OBJECTIVE: Cost-effectiveness, -utility and -benefit analyses have made a substantial impact on health care. Current approaches are methodologically coherent and provide a basis for improved resource allocation. As has been noted before, they are based on expected (average) outcome and do not take into account patients’ risk preferences, which are important aspects of clinical decision-making. From a patient’s perspective, a treatment associated with a lower level of expected clinical benefit may be preferred if it has better worst-case scenario than a treatment with higher expected (average) benefit. We analyze decision-scientific methodology in order to incorporate risk preferences into the framework of outcome and utility studies.

METHODS: Concepts of risk preferences in decision-making from economics and management science are described, and their applicability to a clinical context is tested using a decision tree model. Methods analyzed include the Bayes-Principle of expected value (m-principle), the m-s-principle, risk restriction with given outcome and the Bernoulli-Principle. The absence of risk preferences in the QALY (quality adjusted life years) and HYE (healthy years equivalent) concepts is shown mathematically.

RESULTS: Current methodological concepts used in outcomes research do not adequately incorporate patients’ risk preferences. On the basis of a modified standard gamble approach a method of obtaining risk preferences for given treatment outcome is developed. It leads to the determination of relative marginal utilities and may be used in choosing health-care interventions by considering relative marginal costs.

CONCLUSION: Patients’ risk preferences should be taken into account in outcome and utility analyses involving substantial risks. The approach proposed here may improve the empirical estimation of patients’ preferences and the quality of resource allocation in health care.

PSYCHOMETRIC PERFORMANCE OF THE MEDICAL OUTCOMES STUDY SLEEP SCALE IN THE US GENERAL POPULATION
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OBJECTIVE: Support for the reliability and validity of the Medical Outcomes Study (MOS) Sleep Scale was provided in the MOS sample of 3445 individuals with chronic illness. We sought to extend this work by evaluating the psychometric properties of the MOS-Sleep Scale in the US general population.

METHODS: The MOS-Sleep Scale is a 12-item, self-reported survey that yields six subscales: sleep disturbance, snoring, awaken short of breath or with headache, quantity of sleep, sleep adequacy, and somnolence as well as a nine-item sleep problem index. The subscales and problem index are scored on a 0 to 100 range, with higher scores indicating more of the domain being measured. We administered the MOS measure by telephone to a nationally representative sample of 1011 US adults aged 18 and older in January 2001.

RESULTS: The average age of the sample was 46; 51% were female and 74% were white. Internal consistency reliability estimates for the MOS-Sleep scales tended to be adequate: sleep disturbance (4 items, alpha = 0.80); sleep adequacy (2 items, alpha = 0.82); sleep somnolence (3 items, alpha = 0.63); and nine-item sleep problems index II (alpha = 0.83). Adjusting for age and gender, MOS patients reported significantly more quantity of sleep (t = 3.27, P < .002), but significantly worse sleep disturbance (t = 5.08, P < .001), snoring (t = 2.16, P < .05), shortness of breath (t = 4.59, P < .001), sleep adequacy (t = 2.39, P < .05), somnolence (t = 5.10, P < .001), and sleep problems (t = 3.27, P < .002) than the general US population.

CONCLUSIONS: The MOS-Sleep Scale was found to have good internal consistency reliability and to discriminate between patients with chronic illness and the US general population. Further work is needed to compare the MOS-Sleep Scale results with objective measures of sleep such as polysomnography.

SESSION IV
MENTAL HEALTH II

SLEEP DISORDERS AND HEALTH RELATED QUALITY OF LIFE—AN EPIDEMIOLOGICAL SURVEY
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OBJECTIVE: To analyze health-related quality of life among people with sleeping problems from an epidemiological perspective.

METHOD: A cross-sectional survey on a sample aged between 20 and 84 years in the county of Uppland, Sweden yielded a response in 5404 patients (68%). A recall period of two weeks was used for sleeping problems and use of sleeping medication. The SF-36, used to measure HRQoL, covers eight domains of health: physical function (PF); role limitation because of physical health (RP); bodily pain (BP); general health perception (GH); vitality (VT); social functioning (SF); role limitation because of emotional health problem (RE), and mental health (MH). Linear regression analysis was employed for the multivariate analyses.

