

Using Data for Quality Improvement: Reporting and Payment

The Maryland Experience

AHRQ Conference
Using Administrative Data to Answer State
Policy Questions

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Overview of Presentation

- Context: A Self-Contained Data Collection and Reimbursement System
- Data Bases established for Rate System
- Data Considerations
- Quality of Care Example/Application
 - Reporting
 - Link to Payment and Financial Incentives

Context: Maryland All-Payer Hospital Rate Setting System

- Last State to Control Hospital Charges (All-Payer)
- System made possible by Waiver from Medicare
- Primary Statutory Responsibilities:
 - Very strong data collection authority
 - Rate setting authority
- Data are the Foundation & Building Blocks
- Many Positive Externalities from Data Collection
 - Comparative analyses
 - Basis for rate system
 - Use of data by consumers and public
 - Evaluation of disparities and inequity
 - Pay for Performance and Quality Assessment

Policy Objectives & Use of Data

- **Cost Containment** (cost data → payment)
- **Access to Care** (data on uninsured → UC Pools)
- **Equity in Payment** (data on payment levels)
- **Financial Stability** (data on operating performance)
- **Accountability/Transparency** (System performance vs. Targets; Community Benefit Performance)
- Now a focus on **Quality Improvement**

Maryland Data Bases & Applications

- Service Volumes, Cost and Financial Data → Payment
- Medical Record Discharge Data → Structuring Payment DRGs
- Extensive data on the uninsured receiving care → UC Pools
- Wage and salary data by facility → Adjust Payment (LMA)
- Residents and Interns Survey → Adjust Payment (GME)
- Financial and Operating Data → Monitor Financial Stability
- Community Benefit Data → Hold Hospitals Accountable
- Present on Admission → Lower Complication Rates
- Admissions and Readmissions → Lower Re-Admission Rates

Importance of “Data Efficacy”

- How Complete?
 - Sampling less desirable and less defensible
- How Accurate?
 - Audits, Cross-checks & Reconciliations
 - Benchmarks vs. Other States
 - Uses of the data (for payment?)
- How Timely?
 - Health Care Market changes rapidly
 - Most effective policy decisions require timely data (<2 years old)
- How Robust?
 - Availability of other data for adjustments/correlations
 - Policy Decisions more powerful when data bases are combined
 - Thresholds for being able to use data for reporting or payment
- How Fair?
 - Adjust for factors beyond the control of providers
 - Adjust for certain factors you don't want providers to influence

Characteristics of Data Use in Maryland

- Very direct link: Data → Policy Decisions
- Entire system built from bottom up using granular data
- Many positive externalities to comprehensive data collection effort (research, public health)
- Large role for public agency to make data available for the Market and Public

Example:

**Using Administrative Data
to Lower Complication &
Re-Admission Rates**

Re-Admission Rates & Diagnosis Present on Admission (POA) – **Context/Rationale:**

- Next logical step after process measure P4P
- CMS taken first step: Hospital Acquired Conditions
- States can go further – tailor concept to local conditions
- Goal: To Reduce Complication and Re-admission rates
- Focus attention on poor performers (reporting) and correct payment incentives
- Reward hospitals who are doing the best job – lowest complication rates and re-admission rates (risk-adjusted)

Key Elements in the Exercise

- Goal: Improve Quality of care (and reduce cost) by lowering complication and re-admission rates
- Data use: Administrative Discharge Data Set
- Key Data Elements:
 - Present on Admission indicator (POA) for complications
 - Probabilistic match of patients in data set across hospitals for re-admissions
- Other tool required: Use of Severity Adjusted DRGs
- Mechanisms to create behavioral change by hospitals:
 - Private or Public reporting of performance
 - Link to payment (Medicaid and/or Large private payer in state)

PPCs and PPRs

- Potentially Preventable Complications (PPCs)
 - Harmful events (accidental laceration during a procedure) or negative outcomes (hospital acquired pneumonia) that may result from the process of care and treatment rather than from a natural progression of underlying disease
- Potentially Preventable Readmissions (PPRs)
 - Return hospitalizations that may result from deficiencies in the process of care and treatment (readmission for a surgical wound infection) or lack of post discharge follow-up (prescription not filled) rather than unrelated events that occur post discharge (broken leg due to trauma).

