Harnessing the Power of Enhanced Data for Healthcare Quality Improvement: Lessons from a Minnesota Hospital Association Pilot Project

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EXECUTIVE SUMMARY
The imperative to achieve quality improvement and cost-containment goals is driving healthcare organizations to make better use of existing health information. One strategy, the construction of hybrid data sets combining clinical and administrative data, has strong potential to improve the cost-effectiveness of hospital quality reporting processes, improve the accuracy of quality measures and rankings, and strengthen data systems. Through a two-year contract with the Agency for Healthcare Research and Quality, the Minnesota Hospital Association launched a pilot project in 2007 to link hospital clinical information to administrative data. Despite some initial challenges, this project was successful. Results showed that the use of hybrid data allowed for more accurate comparisons of risk-adjusted mortality and risk-adjusted complications across Minnesota hospitals. These increases in accuracy represent an important step toward targeting quality improvement efforts in Minnesota and provide important lessons that are being leveraged through ongoing projects to construct additional enhanced data sets. We explore the implementation challenges experienced during the Minnesota Pilot Project and their implications for hospitals pursuing similar data-enhancement projects. We also highlight the key lessons learned from the pilot project’s success.

For more information about the concepts in this article, contact Mr. Schindler at jschindler@mnhospitals.org.
INTRODUCTION
Healthcare data are essential components of performance assessment strategies and are increasingly relied on for targeting quality improvement efforts. As the United States continues to build and standardize the country’s health information technology (IT) infrastructure, information-driven quality improvement and efficiency gains are expected to become easier to achieve (Blumenthal 2009). This vision for the future of healthcare data formed the platform from which the Agency for Healthcare Research and Quality (AHRQ) launched an initiative in 2007 to enhance hospital administrative data with clinical information to improve quality measurement. AHRQ awarded two-year contracts to three state data collecting organizations—the Florida Agency for Healthcare Administration, Virginia Health Information, and the Minnesota Hospital Association (MHA)—to conduct in-depth pilot projects to determine the feasibility of creating powerful data sets by adding clinical data to administrative databases. This effort complemented existing efforts in the Healthcare Cost and Utilization Project (HCUP), which collects all-payer, statewide hospital administrative data through a federal–state–industry partnership in 46 states (HCUP 2012).

The purpose of this article is to describe the experiences and insights from the Minnesota Pilot Project, including the business imperative that prompted MHA to participate. We also describe project goals, the process of engaging hospitals and maintaining stakeholder interest, the data collection strategy, organizational and data security challenges, legal issues encountered, and lessons learned.

THE MINNESOTA HOSPITAL ASSOCIATION PILOT PROJECT
The Minnesota hospital community has a long history of using healthcare data to assess and improve hospital performance. In the 1980s, select hospitals began reporting abstracts from medical records to a database maintained by MHA, a trade association representing 148 hospitals. This database was expanded in 1995 to incorporate inpatient and outpatient claims data from all acute care hospitals in the state. All but a few long-term care and federal hospitals voluntarily report their data. MHA also maintains Minnesota’s Health Care Cost Information System, a state-mandated database of hospital indicators that holds hospital-specific financial, utilization, staffing, and services data. As the sole source for hospital administrative (patient billing) data in the state, MHA supplies the administrative data needed to support policy, epidemiological, and public health goals. Since 2000, MHA has participated in the HCUP Partnership, a federal–state–industry family of AHRQ-sponsored databases that serves as a national information resource for encounter-level healthcare data.

Project Genesis and Goals
The AHRQ contract ran from October 2007 to September 2009, with hospitals submitting information on discharges from calendar year 2008. The project allowed MHA to leverage and enhance its ongoing work of collecting and
analyzing administrative data. In particular, MHA hoped to enhance existing administrative data for quality reporting and expand its future efficacy by linking it to other clinically rich data sets (Sonneborn, Schindler, and Pine 2009). The primary purpose of this pilot project was to assess the improvement in standard risk-adjustment models when claims data are enhanced with numerical laboratory data. This study evaluated predictive models for inpatient mortality using risk-adjustment methods developed previously by Pine and colleagues (2007) in patients hospitalized with acute myocardial infarction, congestive heart failure, cerebrovascular accident, gastrointestinal hemorrhage, and pneumonia and in patients undergoing coronary arterial bypass graft and percutaneous coronary intervention procedures. The risk-adjustment results were used to provide feedback to hospitals on their performance to target quality improvement efforts. In addition to these goals, MHA sought to achieve the following:

