HOSPITAL BRIEFING MEMORANDUM
HYBRID HOSPITAL DATABASE PROJECT ORIENTATION
Minnesota Hospital Association
November, 2008

A. Introduction – Background, Objectives, and Overview of Hospital Involvement

Until now, there have been two distinctly different approaches to obtaining data to support hospital-level analyses of clinical performance. The simplest approach was to utilize administrative claims data that were relatively easy and inexpensive to collect and compile but which yielded analytic results that were of questionable validity. The second was to abstract clinical data from medical records, a labor-intensive relatively expensive procedure but one that supported analyses that were far more credible to clinicians and experts in quality monitoring. With the advent of more sophisticated electronic methods of collecting and storing clinical data and new widely-accepted standards for the management of electronic medical data (e.g., LOINC® for laboratory data), it now is possible to enhance administrative data by merging them with clinical data readily available in electronic format at the vast majority of hospitals in the United States today. This project will use principles and methods from recent research completed for AHRQ by Abt Associates and Michael Pine and Associates to facilitate the cost-effective enhancement of state hospital administrative databases with clinical data without waiting for comprehensive electronic medical records and robust regional health information exchanges to become a reality. It also will incorporate improved coding practices (at a minimum, the proper use of a present-on-admission modifier) into this hybrid administrative-clinical data set.

This pilot project is designed to demonstrate that improvements in comparative analyses of hospital performance demonstrated using clinical data abstracted from medical records in AHRQ's study Adding Clinical Data Elements to Administrative Data for Hospital-Level Quality Reporting can be achieved using clinical data obtained from electronic medical records and develop protocols that will enable statewide organizations to obtain and utilize these hybrid databases from hospitals with very different health information systems without imposing undue burdens on either the hospitals or the statewide organizations. By integrating experiences for multiple sites and diverse organizations, this pilot project should provide proof of concept, guides for implementation, and an informed constituency of statewide data organizations that are ready and willing to begin enhancing their current hospital claims databases. These efforts also should provide a basis for enriching these databases as new information technology becomes more widely available.

To these ends, the Minnesota Hospital Association (MHA) and its subcontractor, Michael Pine and Associates, Inc. (MPA) will work to:

- prove the feasibility of statewide data organizations creating cost-effective hybrid hospital administrative-clinical databases from electronic data submitted by hospitals that will improve the measurement of risk-adjusted hospital performance,

- identify and document best practices for data capture, transmission, integration, validation, and utilization for organizations with different information capabilities,
- engage multiple stakeholders and peer-group organizations to share and disseminate information and stimulate and support efforts to create and utilize hybrid hospital administrative-clinical databases, and
- set the stage for enrichment of these hybrid databases as improved health information technology becomes more widely available.

Specifically, MHA and MPA will recruit a diverse set of hospitals willing to supply required administrative and clinical data and obtain buy-in and cooperation from all important stakeholders. Working with participating hospitals and expert advisory groups, they will:

- create and fully specify mandatory and optional data elements to be collected,
- develop cost-effective methods of obtaining and transmitting these data in one or more data streams,
- merge data whenever necessary to create a unified database,
- screen data for inconsistent and implausible data elements, correct errors whenever possible and flag remaining questionable data,
- develop risk-adjusted measures of selected AHRQ inpatient quality indicators and patient safety indicators using already available reference data,
- recalibrate, perfect, and validate these measures with prospective data collected from Minnesota hospitals as these data become available,
- perfect and apply methods to evaluate these prospectively collected data for data quality and work with participating hospitals to improve the quality and usefulness of their data,
- prepare reports of comparative risk-adjusted clinical performance for participating hospitals, and
- transfer technology from MPA to MHA to enable MHA to continue and expand monitoring clinical outcomes using a hybrid administrative-clinical database.

A timeline for performing these tasks is presented in Appendix 1.

B. Steps in Implementation

Hospital Orientation and Support

On January 15, 2008, MHA will convene an orientation meeting of all Minnesota hospitals that have expressed an interest in participating in this pilot project. A proposed agenda for this meeting is attached as Appendix 2. Feedback for potential participants is requested prior to the meeting to permit project staff to perfect the agenda and structure presentations and discussions according to the needs of participants.

