Computers in Medicine

Impact on Provider Profiling

BARRY P. CHAIKEN, MD

AS PRACTICING PHYSICIANS, we experience daily the impact computers have on health care. Numerous imaging, laboratory and therapeutic modalities are driven by computer technology. Cardiologists implant computers in patients to regulate heart rates and disrupt arrhythmias. In addition to the clinical medicine, computerization is changing the administrative processes of delivering patient care through electronic claims processing, CD-ROM based patient education, computerized workflow systems and electronic medical records.

The broad computerization of medicine permitted the introduction of provider profiling tools that report on the activities of physicians. The availability of inexpensive, powerful desktop computers allows organizations to collect, reposit, format and analyze information about physicians and develop profiles of their care. Organizations use this readily available computer technology to monitor quality of care, track utilization and choose providers for their networks. In some cases physician reimbursement is tied to the results of physician profiling reports.

Managed care companies trying to manage the business of health care now use these sophisticated profiling tools to monitor physician behavior and report back to physicians on their care patterns. US Healthcare, recently purchased by Aetna, put great emphasis on physician profiling tools and the reporting back of information to providers. Some analysts believe the substantial price paid by Aetna for US Healthcare was due in part to the value of US Healthcare's very sophisticated, respected and well developed provider profiling, report card and data repository tools. The substantial competition and downward price pressures of the healthcare marketplace are driving organizations to search for ways to limit unnecessary care and enroll physicians who can deliver quality care at a reasonable cost.

Barry P. Chaiken, MD, MPH, is the corporate medical director of Araxsys, Inc. of Boston, Massachusetts.

Address correspondence to him at 50 Rowes Wharf, Suite 420, Boston MA 02110. E-mail: bchaiken@chaiken.com

Data Analyzed for Patterns

Provider profiling systems mainly utilize available data sources to report back on patterns of care by one or several providers. Often the data used for analysis is moved off-line, separate from the data bases used in the regular course of business. This allows evaluation of the data without impacting the ongoing day to day activities of the central data base system.

For example, a hospital information systems officer may generate a database of all patients admitted for angina over a 3-month period for review by the quality assurance coordinator for the hospital. The database is put into a format for analysis by the officer on a desktop computer while the hospital computer continues to process and collect data during the normal operations of the hospital.

Data used for analysis usually comes from two main sources, transactional data sets and customized data sets. Transactional data sets are generated from regular activities that occur during the process of providing health care.

For example, physicians are mostly reimbursed for their care by submission of specific claims forms. The demographics, diagnostic and therapeutic codes and charges submitted are processed by the claims payor with the provider reimbursed the appropriate amount for the services provided. The transactional process, submitting and paying the claim, is a necessary activity within a reimbursement based health care delivery model. Without the claim, there is no payment.

Claims Form Transactional Data Sets

The low cost and ease of access of transactional data sets makes them the most widely used data source for provider profiling. Claims data, in particular, forms the basis of the majority of clinical data repositories that are used for profiling providers. Although readily available, claims data present significant methodology problems to those using such data sets.

Claims forms are compiled and submitted solely for the purpose of reimbursement. During completion of these forms little attention is directed at potential uses for the data such as quality improvement, utilization management or provider profiling. Anyone who has completed claims forms understands all to well the difficulties and challenges posed by the .various coding schemes such as ICD-9CM or CPT-4. As precise as these coding schemes may seem to be, the process of coding is, in practice, not easy nor exact.

For example. there are several ICD-9CM codes that describe a person who suffers from infectious gastroenteritis. Some codes are categorized under infectious diseases while others are under gastrointestinal illnesses. In addition, the order of the codes on the claim form does not necessarily indicate the importance or severity of the illness recorded. There is also much confusion about the re-

cording of both principal and primary diagnosis.

Any profiling system that uses claims data must "clean" the data of these inconsistencies to make the data useful. Cleaning of the data also includes the removal of duplicative claims and error checking for inconsistent and nonsensical codes. As claims record limited clinical information, profiling systems use algorithms and other rule based methodologies to construct episodes of care that assign activities and resources used (i.e., claims for particular services) to patients, physicians and associated disease processes. An episode of care is a collection of activities attributed to a patient for an associated illness.

For example, a diabetic who presents with community acquired pneumonia and who has a chest radiograph, CBC and finger stick blood sugar performed will have the office visit, radiograph and CBC assigned to the episode of care defined as pneumonia while the finger stick blood sugar is most likely assigned to the episode of care for diabetes mellitus. (If you think the blood sugar should be assigned to the pneumonia episode, you now understand the difficulty in assigning resources, when associated clinical information from claims is so limited.)