1. Demonstrate the feasibility of creating hybrid administrative–clinical databases from hospital data that are captured electronically to improve measurement of risk-adjusted hospital performance
2. Identify and document best practices for capturing, transmitting, integrating, validating, and using data from organizations with different information capabilities
3. Engage multiple stakeholders and peer-group organizations to share and disseminate information and stimulate and support efforts to create and utilize hybrid databases
4. Develop the foundation for enrichment of hybrid databases as improved health IT becomes more widely available

**BUSINESS CASE FOR LINKING CLINICAL AND ADMINISTRATIVE DATA SETS**

MHA launched its pilot project because it was convinced of the value of adding clinical data to the statewide effort to collect hospital administrative discharge records. Administrative data convey a limited amount of clinical information, such as diagnoses present during the current hospital stay and significant procedures performed (particularly those that carry surgical risk or require specialized training). The appeal of administrative data is that they are relatively low-cost sources of information, are readily available, are easy to use, and represent all patients and care rendered by a provider organization (Iezzoni 1997). Despite these advantages, administrative data lack many clinically important pieces of information, including laboratory data for the accurate measurement of illness severity (Iezzoni 1997) and, in many cases, present-on-admission (POA) indicators for diagnoses; the POA indicators can help to distinguish between conditions that are present at the time of admission and those that arise during the hospital stay (Pine et al. 2007). The inability to distinguish between preexisting conditions and complications may misclassify hospitals in quality rankings (Glance et al. 2006). As a consequence, providers are concerned that inadequate risk adjustment may improperly penalize those that treat the sickest patients (Pine et al.
2007). Enhancing administrative data with additional clinical information in hybrid data sets may benefit hospitals in three specific ways: by improving the cost-effectiveness of reporting processes, by improving the accuracy of quality measures and rankings, and by strengthening data systems (Jordan et al. 2007; Pine et al. 2007; Fry et al. 2007).

Linking clinical and administrative data sets holds much promise for simplifying and improving the cost-effectiveness of hospital quality reporting through systematic processes (Jordan et al. 2007). For example, this type of linked data set can reduce the need for labor-intensive manual data abstraction from medical charts (see Exhibit 1).

An enormous benefit that hybrid or enhanced databases offer over existing administrative databases is improved identification of patients who are at a higher risk of death than others by accounting for the complexity and severity of the patient’s conditions. This utility enables more accurate risk adjustment and better designation of hospital performance using information that is already routinely collected (Pine et al. 2007). The advent of the POA modifier, in conjunction with laboratory data in enhanced data sets, makes it feasible to include important predictors in risk-adjustment models (Pine et al. 2007). Laboratory data establish objective clinical evidence of the patient’s condition and provide a clearer picture of the patient’s acuity level. Thus, hybrid data provide greater clarity on clinical acuity and comorbidities than can be captured by administrative data alone. Hybrid data sets are able to expand the breadth and depth of information available for risk adjustment.

This study found that incorporating laboratory data with administrative data substantially improved the discriminatory power of risk-adjustment models for all of the quality indicators studied. The average c-statistic for all of the models studied increased by 0.12 (from 0.69 to 0.81). The c-statistic is an indicator of the accuracy for predictive models (Steyerberg et al. 2001). This type of

**EXHIBIT 1**

Comparison of Clinical Data Reporting Using Traditional and Enhanced Data Collection Processes

<table>
<thead>
<tr>
<th>Traditional Process</th>
<th>Enhanced Data Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data cover a small sample of encounters meeting study requirements</td>
<td>Data cover all patient encounters meeting study requirements</td>
</tr>
<tr>
<td>Limited generalizability due to small sample size</td>
<td>Broad generalizability due to comprehensiveness of population information</td>
</tr>
<tr>
<td>Abstraction subject to human error, including potential for missed, poorly coded, or miskeyed information</td>
<td>Electronic processes producing accurate results that capitalize on information collected for other purposes</td>
</tr>
<tr>
<td>Costly, labor-intensive data processes for one specialized purpose</td>
<td>Automated, cost-effective data processes with broad applicability</td>
</tr>
</tbody>
</table>
model improvement is supported by a previous study (Pine et al. 2007). For example, in the laboratory model, an admission albumin less than or equal to 3.1 (g/dL) increased the odds of dying by 54 percent. Adding laboratory data increased the $c$-statistic of the AMI model from 0.72 to 0.82.

