

**PMC10**

**A METHODOLOGICAL APPROACH TO ASSESS COST DATA IN THE CONTEXT OF A DECISION ANALYTIC MODEL TO EVALUATE THE COST-EFFECTIVENESS OF THE TREATMENT OF THE METABOLIC SYNDROME**

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**OBJECTIVES:** The metabolic syndrome is an accumulation of risk factors and shows a high prevalence in the German population. Treatment is limited to the treatment of single risk factors as dyslipidemia or high blood pressure. A decision analytic model will be developed to assess the cost-effectiveness of a new pharmacological substance for the treatment of the metabolic syndrome. In this context a methodological approach was developed to evaluate cost data that enables decision analyst to use cost data for various treatment options. **METHODS:** Direct and indirect costs were considered for different treatment options and for costs of long-term complications of the metabolic syndrome. Field and desk research was done to obtain data concerning resource utilisation and was reviewed by clinical experts. Prices have been taken of official catalogues. Resource utilisation and prices have been related in a cost database that enables to give cost data for different treatment options and long-term complications of the metabolic syndrome. **RESULTS:** The German Metabolic Syndrome Cost Database includes information of resource utilisation prices and costs. The database is constructed in a way that it supports analysis from different perspectives. **CONCLUSIONS:** A flexible database was developed that enables the adaptation of cost data for future projects due to new developments in treatment of the metabolic syndrome.

**PMC11**

**DEVELOPMENT AND VALIDATION OF A CLAIMS-BASED RISK ASSESSMENT MODEL TO PREDICT PHARMACY EXPENDITURES IN A U.S. MEDICAID POPULATION**

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**OBJECTIVES:** To empirically develop and validate the Medicaid RxCost Model, a prospective risk assessment model, that uses claims-based diagnostic information to predict future pharmacy expenditures. The Medicaid Mixed RxCost (MRxCost) Model was developed to explore the gain in predictive power associated with adding drug information. **METHODS:** A retrospective longitudinal cohort study using a California Medicaid sample from 1998 through 2000 was undertaken. Persons who were continuously enrolled for at least 13 months, who were 18 to 64 years of age, not eligible for Medicare and were not admitted for a hospital or nursing home stay >30 days were selected. A training sample consisting of 138,454 persons was utilized to develop the models using OLS regression. A random holdout sample of 92,621 was utilized to validate the models and to compare the performance of each model. The discrimination of the models was also compared to a demographic model and the Chronic Illness and Disability Payment System (CDPS) model. Prediction ratios and measures of discrimination were estimated for hypothetical physician groups with varying patient sizes. **RESULTS:** Subjects were on average 35 years old, 72% were female, and annualized prescription expenditures were \$497. Out of a total of 101 variables explored for the Rx-Cost model, 56 were retained after variable selection procedures and clinical review. The R-square value for the Medicaid RxCost Model, the Medicaid MRxCost Model and the CDPS model using the validation sample was 0.24, 0.30 and 0.04 respectively. The predic-

tion ratio = 0.90 and r-square = 0.50 were highest for large hypothetical physician groups (500 patients), but acceptable measures were observed for groups as low as 10 members. **CONCLUSIONS:** The Medicaid RxCost Model was successfully developed and it substantially outperformed the CDPS model in terms of R-square. The Medicaid MRxCost Model proved that supplementing drug information can improve discriminatory power.

**PMC12**

**PHARMACOECONOMIC ASPECTS OF THE ADMINISTRATIVE REFORMS IN PHARMACEUTICAL SECTORS OF REPUBLIC HEALTH DEPARTMENTS IN MONTENEGRO**

