MARKOV MODEL FOR COPD: COMPARING TREEAGE AND ARENA SOFTWARE AND VALIDATING THE MODEL
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OBJECTIVES: To develop a Markov model for an economic evaluation of a hypothetical intervention in chronic obstructive pulmonary disease (COPD), to implement it in TreeAge and ARENA in order to ensure its technical validity and to compare ease of implementation. METHODS: We used a 7-state Markov model (disease stages I to IV according to GOLD classification, post-surgery, post-transplantation and death) with a time frame of 60 years to assess incremental costs ($) and effects (life-years gained, LYs). Applying identical assumptions regarding transitions and costs, we ran Monte Carlo simulations with 10,000 patients for 100 replications in both packages. Additionally, we calculated expected values for the TreeAge model. RESULTS: In TreeAge, the simulation resulted in higher incremental costs and effects compared to ARENA (p < 0.0001). Standard errors in both packages were equal for effects, but slightly higher for costs in ARENA. For the TreeAge model, averaged simulated values of both costs and effects were close to the expected values, indicating adequate sample size. Run-time was slightly shorter in ARENA. Yet determining cost-effectiveness values was more convenient using TreeAge. CONCLUSION: Building a standard Markov model for cost-effectiveness calculations appears more comfortable in TreeAge. Useful tools for calculating and plotting the results of an economic evaluation are available and can easily be applied. In ARENA, users must implement these features themselves, yet the user is more flexible when classical Markov assumptions no longer hold.

RESPIRATORY DISORDERS—Patient Reported Outcomes

PRS11
CEPOC STUDY: DIAGNOSTIC VALIDITY OF INDIRECT METHODS FOR COMPLIANCE ASSESSMENT IN COPD PATIENTS
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OBJECTIVES: Evaluate diagnostic validity of indirect methods of compliance assessment (Gold standard: number of doses administered per day) in COPD (Chronic Obstructive Pulmonary Disease) patients with inhaled regular medication. METHODS: Cohort study of 98 patients with follow-up of six months. Variables: age, gender, educational level, comorbidity, COPD staging (by SEPAR recommendations), prescribed drugs, and indirect methods for compliance assessment (Morisky-Green test, Batalla test), and count of number of doses per day as gold standard (electronic count or perforated pills number). RESULTS: Predominance of males, with mean age of 69 years (CI 95% 67–72); low cultural level, 23% smokers (28 cigarettes/day [CI 95%, 26.73–30.67]); overweight (Body Mass Index 29 kg/m2 [CI 95%, 29.1–30.1]). Seventy-five percent of patients are in mild-moderate severity stage with predominance of mixed respiratory pattern; FEV1 (mean) 53.99 [IC 95% 50.07–57.91]. A total of 1.67 exacerbations per year [IC 95%, 1.31–2.03]. Pharmacological treatment: inhaled anticholinergic 89.9% patients, inhaled beta2-adrenergic 86.7% patients, inhaled corticosteroids 70.4% patients; xantins 16.3% patients, oxygen therapy 5.1% patients; oral corticosteroids 1% patients, mucolytics 2% patients. Sixty-six percent patients (67.3%) completed follow-up. Compliance prevalence: gold standard: 57.6%; Morisky-Green test 50.8% sensibility 58%, specificity 67%, likelihood ratio for positive result 1.76; Batalla test 63.1%; sensibility 83%, specificity 70%, likelihood ratio for positive result 2.76. When consider together both indirect METHODS: sensibility 50%, specificity 89%, likelihood ratio for positive result 4.54. CONCLUSION: Indirect methods for compliance assessment are valid and applicable in clinical follow-up of patients with COPD.

PRS12
MAPPING THE EQ-5D FROM THE ST. GEORGE’S RESPIRATORY QUESTIONNAIRE IN A CLINICAL TRIAL OF COPD TREATMENTS—RESULTS FROM THE OPTIMAL TRIAL
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OBJECTIVES: Direct preference elicitation is uncommon in clinical trials of COPD treatments. Investigators have created an algorithm that estimates EQ-5D preference weights from the St. George’s Respiratory Questionnaire (SGRQ) to permit the calculation of QALYs. METHODS: Using data from a placebo controlled randomized trial comparing three regimens: 1) tiotropium plus placebo; 2) tiotropium plus salmeterol; and 3) tiotropium plus salmeterol/fluticasone in COPD, we examined the validity of estimated EQ-5D scores from the SGRQ. RESULTS: A total of 351 patients with complete SGRQ scores at each point in the trial were included in the analysis. The mean values of the SGRQ and the estimated EQ-5D revealed similar pattern across the three treatments over time. A scatterplot of the SGRQ scores versus the EQ-5D scores showed that although there was an underlying linear relationship, it was somewhat “stepped” as the conversion algorithm results in the estimation of the same EQ-5D utility value for a number of SGRQ scores. Given that the minimally clinical important difference (MCID) of the SGRQ is 4, it would be possible that one might lose an MCID response when converting to the EQ-5D (whose MCID is 0.03). This was not the case in 85% of the SGRQ MCID responders. Finally, to see if any of the above made a difference statistically, the SGRQ scores and the estimated EQ-5D scores were compared at the end of the study (52 weeks). For the predicted mean EQ-5D utilities, treatment arms 1 and 3 were significantly different. However, when using the SGRQ, treatment arms 1 and 3 and treatment arms 1 and 2 were significantly different. CONCLUSION: The conversion algorithm was judged to be sufficient. However, use of the algorithm resulted in a reduction in discriminatory ability of the estimated EQ-5D as compared to the SGRQ.