Finally, the growth of health information exchanges and adoption of electronic health records (EHRs) can provide the infrastructure support needed for viable hybrid data sets. The use of EHR

### Exhibit 2
Comparison of Risk-Adjustment Models for Mortality in Patients Hospitalized with Acute Myocardial Infarction (AMI) Using Administrative Data Only and Enhanced Administrative-Laboratory Data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds Ratio for Model Using Administrative Data Only</th>
<th>Odds Ratio for Model Using Enhanced Administrative-Laboratory Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 55 to 64 years</td>
<td>1.75</td>
<td></td>
</tr>
<tr>
<td>Age 65 to 74 years</td>
<td>2.82</td>
<td>1.87</td>
</tr>
<tr>
<td>Age 75 to 84 years</td>
<td>5.42</td>
<td>3.75</td>
</tr>
<tr>
<td>Age greater than 84 years</td>
<td>6.50</td>
<td>5.49</td>
</tr>
<tr>
<td>Very high risk AMI</td>
<td>2.50</td>
<td></td>
</tr>
<tr>
<td>High risk AMI</td>
<td>2.04</td>
<td></td>
</tr>
<tr>
<td>High risk pulmonary</td>
<td>1.86</td>
<td>1.75</td>
</tr>
<tr>
<td>High risk metabolic</td>
<td>1.70</td>
<td></td>
</tr>
<tr>
<td>High risk renal</td>
<td>1.47</td>
<td></td>
</tr>
<tr>
<td>High risk cancer</td>
<td>2.21</td>
<td>2.70</td>
</tr>
<tr>
<td>Albumin $\leq$ 3.1 (g/dL)</td>
<td>1.54</td>
<td></td>
</tr>
<tr>
<td>Base excess $\leq$ –9.0 (mEq/L)</td>
<td>4.18</td>
<td></td>
</tr>
<tr>
<td>Creatinine $\geq$ 1.3 (mg/dL)</td>
<td>1.80</td>
<td></td>
</tr>
<tr>
<td>Glucose $\geq$ 170 (mg/dL)</td>
<td>2.39</td>
<td></td>
</tr>
<tr>
<td>Blood urea nitrogen (BUN) $\geq$ 45 (mg/dL)</td>
<td>1.71</td>
<td></td>
</tr>
<tr>
<td>Serum glutamic oxalocetic transaminase (SGOT) $\geq$ 185 (U/L)</td>
<td>2.45</td>
<td></td>
</tr>
<tr>
<td>Sodium $\geq$ 145 (mEq/L)</td>
<td>2.58</td>
<td></td>
</tr>
<tr>
<td>pH $\leq$ 7.30</td>
<td>2.83</td>
<td></td>
</tr>
<tr>
<td>pO$_2$ $\leq$ 60 (mm Hg) or O$_2$ saturation $\leq$ 85 (%)</td>
<td>3.11</td>
<td></td>
</tr>
<tr>
<td>pCO$_2$ $\leq$ 34 (mm Hg)</td>
<td>2.99</td>
<td></td>
</tr>
</tbody>
</table>
data to support quality improvement activities offers the promise of accessing much larger samples of patient data at lower cost in the future. Although most hospitals are still several years from fully harnessing the use of EHR data, hospital administrators can add clinical data to administrative data using existing infrastructures to support use of enhanced information within hospitals.

**Stakeholder Engagement and Implications for Hospital Management**

**Initiating Stakeholder Involvement**

The first major task was to engage hospitals to participate in the pilot by presenting a strong business case—this was a key step toward initiating and ensuring stakeholder interest and participation. Hospitals face enormous internal and external demands on their data collection capacities, making recruitment for a new data project a potentially daunting process.

