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Assessing Chronic Disease Rates Through Automated Pharmacy Data

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It is well known that people with chronic conditions represent the bulk of all health care needs and associated costs. To set appropriate health care strategies, a crucial issue for policy makers and health care researchers worldwide is therefore to find proper methodologies to assess the number of individuals affected by specific chronic illnesses. Thus far, surveillance studies have been largely used to estimate the health status of a population because they are fairly inexpensive and data are easy to collect.

Recently, the analyses of automated pharmacy data have been proposed as an effective means to measure chronic disease within investigated populations. Pharmacy data offer several advantages. Prescription data are easily accessible, inexpensive, precise, and well coded. In addition, drugs prescribed may be associated, to some extent, with specific chronic conditions. However, few studies have validated the accuracy of chronic diseases prevalence rates obtained by this methodology.

The existence of a comprehensive, individual-level linkable pharmacy database of the approximately 4.0 million inhabitants of Emilia Romagna, a large region in the north of Italy, provided a unique opportunity to 1) adopt and apply an existing model of chronic condition identification using Italian pharmacy data, 2) determine rates of chronic conditions and morbidity within the Emilia Romagna's population, and 3) compare the estimated prevalence rates using pharmacy data with those available from a 2000 Emilia Romagna disease surveillance study. This research has been jointly conducted by the Department of Health Policy and the Center for Research in Medical Education and Health Care, supported through a collaborative agreement with the Agenzia Sanitaria Regionale, Regione Emilia Romagna, and Jefferson Medical College.[1]

Using a modified version of the Chronic Disease Score,[2] we developed a framework that identified the use of discrete pharmaceuticals as an indicator of having a chronic condition. Our framework encompassed important chronic conditions that can be tracked through the consumption of prescribed pharmaceuticals under the Italian dispensing system. A clinical review was employed to assure that medication classes be matched to individuals with chronic conditions and not to incidental users of pharmaceuticals. To increase specificity, therapeutic classes associated with chronic conditions needed to be mutually exclusive.

A final list of 31 major chronic condition drug groups (CCDGs) was created. This list includes primary chronic morbidities, such as cardiovascular diseases and gastric disorders, as well as other less recurrent disorders, such as gout and Parkinson's. Algorithms were then tested on pharmaceutical claims data from Emilia-Romagna 2001 to determine the applicability of our CCDG classification scheme. In 2001, there were 55.2 million individual prescriptions.

Applying our model, we found that approximately 1.5 million people (37.1% of the population) were identified as having one or more of the 31 CCDGs. The 31 CCDGs

accounted for 74.3%of the total number of prescriptions and 76.8% of the total 2001 drug expenditures. Cardiovascular diseases, rheumatologic conditions, gastric disorders, chronic respiratory illnesses, and psychiatric disorders were the most frequently occurring chronic diseases. The comparison of rates found through our algorithms with those available of a 2000 Emilia Romagna disease surveillance study showed, in most cases, similar prevalence of illnesses, particularly for cardiovascular diseases, psychiatric disorders, diabetes, benign prostatic hyperplasia, thyroid disorders, and malignances.

In conclusion, pharmacy data may be a valuable alternative to estimate the extent to which large populations are affected by chronic conditions. The model for identifying chronic disease status derived from Italian automated pharmacy data may find several applications in the healthcare research field. For example, it could be used to compare morbidity levels in different population groups and to determine the extent to which the workload of physicians may vary due to patient morbidity differences beyond those variations attributable to age and gender. It may help detect level of comorbidity. In addition, it may be used to develop risk adjustment models to allocate resources in the financing of the Italian health care system.[3]

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