MHA also is seeking volunteers from interested hospitals to serve on one of three advisory groups: a Hospital Information Technology Advisory Group, a Medical Record Coding Advisory Group, and a Quality Monitoring and Improvement Advisory Group.

These groups will supplement the expertise and experience of project staff assigned to this project. The Hospital Information Technology Advisory Group will consist of personnel responsible for the database architecture, operation, maintenance, and upgrading of their hospitals' information systems. The Medical Record Coding Advisory Group will consist of personnel responsible for medical record coding. The Quality Monitoring and Improvement Advisory Group will consist of personnel responsible for clinical quality monitoring and improvement whose engagement and support are critical to the recruitment and continued support of participating hospitals.

Joseph Schindler, Senior Director of Data and Finance Policy at MHA and Barbara Jones, Vice President for Data Management at MPA will coordinate the work of the Hospital Information Technology Advisory Group. Michael Pine, President of MPA and Barbara Jones will coordinate the work of the Medical Record Coding Advisory Group. Mark Sonneborn, Vice President of Information Services at MHA and Donald Fry, M.D., Executive Vice President for Clinical Outcomes at MPA will coordinate the work of the Quality Monitoring and Improvement Advisory Group. These groups will meet face-to-face in breakout sessions during the hospital orientation meeting in St. Paul in January, 2008. After this initial meeting, individual consultations and conference calls will be arranged as required.

Hospital representatives attending the meeting will meet project leaders and will receive detailed information about the objectives and requirements of the pilot project and about potential benefits to participating hospitals. Project leaders will present a preliminary data set that combines administrative and clinical data elements and will obtain feedback from potential participants about the utility and ease of obtaining specific data elements. Dr. Pine will explain how MPA will work with staff at each participating hospital to identify the most cost-effective method of capturing and submitting required data electronically using currently available resources. Dr. Pine also will explain how MPA will develop and utilize screening criteria for proper use of present-on-admission codes. He will explain how reports of comparative risk-adjusted hospital performance on a selected set of AHRQ Inpatient Quality Indicators and Patient Safety Indicators will be prepared from the enhanced administrative data set created for this pilot project. As further inducements to participate and submit complete, accurate data, all participating hospitals will receive reports on the quality of their present-on-admission coding and their risk-adjusted mortality and adverse outcome rates.

MHA also will establish a liaison between the project team and important stakeholders in Minnesota including relevant government agencies (e.g. Minnesota Department of Health – MDH - epidemiologists and researchers), health care quality organizations (e.g. Stratis Health, Minnesota's QIO), and the regional health information exchange organization (e.g., MDH's E-Health Advisory Group and the independent Minnesota Health Care Connection) to keep them informed about the project and to obtain their direct assistance if and when it is needed. MPA will consult with researchers, clinicians, and quality measurement professionals with whom it has long-standing relationships to share thoughts about this new initiative, to obtain guidance about how to best achieve the goals of the pilot, and to obtain assistance in overcoming specific obstacles, if and when they are encountered.

Selection and Specification of Clinical Data Elements

Standard UB-04 data will be enhanced with present-on-admission (POA) codes following guidelines established by CMS for reporting POA. Instructions for coding POA shown in Appendix 3 will be reviewed and modified by the Medical Record Coding Advisory Committee. This material will serve as the basis for a POA training program that MHA will make available to all participating hospitals. Project staff at MHA and MPA will be designated to answer specific questions about POA coding raised by medical record abstractors at participating hospitals.

These data will be supplemented by numerical laboratory data elements that MPA has found to be important predictors of inpatient mortality and surgical complications for a wide variety of conditions and procedures. Three sets of numerical laboratory data are considered prime candidates for inclusion in the hybrid database: blood gas determinations; clinical chemistry analyses, and hematological results.

Numerical values related to blood gas determinations are pH, pCO_2, base excess, pO_2, O_2 saturation, and FIO_2. While pO_2 determinations, like measured pH and pCO_2, generally are available electronically, O_2 saturations frequently are obtained in place of full sets of blood gases and may not be as readily available in an electronic format. The FIO_2 when pO_2 or O_2 saturation is measured is important for correct clinical interpretation of findings, but may not be included in electronic reports, either because the FIO_2 has not been reported to the laboratory performing the test or because the laboratory does not include FIO_2 the in its electronic database. Base excess, which was a useful independent laboratory value in a number of risk-adjustment equations, can be calculated directly from measured pH and pCO2 using the Henderson-Hasselbalch and Siggaard-Anderson equations.