A project kickoff meeting was held after the contract was awarded. The primary goal of this meeting was one that any hospital launching a similar project will share: familiarizing stakeholders with the details of the project, including an introduction to the planned project framework and the data methods that would be utilized. All hospitals in Minnesota were invited to the kickoff meeting.

MHA had no direct financial incentives to offer participants. Instead, it relied on the strength and merits of the concept being tested. It also offered project-specific incentives, such as access to severity-adjusted AHRQ quality indicators (QIs) and some evaluation of the quality of POA indicators (Pine et al. 2009).

MHA also leveraged the trust it had maintained with hospitals on the basis of its long experience of collecting sensitive patient-level data. MHA maintained that the primary purpose of the pilot was to identify the optimal laboratory data combined with POA codes to refine current risk-adjustment methods. The benefit to participating hospitals was direct feedback on their performance and a tool to address any areas of quality that needed improvement. MHA affirmed that it had no plans to publish results of the hospitals’ performance; rather, results would be used for quality improvement purposes.

Although nearly 30 hospitals expressed interest in the project, 13 hospitals ultimately agreed to participate.

**Ongoing Communication Strategies**

When undertaking a project of this type, a multifaceted communication strategy is necessary to sustain participant engagement for its duration. Project information must be widely available and easily accessible to all participants. MHA developed a dedicated project web page (MHA 2007) that cataloged reference materials, including the presentations from the kickoff event that detailed the planned project framework and the data methods to be employed. Project leaders also created a summary graphic depicting the data and information flow in the project with a description of the pilot and its intended outcomes (Exhibit 3). For a single hospital or system, using existing intranet functions may be a convenient way to achieve similar results. Monthly conference calls with the project’s contractors...
and with colleagues in other states conducting similar pilots presented valuable opportunities to share ideas, challenges, and best practices that informed the Minnesota Pilot Project.

MHA disseminated information to nonparticipants through presentations to the Minnesota chapter of the American Academy of Professional Coders and the Medical Account Managers Association (hospital billing office managers). Hospitals may find that encouraging participants to share this work in similar ways helps to sustain their enthusiasm, solicits feedback to inform and improve the project, and increases visibility for the hospital and its data projects. These benefits may facilitate future partnerships on data initiatives with other hospitals and further strengthen the business case for participation.

**DATA COLLECTION**

Participating hospitals agreed to collect and submit to MHA a mix of administrative and laboratory data.

Administrative data elements collected in the Minnesota Pilot Project included

- admission and discharge dates,
- admission source,
- discharge type,
- age,
- sex,
- ICD-9-CM diagnosis codes with POA modifiers, and
- ICD-9-CM procedure codes with data on procedures performed.

Selected elements of laboratory data—numerical chemistry, blood gas, and hematology test results—were then added to the administrative data to

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**EXHIBIT 3**

Summary Graphic of Project Data Information Flow and Intended Outcomes

**Adding Clinical Data to Administrative Data**

- Creates data feeds
- Edits incorrect data
- Acts on comparative data
- Improves patient care
- Creates hybrid database
- Applies data quality checks
- Produces comparison reports

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create hybrid data sets. The initial list of numerical data elements appears in Exhibit 4. The project’s technical subcontractor chose these data elements on the basis of their availability and analytic value in determining severity of illness upon admission.

**IMPLEMENTATION CHALLENGES AND IMPLICATIONS FOR HOSPITAL MANAGEMENT**

MHA worked with hospitals to overcome both organizational impediments and legal issues surrounding the privacy and security of health information data. These hurdles illustrate common challenges that may be faced by any organization attempting a large-scale data-linking initiative.

Hospitals that initially expressed interest in the pilot project but ultimately did not join provided insights into the reasons hospitals might decline to participate in data-linking processes:

1. **Lack of available staff and resources.** Some smaller hospitals found that the pilot project was more complex than they had envisioned, and they simply did not have the staff and resources necessary to sustain participation. At larger hospitals, the primary challenge that MHA faced was that many hospital departments are compartmentalized and collaboration across departments posed a hurdle.

