Ipratropium, a short-acting anticholinergic bronchodilator, is frequently prescribed for the maintenance treatment of COPD. Tiotropium is a new, once-daily bronchodilator.

**OBJECTIVE:** To compare the costs and consequences of tiotropium versus ipratropium in COPD patients with a FEV1 65% of predicted normal.

**METHODS:** The cost-consequence analysis was part of a one-year, randomized, controlled, double-blind clinical trial in the Netherlands and Belgium. Consequences were expressed as the number of COPD exacerbations, the number of patients with a minimal clinically relevant improvement in the St. George’s Respiratory Questionnaire (SGRQ), and the number of effectively treated patients. A societal perspective was adopted when calculating COPD-related direct health-care costs. Multiple imputation (SOLAS) was used to impute all missing data.

**RESULTS:** Tiotropium was associated with a 27% reduction in exacerbations (p = 0.03). The number of patients with a clinically relevant improvement in SGRQ after one year of treatment was 16% higher in tiotropium (p < .001). The proportion of effectively treated patients was 21% higher (p < .001). Across all categories, health-care resource use was consistently lower for tiotropium than for ipratropium. There was a 47% reduction (p = 0.07) in the number of hospital admissions and a 36% reduction (p = 0.03) in the number of unscheduled visits to physicians and other caregivers. The use of concomitant medication was comparable in both groups. COPD-related health-care costs were estimated to be Euro 1310 in ipratropium and Euro 1065 in tiotropium. Hence, annual savings were estimated to be Euro 245 with a 95% CI ranging from −656 to +167. This estimate excludes the costs of the study medications, since the price of tiotropium still has to be set.

**CONCLUSION:** This cost-consequence analysis favors the new once daily bronchodilator tiotropium over ipratropium on all relevant outcome measures.

**PRP5**

**ESTIMATES OF LOST PRODUCTIVE WORK TIME ASSOCIATED WITH ALLERGIC RHINITIS (AR)**

Ricci J, Stewart WF, Leotta CR, Chee E

AnnecyPCe, Hunt Valley, MD, USA

**OBJECTIVE:** To determine if lost productive work time differed between individuals with and without AR symptoms and by severity of AR symptoms. Work loss was evaluated as: a) missed workdays; b) missed hours, and c) reduced productivity on days at work while not feeling well.

**METHODS:** Three different phone interviews were developed to quantify illness-related work loss. Version 1 (V1) included a lengthy direct assessment of work loss. Version 2 (V2) was an abridged version of V1. Version 3 (V3) included a brief indirect assessment of work loss. Two different recall periods, at one week and at four weeks, were used for each version of the interview. A convenience sample (n = 20,088) of adult residents from the Baltimore, MD and Chicago, IL areas was contacted by phone, of whom 7,691 met occupation eligibility criteria. The interview included health questions to screen for AR symptoms and to determine AR severity.

**RESULTS:** The dominant source of health-related work loss among all respondents was in total hours of reduced productive work time on days at work when not feeling well, rather than missed full days of work. We compared individuals with AR symptoms (n = 1,596) to controls without AR symptoms on the basis of estimates of total hours of lost productive work time per week by interview version. AR cases reported significantly more lost productive work hours per week than controls. The observed differences between cases and controls per week were 1.8 hours (V1), 2.1 hours (V2), and 3.1 hours (V3) (p < .05). Among moderate-to-severe AR cases, the observed differences per week increased to 4.4 hours (V1), 5.7 hours (V2), and 6.5 hours (V3).

**CONCLUSION:** Individuals with AR symptoms reported significantly more lost productive time at work on days at work when not feeling well than controls. Hours of lost productive work time per week increased with increased severity of AR symptoms.

**PRP6**

**ASMACARE STUDY. ASSESSMENT OF THE IMPACT OF AN INTERVENTION DESIGNED TO IMPROVE THE MANAGEMENT OF ASTHMA PATIENTS**

Espinosa C1, Plaza V2, Molina J3, Ignacio J4, Garcia-Alonso F5, Cobos A6

1Novartis Farmaceutica, Barcelona, Spain; 2Hospital de Sant Pau Barcelona, Barcelona, Spain; 3C.S. Francia, Fuenlabrada, Madrid, Spain; 4Hospital General Basico Serrania, Ronda. Malaga, Spain; 5Ministerio de Sanidad y Consumo, Madrid, Spain; 6RDES-Remote Data Entry System, Barcelona, Spain

**OBJECTIVES:** To assess the impact of an intervention helping physicians in the management of asthma patients (APs).

**METHODS:** A program was designed to help physicians in the management of APs that includes an education program (EP) and a computer application (CA) advising on therapeutic decisions. The EP was devoted to teach patients to distinguish worsening symptoms requiring a hospital emergency visit from those that could be self-managed, and to ensure correct self-administration/self-control of therapy. The CA implements the Spanish recommendations for the management of APs that physicians may follow at their discretion. A naturalistic, controlled, cluster-randomized study was designed to assess the long-term (one-year) impact of the intervention on health-related quality of life as measured by the St. George’s Respiratory Questionnaire (SGRQ), on direct and indirect costs, and on satisfaction and clinical outcomes. We also assessed physicians’ adherence to the recommendations. Twenty-two physicians (11 GPs, 11 pneu-
mologists) were randomly assigned to either intervention (I) or control (C = standard practice) groups, and were expected to enroll 10 adult patients with persistent asthma (ATS criteria).

