Using Health Information Exchange Data to Create a Unique Patient Identifier That Supports Accurate Measurement of Hospital-specific Readmission Performance

FINAL STAFF RECOMMENDATION

Health Services Cost Review Commission
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This document represents a final amended recommendation approved at the HSCRC's April 15, 2011 public meeting for action by the Commission.

1. Introduction

The United States health care system currently experiences an unacceptably high rate of unnecessary hospital readmissions. These excessive readmission rates are a symptom of our fragmented payment system and result in considerable unnecessary cost and substandard care quality. According to the CMS analysis of Medicare data, the state of Maryland has among the highest all-cause readmission rate in the US. The readmission rate in Maryland for Medicare patients is 24.1% compared to a national average of 19.3%.

In 2011, The HSCRC is expanding its Total Patient Revenue ("TPR") structure - a global budget or capitated payment structure covering a given hospital's inpatient and outpatient regulated facility charges- from two hospitals to ten hospitals. At its December 2010 Commission meeting, the HSCRC approved the Admission-Readmission Revenue ("ARR") episode payment structure. Both the TPR and ARR initiatives are designed to provide incentives for hospitals to improve overall care coordination and substantially reduce readmission rates, and represent important and urgently needed steps in the Commission's attempt to utilize its current regulatory authority to better rationalize Maryland's hospital payment and delivery system. Sufficient patient identifier fields must be collected and used to create a reliable unique patient ID which is essential to fully measure readmissions, both inter- and intra-hospital readmissions, and further strengthen the financial incentives linked with performance. Leveraging the already established infrastructure of the state's designated Health Information Exchange, a structure explicitly established and mandated to electronically connect all healthcare providers in the state, offers a "win-win" solution for creating a unique patient ID that benefits the Commission, providers, payers and most importantly, consumers.

2. Variation in Inter- and Intra-Hospital Readmission Rates

Using 2008 Medicare Provider Analysis and Review (MEDPAR) data for its analysis of Maryland hospital readmissions, HSCRC staff found wide hospital variation in the unadjusted readmission rates for intra-hospital (within), inter-hospital (across) and total readmission rates. Overall, total readmission rates are 30% and 26% higher than the readmission rates for intra-hospital readmission rates for 15 day and 30 day readmission intervals, respectively. In some hospitals the difference between the intra-hospital readmission rate and the total readmission rate is as low as 2% while in others it is more than 50%.

The above findings highlight the need to measure readmissions both within and across hospitals in order to fairly and accurately assess hospital-specific performance on readmissions and ultimately support better patient care management and coordination activities that reduce readmissions and improve quality and patient care outcomes.

3. Current HSCRC Data Constraints to Develop a Unique Patient Identifier

The patient-specific -fields submitted to HSCRC by hospitals in the inpatient data set are limited to medical record number (MRN), date of birth (DOB), gender, and zip code. HSCRC staff has attempted to link patient records across hospitals using these patient-specific data elements. The comparison of the linkage results with the MEDPAR data set which does include a unique patient identifier number revealed that the data elements HSCRC currently collects are insufficient to accurately link records of unique patients across hospitals. Therefore, the Commission is unable to fully measure and compare hospital-specific performance on readmissions and use the data to further enhance and strengthen the financial incentives linked with performance.

4. Options Considered for Creating Unique Patient IDs

To determine the patient identifier fields necessary to reliably create a unique patient identifier, HSCRC staff have done substantial "fact-finding" research through interviews with 15 states that currently use unique patient IDs, and consulted with experts in the field through the Agency for Healthcare Research and Quality. Subsequently, staff evaluated two options to create a unique patient ID that will enable tracking readmissions across hospitals. The first option is to collect additional personal identifiers with the existing data collection method and create a unique ID after data are submitted to HSCRC. The second option is to benefit from data infrastructure already in progress though Chesapeake Regional Information System for our Patients (CRISP), the Maryland Health Information Exchange designated by the Maryland Health Care Commission.

While it is possible to use the first option, one major drawback is that hospitals and patients will not be able to benefit from the creation of a unique ID immediately since tracking readmissions across hospitals would have a time lag, which is between three and six months, due to submission schedules of HSCRC data. As hospitals are moving toward implementing care-coordination strategies and information exchange, tracking readmissions across hospitals in real or close to real time, which the CRISP infrastructure supports by design, will inform care personnel and improve the care for these patients.

5. CRISP Work To Date

Consistent with its chartered mandate to electronically connect all healthcare providers in the state, CRISP's infrastructure uses a hybrid-federated model that is supported by two technology vendors. Axolotl Corporation, an Ingenix company, provides the core infrastructure, and Initiate Systems, an IBM company, provides the master patient index ("MPI") technology.

In the Fall of 2010, CRISP began receiving clinical data from five hospitals, three large radiology centers, and two national labs. Since that point, CRISP has engaged with an additional 25 acute care hospitals to achieve connectivity with the statewide HIE. When connecting with CRISP,

hospitals submit admission, discharge and transfer data (primarily demographic data), as well as laboratory results, radiology reports, and a series of electronic documents such as discharge summaries.