2. **Relevance of the AHRQ QIs.** Some smaller rural hospitals were concerned that their patient volume was too low for risk adjustment of the AHRQ QIs. They also conveyed

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**EXHIBIT 4**

**Numerical Laboratory Data Elements Added to Administrative Data**

<table>
<thead>
<tr>
<th>Chemistry</th>
<th>Blood Gas</th>
<th>Hematology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspartate aminotransferase</td>
<td>Calcium</td>
<td>Arterial O$_2$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>saturation</td>
</tr>
<tr>
<td>Albumin</td>
<td>C-reactive protein</td>
<td>Pro-B-type natriuretic peptide</td>
</tr>
<tr>
<td>Alkaline phosphatase</td>
<td>Creatine kinase</td>
<td>Sodium</td>
</tr>
<tr>
<td>Amylase</td>
<td>Creatine kinase-MB</td>
<td>Troponin I</td>
</tr>
<tr>
<td>Bicarbonate</td>
<td>Creatinine</td>
<td>Troponin T</td>
</tr>
<tr>
<td>Bilirubin (total)</td>
<td>Glucose</td>
<td>Urea nitrogen</td>
</tr>
<tr>
<td>B-type natriuretic peptide</td>
<td>Lactic acid</td>
<td>FIO$_2$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>White blood count</td>
</tr>
</tbody>
</table>
lack of integration hampered the timely creation of hybrid data sets. MHA encouraged hospitals to automate the process, which is an important step that can be adopted by hospitals pursuing similar initiatives.

Internal communications within hospitals proved to be a large obstacle during the implementation phase. Despite the project communication strategies detailed earlier, the aims and importance of the project were not always adequately conveyed to all relevant hospital staff. Frontline hospital staff, like the IT or laboratory staff members responsible for writing code or interpreting laboratory values, were often further removed from the flow of project information than were kickoff-meeting participants. This distance is believed to have resulted in some deterioration of hospital participation over time. Project leaders feel that a more active communications strategy—one aimed at more frequently engaging project members at all levels—would have been more successful. The team discovered that pairing tools such as a project web page with active outreach is the most effective way to ensure that staff instrumental to the process receive the information they need.

Initially, MHA required the use of Health Level Seven (HL7) interoperability standards for the exchange and integration of electronic health information in transmitting the required information from individual hospitals to MHA. This standard is used by IT personnel at healthcare facilities to exchange files in a common format. However, during the course of the project, MHA began offering an alternative to HL7.
for receiving information from hospitals because hospital programmers participating in the project indicated that adhering to the HL7 standard was creating an unnecessary administrative burden. Also, the process was costly and cumbersome because MHA did not have access to software tools to interpret and standardize the HL7 codes. As a result, MHA began accepting American Standard Code for Information Interchange (ASCII) text files, thereby easing the burden faced by participating hospitals. This midstream switch in transmission format, however, created additional problems for MHA in merging data submitted in ASCII format with data submitted by two hospital systems that were able to send data files in the HL7 format. Nonetheless, flexibility, particularly on technical matters, proved to be essential to sustaining efforts to build enhanced databases.

Data and Transmission Standards Issues

Legal issues surrounding the privacy and security of health information are particularly relevant for projects that seek to create clinically enhanced hybrid data sets. Patient consent to collect data for the pilot was covered under the general privacy release agreements obtained at hospitals for sharing information for operational purposes with MHA. Further data sharing for the Minnesota Pilot Project was aided by legal groundwork that had been laid for other MHA data-oriented initiatives. For example, MHA had already established business associate agreements between MHA and each member hospital to ensure Health Insurance Portability and Accountability Act compliance. However, even these existing agreements were not sufficient for the pilot project because they did not cover subcontractor access to the data. MHA developed an addendum to these agreements, giving MHA permission to share patient data with its subcontractors for linking and analysis. Hospitals working on data-linking projects independently may need to address legal issues surrounding data use if they grant subcontractors access to health information.

