New York State Department of Health

Using Clinically Enhanced Claims Data to Guide Selection of Coronary Procedures

Frequently Asked Questions and Answers

1. What is the project, *Using Clinically Enhanced Claims Data to Guide Selection of Coronary Procedures*?

In late 2010, the NYSDOH received a grant from the Agency for Healthcare Research and Quality (AHRQ) to create and analyze a clinically-enhanced hospital claims dataset to compare the clinical effectiveness of alternative coronary revascularization procedures.   We plan to do this by combining our existing administrative database (SPARCS), which contains data from all New York hospitals, with laboratory data extracted from hospitals' electronic data repositories. This study is limited to a select group of hospitals and their patients who were admitted for coronary artery disease and/or have undergone inpatient or outpatient coronary revascularization procedures.

This project has been designated a scientific research study, under PHL 206, 1 (j) by the State Commissioner of Health. The results of the study cannot identify persons, providers or hospitals and the data cannot be FOIL'd. This study is one of several designed to make hospital billing data collected by states more useful for quality measurement and improvement.   Our focus is on the relative benefits of coronary bypass and coronary angioplasty.   We plan to assess patient outcomes using only currently available claims data and to compare them to outcomes based on the enhanced claims data produced by adding numerical lab data.   Findings based on these two data sets will be compared to findings based on clinical data from New York State's cardiac registry.   Successful development and use of new, relatively inexpensive ways to obtain clinically-enhanced claims data will provide an important tool to ensure that each patient receives the right treatment performed in the right way at the right time.

The project will be guided by an Operations Advisory Panel comprised of national and local clinicians, consumers, policy makers, health care administrators, quality professionals, and health services researchers.   Participating hospitals will be invited to recommend individuals with clinical, analytic, and information technology expertise to serve on Technical Advisory Committees.   Guidance provided by these committees will assist the project team in achieving the project's objectives most effectively and efficiently.

2. What's the timeline for completion of this project?

By mid 2012, a Clinical Laboratory Data Sharing Agreement between the NYSDOH and each hospital will be in place, and initial submissions of historical laboratory data (2008-2010) are expected to be completed.

3. How will the new clinically-enhanced claims database be used?

New datasets created for this project will be used to study the comparative effectiveness of alternative

forms of coronary revascularization and to provide feedback to participating hospitals about their approaches to treating patients requiring coronary revascularization and the risk-adjusted outcomes they achieve. Hospitals can use this information to guide quality improvement initiatives. Because this project has been designated as a research study, information about individual hospital performance will not be released to the public or used by the state as the basis for administrative actions.

In the future, the state may require hospitals to submit clinical laboratory data that will be combined with SPARCS data to support administrative decision making and the public release of information about hospital performance.

4. What direct benefits will your hospital receive by participating in this project?

Each participating hospital will receive a series of customized reports that provide:

- comparative risk-adjusted mortality, serious inpatient complication, and readmission rates for selected cardiac conditions and procedures based on clinically-enhanced administrative data
- information about how the choice among coronary revascularization procedures at its hospital differs from choices made at other hospitals and how these choices relate to risk-adjusted clinical outcomes
- other analytic findings of interest to hospitals identified through collaborative exchanges between representatives of participating hospitals and members of the research team
- opportunities to guide the development of data, analytic, and reporting study protocols that may serve as templates for mandatory state and national comparative effectiveness initiatives.

Participating hospitals will also receive assistance in creating and implementing protocols to process and transmit electronic laboratory data that can assist them in satisfying Centers for Medicare and Medicaid Services (CMS) electronic health record (EHR) meaningful use criteria and in preparing to meet future federal, state, and third-party payer requirements for submission of clinically-enhanced claims data.

5. What is the time period covered by the study? How relevant are analyses of relatively old retrospective data to current clinical performance? How can the timeliness of reports be improved?

Initial analyses will be performed using historical data starting with data from January 2008 from hospitals that can readily retrieve these data and with later data from other participating hospitals.

Because comparisons of risk-adjusted clinical outcomes require sufficient numbers of cases to achieve satisfactory statistical power, concurrent monitoring of outcomes adds little to the timeliness of reports. Because data completeness and accuracy are important for external reporting, rapid data processing and analyses are not advisable. On the other hand, hospitals may be provided with preliminary reports that will suggest where problems may exist. Judicious use of this information can enable hospitals to address quality issues before more rigorous analyses are completed and disseminated.

Because provider-specific risk-adjusted clinical outcomes are relatively stable from year to year, reports based on data that are several years old generally are accurate reflections of current clinical

performance.   Providers that believe these historical data are inaccurate because of changes in their processes of care should be able to document these changes and their effects on patient outcomes.

6.   What clinical outcomes will be measured? What reference standard will be employed?

Clinical measures will include:

- Inpatient and 30-day risk-adjusted post-procedure mortality rates;
- Risk-adjusted rates of serious post-procedure inpatient complications including mortality and hospital-acquired complications that affect patient care;
- Risk-adjusted rates of serious post-procedure inpatient complications or post-discharge mortality and readmissions within 30, within 60, or within 90 days post-procedure and
- Risk-adjusted rates of serious post-procedure inpatient complications or post-discharge mortality, readmissions, or clinically significant procedure-related interventions (e.g., procedure-related emergency room encounter, repeat procedure) within 30, within 60, or within 90 days post-procedure.