RESULTS: In all, 20.3% of the population reported sleeping problems. Sixteen percent had experienced sleeping problems but had not used sleeping medication while 4.3% had used medication. The prevalence of sleeping problems was of the same magnitude between the ages of 20 to 74 years (around 20%) but higher among those aged 75 to 84 years (29.5%). Sleeping problems were more prevalent among women (23.8%) than men (16.1%). The use of sleeping medication increased by age. Among
persons aged 20 to 34 years, 1.0% had used sleeping medication and among those aged 75 to 84 years 16.1% did. Use of sleeping medication was more common among women (5.3%) compared to men (3.0%). Individuals with sleeping problems scored significantly lower (p < .05) than those without sleeping problems on all of the eight domains in SF-36 = RE = 20.3; VT = 19.3; MH = 16.8; GH = 16.2; SF = 15.6; RP = 15.1; BP = 13.4 and PF = 7.9. Among individuals with sleeping problems, those using sleeping medication scored lower on seven domains of the SF-36 = RE = 10.5; MH = 10.4; SF = 8.8; GH = 8.1; BP = 7.8; VT = 6.1 and PF = 5.8.

CONCLUSION: Sleeping problems are common in the population and lead to a significantly decreased quality of life among affected individuals.

**Abstracts**

**COST OF THE FIRST, SECOND AND SUBSEQUENT EPISODE OF DEPRESSION IN POLAND**

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**OBJECTIVE:** Depression is a common recurrent disease. Usually, each successive episode of depression is more difficult to cure. The objective of this study is to assess costs, methods of treatment, and outcomes of the first episode of depression compared to the second and subsequent episodes.

**METHODS:** Study was designed as a one-year prospective, natural observation. Psychiatrists who took part in this trial recruited one patient with a first episode of depression, one with a second episode after a period of remission and one with a third or next episode after a period of remission. During the study, carried out in 1999 with three months tolerance, data concerning treatment methods, their outcomes, changes in health state, and economic and social consequences of depression were collected. A social perspective was applied. The capital cost method was used for indirect costs.

**RESULTS:** Five hundred thirty two patients were included, and 94% of them were followed to the end of the study (one-year observation). The average direct medical cost per patient with a first episode of depression was 2097 PLN (1 Euro = 3.50 PLN), with a second was 2241 PLN and with a third and the following 3357 PLN. Direct medical costs included: the cost of hospitalization (49%); doctors consultations (29%); non-pharmacological treatment (14%); pharmacological treatment (8%); laboratory and diagnostic tests (1%). Indirect costs per patient with a first episode reached 10,834 PLN, with a second, 13,802 PLN, and with a third and following, 15,012 PLN. The distribution of indirect cost was as follows: sick leaves 40.5%, sickness pensions 59%, and suicides 0.5%. Total costs in the three study groups were 12,931 PLN, 16,043 PLN and 18,369 PLN respectively.

**CONCLUSIONS:** Treatment of a third episode of depression costs 60% more than the first episode. Direct medical costs account for only 16% of total costs.

**MODELLING THE COSTS OF ILLNESS AND THE COSTS OF RELAPSE IN THE MANAGEMENT OF SCHIZOPHRENIA IN THE UK**

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**OBJECTIVE:** Schizophrenia is probably one of the most costly mental-health illnesses in terms of its impact on the society, on the health-care system and on patients and their families. We aim to develop a framework for analyzing schizophrenia through the estimation of the costs of illness as well as the costs of relapse in the management of schizophrenia in a UK care setting.

**METHODS:** A model that utilizes a Markov structure was elaborated in order to calculate the lifetime cost of illness and the principal cost driver in schizophrenia, the cost of relapse. The model included the main confounding factors such as compliance, dropout, and treatment location, which have been shown to be important in the literature when constructing a model. The costs were estimated for a 10-year period as well as for the lifetime of a patient, and consider all types of treatment structures in the UK.

**RESULTS:** The average 10-year cost of illness for a patient in a UK treating environment was estimated at £ 66 600, and the lifetime cost per patient at £ 98 510. As for the cost of relapse of a schizophrenic patient, the 10-year cost was £ 51 630 and the lifetime cost per patient was £ 75 890.

**CONCLUSIONS:** This model enables the identification and the calculation of the main cost drivers in the treatment of schizophrenia. This model can therefore be used to evaluate the cost implication of treatment options and policy choices, by generating budgetary provisions. Hence, this model can help decision-makers in policy-making for mental health-care organizations in the management of schizophrenia.

**NEUROLOGICAL DISORDERS**

**INDIRECT COSTS DUE TO BACK PAIN IN THE UNITED STATES**

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**OBJECTIVE:** Back pain is a leading cause of absence and disability in the workplace. Costs associated with lost productivity due to back pain are significant and may be as high as the costs of medical care for this condition. However, there has been limited study of the indirect costs of back pain in the United States. The objective of this study was to determine the indirect costs due to back pain in the US population.