Technical challenges also arose during the project. Understanding the data standards used in the project—the HL7 standard for exchange mentioned earlier as well as the Logical Observation Identifiers Names and Codes (LOINC) standard, a common code set for identifying medical laboratory test names—was essential to the data collection process. MHA’s technical subcontractor was responsible for developing LOINC codes and LOINC code crosswalk maps for each participating hospital’s laboratory coding system. Through this process the internal, idiosyncratic codes used by individual hospitals to identify observations were translated to the universal identifiers of the LOINC code system. Many hospitals were initially unfamiliar with the LOINC standard, but those that followed through were ultimately successful in mapping their internal codes to the LOINC system. The team benefited from educational tools and resources provided by AHRQ that are available online (HCUP 2010).

MHA’s technical subcontractor also designed instructions for participating hospitals related to the HL7 standard. These instructions were intended to
guide hospitals in programming for laboratory data files so that they understood the specifications required by the project. Some delays were experienced in formulating the instructions as the details were defined and guidance from a national expert on HL7 was secured. Facilities whose internal IT staff members were unfamiliar with the use of HL7 benefited from being able to use a simplified (ASCII flat file) format that retained HL7 definitions but was limited to fields required to augment administrative claims data; this format allowed participating hospitals to enjoy the advantages of the HL7 definitions without overburdening their IT departments.

Additional technical issues arose in using MHA’s secure web portal to transmit and receive data files. MHA encountered difficulties in attempting to receive laboratory data files larger than 25 megabytes. The issue was ultimately resolved by MHA’s IT staff. However, a long-term program to collect laboratory data would be best served by requesting the data in shorter time increments.

LESSONS LEARNED
MHA learned several important lessons in implementing the Minnesota Pilot Project.

Linking administrative and clinical data offers great potential for generating more useful data sets to help hospitals transform patient care. Hospitals have large amounts of diverse data stored in various silos across their systems. Despite the wealth of available data, most analyses to date have focused on claims data, which lack clinical details. Enhancing the clinical power of data sets by linking laboratory data with claims data increases their analytic power at a lower cost than that of medical record review.

Project leaders lay the foundations for success during the project initiation phase. Securing stakeholder buy-in (in particular, the buy-in of the hospital IT staff who will bear significant responsibility for implementing the project) is essential. It is one of the first major challenges encountered during the initiation phase. Patterns of communication and engagement that begin during the project initiation phase may characterize the project for its duration, underscoring the importance of building a strong foundation at the outset. The Minnesota Pilot Project benefited at its inception from the existing trust between participating hospitals and MHA.

Formulation of a detailed communications plan helps to keep stakeholders engaged. A sound communications strategy might include identification of key contacts, a timeline, a kick-off event, ongoing meetings, periodic conference calls, and a dedicated project website or intranet site. The strategy must involve keeping all participants informed, and it must be designed to foster the exchange of ideas and feedback. Proactive efforts to keep participants enthusiastic and engaged, such as encouraging them to share results with colleagues at professional conferences, are important for sustaining interest.

Flexibility enables projects to clear inevitable implementation hurdles. The Minnesota Pilot Project personnel encountered difficulties in collecting data but were able to adapt their plans to meet the stakeholders’ needs. This flexibility prevented inconvenient
obstacles from becoming insurmountable. Similarly, flexibility in allowing time for negotiations with partner hospitals or contractors may be necessary. The need for flexibility must be balanced against certain baseline goals and procedures; for example, MHA found that the use of standardized data content (such as LOINC) was important to the success of its pilot despite the extra time its use consumed.

RECOMMENDATIONS AND FUTURE DIRECTIONS

We have several recommendations for hospitals considering a similar project. Close communication between experienced IT and clinical staff is essential to ensure collaboration and achieve the project’s goal. Having a champion who will work with the staff to bridge the claims and clinical data is paramount to smooth implementation. Building off of existing hospital IT infrastructure allows the data to be collected more efficiently from different database silos and helps to minimize the duplication of efforts. Lastly, using software tools that are able to interpret HL7 codes reduces the burden of data standardization.

To continue building on these successful efforts to link clinical and administrative data, MHA is undertaking a new AHRQ grant-funded effort to compare the effectiveness of different treatment interventions for patients with acute decompensated heart failure. Toward this end, MHA is developing ways to routinely collect enhanced data by tapping existing hospital IT infrastructure and to more efficiently obtain laboratory, pharmacy, and claims information. These efforts will create a first-of-a-kind statewide inpatient database that will enable researchers to compare clinical performance and relate risk-adjusted outcomes to drug therapy without expensive medical records abstraction. This initiative will be guided by the lessons learned during the Minnesota Pilot Project.

