CVB2

DEVELOPMENT AND CROSS-VALIDATION OF A COMORBIDITY INDEX FOR A STROKE POPULATION

Ricci JF, Martin BC
College of Pharmacy, University of Georgia, Athens, GA, USA

Comorbidity weights have become an important tool in longitudinal outcome studies. They should be tailored toward the population and the disease state under investigation.

OBJECTIVES: The objectives of the study were to develop and validate a comorbidity index for ischemic stroke patients for use in longitudinal studies.

METHODS: A 5-year retrospective review of all Georgia Medicaid claims data from 1990 to 1994 was used to detect first time ischemic stroke patients. Ischemic strokes were defined by three ICD-9-CM code series (433.XX, 434.XX, and 436.XX). Comorbid conditions were measured from all claims submitted within 12 months prior the first ischemic stroke event. Half of the stroke cohort was randomly selected, and multivariate logistic regression was used to derive a mortality stroke-specific weighted-index, controlling for age and gender. The Charlson and stroke-specific indexes were then tested on the second half of the stroke cohort for their ability to predict risk of death.

RESULTS: We identified 3,784 ischemic stroke patients with a mean age of 65 years (range 40 B 102). Of all patients, 40% died within the 3-year follow-up and 73% were women. A more concise index with 7 comorbid disease states was identified. The original Charlson index has 16 comorbidities. The stepwise multiple logistic regression integer weights for the 7 comorbidities were 2 for CHF, dementia, neoplasia, and renal disease, and 6 for metastatic solid tumor, liver diseases, and AIDS. Finally, when tested on the second group, the stroke-specific index showed stepwise increases in the cumulative mortality attributable to comorbid diseases (p log rank ÷ $2 < 0.001$), whereas the Charlson index did not.

CONCLUSION: This shorter stroke-specific index allows for the development of more highly discriminant comorbidity models for risk adjustment.

CVB3

EVALUATION OF THE COSTS OF CORONARY HEART DISEASE IN BELGIUM

Annemans L[1,2], De Backer W[2], Van Rompay W[1], Closon MC[3]
[1]HEDM Research and Consulting, Mechelen, Belgium; [2]Rijks Universiteit Gent, Gent, Belgium; [3]Université Catolique Louvain, Bruxelles, Belgium

OBJECTIVE: To calculate the cost of ischaemic heart disease in Belgium.

METHODS: We calculated the cost of acute and follow-up treatment of coronary heart disease in Belgium, taking into account a weighted average of current practice. Costs related to current practice (1996 values) and disease progression were taken from the perspective of the health insurance. Unit costs of ambulatory care were collected through official listings; hospitalisation costs for heart failure were collected from a database of 58 hospitals (ICD codes 410 to 414). Current practice was obtained through review of 240 patient records in primary care, post coronary event, during 6 months and through expert interviews (2 rounds Delphi method). Epidemiological data regarding incidence and distribution of coronary events were obtained via the MONICA WHO study.

RESULTS: The results indicate that the acute cost of coronary heart disease is equal to 191,933 Bef (37Bef = 1$) for acute MI, 175,959 Bef for coronary insufficiency, and 159,912 Bef for angina pectoris. Follow-up costs amount to 47,000 Bef per year, of which 13,000 for drugs, statins not included. An existing model has been applied and reviewed according to Belgian risk predictions to estimate the cost-effectiveness of statins.

CONCLUSIONS: The study showed that coronary heart disease is not only expensive in the acute stage but even more in the follow-up. There are no large differences between the costs of different coronary events.

CVB4

IN-HOSPITAL SURVIVAL OF CONGESTIVE HEART FAILURE PATIENTS TREATED WITH DOBUTAMINE OR MILRINONE

Weycker DA, Simons WR
Sanofi Pharmaceuticals, New York, NY, USA

Data indicate that oral positive inotropic agents have a negative effect on survival. However, evidence suggests that this conclusion may not apply to intravenous inotropic agents. Further, clinical differences in the action of these inotropes may lead to variations in their effect on survival.

OBJECTIVE: This study assesses and compares the odds of in-hospital survival for patients who received either amrinone, dobutamine, or milrinone.

METHODS: The data source was a hospital database of inpatient claims (1995–1996) from 40 U.S. hospitals, including information on diagnoses and procedures, costs and discharge, drug therapies, as well as patient and hospital characteristics. Study eligibility criteria require that the patient had a diagnosis of congestive heart failure or underwent a heart by-pass procedure, received at least one unit of an inotropic agent (dobutamine or milrinone), and received only one type. Baseline comorbidity measures were constructed and used as controls for confounding covariates such as patient and hospital characteristics, condition severity, complexity of drug therapy, insurance status, and treatment type. The likelihood of in-hospital survival was analyzed using logistic regression. Odds ratios are assessed and compared for each patient cohort.

