

## 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

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## 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	Discharges At Risk for PPCs	Discharges with Major PPC		Major PPC/1,000		Percent Diff	TOS
		Actual	Expected	Actual	Expected		
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	308	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	

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## Data Considerations

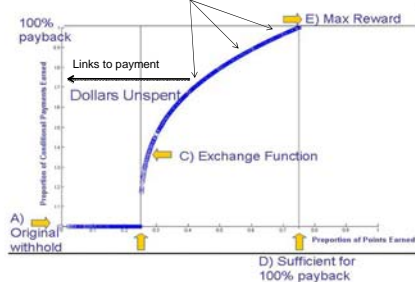
- Data Validity Issues for PPCs
  - Present on Admission (POA) now required by Medicare
  - Must Verify Accuracy of Present on Admission Statistic
  - Error/Edit checks
  - Bench mark vs. other States (California/Maryland)
  - Verify accuracy of overall SDX and procedure coding
- Data Validity Issues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

DRG	SOI	Approved Rev. Based Diag. (1)	PDX	Rel. Wgt	DRG Revenue "Credit"
1	221	2 Major Small & Large Bowel Proc.	Ca in situ colon	1.6724	\$16,734
2	SDX Not POA	99850 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	E8786			
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