TEXAS TECH UNIVERSITY
HEALTH SCIENCES CENTER
Anita Thigpen Perry School *of* Nursing™

Parameters for the appropriate definition of hospital readmissions

Presented to:

AHRQ Workshop: *Using Administrative Data to Answer State Policy Questions*
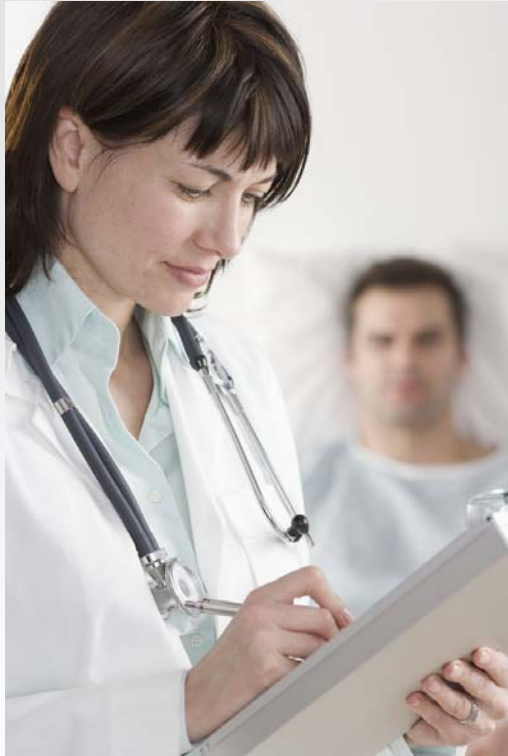
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Susan McBride, RN, PhD

Professor of Research

Texas Tech University Health Science Center

Hospital Readmissions

Objectives

- Discuss the scope of the problem
- Define readmissions
- Summarize findings from NAHDO consensus conference
- Discuss the importance of linkage and quality demographic data for quality linkage
- Discuss payment reform and state policy implications relating to readmissions

Scope of the Problem

Medicare Expenditures for Readmissions

- 18-20% (1/5th) of Medicare Beneficiaries readmit within 30 days of discharge

- 33% (1/3rd)) readmit within 90 days

- Readmissions have a 0.6 day longer LOS than other patients in the same DRG

- Medical causes dominate readmissions

- Estimated cost to Medicare: $15 to $18.3 billion in annual spending

Jencks, S., Williams, M., & Coleman, E. (2008). "Rehospitalizations among medicare fee-for-service patients". Unpublished Manuscript.

Medpac (June 2007). "Report to the Congress: Promoting Greater Efficiency in Medicare", pp 103-120.

CMS is targeting readmissions

- CMS is targeting readmissions to the hospital within 30 days of discharge as a probable marker for both poor quality of care and money going down the drain.

- While CMS weighs Medicare reimbursement cuts for readmissions, it also is investing in strategies to lower readmission rates to improve quality of care.

- One CMS-funded study by the Medicare quality improvement organization (QIO) for Colorado found that coaching patients during and after their hospital stays can reduce readmissions by as much as 50%.

- CMS is funding as many as 18 QIO projects aimed at reducing readmissions in communities around the country.

CMS's "Game Plan"

System of Care Issue

Hospitals

P4P
"Value-based Purchasing"

Home Health ⟷ Skilled Nursing Facilities
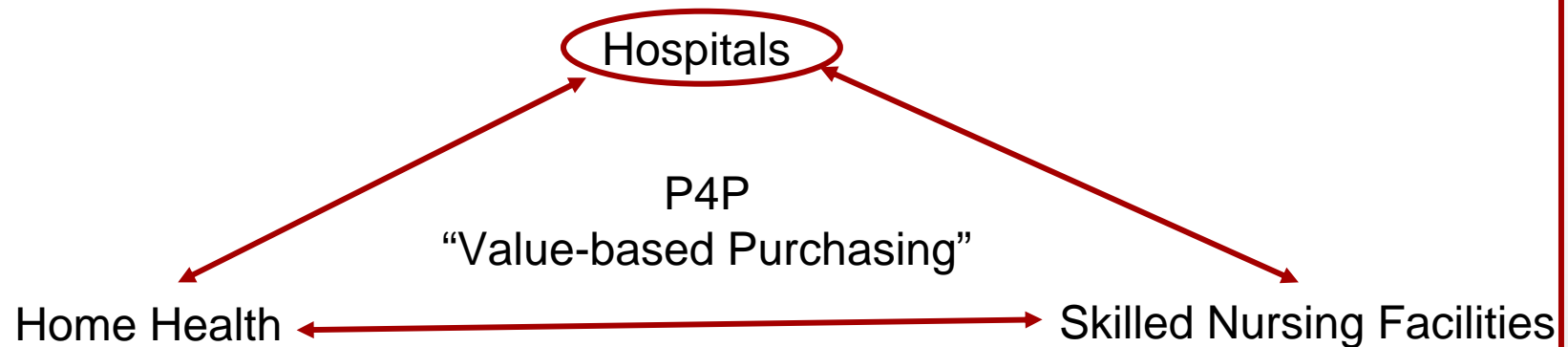
Other important considerations:
- Beneficiary responsibility
- Fee-for-service providers