Alternative measures of clinical performance will be compared and the most useful selected for detailed analyses and reporting. Performance will be compared to reference standards based both on average results for all participating hospital and average results for participating hospitals with satisfactory measured performance after data from hospitals with significantly poorer-than average risk-adjusted performance are eliminated from the reference database.

7.   Is there funding to defray hospital costs?

There is no funding available to defray hospitals costs. Hospital costs are estimated to be minimal.

8.   How much effort will participation in this project require from your hospital?

To make setup easier, project staff will be available to assist your hospital to prepare its initial submission of requested laboratory data files to the NYSDOH.   Once operational interfaces are established between your data repositories and NYSDOH's centralized database, the process for submitting requested data can be automated so that future data submissions will require only minimal additional effort by your hospital's staff.

9.   Will data required for this project conform to current purchase agreements between individual hospitals and their data system vendors?

Data specifications for this study will be based on field codes and LOINC definitions of standard laboratory tests. These have been incorporated into federal meaningful use standards and should be consistent with New York State and CMS data specifications. We anticipate that current purchase agreements will support all study requirements. However, because this project is a voluntary research study and not officially mandated by the state, vendors cannot be required to modify systems at no charge to provide data needed to participate in the project.

10.   What IT support will be required at participating hospitals? Will required submissions be real-time or batched retrospective data? Will technical specifications be provided to guide

hospitals to setting up data transmission programs and protocols? How will hospitals know on which cases to send laboratory data?

IT must match the laboratory records with patient identifiers provided by NYSDOH and extract laboratory records from the participating hospital's information systems into a batch HL7 file, a flat file or as Excel file. A project-specific implementation guide to identify the fields and formats required will be sent to hospitals in August.

After a participating hospital's current codes for required laboratory tests are mapped to corresponding LOINC codes using a mapping grid supplied by project staff, IT must incorporate this mapping into the export file. After output from export programs are evaluated by project staff, IT may be required to assist with setting up a protocol for retrieving requested batched retrospective laboratory data for submission, following technical specifications supplied by project staff.

Case identifiers and associated time intervals for inclusion in each batch submission will be supplied by project staff either NYS Health Commerce System (HCS) Secure File Transfer or PHINMS software. Data will be requested for all cases that qualify for inclusion in the study based on preliminary analyses of SPARCS data by project staff.

11.   What additional data will be requested from participating hospitals?

The following laboratory test results will be requested from participating hospitals:

1.	Albumin	17.	INR
2.	Alkaline Phosphatase	18.	Lactate Dehydrogenase (LDH)
3.	Amylase	19.	Neutrophils Band
4.	AST (SGOT)	20.	Partial Thromboplastin Time
5.	Base Units Deficit (Excess)	21.	pCO2 Arterial
6.	Bicarbonate	22.	pH Arterial
7.	Bilirubin Total	23.	Platelet Count
8.	BNP	24.	pO2 Arterial, O2 Saturation Arterial
9.	Calcium	25.	Potassium
10.	Creatine Kinase (CPK)	26.	Sodium
11.	Creatine Kinase MB	27.	Troponin I
12.	Creatinine Serum	28.	Troponin T
13.	Glucose	29.	Urea Nitrogen Blood (BUN)
14.	Hemoglobin	30.	White Blood Count
15.	Hemoglobin A1c		
16.	Inhaled oxygen (percent)(rate)		

Data elements that will be requested for each test are:

- A LOINC code to identify the type of test performed
- The observation value (i.e., test result)
- The observation units
- The normal range for the patient on whom the test was performed
- The date and time at which the specimen was obtained (if available electronically)

- The date and time at which the sample was analyzed
- Any information that may be useful for understanding submitted lab values (e.g., sample hemolyzed)

Additional data elements that will be requested to facilitate matching laboratory results to claims data include the patient's:

- Date of birth
- Sex
- Medical Record Number
- Patient Control Number
- First Name
- Last Name
- Social Security Number
- Zip Code
- Permanent Facility Identification Number (PFI)
- Admission date
- Discharge date
- Street Address

These data will be requested for the following cases:

- Every inpatient undergoing coronary artery bypass graft surgery (ICD-9-CM procedure codes 36.10 through 36.19);
- Every patient undergoing an inpatient or outpatient percutaneous coronary intervention (ICD-9-CM procedure codes 00.66, 3601, 3602, 3605, 3606, 3607, or 3609);
- Every patient admitted with a principal diagnosis of acute myocardial infarction (ICD-9-CM diagnosis codes 410.00 through 410.92) and
- Every patient admitted with a principal diagnosis of ischemic heart disease (ICD-9-CM diagnosis codes 411.0, 411.1, 411.81, 411.89, 412, 413.0, 413.1, 413.9, or 414.0 through 414.9).

