telemedicine (evaluation of usefulness), • the view of information systems or archi-
tectures. The following characteristics were taken: • purpose of the system, • inter-
action of patients and physicians; • training and impact on lifestyle - the formation of health-preserving behaviors (with the exception of smoking, adequate physical activity, etc.), • self-management. RESULTS: The following problems of implementa-
tion were identified in the study: • lack of awareness of the importance of these methods and the lack of specific training for the users; • a lack of special equipment and devices; • the need for training and motivation of both staff and patients; • a lack of unified architecture, protocol stack and hardware-software platform for the integration of systems at all stages of the process - from data collect-
ion to its processing, decision-making and patient feedback. Despite the fair amount of existing telemonitoring systems almost all of its provide only data collection, while the entire analytical part falls on the doctor. Almost all of studies were focused on the elderly and adults. CONCLUSION: A promising direction is the development of a prototype system for remote health monitoring in pediatric patients. The study was supported by the Russian Foundation for Basic Research, the project 13-04-12055.

PMR66 USING MACHINE LEARNING TO POPULATE A MARKOV MODEL BY MINING BIG DATA DIRECTLY FROM HOSPITAL EHR - AN APPLICATION TO DYNAMICALLY PROJECTED HIPAA HAPU RISK

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OBJECTIVES: Real-world big data accessible through electronic health record (EHR) systems offer opportunities to collect generalizable information to populate eco-
nomic models. Using a supervised machine learning approach, the objectives were: (a) to mine a hospital EHR for transition probabilities of high-risk patients for developing hospital-acquired pressure ulcers (HAPUs); and (b) to compare efficiency and accuracy of predictive methods between Markov modeling and Bayesian inference with EHR data. METHODS: This study used a de-identified panel of 12,236 patients from hospitals since 2010 in a U.S. tertiary academic medi-
cal center EHR to study Braden scores of patient risk for developing HAPUs. The study focused on patients hospitalized for ≥5 days and at least two Braden scores. Braden scores were converted from an ordered scale into five categories (i.e. mini-
mal risk, at risk, moderate risk, high risk; very high risk). A 10-stage Markov model was constructed via supervised machine learning using R software designating the five Braden categories as transition states, as well as end-states for discharge or HAPU development. Results from the Markov model were adjusted to a pared to paired probabilities of HAPU risk derived from naive and full Bayesian inference. Measures of computational accuracy and efficiency were derived to compare analytical approaches. RESULTS: The EHR provided a panel of over 34,787 patients. The Markov model yielded transition probability matrices of 2.35% compared to a minimal risk transition probability of 0.001. Neither of the Bayesian classifiers provided accurate comparisons. CONCLUSIONS: Real-world big data from an EHR enables outcomes researchers to mine transition probabilities using supervised machine learning. These results can be leveraged to efficiently populate Markov models for cost-
effectiveness and decision analysis.

PMR67 BURDEN OF EPILEPSY IN COLOMBIA

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OBJECTIVES: Epilepsy lays an important burden on healthcare systems and society in general. Disability adjusted life years (DALYs) have been developed to compare the burden of this disease both between conditions and between geo-
 graphical boundaries. With improving data on disease incidence and prevalence in Colombia, we can refine our DALYs-based estimates. METHODS: Using different strategies, including the official healthcare provision database (called RIPS) and death certificates, as well as extrapolation from published neuroepidemiologic studies, we estimated the incidence and prevalence by age groups, the disease duration and the attributable mortality. Baseline period was divided into the average disability weight of 0.113. With this information, and using the clas-
sical methods for DALYs, and especially for the calculation of DALYs, we can refine our DALYs-based estimates.