THE IMPACT OF SALMETEROL/FLUTICASONE PROPIONATE COMBINATION ON QUALITY OF LIFE OF ASTHMA AND COPD PATIENTS
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OBJECTIVES: The objective of this study was to examine the impact of salmeterol/fluticasone propionate combination (SFC) on the health related quality of life (HRQOL) of patients with respiratory diseases. HRQOL data is not often collected when examining the impact of treatment in Ireland eventhough improving HRQOL is one of the main objectives of treatment of chronic diseases. METHODS: This was a non-interventional, observational cohort study that recruited 113 patients attending
Abstracts

PRS15

EQ-5D UTILITIES ASSOCIATED WITH LEVELS OF COPD SEVERITY: A META-ANALYTIC APPROACH

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OBJECTIVES: Chronic obstructive pulmonary disease (COPD) imposes a tremendous economic and humanistic burden on health care systems worldwide. The EQ-5D is a generic measure of health-related quality of life (HRQL) that can help to better understand the impact of COPD. The aim of this study was to estimate EQ-5D index-based utility scores associated with different levels of severity of COPD according to Global initiative of Chronic Obstructive Lung Disease (GOLD) stage.

METHODS: A structured literature search was conducted in EMBASE and MEDLINE (Jan 1988 to Jan 2007) using keywords relevant to respiratory disease and EQ-5D. Original research studies in COPD that reported EQ-5D summary scores were selected for inclusion. Pooled summary scores for UK-based index were estimated using a fixed-effects estimate for COPD overall and by GOLD stage (Stage I [least severe] to Stage IV [most severe]).

RESULTS: Of 15 original research studies identified prior to screening, 8 reported EQ-5D index-based summary scores by severity. Utility scores which ranged from 0.52 (SD 0.16) to 0.84 (SD 0.15). Pooled average utility scores (95% CI) by GOLD severity. Utility scores which ranged from 0.52 (SD 0.16) to 0.84 (SD 0.15). Pooled average utility scores (95% CI) by GOLD severity. Utility scores which ranged from 0.52 (SD 0.16) to 0.84 (SD 0.15). Pooled average utility scores (95% CI) by GOLD severity. Utility scores which ranged from 0.52 (SD 0.16) to 0.84 (SD 0.15).

CONCLUSION: The preferential algorithm included the following terms (coefficient): constant (+1.0500), symptoms (−0.0006), activity (−0.0019) and impacts (+0.0019) component scores, one activity item—Item 27 ‘I take a long time to get washed or dressed’ (−0.0780), one symptom item—Item 5 ‘I have had 5 or more attacks of chest trouble in the last year’ (−0.0480), and two patient characteristics, smoking history (−0.0160) and gender (+0.0304). Adjusted R-squared was 43.45% and RMSE was 0.1452. In the validation analysis, this algorithm explained 39% of the variation in utilities derived from EQ-5D. The algorithm that excluded items 27 and 5, but included all three components and two patient characteristics, had adjusted R-squared of 41.11% and RMSE of 0.1482. Alternative specifications applying a logistic transformation and Tobit regression did not improve on this model.

CONCLUSION: The regression model enables utilities to be estimated for study patients with SGRQ-COPD measurements but for whom no preference-based instrument has been administered. The approach appears fairly robust based on the explanatory power of the algorithm and validation results.

PRS17

SELECTION OF UTILITY INSTRUMENTS FOR ASTHMA AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

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OBJECTIVES: Agencies such as NICE in the UK have specific requirements for economic evaluations. NICE specify how utility data should be collected and used in such analyses. The present review aimed to: 1) identify which utility measures have been used in asthma and COPD; 2) compare their measurement properties; and 3) determine if they meet NICE requirements.

METHODS: A literature (Embase, PubMed) and internet (Google, PROQOLID) search for studies including utility measures in asthma and COPD was completed for the last 10 years. It identified 41 and 24 studies respectively. The evidence regarding each measure was critically appraised and summarised in terms of our three criteria.

RESULTS: Asthma and COPD search generated 41 and 24 hits respectively. The following generic instruments had been used in asthma or COPD studies: EQ-5D, 1SD, HUI-2, SF-6D [1]. Disease specific utility measures were also identified: ALQ-5D, Asthma Symptoms Utility Index (ASUI) and the SGRQ-U. The ALQ-5D and the SGRQ-U are derived from the Asthma Quality of life Questionnaire and St George’s Respiratory Questionnaire respectively. The EQ-5D has been most commonly used and one comparison study found it to be more sensitive than the SF-6D. Measurement properties and appropriateness for all measures will be summarised.

CONCLUSION: Utility measures have been quite widely used in asthma and COPD. EQ-5D, SF-6D, ALQ-5D and HUI-2 would all in principle be suitable for NICE, but EQ-5D is probably the safest