**RESULTS:** Two physicians withdrew after randomization (I:1, C:1) but before starting recruitment. A total of 200 patients (I:100, C:100) were recruited and 173 completed the study (C:86, I:87). The ITT analysis showed a greater reduction of SGRQ values in group I that was significant at the 5% level or marginally non-significant (p = 0.06) depending on the method of analysis, but always clinically significant. Resource consumption and some clinical variables (such as the number of symptom-free days and nights) favored group I (p < 0.05). The recommendations were adopted in about 63% of the cases but this seemed to depend on disease severity.

**CONCLUSIONS:** The intervention improved QoL, clinical outcomes and resource consumption. The Spanish recommendations for the management of APs should be revised for severe cases.

**COST-EFFECTIVENESS ANALYSIS OF SEQUENTIAL TREATMENT WITH ALMITRINE BISMESYLATE IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE**

Gorecka D, Jaworski R, Czech M, Pachocki R, Corcaud S
1 Institute of Tuberculosis and Lung Diseases, Warsaw, Poland; 2Servier Polska, Warsaw, Poland; 3Les Laboratoires Servier, Neuilly sur Seine Cedex, France

**OBJECTIVE:** The aim of the study was to assess the cost-effectiveness of almitrine in the treatment of severe, chronic obstructive pulmonary disease.

**METHODS:** A retrospective approach was applied. Both costs and consequences of the therapy in two groups of patients, almitrine group and placebo group, were assessed. The pharmacoeconomic analysis was based on the results of a clinical trial entitled “Effects of sequential administration of almitrine bismesylate (100mg per day per os) in 120 patients with chronic obstructive pulmonary disease. One year, double blind study versus placebo”.

The effectiveness of the therapies was exemplified by significant changes in arterial oxygen partial pressure (D PaO2). The differences on Visual Analogue Scale for dyspnoea were also measured. Results of the trial demonstrated significant improvement in PaO2 during 12-months of treatment with almitrine compared to placebo. Direct medical costs of pharmacological treatment, hospitalizations, additional examinations and oxygen therapy were identified and calculated. The societal and third-party-payer perspectives were applied.

**RESULTS:** The total cost per patient per year in the almitrine group amounted to 2 656 PLN and was 27 PLN lower than for the placebo group. The most important difference in cost components concerned costs of hospitalizations and oxygen therapy, which were 47.4% and 34.5% lower in almitrine group (calculations made from societal perspective). Results of simulation assuming possibility of partial, subtotal or total reimbursement determined that savings due to this procedure might vary from 93 PLN per patient per year in the case of total reimbursement to 531 PLN per patient per year in the case of 50% reimbursement.

**CONCLUSION:** Cost calculations together with clinical results determined that treatment with almitrine is a cost-effective alternative, which leads to clinical improvement and constitutes effective use of resources both from the broad societal perspective and also from the third-party-payer perspective.

**LIFETIME COSTS OF COPD IN THE NETHERLANDS**

Feenstra T, van Genugten ML, Rutten-van Mölken MP
1 National Institute of Public Health and the Environment, Bilthoven, Netherlands; 2Erasmus University Rotterdam, Rotterdam, Netherlands

**OBJECTIVES:** Chronic Obstructive Pulmonary Disease (COPD) causes great disability, primarily among the elderly. A Dutch cost-of-illness study estimated the yearly cost of care for an average patient to be Fl 1800 in 1993. The purpose of this paper is to compute the lifetime cost of COPD and to evaluate the contribution of medication, hospital, and other types of care to this cost.

**METHODS:** The average life expectancy of a new COPD patient was computed with a dynamic lifetable model for the Netherlands. The model accounts for competing death risks from other smoking-related diseases. Resource use and costs for three age groups and nine types of care came from large representative registries. Sensitivity analyses were performed a/o., for the cost of a day in hospital and for medication costs.

**RESULTS:** Male COPD patients diagnosed at age 45 and 65 have a life expectancy that is almost six and more than two years less than the average life expectancy at these ages. Expected lifetime costs for COPD are between DFL 460 000 and 570 000 for men and women diagnosed at age 45. New patients at age 65 have lower costs: between DFL 81 000 and 110 000 for men and DFL 102 000 and 152 000 for women. A large decrease in life expectancy that differs for men and women explains the reduction. Lower boundaries use minimum estimates for the price of a hospital day and upper boundaries use high estimates. Hospital and medication costs together contribute to more than 80% of total lifetime cost. The contribution of medication costs to the expected lifetime cost decreases with age at diagnosis from 45% to 30%.

**CONCLUSION:** The lifetime cost reflects the importance of hospital costs and medication costs to the total cost of COPD. It is known that the number of COPD patients will increase in the near future. The results of this work may help understand the increasing health-care needs of these patients.