Results for qualifying laboratory tests will be requested for the period from 30 days prior to a qualifying procedure or admission through the date of discharge from the inpatient or outpatient facility.

Hospital discharge data routinely submitted to the Department of Health by participating hospitals will be used by the Department to prepare lists of case identifiers and associated dates for cases for which laboratory results are requested.

12. How will data be transmitted to the NYSDOH by participating hospitals?

Most hospitals and clinical labs currently send mandated data related to communicable diseases, cancer, HIV/AIDS, and other specified conditions to the NYSDOH using the Department's Electronic Clinical Laboratory Reporting System (ECLRS). However, for this project ECLRS will not be used.

The NYS Health Commerce System (HCS) Secure File Transfer or Public Health Information Network Messaging System (PHINMS) software will be used to transmit numerical laboratory data to the NYSDOH.   It is anticipated that few, if any modifications to these interfaces will be needed to produce the requested data in standard format with Logical Observation Identifiers Names and Codes (LOINC) to transmit it.   Hospital-specific codes identifying laboratory test results requested for this project will be mapped to corresponding LOINC codes using mapping forms and protocols supplied and supported by the NYSDOH.

13.   What are the shortcomings of the current CABG and PCI registries? Are hospitals that perform PCIs mainly on emergency STEMIs being disadvantaged when compared to hospitals that perform PCIs mainly on elective cases?

Additional quality measures not supported by these registries would be highly desirable. Additional auditing to ensure data quality would be useful. Because current registries are labor intensive to create and maintain, it would be difficult to extend this effort into other clinical areas.

Because emergency ST segment elevation myocardial infarction (STEMI) is a risk factor in the statistical models derived from current registry data, hospitals that treat a higher percentage of these cases having correspondingly higher expected mortality rates. This levels the playing field among hospitals with different distributions of underlying disease patterns.

14.   How will the quality of POA be assessed? Will record review be performed? What reference standard will be used to assess the quality of a hospital's POA coding?

POA coding will be assessed using a set of screens for internal consistency as outlined by Pine and colleagues. [1] Record review will not be performed by project staff, but may be performed by individual hospitals based on results of the screens. The most recent available data will be used to prepare reports on coding quality for participating hospitals. Current POA coding standards were developed using historical data from California and New York State.   These standards may be altered as POA coding improves nationally based on analyses of the Hospital Cost and Utilization Project national database maintained by the Agency for Healthcare Research and Quality.

The Agency for Healthcare Research and Quality has posted a video on its website to assist physicians in supporting proper POA coding. One CME credit will be given by the University of New Mexico for each physician viewing the video. (http://www.hcup-us.ahrq.gov/datainnovations/clinicaldata/tktt.jsp)

15.   How will comorbidities that are present on admission be distinguished from complications in outpatients whose ICD-9-CM codes are not modified by POA codes?

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[1] Pine M, Fry D, Jones B, et al. Screening algorithms to assess the accuracy of present-on-admission coding.

Perspectives in Health Information Management. 2009; 6(2):1-14. http://perspectives.ahima.org. Accessed July 11, 2011.

Because the study will focus on prolonged hospitalizations, serious complications that are fatal, or result in readmission or in a clinically significant intervention, POA codes will not be required to identify serious complications or to risk-stratify cases that are straight-forward enough on admission to have their PCIs performed as outpatients.

16. Will patients who are not admitted to the hospital and have coronary angiography or PCIs be included in the study?

Patients who are not admitted to the hospital and have coronary angiography without a PCI will not be included in the study.   Patients not admitted to the hospital who have a PCI will be included in the study if satisfactory data about these cases can be obtained.   Otherwise, the study will be limited to inpatient PCIs that are documented in the inpatient SPARCS database.

17. Are these procedures that are performed on patients not admitted to the hospital captured in the SPARCS database?

Currently, there is a SPARCS database that contains PCIs performed on patients not admitted to the hospital.   However, the PCI registry contains cases that are in neither inpatient nor outpatient SPARCS databases.   We plan to investigate whether this discrepancy results from some hospitals not including outpatient PCIs in their data submissions to outpatient SPARCS. If we determine the cause of the discrepancy between the PCI registry and the SPARCS databases, we will work with participating hospitals to remedy the problem.

18. Will investigators other than project staff be able to obtain access to this database? If so, how will they be able to obtain these data?

Currently, access to study data is limited to participating investigators. Project staff will work with The Project Advisory Panel and state officials to explore how the data may be made available to other qualified researchers through clear, transparent mechanisms.

19. What are the next steps for hospitals that wish to participate? When can participating hospitals begin submitting laboratory data? What is the deadline for the initial submission of laboratory data?

Each participating hospital will need to complete a Clinical Laboratory Data Sharing Agreement between the hospital and NYSDOH. NYSDOH will work with hospitals to implement laboratory data acquisition and transmission protocols to submit test laboratory data sets. Once test data from the hospitals are received, screened, and found to be satisfactory, each participating hospital will be asked to submit a complete set of historical laboratory data (2008-2010). In 2012, an additional year of data (2011) may be transmitted in the same manner.