Two Stage Process:
1) Public disclosure of readmissions rates
2) Follow with payment changes

Medpac (June 2007). *"Report to the Congress: Promoting Greater Efficiency in Medicare",* p 105.

Hospital Readmission Rates

Hospital readmission rates

	Percent of patients readmitted to hospital within:		
	7 days	15 days	30 days
Total	6.2%	11.3%	17.6%
Non-ESRD	6.0%	10.8%	16.9%
ESRD	11.2%	20.4%	31.6%

Note: ESRD: end stage renal disease

Source: Recreated from table within: Medpac (June 2007). *"Report to the Congress: Promoting Greater Efficiency in Medicare"*, p 107.

Potentially preventable hospital readmission rates

Potentially preventable hospital readmission rates

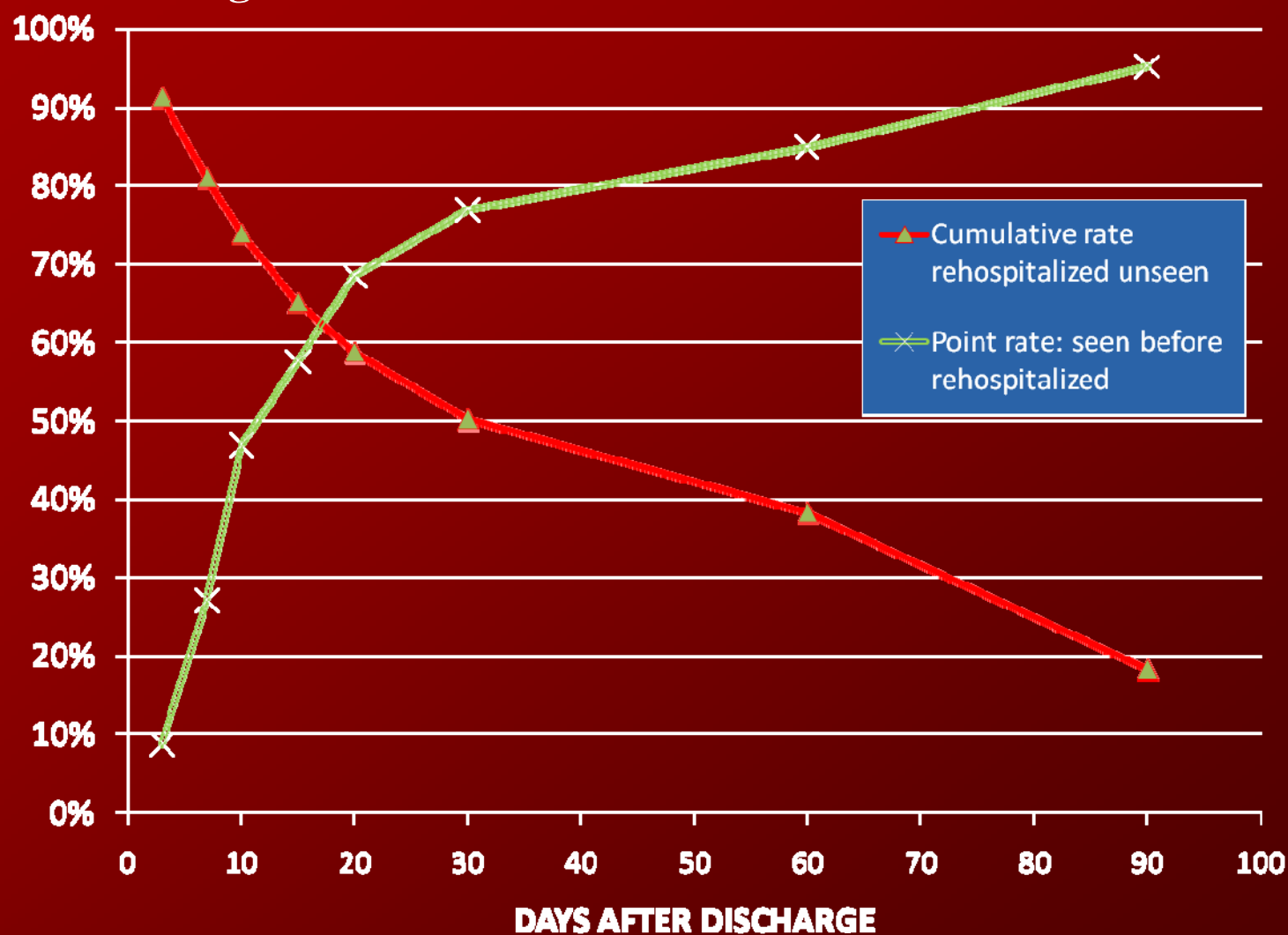|	Patients readmitted to hospital within:		
	7 days	15 days	30 days
Rate of potentially preventable readmissions	5.2%	8.8%	13.3%
Spending on potentially preventable readmissions	$5 billion	$8 billion	$12 billion