These methodologies, in their attempt to impute the clinical processes from the limited clinical data on claims, introduce unavoidable biases into the database that may generate a false result when analyzed. In addition, as difficult as coding may be, there is little incentive beyond some very general parameters to get claims coding precisely correct. Reimbursement, particularly in the outpatient setting, often changes little for a large variety of codes so accuracy is not that critical. In fact, in payment arrangements where physicians are capitated, the lack of financial incentive to submit claims substantially decreases the number submitted and in turn the available data for analysis. (Claims are unnecessary since there is prospective payment, not service-based reimbursement)

Customized Data Sets

In contrast, customized data sets are generated through data collection activities outside of the normal processes of providing care. For example, if an organization wants to evaluate the waiting times patients experience in physicians' offices, special data collection forms must be developed and administered to patients to collect that type of information. Unlike submission of claims which is necessary to receive reimbursement, collecting information on waiting times is not part of the usual activities that occur during the delivery of health care.

Some organizations have tried to implement customized data collection forms, outside the transactional process, but have achieved mixed success. As well intentioned as participants may be, the quick pace and high demands of medical practice today do not allow for the introduction of activities (i.e., completing a supplementary data form) that is not part of the routine activities that deliver health services to patients.

Workflow Electronic Medical Records

The recent introduction of workflow based electronic medical records offers the opportunity to make collection of detailed primary care clinical data an integral part of the transactional processes of delivering care. Health care workflow is the detailed documentation, assignment and management of clinical and administrative activities that take place in providing care to a patient.

For example, in an ambulatory care setting, a patient who presents with an ear infection will require 1) registering with the office clerk, 2) meeting with the office nurse to obtain vital signs, 3) examination by the physician to obtain signs and symptoms, assignment of a diagnosis and designation of a therapeutic plan, and 4) interfacing again with the office clerk to complete insurance forms and obtain any needed prescriptions. Computerization of these workflow activities allows clinicians to use computers to efficiently manage their activities and work assignments while concurrently recording clinical information. This method of documentation in most cases eliminates the need for the usual written entry in the medical record since a note is generated automatically. Implementation of such workflow-based electronic medical records will soon offer a rich database of primary clinical data for use in provider profiling.

For both transactional and customized data sets, validity and reliability are issues that warrant serious evaluation. Does the data truly reflect what we are trying to measure? Is the data reproducible from time period to time period and from physician to physician? Although studies exist reviewing the statistical merits of claims data, the cleansing methodologies have not been generally peer reviewed. For customized data sets, the same problems of statistical evaluation exist. Use of primary data from electronic medical records and workflow systems should decrease these problems of statistical validity and reliability.

Is Profiling Useful?

With such poor data available, many physicians question the usefulness of provider profiling in the first place. If used as a surveillance tool, provider profiling, irrespective of the data set analyzed, can be a valuable tool for those interested in managing quality and utilization in a health care setting.

Surveillance tools allow us to analyze trends and give us hints on areas that may need further attention.

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Whether applied individually to providers or globally to a large provider base, profiling reports spot trends that providers can react too. These reports offer us a moment to step back from our daily activities and ask ourselves "what if" questions to make sure we understand what we are doing and how we are doing it. Profiling systems offer physicians feedback that they can use to modify their own processes. Problems arise when profiling results are used for purposes that go beyond the information provided by the data.

Several organizations are using profiling systems that employ claims data to manage their network, deselect providers and establish compensation programs. Use of this data to make such significant decisions could prove quite problematic to those organizations. Since the data is only marginally representative of the clinical care delivered by individual physicians, physicians rewarded for certain behaviors may not in reality be practicing that way. In contrast, those physicians perceived to be outliers may in fact be best practices. Users of these tools must investigate further to truly understand the activities of those being profiled.

Without the availability of low cost, high powered desktop computers, much of what we see today on provider profiling would not exist. The legacy systems of hospitals and insurance companies are designed to process transactions, not serve as clinical data repositories for data analysis and physician profiling. Use of powerful database tools and SQL query language processors that convert simple questions into multiple lines of database query code. Make available to nontechnical managers the information and reports that required teams of programmers and million dollar computer systems only 10 years ago.

Successful use of provider profiling tools requires a deep understanding of the quality of the data available and the methodologies used to clean, refine and present the data in informational reports. If used correctly, profiling tools offer providers valuable feedback information that they can employ in their quest to deliver high quality, efficient health care.