Results of blood chemistry analyses most likely to be useful and easily obtained in electronic format are blood urea nitrogen, creatinine, glucose, sodium, potassium, albumin, calcium, total bilirubin, aspartate aminotransferase (AST/SGOT), alkaline phosphatase, creatine phosphokinase (CPK), CPK-MB, and troponin-I.

Hematological results most likely to be useful and easily obtained in electronic format are hemoglobin, hematocrit, white blood count, platelet count, prothrombin time, international normalized ratio prothrombin (INR), and partial thromboplastin time (PTT).

Consideration also will be given to bacteriological data (e.g., positive culture results), cardiac ejection fraction, numerical vital signs (i.e., temperature, pulse, respiratory rate, and systolic and diastolic pressures), preoperative ASA classification, and Glasgow Coma Score.

Criteria for selection of clinical data elements for inclusion in the hybrid database are potential usefulness in defining populations of cases for analysis of clinical performance, potential usefulness in improving the accuracy of clinical outcome indicators, potential usefulness in enhancing the accuracy of risk-adjustment algorithms, availability in

electronic format, cost of collection if not available in electronic format, ease and accuracy of identifying appropriate values for inclusion in an analytic hybrid database, and ease and accuracy of combining data submitted by different facilities.

MHA, MPA, MediQual™ services, the Medical Record Coding Advisory Committee, and representatives of participating hospitals also will explore the utility of systematically coding ICD-9-CM codes for signs, symptoms, and conditions that may not ordinarily coded consistently due to current coding conventions. These include codes for tachycardia (785.0), tachypnea (786.06), fever (780.6), hypotension (458 series), coma (780.01), stupor (780.09), convulsions (780.3), severe malnutrition (261, 262), morbid obesity (278.01), body mass index (V85 series), previous coronary artery bypass graft surgery (V45.81), previous heart valve replacement (V42.2, V43.3), intraventricular conduction disturbance (426.2 - 426.6), pleural effusion (511.1, 511.8, 511.9), decubitus ulcer (707.0), skin edema (782.3), congestive heart failure (428 series), lower respiratory inflammation (490, 491 series, 494), chronic lung disease (493.2, 496, 500 - 505), peripheral vascular disease (440.2 series, 443.9), chronic renal disease (585), and a history of cancer (V10 series). In previous research, MPA found that if these signs and symptoms are coded consistently when they are present on admission, they are important predictors of adverse clinical outcomes. Hospitals that can record and submit these supplementary codes to MPA without corrupting their submitted claims will be encouraged to do so, but not doing so will not eliminate hospitals from participating in the study. If a sufficient volume of supplementary ICD-9-CM codes can be obtained to permit the use of these codes in risk-adjustment models, MPA will evaluate the cost and benefits associated with adding these additional data to the hybrid databases created for all participating hospitals. By making this additional coding optional, MHA and MPA potentially can enhance the utility of the pilot database without eliminating potential participants that can submit only administrative and numerical laboratory data.

Careful consideration will be given to specifying additional clinical data elements to be collected. MHA, MPA, MediQual™ services, and the Quality Monitoring and Improvement Advisory Group Rules will collaborate to develop rules to select which of several alternative values should qualify as an authoritative admission finding. Issues to be address will include the use of preadmission test results, the avoidance of post-interventional test results, and the creation of easy-to-apply algorithms to identify values that best represent a patient's status on admission. Algorithms also will be created to integrate corresponding data obtained or reported in different units. In some cases this process will be trivial (e.g., converting Centigrade to Fahrenheit). In other cases, empirical analyses may be required to develop satisfactory algorithms (e.g., integrating measures of CPK-MB levels obtained using different analytic methods, assessing oxygenation based on pO_2 or O_2 saturation with or without corresponding FIO_2, combining INRs and prothombin times when some hospitals report both and some only one or the other).