RESULTS: The logistic model correctly predicted 79% of the 308 observed deaths in 1,538 patients selected for

analysis. The results correctly predicted the effect on survival due to increased age (negative), condition severity (negative), complexity of drug therapy (positive), aggressive drug therapy (positive), and a number of life-threatening comorbid conditions (negative); the two inotrope cohorts indicate a significant difference in in-hospital survival. Milrinone patients were more than twice as likely to survive the in-hospital stay than dobutamine patients. Further, dobutamine patients were twice as likely to survive than amrinone patients.
CONCLUSION: In-hospital survival varied significantly by inotropic study cohort. Patients on milrinone had a higher likelihood of survival.

CVB5

PREVENTING CARDIOVASCULAR DISEASE: IS PRIMARY PREVENTION WITH PRAVASTATIN WORTH THE MONEY?

Caro JJ[1], Payne K[2], Klittich WS[1], Getsios D[2], Shepherd J[3], Pettitt D[4], WOSCOPS Economic Analysis Committee
[1]Caro Research, Boston, USA; [2]Caro Research Montreal, Montreal, Canada; [3]University of Glasgow, Glasgow, Scotland; [4]Bristol-Myers Squibb, Princeton, NJ, USA

Addition of pravastatin to dietary advice has been shown by the West of Scotland Coronary Prevention Study (WOSCOPS) to prevent the transition from health to cardiovascular disease.
METHODS: An economic analysis was conducted to assess the cost-effectiveness of primary prevention with pravastatin. Appropriate Canadian risk factor data were used in an exponential regression model derived from WOSCOPS data to estimate the rates at which Canadians transition to cardiovascular disease. The number of transitions avoided were valued in terms of cost savings to the Canadian health care system, as well as life years gained. Canadian costs (1996 CAD $1 = $0.72 US) were based on ICD-9-CM Ontario Case Cost Project inpatient hospital data and were discounted at 5% per annum beyond the first year. The difference between age and gender-specific Canadian life table survival and post-event survival obtained from Scottish linkage data was calculated to estimate life years gained.
RESULTS: The prevention of 303 transitions to CVD, which implies 3,067 years of life gained, would be achieved if 10,000 Canadian hypercholesterolaemic men started treatment. Based on these results, cost-effectiveness ratios of $10,113/LYG (undiscounted) and $24,223/LYG (discounted) were obtained. If only high-risk patients (defined by published consensus statements) are treated, the ratios drop to between $6,865 and $16,391.
CONCLUSION: In light of published Canadian economic analysis guidelines, this constitutes strong evidence for adoption of primary prevention with pravastatin to avoid the clinical manifestations of CVD.

CVB6

TORSEMIDE AND FUROSEMIDE IN THE TREATMENT OF THE EDEMA OF HEART FAILURE: INTERIM RESULTS OF A RANDOMIZED EFFECTIVENESS TRIAL

Murray M[1], Stroupe K[2], Pierson W[3], Heyman E[3], Minick S[4], Tierney W[2,4], Brater C[4]
[1]Purdue University School of Pharmacy, Indianapolis, IN, USA; [2]Regenstrief Institute, Indianapolis, IN, USA; [3]Boehringer-Mannheim Pharmaceuticals, Gaithersburg, MD, USA; [4]Indiana University School of Medicine, Indianapolis, IN, USA

OBJECTIVE: The purpose of this study was to test the hypothesis that patients with evidence of left-systolic ventricular dysfunction treated with torsemide would have fewer hospitalizations for heart failure, improved disease-specific quality of life, and lower direct inpatient costs compared to patients treated with furosemide. Pharmacokinetic studies have shown that the bioavailability of torsemide is more complete and predictable than furosemide, especially in patients with heart failure.
METHODS: Prospective, randomized trial. This is an interim analysis of 191 hospitalized patients (65 years of age ± 12 SD) who were prescribed torsemide (n = 93) or furosemide (n = 98) for 1 year. Data were analyzed at 15 months as part of a planned interim intention to treat analysis. Duration of follow-up did not differ between treatment groups (233 days ± 134 SD). Dependent variables were the numbers of subsequent hospitalizations for heart failure, other cardiovascular causes, and all causes, their corresponding count of hospital days, and direct costs. Disease-specific quality of life was measured using the Chronic Heart Failure Questionnaire.
RESULTS: Patients treated with torsemide had significantly fewer hospitalizations for heart failure (11 vs. 28) and other cardiovascular causes (20 vs. 48). The difference in all cause hospitalizations was not significant (77 vs. 107). Hospital days were significantly less for patients treated with torsemide for all cardiovascular causes only (91 vs. 222) ($p < 0.05$). Dyspnea, fatigue, and total disease-specific quality of life were significantly better for patients treated with torsemide. Direct inpatient costs for all cause hospitalizations were $793,460 ($8,532 per patient) for torsemide and $1,161,617 ($11,617 per patient) for furosemide.
CONCLUSION: Patients treated with torsemide have fewer hospitalizations for heart failure and other cardiovascular causes, improved dyspnea and fatigue, and lower direct inpatient health care costs. These effects are presumably due to the complete and reliable absorption of torsemide.