Additional future directions for MHA include continuing to expand and build on the IT infrastructure at hospitals and use available software tools to obtain clinical data on an automated and real-time basis. This development will allow hospitals to have more actionable data with which to engage clinicians during the delivery of patient care and thereby mitigate risks. In the long term, MHA would like to establish a system to collect clinical data for risk adjustment of the AHRQ QIs and integrate these data with the Minnesota Community Measurement, a statewide quality reporting system. The possibilities of a statewide hybrid data initiative hold much promise for harnessing the power of enhanced databases for sustained quality improvement efforts.

CONCLUSIONS

MHA demonstrated the feasibility of linking administrative with clinical data through the Minnesota Pilot Project. Despite some initial challenges, the benefits of hybrid data have allowed more accurate comparisons of risk-adjusted mortality and risk-adjusted complications across Minnesota hospitals—an important first step toward targeting quality improvement efforts. Through its new, expanded effort to build on the pilot, MHA will leverage the lessons learned about engaging and
assisting hospitals, and it will continue to advance its broad goal of identifying best practices for constructing and utilizing hybrid data to set the stage for quality improvement.

ACKNOWLEDGMENTS

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REFERENCES


In recent years, interest in and availability of clinical quality data have risen exponentially and electronic health record systems have proliferated. This article touches on both as the authors describe a two-year pilot study, funded by the Agency for Healthcare Research and Quality and conducted by the Minnesota Hospital Association, to determine “the feasibility of creating powerful data sets by adding clinical data to administrative databases” as a way to increase the accuracy of measuring risk-adjusted mortality and complications. Several related findings were also included in the article, which I mention later.

When I began my healthcare leadership career more than 25 years ago, I worked in the “Quality department.” My job centered on conducting quality assurance audits, or episodic manual reviews of medical records to discover any egregious clinical or administrative errors. The work was time consuming and tedious; I was grateful that The Joint Commission required only one such audit per department per year. The concept of actually sharing the results of these audits beyond the hospital walls was not even contemplated at the time.

Audits have long been replaced by ongoing quality improvement efforts with widespread electronic reporting of the information. For many measures, this information is available on a variety of comparative websites accessible to the public. However, inconsistency remains among these websites. Two recent articles focused on the varied methods used to determine healthcare rankings and the often conflicting results (Begley 2012; O’Donnell 2012). Alternatively, the enhanced data collection methodology described in the research article suggests a more standardized approach that couples the administrative/claims data (i.e., admission and discharge dates, admission source, discharge type, age, sex, and ICD-9 codes) with discrete laboratory data. The Minnesota Hospital Association study found that this hybrid data set more accurately reflected risk-adjusted mortality and complications across the state’s hospitals than did the claims data alone. Perhaps this standardized approach to reporting could be considered by the comparative websites in the future.

In reading the article, I was particularly impressed with the authors’ description of the link between adding laboratory data to claims data and the increase of the odds ratio. For example, an admission albumin less than or equal to 3.1 in acute myocardial infarction patients “increased the odds of dying by 54 percent.” There seems to be an inherent benefit to using the modeling on a real-time basis, not just retrospectively, to potentially change the patient’s course of treatment. Steps could be taken in the future to add pharmaceutical and radiology/imaging information to the hybrid database to further refine the model.
Included in the article is a summary of lessons learned that could prove useful for organizations embarking on any project, particularly those that are IT related. Recommendations such as securing stakeholder buy-in, developing a comprehensive communication plan, and remaining flexible throughout the project are logical ideas to consider. Having been involved in the electronic health record implementation for five separate health systems (with multiple vendors), I can speak firsthand in particular to the importance of a multifaceted communication strategy to engage all the affected parties throughout the duration of the project.

The study depicted in the article reflects the kind of forward-thinking work being conducted by the Minnesota Hospital Association and other progressive state associations such as Wisconsin and Iowa. I applaud their efforts and look forward to reading the results of the next phase.

REFERENCES