Note: PPRs/PPCs definitions and methodology developed by 3M Health Information Systems

Major PPCs (Twenty-nine of the Most Significant PPCs)

Major Cardiac and Pulmonary Complications

- Stroke & Intracranial Hemorrhage
- Extreme CNS Complications
- Acute Lung Edema & Respiratory Failure
- Pneumonia, Lung Infection
- Aspiration Pneumonia
- Pulmonary Embolism
- Shock
- Congestive Heart Failure
- Acute Myocardial Infarct
- V Fibrillation, Cardiac Arrest
- Pulmonary Vascular Complications

Other Major Medical Complications

- Major GI Complications w transfusion
- Major Liver Complications
- Other Major GI Complications
- Renal Failure with Dialysis
- Post-Hem & Other Acute Anemia w transfusion
- Decubitus Ulcer
- Septicemia & Severe Infection
- Other Major Complications of Medical Care

Major Peri-Operative Complications

- Post-Op Wound Infection & Deep Wound Disruption w Procedure
- Reopening or Revision of Surgical Site
- Post-Op Hemorrhage & Hematoma w Hemorrhage Control Proc or I&D Proc
- Post-Op Foreign Body & Inappropriate Op
- Post-Op Respiratory Failure with Tracheostomy

Major Complications of Devices, Grafts, Etc.

- Malfunction of Device, Prosthesis, Graft
- Infection, Inflammation, & Other Comp of Devices and Grafts Excluding Vascular Infection
- Complications of Central Venous & Other Vascular Catheters & Devices

Major Obstetrical Complications

- Obstetrical Hemorrhage w Transfusion
- Major Obstetrical Complications

Redesigning Incentives - PPCs

- Using Administrative data (and POA) - can calculate rates of PPCs by hospital
- Rates of Complications are specific to each facility but risk adjusted to account for its patient population
- Identify where there is statistically significant variation from an “expected” rate of complications
- The Expected rate – Policy decision
 - Best practice?
 - Statewide average?
- Potential Applications:
 - Provide Reports back to the Hospital (private reporting – NY state)
 - Publish performance (PPRs - Florida)
 - Link to payment (Medicaid and/or Private Payers)

NY Hospital Example

2003 Major PPCs - All Service Lines

| Major PPC | Dsicharges | Discharges with | | Major PPC/1,000 | | Percent | TOS |
|---|------------|-----------------|----------|-----------------|----------|---------|-----|
| | At Risk | Major PPC | | | | | |
| | for PPCs | Actual | Expected | Actual | Expected | Diff | |
| Stroke & Intracranial Hemorrhage | 39,509 | 79 | 89.4 | 2.00 | 2.26 | -11.7 | |
| Extreme CNS Complications | 37,958 | 18 | 26.7 | 0.47 | 0.70 | -32.7 | |
| Acute Lung Edema & Respiratory Failure | 39,078 | 398 | 460.6 | 10.18 | 11.79 | -13.6 | *** |
| Pneumonia, Lung Infection | 36,506 | 292 | 261.2 | 8.00 | 7.16 | 11.8 | |
| Aspiration Pneumonia | 38,055 | 101 | 101.5 | 2.65 | 2.67 | -0.5 | |
| Pulmonary Embolism | 40,076 | 34 | 36.7 | 0.85 | 0.92 | -7.4 | |
| Shock | 39,761 | 68 | 97.4 | 1.71 | 2.45 | -30.2 | *** |
| Congestive Heart Failure | 35,732 | 189 | 109.5 | 5.29 | 3.06 | 72.9 | * |
| Acute Myocardial Infarct | 38,813 | 146 | 154.3 | 3.76 | 3.98 | -5.4 | |
| Ventricular Fibrillation/Cardiac Arrest | 40,291 | 133 | 133.2 | 3.30 | 3.31 | -0.2 | |
| PV Complications Except DVT | 40,056 | 17 | 25.5 | 0.42 | 0.64 | -33.2 | |
| Major GI Complications w Transfusion | 34,142 | 29 | 26.6 | 0.85 | 0.78 | 9.0 | |
| Major Liver Complications | 39,953 | 10 | 16.1 | 0.25 | 0.40 | -37.7 | |
| Other GI Complications w Transfusion | 34,197 | 24 | 13.9 | 0.70 | 0.41 | 72.1 | * |
| Renal Failure W Dialysis | 39,033 | 23 | 26.1 | 0.59 | 0.67 | -12.0 | |