<u>Collection, Transmission, and Security of Data</u>

Appropriate staff at each participating hospital will work closely with Barbara Jones, Vice President of Data Management at MPA, to develop an individualized protocol for

data retrieval and submission. Ms. Jones also will work with appropriate personnel at participating hospitals to implement and perfect present-on-admission coding practices based on CMS guidelines. Ms. Jones has successfully managed customized data collection from diverse hospitals to create hybrid databases for analysis by MPA for almost two decades. She will be aided by technical staff at MHA and MPA, by the project's Hospital Information Technology Advisory Group and Medical Record Coding Advisory Group, and by ongoing advice and problem solving from Linda Hyde and Richard Johannes, M.D., both of whom have extensive expertise and experience implementing and maintaining electronic systems to capture and integrate administrative and clinical data from hospitals utilizing MediQual™ services' performance monitoring system.

Strategies for obtaining lab data electronically from current systems will be developed by collaborating with the subject matter experts from the project team and from participating hospitals to clarify data structures, processes used to update data, and potential linkages available to create an enhanced data set. Logical Observation Identifiers Names and Codes (LOINC®), which were developed by the Regenstrief Institute and are in the public sector, will serve as the preferred data structure and reference for data transmission. After initial face-to-face meetings of the Hospital Information Technology Advisory Group and the Medical Record Coding Advisory Group at the orientation session, members of these teams of experienced hospital information and systems specialists and of experienced coding personnel from participating hospitals will provide individual consultations and participate in group conference calls as required.

Because the goal of this pilot is to develop techniques that can be disseminated rapidly, data will be merged at hospitals only when this is the most cost-effective method of obtaining and submitting data. (Although merging data prior to transmission to a central site is appealing, disseminating this technology to all hospitals participating in statewide databases would be a relatively daunting task. Requiring hospitals with very different information systems and capabilities to develop or purchase software systems to merge data prior to their submission will be a major barrier to creation of statewide enhanced administrative databases.)

Protocols for data transmission, storage, analysis, and reporting will include safeguards to protect confidentiality and maintain data security. Appropriate data-use agreements will be executed. Hospitals that submit multiple files either will encrypt patient identifiers before submitting their data to MPA, or alternatively MPA will encrypt their data, will send a file containing encrypted and actual identifiers to the reporting hospital, and then will remove actual identifiers from MPA's database. This approach permits linking data without retaining actual patient identifiers and permits hospitals to retrieve actual patient records for validation of data whenever necessary. MHA and MPA has excellent arrangements to maintain data security (see Appendix 4 for further details) and have received, merged, and analyzed highly sensitive health data for many years without a breach in security.

Merging, Cleaning, and Analyzing Data

Analytic staff at MPA will process data received from hospitals and will merge these data to create a consolidated hybrid database. This database will be evaluated to determine the consistency and plausibility of data. The enhancement of administrative data with numerical laboratory data will permit MPA to detect obvious individual inconsistencies (e.g., case with the first pH on the day of admission of 7.41 that has acidosis coded as a secondary diagnosis present on admission; case with a principal diagnosis of osteoarthritis and a knee replacement performed on the first hospital day that has sepsis coded as a secondary diagnosis present on admission) and more subtle institutional inconsistencies (e.g., a hospital with 14 of 43 cases with principal diagnoses of pneumonia that have normal white blood cell counts). Participating hospitals will be given information about questionable data and will have an opportunity to correct errors when they are identified. Inconsistent and implausible data either will be corrected or will be flagged as having questionable validity.

MPA will analyze a reference research database that contains administrative and clinical data elements to develop preliminary risk-adjustment models for selected inpatient quality indications and patient safety indicators using data elements being collected for the pilot project. Predictive models for mortality will be developed for five medical Inpatient Quality Indicators (IQI; acute myocardial infarction [IQI 15], congestive heart failure [IQI 16], acute stroke [IQI 17], gastrointestinal hemorrhage [IQI 18], and pneumonia [IQI 20]), for one surgical IQI (coronary artery bypass graft surgery [IQI 12]) and for one procedural IQI (percutaneous transluminal coronary angioplasty [IQI 30]). Predictive models also will be developed for four post-operative complications validated using laboratory data to confirm their occurrence after admission (respiratory failure [Patient Safety Indicator; PSI 11], pulmonary embolism or deep vein thrombosis [PSI 12], sepsis [PSI 13], and acute myocardial infarction [not currently monitored as a PSI]). These risk-adjustment models will be developed using the same methods MPA employed to create and evaluate risk adjustment models for the study of "Enhancement of Claims Data to Improve Risk Adjustment of Hospital Mortality" published in JAMA 297(1), 71-76 on January 3, 2007. Analyses of these clinical outcomes also will evaluate the structure of the IQIs and PSIs themselves to determine whether additional clinical data can be used to improve the validity of outcome measures as well as the accuracy of risk-adjustment.