5.1. Master Patient Index

A core component of CRISP's technology infrastructure is the MPI. This technology allows CRISP to apply probabilistic algorithms to data received from an individual hospital and across hospitals (as other healthcare facilities) to uniquely identify patients that may have varying demographic data and different medical record numbers. The MPI assigns an Enterprise Patient Identifier that cross-references all of the local medical record numbers from facilities, including from within a facility which may have not matched accurately.

6. Industry Engagement

HSCRC staff has had ongoing discussions about the unique ID issues with the Maryland Hospital Association and industry stakeholders over the last several months, and staff believe there is consensus that sufficient patient identifier fields must be collected and used to create a reliable unique patient ID. In addition, there is agreement that a unique patient ID is necessary to fully measure readmissions, both inter- and intra-hospital readmissions. In March 2011, HSCRC convened a meeting of approximately 50 hospital case mix liaison representatives and other stakeholders to review the Commission's plan to propose that hospitals be mandated to connect with CRISP and provide the fields needed to create the MPI by December 1, 2011. Several hospitals indicated that readiness to connect with CRISP was imminent, or they were already connected. As a next step, at the request of the participants of a stakeholder meeting held in March, within the next few weeks HSCRC will coordinate with MHCC and CRISP staff to convene an industry meeting to address technical questions as the process moves forward.

7. CRISP Creation of a Unique Patient ID

To create a uniform unique patient ID that can be used by HSCRC to track readmissions, the staff is proposing to require all hospitals to connect with CRISP and submit to CRISP the newly required data fields indicated below for all hospital admission / discharge related events.

Field Name	HSCRC New Requirement	HSCRC Current Requirement
Name, First	**Yes**	
Name, Middle Initial	**Yes**	
Name, Last	**Yes**	
Address	**Yes**	
Address, City	**Yes**	

Field Name	HSCRC New Requirement	HSCRC Current Requirement
Address, State	**Yes**	
Address, Zip code	**Yes**	**Yes**
Date of Birth	**Yes**	**Yes**
Gender	**Yes**	**Yes**
Social Security Number	**Yes***	
Visit/Encounter ID (VID)	**Yes****	
Medical Record Number (MRN)	**Yes**	**Yes**
Enterprise / System Level Patient ID	**Yes*****	
Admission Timestamp	**Yes**	**Yes**
Discharge Timestamp	**Yes**	**Yes**

Yes*- Field required only if information is provided by patient
Yes** -This data field should be a unique number to identify a specific visit
Yes** *- If Hospital has an Enterprise ID in addition to the Medical Record Number

Using the patient information submitted by the hospital, CRISP will create a MPI for each unique patient using a probabilistic matching algorithm. CRISP will be required to provide reports to the HSCRC at the patient level which will include at least the following fields:

- Enterprise MPI Number
- Hospital/Facility ID
- Medical Record Number
- Date of Admission
- Date of Discharge

The exact list of fields that will be required to match the report from CRISP to HSCRC's data set will be determined based on the analysis of a pilot data set. HSCRC may require CRISP to use an HSCRC algorithm to generate a supplemental HSCRC ID for the purposes of matching against other hospital reported data.

8. Proposed Timeframe

Staff are proposing that the Commission require, through regulation, hospital connectivity with CRISP by December 1, 2011 to ensure full hospital participation as well as fair and accurate measurement of readmission performance. The initial target for the first set of CRISP reports to HSCRC is CY Q3 2011. Beginning with 9-1-11, hospitals will connect "real time" with CRISP, and CRISP will provide quarterly reports to HSCRC thereafter. In addition, ideally CRISP will have the capability to initially receive a bolus of historical data from hospitals covering 3-1-10 to

3-31-11, commensurate with what would be an ARR base period for calculating inter-hospital readmissions. However, ongoing development work is needed to modify the existing CRISP infrastructure to support HSCRC requirements, and HSCRC will work with CRISP on detailed implementation steps and timelines as we move forward.

RECOMMENDATIONS

Staff recommend that the Commission approve the following recommendations:

1. Move forward the Proposed Action to promulgate regulations that require hospitals to connect with the state Health Information Exchange as stated in "Title 10 DEPARTMENT OF HEALTH AND MENTAL HYGIENE , Subtitle 37 HEALTH SERVICES COST REVIEW COMMISSION, Chapter 07 Health Information Exchange Data."
2. Hospitals establish connectivity with State-Designated HIE by December 1, 2011.
3. Hospitals have capability to submit the data elements outlined in Section 7 of this recommendation.
4. HSCRC publish data elements required for submission in the "Maryland Register" and on the Commission's website (http://www.hscrc.state.md.us).
5. HSCRC publish the format and data time period for submission in the "Maryland Register" and on the Commission's website.
6. To provide flexibility to make changes to the required data elements that may change over time, the changes be specified via the HSCRC website with a notice of change in the Maryland Register.
7. HSCRC use these data to fully measure and compare hospital-specific performance on readmissions and to use the data to further enhance and strengthen the financial incentives linked with performance.