Source:

Recreated from table within: Medpac (June 2007). *"Report to the Congress: Promoting Greater Efficiency in Medicare"*, p 107, from 3M analysis of 2005 Medicare discharge claims.

Percent Of Medicare FFS Patients Rehospitalized With No Interim Physician Visit Bill

Medical Discharges To Home Or Home Health

Legend:
- Cumulative rate rehospitalized unseen (red)
- Point rate: seen before rehospitalized (green)

X-axis: DAYS AFTER DISCHARGE (0–100)
Y-axis: 0%–100%

Physician Post Follow-up Opportunities

Jencks, et al, points to key area for improvement:

- 50.1% of the patients rehospitalized within 30 days after a medical discharge had no bill by a physician between hospitalization and rehospitalization

- 52% of Heart Failure patients had no bill by a physician between hospitalization and rehospitalization

- Potential implications:

    - *seeing a physician post discharges may have a protective effect on readmitting to the hospital*

    - *critical window within the 30 day period*

Jencks, S., Williams, M., & Coleman, E. (2008). "Rehospitalizations among medicare fee-for-service patients". Unpublished Manuscript.

What is a readmission?

"Readmissions are not *primarily* about people being rehospitalized because of mistakes made in the hospital.

Readmissions is about making transitions effectively.

Taking care of people with ongoing problems or chronic illnesses and frailty.

Transitions of care not done well,…evidence suggests they wind up back in the hospital."

Stephen Jencks, M.D., a former senior clinical adviser to CMS

How can readmissions be defined?

- Count as an overall rate or as a subset of clinically specific indicators
  - *Medicare: clinically specific conditions beginning with heart failure, followed by pneumonia and acute myocardial infarction*
  - *National Quality Forum endorsed an all cause readmission index & 30-day all cause risk standardized readmission rate for heart failure*
  - *Leapfrog: all admissions within 14 days of discharge*
- Period of time: 7 days, 14 days, 15 days, 30 days, &/or 90 days?
  - *Consensus: 30 day window is critical*
- Should count begin with admission or discharge date?
  - *Consensus: discharge date*
- Reasonably preventable readmission using algorithms is an important consideration
  - *Examples include: 3M, United Healthcare and Geisinger Health System methods*
- Risk Adjustment versus Stratification
  - *Consensus:*
    - CMS risk adjustment methods similar to 30 day mortality indicator
    - Stratification is useful to providers for improvement of care to address patient populations most likely to readmit, i.e. focusing on "low hanging fruit"

What is needed to attain a readmission metric?

- Demographic data for linkage

- Linkage software

  - *Deterministic*

  - *Probabilistic*

  - *Cost ranges from $0-$1,000,000*

Readmissions vary across states

- Jencks, et al. (2008) findings on readmission rates by state for 2004 Medpar discharges:

  - *20.6% to 23.3%*   *14 states*
  - *19.6% to 20.5%*   *14 states*
  - *18.0 to 19.2%*   *12 states*
  - *13.4% to 18.0%*   *13 states*

- States inpatient treatment intensity by quartiles indicate similar patterns by state with the readmission rate quartiles

  - *Higher intensity = higher readmission rates by state*
  - *Lower intensity = lower readmission rates by state*

Jencks, S., Williams, M., & Coleman, E. (2008). "Rehospitalizations among medicare fee-for-service patients". Unpublished Manuscript.
Minott, J. (2008). "Report on One-Day Invitational Meeting January 25, 2008: Reducing readmissions", AcademyHealth.

