Multi-Hospital Data Mart for Quality Improvement in Ambulatory Care

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ABSTRACT

We have used SQL databases, PC based software tools, high volume network printers, and optical scanning technology to build an information system for a clinical trial that tracks the ambulatory care of over 60,000 patients at seven VA hospitals. The system presents patient information to providers at General Internal Medicine (GIM) clinic visits for 26,800 patients assigned to the intervention group.

BACKGROUND

Many health care institutions have adopted new approaches to outpatient quality assurance programs that embrace principles of Continuous Quality Improvement (CQI), a widely adopted philosophy that constantly seeks the consumer's (patient's) perspective. The Ambulatory Care Quality Improvement Project (ACQUIP), sponsored by the Veteran Affairs Health Services Research Program, is testing the application of such CQI concepts to treatment of GIM patient populations.

METHODS

ACQUIP tracks patient-reported health status and satisfaction with data from repeated survey mailings. These quality measures are combined with clinical data from the hospital’s computer system to monitor patient outcomes over time. Results are fed back to primary care providers.

Each of our study hospitals has a GIM clinic organized into discrete practice groups or firms. The study was randomized by firm such that providers in control firms receive no feedback while providers in intervention firms receive patient-specific reports, summary reports, and disease-specific education. We have completed a one-year pilot study in three hospitals and are now in the second year of a randomized trial at seven sites.

Quality improvement of the health care provided to GIM patients in our study is dependent on an efficient information system to support clinical decisions. The difficulties in using existing information systems for new clinical and decision support applications are well known. Many large organizations have clinical databases that are transaction-oriented and accessible only through limited or proprietary software tools. As the SQL standard has become more universally adopted, converting to relational databases can dramatically improve the number and quality of query and development tools available. Conversion of legacy systems, however, can require a huge institutional commitment.

To mitigate these kinds of difficulties, many organizations have recently begun developing Data Warehouses or Data Marts. These systems draw some or all of the data from existing systems and use updated technologies to meet specific goals, but they do not duplicate components that the existing systems provide, such as data entry applications. They typically have the following characteristics: they combine multiple data sources into an integrated set; they are routinely updated; they include data cleaning; and they are not used to update the data sources. We call our system a Data Mart because it’s application is more directed than a Data Warehouse might be.

Our Data Mart combines and routinely updates data extracted from existing hospital clinical databases and self-administered health status and satisfaction questionnaires. Cleaned data is used to generate reports for providers in the direct clinical intervention described.