Data Considerations

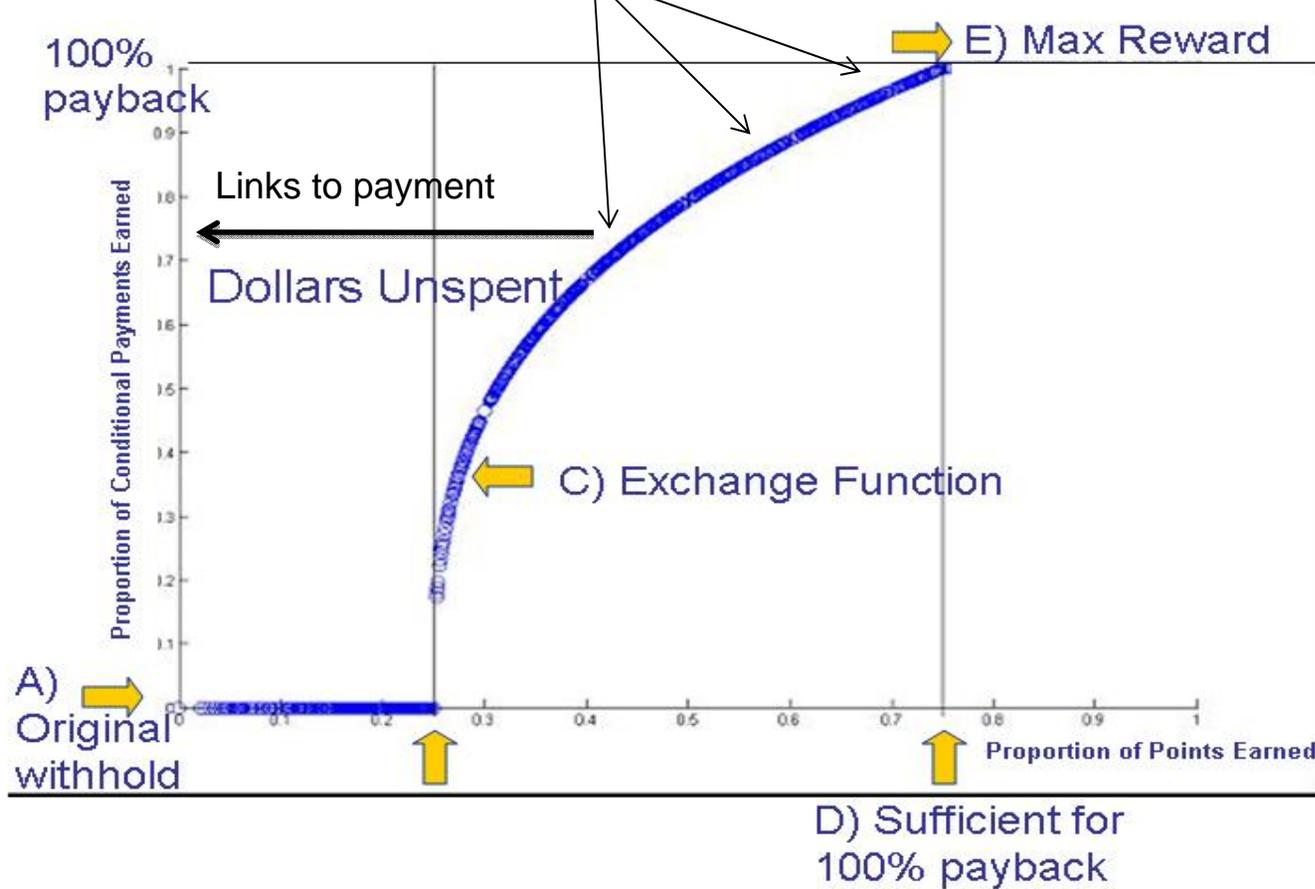
- Data Validity Issues for PPCs
 - Present on Admission (POA) now required by Medicare
 - Must Verify Accuracy of Present on Admission Statistic
 - Error/Edit checks
 - Bench mark vs. other States (California/Maryland)
 - Verify accuracy of overall SDX and procedure coding
- Data Validity Issues for PPRs
 - Probabilistic matching to track patients across hospitals