Use of this reference data set will permit the study team to "jump-start" the analytic phase of this research with a large high-quality, well-validated database that parallels data being collected from participating hospitals. Because adequate data for development of risk-adjusted models for IQIs and PSIs will not be available until fairly late in the second year of the project, completion of preliminary analytic work in the first year will be important to ensure the timely completion of the project. Creating preliminary models using a large reference data set will permit analyses to begin before prospective data are available from participating hospitals. Prospective data then can be used to refine and validate models and to explore differences between numerical laboratory data abstracted from medical records and numerical laboratory data captured electronically and processed according to different algorithms to identify which results qualify to be used as

valid risk factors. Also, preliminary models created using reference data will serve as benchmarks to assist in assessing the quality of data collected and transmitted by participating hospitals and in identifying and solving problems in data specification, collection, transmission, and aggregation during rather than after a full year of data have been collected. This approach will permit more extensive and detailed analyses of merged data than could be completed if analyses were delayed until adequate prospective data were collected.

In addition to predictive models for categorical outcomes used as quality and patient safety indicators, MPA will develop predictive models for hospital length of stay for uncomplicated live discharges admitted for medical care and for post-operative length of stay for uncomplicated live discharges admitted for surgical procedures. Techniques to select and calibrate variables and validate these predictive models will parallel those used to select and calibrate variables and validate predictive models for adverse outcomes except that analytic techniques appropriate for continuous rather than categorical variables will be employed (e.g., linear rather than logistic regression). Complicated cases will be identified based on their unusually long risk-adjusted lengths of stay compared to patients hospitalized for the same medical condition or surgical procedure. The normal upper bound for risk-adjusted lengths of stay for cases discharged alive from individual hospitals will be computed using control charts with outliers removed and upper bounds recalibrated until all live discharges have risk-adjusted lengths of stay that are shorter than the computed upper confidence limit. (See Pine M. Crafting valid, relevant measures of clinical performance. In: Kongstvedt PR, Plocher DW, editors. Best Practices in Medical Management. Gaithersburg: Aspen Publishers; 1998. Chapter 35 for a more detailed description of this method of identifying complicated cases.) These predictive models will be developed using reference data and will be applied to prospective data from a Minneapolis hospital whenever sufficient data are available to compute an accurate upper bound for a medical condition or a surgical procedure. The percentage of cases discharged alive with prolonged risk-adjusted lengths of stay that do not have at least one secondary diagnosis coded as not having been present on admission will be computed. These percentages will be reported to hospitals along with standard rates based on overall results from participating hospitals and identifiers of cases suspected of having hospital-acquired complications that were not coded as such. Hospitals with high rates of prolonged risk-adjusted lengths of stay that are not associated with reported hospital-acquired complications will be advised to validate their coding practices and permitted to submit corrected administrative and/or clinical data.

Using techniques described above, MPA has detected substantial variation among hospitals in the quality of their application of present-on-admission codes and in the completeness of their coding hospital-acquired complications. MPA anticipates similar findings when Minnesota hospitals begin using present-on-admission modifiers and enhancing their administrative data submission with numerical laboratory data. Achieving a satisfactory degree of accuracy and completeness in coding will be a challenge for MHA, MPA, and participating hospitals. On the other hand, the projected use of present-on-admission coding to determine hospital reimbursement (i.e., differential reimbursement depending upon whether specific secondary diagnoses were comorbidities present on admission or hospital-acquired complications) makes the development of

powerful data-quality screening methods and evaluation of their usefulness in programs to improve data quality well worth the effort.

MPA will prepare data quality reports for each hospital whenever information of importance becomes available. Upon completion of analyses for this pilot project, MPA will prepare comparative performance reports for participating hospitals for each outcome assessed. Data in these reports will be aggregated to levels sufficient to insure patient confidentiality.

