910,719] for infants without indication. Having at least one indication resulted in ICER of $698,227 [CI: 290,981–2,475,180] for children <2 years of age. By comparison, the mean cost for RSV-related hospitalizations ranged from $4,111 [CI: 3,891–4,330] for children without indication to $9816 [CI: 8,904–10,727] for children with CLD. **CONCLUSIONS:** ICERs for palivizumab were found to be high, with