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

<table>
<thead>
<tr>
<th>Major PPC</th>
<th>Discharges At Risk for PPCs</th>
<th>Discharges with Major PPC</th>
<th>Major PPC/1,000</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Expected</td>
<td>Actual</td>
<td>Expected</td>
</tr>
<tr>
<td>Stroke &amp; Intracranial Hemorrhage</td>
<td>39,509</td>
<td>79</td>
<td>89.4</td>
<td>2.00</td>
</tr>
<tr>
<td>Extreme CNS Complications</td>
<td>37,958</td>
<td>18</td>
<td>26.7</td>
<td>0.47</td>
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<tr>
<td>Acute Lung Edema &amp; Respiratory Failure</td>
<td>39,078</td>
<td>398</td>
<td>460.6</td>
<td>10.18</td>
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<tr>
<td>Pneumonia, Lung Infection</td>
<td>36,506</td>
<td>292</td>
<td>261.2</td>
<td>8.00</td>
</tr>
<tr>
<td>Aspiration Pneumonia</td>
<td>38,055</td>
<td>101</td>
<td>101.5</td>
<td>2.65</td>
</tr>
<tr>
<td>Pulmonary Embolism</td>
<td>40,076</td>
<td>34</td>
<td>36.7</td>
<td>0.85</td>
</tr>
<tr>
<td>Shock</td>
<td>39,761</td>
<td>68</td>
<td>97.4</td>
<td>1.71</td>
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<tr>
<td>Congestive Heart Failure</td>
<td>35,732</td>
<td>189</td>
<td>109.5</td>
<td>5.29</td>
</tr>
<tr>
<td>Acute Myocardial Infarct</td>
<td>38,813</td>
<td>146</td>
<td>154.3</td>
<td>3.76</td>
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<tr>
<td>Ventricular Fibrillation/Cardiac Arrest</td>
<td>40,291</td>
<td>133</td>
<td>133.2</td>
<td>3.30</td>
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<tr>
<td>PV Complications Except DVT</td>
<td>40,056</td>
<td>17</td>
<td>25.5</td>
<td>0.42</td>
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<tr>
<td>Major GI Complications w Transfusion</td>
<td>34,142</td>
<td>29</td>
<td>26.6</td>
<td>0.85</td>
</tr>
<tr>
<td>Major Liver Complications</td>
<td>39,953</td>
<td>10</td>
<td>16.1</td>
<td>0.25</td>
</tr>
<tr>
<td>Other GI Complications w Transfusion</td>
<td>34,197</td>
<td>24</td>
<td>13.9</td>
<td>0.70</td>
</tr>
<tr>
<td>Renal Failure W Dialysis</td>
<td>39,033</td>
<td>23</td>
<td>26.1</td>
<td>0.59</td>
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</tbody>
</table>

3M Health Information Systems
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

A) Original withhold

B) 100% payback

C) Exchange Function

D) Sufficient for 100% payback

E) Max Reward

Links to payment

Dollars Unspent
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 --->

<table>
<thead>
<tr>
<th>DRG Category or &quot;Ce</th>
<th>SOI 1</th>
<th>SOI 2</th>
<th>SOI 3</th>
<th>SOI 4</th>
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</thead>
<tbody>
<tr>
<td>DRG 1</td>
<td>$2,500</td>
<td>$5,700</td>
<td>$9,700</td>
<td>$12,000</td>
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<tr>
<td>DRG 2</td>
<td>$3,500</td>
<td>$4,700</td>
<td>$10,800</td>
<td>$13,400</td>
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<tr>
<td>DRG 3</td>
<td>$1,500</td>
<td>$3,000</td>
<td>$6,000</td>
<td>$7,800</td>
</tr>
<tr>
<td>DRG 4</td>
<td>$3,000</td>
<td>$4,500</td>
<td>$6,500</td>
<td>$8,000</td>
</tr>
<tr>
<td>DRG 5</td>
<td>$4,500</td>
<td>$8,900</td>
<td>$12,300</td>
<td>$17,000</td>
</tr>
<tr>
<td>DRG 6</td>
<td>$6,000</td>
<td>$12,000</td>
<td>$17,000</td>
<td>$21,000</td>
</tr>
<tr>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
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<td>\vdots</td>
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<tr>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
</tr>
<tr>
<td>DRG 314</td>
<td>$7,600</td>
<td>$14,000</td>
<td>$25,000</td>
<td>$32,000</td>
</tr>
<tr>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
<td>\vdots</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>DRG Revenue</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>221</td>
<td>2</td>
<td>Major Small &amp; Large Bowel Proc. Ca in situ colon</td>
<td>1.6734</td>
<td>$16,734</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>SDX Not POA</td>
<td>99859</td>
<td>PPC 38</td>
<td>Post-Op Wound infection &amp; Deep Wound Disruption with Proc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>SDX Not POA</td>
<td>6822</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>SDX Not POA</td>
<td>78659</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SDX Not POA</td>
<td>E8788</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>PPC related Procedu</td>
<td>5412</td>
<td>Reopen recent lap site</td>
<td>$9,204 Unintended Revenue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>221</td>
<td>3</td>
<td>Major Small &amp; Large Bowel Proc. Ca in situ colon</td>
<td>2.59378</td>
<td>$25,938</td>
<td></td>
</tr>
</tbody>
</table>

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