C. Coordination and Management of Project Staff and Activities

MHA and MPA will coordinate their efforts to capitalize on the unique capabilities of each organization. MHA will provide leadership and will serve as a bridge between local and peer-group participants and stakeholders and the technical and analytical capabilities of MPA's project team. MHA's project team has considerable experience working with Minnesota hospitals to collect electronic data and has strong roots in the Minnesota healthcare community. MPA's tightly knit team has extensive experience as consultants and sub-contractors on developmental and pilot projects such as this.

MHA has a longstanding commitment to transparency in the area of hospital performance and has worked with its hospital membership to create useful databases and provide comparative analyses to inform the public and support clinical and administrative quality improvement. As a hospital association, its core competency is convening and collaborating with hospitals to achieve common objectives such as creating more useful centralized databases or advocating for or against a particular piece of legislation. MHA has decades of experience cost-effectively and securely managing the collection of the administrative data for more than 600,000 hospitalizations and over six million emergency room and ambulatory care visits annually. In this pilot project, MHA will apply its documented experience and proven expertise, build on its excellent rapport with its hospital constituency and, at the same time, improve its current hospital database and enhance its position as a leader in health data acquisition, integration, and dissemination.

MHA will be assisted by MPA, which has been a leading innovator in the measurement and improvement of clinical quality since its inception in 1988. It has been an advocate of present-on-admission coding for almost two decades and began advancing the concept of using hybrid administrative-clinical data sets to measure risk-adjusted hospital performance more than a decade ago. Its work for AHRQ under Contract #233-02-0088, Task Order 13: Adding Clinical Data Elements to Administrative Data for Hospital-Level Quality Reporting has provided valuable information used that will aid in completing this project successfully.

MPA is nationally recognized for its expertise in measuring risk-adjusted hospital outcomes using administrative, laboratory, and pathophysiological data. The firm has extensive experience and expertise in combining administrative and clinical databases to support the measurement of comparative risk-adjusted hospital outcomes. It has worked with numerous large and small hospitals to develop customized protocols for data collection and transmission and has successfully merged administrative and clinical data

sets for analyses of hospital performance. MPA's recent work for AHRQ on the effect of adding increasingly complex clinical data to administrative data on the quality of risk-adjustment models for hospital mortality and surgical complications has been cited as a basis for the currently proposed pilot project.

The staff of MPA has a clear understanding of the past 15 years of research in the field of hospital performance monitoring and has made original contributions to this field. Dr. Pine has written and lectured extensively on this subject. The firm has extensive experience combining rigorous statistical methods with clinical and operational insight to create performance measures and risk-adjustment equations that have excellent predictive power and that are reliable, clinically plausible, statistically valid, and operationally sound. It has prepared numerous reports of comparative hospital performance and has dissected reasons for observed variations in analytic results. The firm has often been required to compare alternative measures and risk-adjustment models and to recommend the best approach to achieve our clients' goals. Many developmental and analytic techniques commonly used in this field today were pioneered by MPA.

While the overall concept and design of this pilot project are relatively straightforward, the interrelationship of the tasks required to complete it successfully make careful, skilled coordination and management essential. Responsibility for the overall management of this project will rest with its Project Director, Mark Sonneborn, a senior manager at MHA with extensive experience in developing and managing health information systems. He also will have direct responsibility for managing collaboration with the multiple stakeholders whose support and participation are essential for the pilot's success.

Michael Pine, the Associate Project Director, will lead MPA's technical team. As founder and president of MPA, Dr. Pine has 19 years of experience managing projects of this nature and working closely with clients to enhance their capabilities and achieve their goals. He will maintain close contact with Mr. Sonneborn to ensure that MHA and MPA achieve maximum synergy in achieving the objectives of the pilot. Dr. Pine also will have direct responsibility for managing all data analyses, preparation and dissemination of related technical and analytical information and reports, and the transfer of technology from MPA to MHA and potential beneficiaries of this developmental effort. Dr. Pine will report directly to Mr. Sonneborn.

Joseph Schindler, a seasoned senior manager at MHA, will serve as Project Manager, with day-to-day responsibility for monitoring and coordinating efforts and for solving unanticipated problems that may occasionally arise. In this capacity, he will work closely with Mr. Sonneborn and Dr. Pine covering all aspects of the project. He also will have direct responsibility for managing the development of an implementation plan, for information-sharing and dissemination activities, and for preparation of a final report. Mr. Schindler will report directly to Mr. Sonneborn.

