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A Population-based Longitudinal Healthcare Database in the Emilia-Romagna Region, Italy: A Resource for Planning and Research

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The US has a fragmented medical insurance system. Different insurance programs cover different populations, with varying eligibility requirements, funding sources, benefits, and methods and levels of payments to hospitals, physicians and other providers. Arecent estimate is that 45 million Americans, more than 15% of the population, did not have health insurance in 2003.[1]

The problems inherent in such a "system" are well known to patients and their families, physicians, nurses and other providers, hospitals, and payers. The fragmented US health care system also presents major challenges for health services researchers and others interested in population based research and planning. By necessity, many health services research studies are limited to the Medicare population, which has continuous enrollment for a single segment of the US population. Even in this population, data are incomplete. Prescription drug data have been unavailable in Medicare administrative databases and will not be integrated until the Medicare Modernization Act begins prescription drug coverage commences in 2006.

In contrast, the Italian healthcare system is a tax funded National Health Service (NHS). Universal coverage entitles all citizens to equal access to "essential" healthcare services, which are provided free or at a minimal charge. The NHS is structured into three hierarchical tiers of public authority: central government, regions, and local health authorities, geographically based health management organizations responsible for providing comprehensive care to a defined population.[2] In collaboration with the Agenzia Sanitaria Regionale of the Emilia-Romagna Region of Italy, Jefferson Medical College's Center for Research in Medical Education and Health Care has constructed a population-based longitudinal healthcare database for the region. The nature of the Italian healthcare system makes the resulting database a valuable resource for planning and research, a resource that many US health policy and health services researchers wish was available in this country.

The Emilia-Romagna Region (RER) is located in the northeast of Italy; Bologna is the capital. From 2000 through the first half of 2004, 4.6 million people resided in the region. The Emilia-Romagna database includes:

- A demographic file for all residents including age, gender, birth and death dates, and location of residence, as well as primary care physician.
- Hospital discharge abstract data including ICD-9-CM coded diagnosis and procedure codes, admission and discharge dates, and DRG based payments for RER residents hospitalized either in hospitals in Emilia-Romagna or other regions. These data include both acute hospital stays and "day-hospital" encounters.

- Outpatient pharmacy data at the individual prescription level including drug codes, pharmacy payments, and patient copayments.
- Referrals for outpatient laboratory, radiology and specialist visits.
- Home health data.
- Information about each primary physician in the region such as payment, specialty, years in practice, and patient load.

The value of this database increased with the addition of clinical classifications mapped from the hospital and pharmacy data. Diagnostic codes from day and acute hospital admissions have been used to classify admissions using the Disease Staging classification which, in turn, has been used to identify the subset of individuals who may be at higher risk for utilizing more extensive or expensive health services in the future.[3] Another set of indicators (Chronic Condition Drug Groups - CCDGs) uses outpatient pharmacy data and the Italian national formulary to identify individuals with chronic disease.[4]

In collaboration with Jefferson researchers, the database is being used by the region in a variety of projects including assessment of the appropriateness of acute hospital admissions, evaluation of potentially inappropriate prescribing patterns for patients over age 65, assessment of the impact of co-payment changes on pharmacy and hospital use, and analyses of concentration and persistence of cost in sub-populations of the region.[5] In addition, the data are being used as a part of a "risk-adjustment" model that identifies individuals with chronic disease and predicts future year costs.[6] This information can then be used to rationalize the allocation of resources to health districts based on the needs of the local population.

The nature of the Italian health care system has made it possible to construct a population-based health care database that currently does not exist in the US. While our healthcare system is very different from that of Italy's, these data may help researchers to address not only organization and financing issues that may be specific to Italy, but also clinical issues such as identification of outcomes of specific therapies that cross international borders.

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