PMR68 GENERALIZED IMPLEMENTATION OF EM ALGORITHM FOR ESTIMATION OF TRANSITION PROBABILITY MATRIX

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OBJECTIVES: Health economic models typically follow a Markovian framework with a fixed number of states. The Markov model used for the estimation of the state-
 state transitions is the key driver of such a model. Estimation of TPM depends on the observation intervals of clinical studies and the model cycle length. Generally Maximum-Likelihood (ML) or eigen-decomposition method can be used for estimating the TPM. However, these methods are not feasible for stud-
ies with non-uniform observation intervals (e.g., observations taken at 1, 3 & 6 months), or when eigenvalues are negative or complex. The current objective is to propose a generalized algorithm to estimate TPM in all possible settings using all the available data. METHODS: Craig & Sendi (2002) illustrated an EM algorithm approach to estimate 1 month TPM for a 3-state model, where 1 and 2 month obser-
vations were available. We generalized this procedure and created an algorithm for determining the TPM for any number of states. We then tested this algo-
 rithm in the following situations: i) Observations at multiple intervals to estimate a single cycle TPM; ii) Seventh month observations to estimate a 2-month TPM. RESULTS: Our methodology can be used to estimate a 2-month TPM when the eigenvalues are negative. RESULTS: The gen-
eralized EM algorithm approach replicated results obtained from ML and eigen-
decomposition method. In cases where eigenvalues were negative and complex, our algorithm, which were valid and interpretable. In all three situations mentioned above, the generalized EM algorithm produced consistent and valid results. CONCLUSIONS: A generalized EM algorithm can be a useful tool to estimate TPM, in complex situations where ML estimation and eigen-decomposition cannot be used. It allows the use of all the observed data to estimate the TPM, thus increasing the accuracy of the health economic models.

PMR69 PATIENT HETEROGENEITY IN COST-EFFECTIVENESS MODELS FOR CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD): ARE CURRENT MODELS SUITABLE TO PRODUCE PERSONALIZED MEDICAL DECISIONS?

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OBJECTIVES: To assess how suitable current COPD cost-effectiveness models are to evaluate personalized treatment options for COPD by exploring the type of hetero-
genre included in current models and by validating outcomes for subgroups of patients. METHODS: A consortium of COPD modelling groups participated in three evalua-
tions. First, they reported all patient characteristics included in the model and provided the level of detail in which the input parameters were specified. Second, groups simulated disease progression, mortality, QALYs and costs for hypotheti-
cal subgroups of patients that differed in gender, age, smoking status and FEV1% predicted. Finally, model outcomes for exacerbations and mortality for subgroups of patients were validated against published subgroup results of two large COPD trials. RESULTS: Nine COPD modelling groups participated. Most models included gender (7), age (9), smoking status (6) and FEV1% predicted (9), mainly to specify disease progression and mortality. Almost all input parameters were specified by FEV1% predicted. In addition, disease progression was higher for females and smokers in three and five models, respectively and costs were higher for older patients in three models. Differences between subgroups on other parameters were more variable between the models. Trial results showed higher exacerbation rates for females, which was found in one model, higher mortality rates for males (found in two models), lower mortality for younger patients (found in four models), and higher exacerbation and mortality rates in several models for heterogeneous COPD patients (found in four models). CONCLUSIONS: The majority of currently available COPD cost-effectiveness models are able to evaluate the cost-effectiveness of personalized treatment based on gender, age, smoking and FEV1% predicted. Treatment in COPD is however, more likely to be personalized based on clinical parameters. Two models include several clinical patient characteristics and seem most suitable to evaluate personalized treatment, although some important clinical parameters are still missing.

PMR70 MODELING THE BURDEN OF ABDOMINAL AORTIC ANEURYSM (AAA) IN EUROPE IN 2013

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OBJECTIVES: To estimate the number of prevalent cases of abdominal aortic aneur-
ysm (AAA) and deaths attributable to AAA in five major European Union (EU) markets: France, Germany, Italy, Spain, and the United Kingdom (UK). METHODS: We used disease modeling software, DisMod II (World Health Organization), to assess AAA burden via a multi-state life table where differential equations define relations between incidence, prevalence, and disease-specific mortality. Markov models were used to project incidence and sex-specific all-cause mortality, and cubic spline interpolation of size and sex-specific AAA prevalence. Other input data consisted of relative risk (RR) estimates of death for persons with AAA vs. persons without AAA, adjusted for age, ethnicity, height, weight, smoking, and cardiovascular disease hospitalization. RESULTS: We estimated 2,484,058 prevalent cases in the EU5 in 2013 (90% CI: 2,282,702–2,683,106), resulting in 48,805 deaths attributable to AAA (90% CI: 39,287–58,323). In the combination of both sexes, AAA prevalence was 58.1 per 100,000 population (and deaths 11.0 per 100,000 population) among the EU5 markets; while Italy had the highest number of prevalent cases (1,103.7 per 100,000 population) and deaths (2.1 per 100,000 population). The number of