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**OBJECTIVES:** In 2002 in Montenegro there was no efficient system which should follow up the prescribing practice in outpatient clinics. The total expenses for drugs were so high that they threatened to diminish the whole system of drug supply. **METHODS:** Therefore in 2003 at the whole Montenegro Republic a system to follow up the drug prescribing in outpatient practice was implemented. System consisted from the central unit in Republic health department, and units in the all pharmacies which give drugs on the prescriptions covered financially by Republic health department. System started on 01.01.2004. System contains bases with all drugs on market in Montenegro, all doctors, pharmacists, drug users and enables to follow the drugs way from each doctor through pharmacy to the patient. **RESULTS:** At the same time Republic health department introduced the new list of drugs refunded by Republic health department. The list of drugs refunded by Republic health department, so called Positive list, covered all important drugs, and was prepared in accordance to new pharmacotherapeutic guidelines. ATC/DDD methodology of drugs was used. Analysis performed one year after implementation showed that the use of drugs significantly (1568%) decreased when compared with 2002 year. Expenses were 1.5 mil E lower than on 2002/2003. From the all drugs, the most often issued drugs were for arterial hypertension and for tonsilopharyngitis, more than 25% of all prescriptions. The structure of drugs prescribed was improved when compared with pre implementation period. **CONCLUSIONS:** Permanent monitoring and periodic analyses of informations obtained from information system in the future will additionally improve rationalization of the drug prescribing. Monitoring and analyses will show if some other administrative measurements are needed to keep this positive trend on.

**PMC13**

**ECONOMIC IMPACT OF HOSPITAL MALNUTRITION**

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**OBJECTIVE:** Malnutrition during hospital stay has been consistently reported since the 1970s. In addition to the clinical implications malnutrition may have, it also leads to increased length of stay and drug usage due to complications. We report from a large observational database of 26 Belgian hospitals to document the potential economic impact of hospital malnutrition. **METHODS:** As a legal requirement, Belgian hospitals must register case-mix data for each inpatient stay in a minimum basic data set (MBDS). We extracted exhaustive and anonymous stay data from 26 hospitals (2nd semester, 2003) and identified malnourished patients as patients for whom ICD9-CM codes for "underweight" (783.22) or "severe weight loss" (783.21) were recorded. A matched analysis on APR-DRG, age and gender was then performed to compare inpatient pharmaceutical costs, pro-

cedures costs, hotel cost and overall costs between malnourished and normally nourished patients. **RESULTS:** A total of 1032 malnourished patients were identified. Of those, “underweight” or “severe weight loss” was the primary diagnosis for 105 patients and the secondary diagnosis for 927 patients. Therefore, only these 927 patients were included in the matched analysis. In all, 26,067 matched controls were retrieved. The overall mean cost difference per stay between malnourished and normally nourished patients averaged €1152 (95%CI: €870; €1433). Pharmaceuticals, procedures and hotel costs differences averaged €264 (€192; €336), €137 (€113; €161) and €754 (€508; €1000), respectively. The largest mean cost difference was found for APR-DRG 691-Lymphoma & non-acute leukemia: €5117 (€2544; €7691). **CONCLUSION:** The inpatient cost incurred by malnutrition is substantial and calls for routine pre- or in-hospital nutritional screening and adequate and timely initiation of nutritional support. However, we can not exclude the possibility that only severe malnutrition was reported and recognized through hospital registries. Further studies able to report from the larger spectrum of malnutrition are strongly advocated.

**PMCI4****POPULATION KNOWLEDGE: AN APPROACH TO CLASSIFY A GENERAL POPULATION ACCORDING TO LIFESTYLE, HEALTH BEHAVIOUR AND ATTITUDE**