Link to Payment – Rates of PPCs/PPRs

- Can Aggregate Results into overall Quality Scores and rank hospital performance on 2 dimensions
 - Attainment (absolute level in a given year)
 - Improvement (year-to-year performance)
- Hospital Attainment/Improvement scores can be calculated and arrayed on a distribution
- Medicaid/Private Payers can redistribute some proportion of payment (amount “at-risk”) based on performance along this distribution
- Applies to both PPCs and PPRs

Translating a Distribution of Performers to Payment (Medicare Value based Purchasing)

Distribution of Hospital Performance (PPC rates vs. Expected)
Higher of Attainment or Improvement score



Link to Payment – Payment Reductions

- For Complications that are “highly preventable” (like Medicare HACs) – DRG payments should be reduced
- Highly preventable PPCs are 100% or nearly 100% preventable
- They show very little variation across hospitals after adjusting for risk factors
- Payment reductions applicable to DRG-based payment systems
- Craft payment decrement commensurate with level of preventability (i.e., 90% decrement & 10% retention)

Flaw in Severity Adjusted Payment System that needs to be fixed

APR-DRG System

- Developed for an "All-Patient" population
- Clinical logic more appropriate for all types of care
- 314 DRG categories
- 4 Splits based on clinical factors for different levels of "severity" of Illness (SOI)

The More Complications, the higher the SOI --->

| DRG Category or "Ce | SOI 1 | SOI 2 | SOI 3 | SOI 4 |
|---------------------|---------|----------|----------|----------|
| DRG 1 | \$2,500 | \$5,700 | \$9,700 | \$12,000 |
| DRG 2 | \$3,500 | \$4,700 | \$10,800 | \$13,400 |
| DRG 3 | \$1,500 | \$3,000 | \$6,000 | \$7,800 |
| DRG 4 | \$3,000 | \$4,500 | \$6,500 | \$8,000 |
| DRG 5 | \$4,500 | \$8,900 | \$12,300 | \$17,000 |
| DRG 6 | \$6,000 | \$12,000 | \$17,000 | \$21,000 |
| : | | : | : | : |
| : | | : | : | : |
| : | | : | : | : |
| DRG 314 | \$7,600 | \$14,000 | \$25,000 | \$32,000 |
| : | | : | : | : |

Case Examples of Preventable Complications and how the current Payment System unfairly and inappropriately increases a Hospital's revenue when it makes a preventable mistake

Preventable Infection and associated procedure Resulted in higher payment to hospital

A B C D E F G

Case 1 (page 1)

| | DRG | SOI | Approved Rev. Based Diag. (1) | PDX | DRG Revenue Rel. Wht "Credit" | |
|---|---------------------|-------|---------------------------------|---|-------------------------------|--------------------|
| 1 | 221 | 2 | Major Small & Large Bowel Proc. | Ca in situ colon | 1.6734 | \$16,734 |
| 2 | SDX Not POA | 99859 | PPC 38 | Post-Op Wound infection & Deep Wound Disruption with Proc | | |
| 3 | SDX Not POA | 6822 | | | | |
| 4 | SDX Not POA | 78659 | | | | |
| 5 | SDX Not POA | E8788 | | | | |
| 6 | PPC related Procedu | 5412 | Reopen recent lap site | | \$9,204 | Unintended Revenue |
| 7 | 221 | 3 | Major Small & Large Bowel Proc. | Ca in situ colon | 2.59378 | \$25,938 |

(1) DRG assignment based on all SDX (POA or non-POA) except PPC 38