Barbara Jones, MPA's Vice President for Data Management and Analysis, will have direct responsibility for managing the collection, exchange, merging, cleaning, and managing of the electronic data required to create and utilize the hybrid hospital administrative-clinical data set envisioned in AHRQ's RFP. In this capacity, Ms. Jones

will work directly with management and data personnel at participating hospitals and related data intermediaries to assist them in implementing cost-effective methods of data retrieval and transmission of data required to create the desired centralized database and will have direct responsibility for maintaining data security throughout the process of data transmission and retention at MPA's facility. Ms. Jones has almost two decades of experience managing these functions for MPA. Ms. Jones will report directly to Dr. Pine.

MHA's Information Services (IS staff - Neil Negstad, Gayle Kayfes, Jaclyn Roland, Bonnie Gazda) staff will be primarily involved in the implementation plan, electronic exchange and linking of data sets and information sharing and dissemination activities and report directly to Joseph Schindler. While initial participation will be to ensure ongoing collection of the administrative data, MHA's IS staff will also collaborate with both stakeholder hospitals and MPA to develop data handling and linking methodologies. The plan for implementing collection of present on admission (POA) data will primarily fall to MHA. MPA will take the lead in the initial phases of the clinical data linkages and the transfer its methods, lessons learned and proposed reports to MHA IS staff for dissemination. Neil Negstad will be primarily responsible for modifying systems to accommodate accepting the administrative data with additional clinical data. Gayle Kayfes, senior programmer analyst, will work to develop data integrity checks, establish data linkage protocols and report routines for Jaclyn Roland and Bonnie Gazda in their roles of data tracking, editing and report functions.

MHA's Education department, headed by Peggy Westby, Vice President, Education, will be involved in the planning and execution of at least two stakeholder meetings with hospitals: an initial kick-off meeting and a project wrap-up. Mark Sonneborn will coordinate the communications and planning for these events.

It is anticipated MHA's patient safety department, headed by Tania Daniels, Vice President of Patient Safety, and working with Julie Apold, Director, will provide assistance with identifying key patient safety data elements and analyzing merged data results. Their insights and expertise administering Minnesota's Adverse Health Events registry will be invaluable in evaluating the patient safety and quality measures within the scope of this project. Mark Sonneborn will coordinate their participation in the project.

Donald Fry will contribute additional clinical and research expertise to the pilot project. Dr. Fry will report directly to Dr. Pine. Roger Meimban will perform advanced SAS programming and support data manipulation and analyses. Dr. Meimban will report directly to Ms. Jones. Carolyn Dixon will provide administrative and clerical support to the MPA team. Ms. Dixon will report directly to Dr. Pine.

Because MHA and MPA are relatively compact organizations with highly collaborative corporate styles, service-oriented corporate cultures, and long experience assuming the roles they will assume in this pilot project, informal mechanisms that support internal communication, quality and cost control, effective and efficient resource utilization, and responsiveness to the needs of external parties will be extremely useful in ensuring satisfactory management of this pilot project.

MHA and MPA anticipate some unanticipated internal problems arising in the course of this pilot project, but the experience and expertise of the two groups should be more than adequate to manage them successfully. On the other hand, MHA and MPA both anticipate difficulties obtaining high quality data from participating hospitals whose information services departments are generally stretched thin because of high turnover rates and a chronic lack of qualified personnel to meet the ever-increasing demands upon these units. Because of MHA's excellent relationships with information departments at Minnesota hospitals and MPA's expertise and experience obtaining high quality data from hospitals experiencing the anticipated difficulties, MHA and MPA believe these difficulties will not be insurmountable. By customizing data collection and transmission protocols and providing strong, experienced, user-friendly support, MPA will minimize the added burden of this project to hospital information departments and reinforce their willingness to cooperate. Furthermore, because these problems will arise whenever hospitals attempt to enhance centralized administrative databases, knowledge gained identifying and working to overcome problems arising at contributing hospitals should be extremely useful in facilitating the successful creation of fully functional hybrid hospital administrative-claims databases by statewide health data organizations throughout the nation.