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**OBJECTIVES:** For decision makers, epidemiological data are key information to set up a public health care policy. By definition, these quantitative data are rarely crossed with qualitative information about population trends concerning lifestyle and health behaviour. We developed a methodological approach to detect and classify groups of subjects over 26 qualitative variables. **METHODS:** A sample of 924 French subjects was included in a cross-sectional survey and answered a face to face questionnaire focusing mainly on their health perception and lifestyle. A multiple correspondence factorial analysis (MFCA) followed by Chi 2 test validations were performed to detect and to classify groups of subjects. **RESULTS:** Four subject groups (n1 = 297, n2 = 235, n3 = 241, n4 = 151) were clearly disclosed. Group n2 was removed from the other groups and was characterized by the poorest health perception, the highest number of declared diseases (more than 6), the highest number of visits to a physician (more than 5 per year), the lowest educational level, the highest compliance to prescriptions and the highest number of obese subjects. From the n2 group, we estimated the proportion of obese subjects (BMI above 30 kg/m<sup>2</sup>) to be 63%. For this group, medical management and follow-up of their weight problems would be the most beneficial. **CONCLUSIONS:** This qualitative analysis is an element of population knowledge which allows us to specify usual epidemiological data. In addition, this approach is a way to target the population who would accept the public health message most easily.

**PMCI5****DIRECT AND INDIRECT COSTS AND EFFECTS IN COST-EFFECTIVENESS ANALYSIS OF PREVENTION: A DYNAMIC MODELLING ANALYSIS**

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The inclusion of indirect medical costs is a topic of ongoing discussion in the literature. Actual practice seems to be to include only medical costs of so-called related diseases. However, this

criterion is not unambiguous since health gains in life years gained may also depend on unrelated medical care. **OBJECTIVE:** To compare different ways to include both direct and indirect medical costs and health effects in cost effectiveness ratios. **METHODS:** Smoking cessation interventions were evaluated using a dynamic population model, the RIVM chronic disease model. This is a multistate transition model that links prevalence of risk factors to the incidence of 28 chronic diseases. Three different cost-effectiveness ratios were compared: 1) all health effects were ascribed to the smoking cessation interventions while only costs of smoking related diseases were taken into account; 2) only the minimum gain in QALY's and life years that can be attributed to the interventions were included while only costs of smoking related diseases were taken into account; and 3) all health effects and all health care costs in life years were included. **RESULTS:** Ratio 1) equals €2650 per QALY gained. Exclusion of health effects on competing diseases increases the ratio to €3600 (ratio 2). Finally, if all costs and effects are included, ratio 3) equals €8560 per QALY gained, which demonstrates that the cost-effectiveness ratio increases enormously when health care costs of competing diseases are taken into account. **CONCLUSION:** The large differences in outcomes urges one to think about the interpretation of cost-effectiveness ratio's and what ratio to use. We argue that for the evaluation of preventive interventions in a population model, the third ratio is the best, since it seems impossible to isolate the precise effects of an intervention.

**PMCI6****THE US NATIONAL VIOLENT DEATH REPORTING SYSTEM (NVDRS) AS A MODEL OF A NATIONAL PUBLIC HEALTH REGISTRY**

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**OBJECTIVE:** The National Violent Death Reporting System (NVDRS) is a registry of violent deaths in the United States. The NVDRS aggregates data from multiple sources, including death certificates, medical examiner and coroner reports, and crime laboratories. The NVDRS currently obtains data from 17 states, but is designed to eventually be a national registry. This study evaluates how NVDRS can serve as a model for other developing national public health (PH) registries. **METHODS:** A team of PH professionals compared the NVDRS to other national registries (immunization registry, cancer registries, National Ambulatory Care Survey, National Hospital Discharge Survey etc.) in terms of data elements' design, efficiency of a hierarchical structure and data integrity, data security, etc. Comparative analysis has been conducted using a tool that aggregates questions on qualitative registries' metrics. **RESULTS:** Compared to other registries, NVDRS has a well-defined goal, sufficient for the development of a PH registry (to assist the design of PH interventions for a reduction of mortality due to violent deaths). NVDRS is a population based, confidential, incident-driven, computerized information system. NVDRS represents a new generation of systems with the highest level of data complexity because of the aggregation of multiple data sources obtained from different state agencies. NVDRS encompasses essential registry functions and attributes sufficient to accomplish the system's major goals. It has well defined core elements, which allows for many types of analysis. **CONCLUSIONS:** A comparative analysis of NVDRS demonstrates that goals, design and structure of this system promote best practices for the PH patient registries.