treatment patterns, and marginal structural models (MSMs). MSMs utilize all of the data, account for the treatment switching, while adjusting for selection bias and patient dropout.

RESULTS: Over 25% of 664 randomized patients switched treatments during the study, 7% augmented their randomized treatment, and another 28% discontinued early. Switching was greatest among patients randomized to conventional antipsychotics (45% switched to atypicals, <20% of atypical patients switched therapies). Treatments did not differ in BPRS total score using various intent-to-treat analyses including last-observation-carried-forward. However, MSMs and other approaches that took into account the treatment switching demonstrated statistically significantly greater symptom reduction for patients treated with olanzapine as compared to conventional antipsychotics (overall treatment difference: 4.2 points, p = 0.007).

CONCLUSIONS: Drawing inferences on treatment effects in longitudinal naturalistic studies is challenging due in part to patients changing or stopping medications over time. In this study, standard methods did not address treatment effectiveness, while MSMs provided a framework for addressing effectiveness in the presence of switching, selection biases, and early dropout. The MSM analysis showed olanzapine to be superior to conventional antipsychotics in reducing schizophrenic symptom severity.

**THE EFFECTS OF ANTIDEPRESSANT DRUGS ON THE RISK OF COLORECTAL CANCER: A POPULATION-BASED CASE-CONTROL STUDY**

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OBJECTIVES: The study was conducted to examine following hypotheses: Tricyclic Antidepressants (TCAs) use increases the risk of colorectal cancer. In particular, the use of genotoxic TCAs increases the risk as compared to non-genotoxic TCAs. The use of Selective Serotonin Reuptake Inhibitors (SSRIs) decreases the risk of colorectal cancer.

METHODS: A population-based nested case-control study was conducted using source population who individually participate in the Saskatchewan Prescription Drug Plan aged 5–82.5 years from 1981–2000 with no previous history of cancer since 1967. A total of 6544 histologically proven invasive colorectal cancer patients were identified from the Saskatchewan Cancer Registry. For each case, four eligible non-cancer controls matched on age, gender and calendar time were randomly selected. The effects of antidepressant use were examined by conditional logistic regression, considering dosage, duration and timing of antidepressant use.

RESULTS: A significant increased risk of colorectal cancer was observed for medium dose and duration of TCAs use during 16–20 year period preceding diagnosis without significant dose-response effect (Incidence rate ratio (RR) for dose = 1.51, 95% confidence interval = (1.09–2.09); RR for duration = 1.60 (1.13–2.27)). No significant increased risk was observed among users of genotoxic TCAs, while a significantly increased risk was observed among persons exposed to medium duration of non-genotoxic TCAs during 16–20 years preceding diagnosis without significant dose-response effect (RR = 1.89 (1.14–3.14)). Significant decreased risk of colorectal cancer was observed among subjects heavily exposed to SSRIs during 5-year periods preceding diagnosis (RR for dosage = 0.62 (0.43–0.90), P-value of test for trend = 0.01; RR for duration = 0.71 (0.50–1.00), P-value of test for trend = 0.008).

CONCLUSIONS: No sufficient evidence supporting that the use of TCAs increases the risk of colorectal cancer. Our results support the priori hypothesis that the use of SSRIs decreases the risk of colorectal cancer.

**COMORBIDITY INFLUENCE INDEX**

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OBJECTIVE: To define a method of recognizing influence of comorbid conditions when studying outcomes of a specific disease or therapy. Background: Patients are often suffering from multiple disease states. When looking at resource utilization, absenteism, and other outcomes for a specific disease state or therapy it is important to recognize the influence of other diseases to the total costs and outcomes of the disease of interest.

METHODS: Several comorbidity indexes have been developed. Well known and described are the Charlson Index with adaptations, Index of Coexistent Disease, Cumulative Illness Rating Scale, Chronic Disease Score and several other disease specific indexes. The typical use of these indexes is predictive, a forecast of mortality or costs based on the current history of a patient. Many of these indexes require clinical information. The focus of the current index is strictly toward administrative (claims) databases. RESULTS: The methodology presented here is a non-linear transformation of the number of comorbid conditions, scaled so that the probability of significant comorbidity increases monotonically with the number of conditions reported. This AHRQ Comorbidity Index algorithms described by Elixhauser are used to define a set of 31 comorbid conditions as defined by 1111 ICD9 diagnoses. Sensitivity analysis of the number of expected conditions resulted in a denominator of ten units.

CONCLUSIONS: The denominator to yield a percentage of costs, outcomes, etc attributable to the comorbid conditions divides the number of Elixhauser conditions, other than the disease of interest. This index takes advantage of the longitudinal nature of claims data to be inclusive of all disease states within a patient and not just the current cause for treatment. It provides an alternative approach to assign costs, absenteism, and other outcomes to a disease state that is a more accurate valuation of the outcomes without undue influence from other comorbidities.

**AN AUTOMATED METHOD TO INFER MORBIDITY DESCRIPTIONS FROM PATIENT PHARMACY PROFILES**

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OBJECTIVES: Inferring disease descriptions (e.g. asthma, multiple-sclerosis, etc) in a patient from his/her pharmacy profile is important in several sectors of health care such as insurance and medical management. While the inference is relatively straightforward in a few cases (e.g. diabetes in the presence of insulin), very often the relationships are multifactorial. Manual, expert-based processes for the task are unscalable and unmaintainable. An automated, scalable and accurate method to infer disease descriptions from a patient’s pharmacy profile is the objective of this study.

METHODS: A large managed care database comprised of both medical and pharmacy claims was used for the implementation. The pharmacy profiles were abstracted into dummy variables based on First Data Bank drug classification. One dummy variable for each disease description based on medical claims was created, and there were as many dummy variables as disease descriptions. For the current implementation, Clinical Care Groups (a product of Ingenix) was chosen as the disease description standard. To capture the multifactorial nature of the relationships, logistic regression was used. The process of creation of several such models was automated. The models were evaluated based on standard metrics such as concordance rate, false positives, sensitivity, etc. Performance of the models rela-