AHRQ funded NAHDO Consensus Conference on Readmissions

Background

- The National Association of Health Data Organizations (NAHDO) held their annual conference in San Antonio in late October.

- Subsequent to the annual meeting, a conference on resubmissions was held, funded by a grant from the Agency for Healthcare Research and Quality (AHRQ) and others.

- The meeting was attended by experts in the field of re-hospitalization with a goal to build consensus on measurement for private and public reporting.

Background

Speakers included representatives from these organizations.

- The National Quality Forum (NQF)
- The Centers for Medicare and Medicaid Services (CMS)
- Leapfrog Group
- 3M Health Information Systems
- American Heart Association
- Agency for Healthcare Research and Quality (AHRQ)
- Veteran's Affairs— Veterans Health Administration
- Various state and local hospital associations, employer purchasing agencies and universities

Topics of Discussion

National endorsements and feasibility of approaches

- NQF perspective
- Leapfrog perspective
- CMS initiatives
  - *MedPAC report to Congress on how Medicare could impact readmits**

State Applications of public reporting on readmissions

- Virginia Health Information
- Florida Agency for Health Care Administration
- The Alliance (Wisconsin)
- Pennsylvania Cost Containment Council

* Detailed documents included in appendix

Topics of Discussion

- Clinically specific conditions and considerations for tracking readmissions

    - *Congestive Heart Failure*

    - *Potentially Preventable Readmissions*

- Impact of data quality and linkage specifications on readmission assessment

- Special considerations for rural hospitals

Summary of Discussion

- There is a growing interest in developing methods for public reporting and readmission analysis for

  - *Quality and safety analysis*

  - *Pay for performance*

- Adequate methods and measures are still under development but standardization is important to:

  - *P4P*

  - *Use of data to improve care*

  - *State public reporting*

- Consensus is needed in the following areas

  - *Readmission measures and feasibility*

  - *Clinically specific conditions to measure*

  - *Linkage quality standards*

Major "Take Aways" from the Consensus Discussions

- Context and purpose of the metric is important

- Data quality is perhaps more important than the metric itself

  - *A standard minimum dataset is needed*

  - *Recommendations on data quality standards for an adequate link is also needed*

- Linkage method is an important consideration

- Research is needed to determine impact of linkage on the actual readmission metric (over or understating depending on method)

Recommendations for AHRQ and NAHDO

- ## AHRQ support:

  - *Support state research to define the minimum data set essential for measuring readmissions; the quality and documentation of the underlying data.*

  - *Research should test and quantify the linkage validation and the additive effects of adding linkage data elements to the minimum data set.*

- ## NAHDO seek funding to develop a:

  - *Resource website with case studies and technical resources to support states expanding NAHDO's technical site.*

  - *Report of what is legally permissible to collect across states (SSN, address are particularly important). Later develop model language for adding identifiers, construct a plan, and make recommendations relating to the role federal agencies play in support of states.*

  - *Data dictionary and guidance for readmissions, describing details of linkage (the caveats, the linkage methods, the linkage validation results)*

Consider convening expert panels to address:

- The core linking data elements suggested for a minimum dataset.

- The underlying quality of the data and tests needed to determine adequacy.

- Suggested error tolerance and understand how coding variations and other data quality issues play out practically in the influence on the measure and how to deal with variation in coding and data quality.

Important considerations for data stewards

Record Linkage

- Deterministic versus probabilistic

- Accurate demographics with critical elements including:

  - *SS#, full name and address including zip, gender, DOB, medical record number*

  - *Edits for valid SS# and zip codes are recommended*

  - *SS# is the most discriminating variable for record linkage*

  - *Importance of SS#: 4 times as important as the full name*

Deterministic Linkage

- Deterministic Linking is a process by which records in two files which lack a common, unique id can be "joined"

- A comparison of partially-discriminating but non-unique fields are arbitrarily assigned points for each agreement

- Only records with a point total over a predefined threshold are linked

Problems with Deterministic Linking

- Difficulty in establishing appropriate points for individual agreement criterion

- Difficulty in setting an appropriate threshold for linking

  - *Example: While it may be obvious that complete agreement on SSN should be more important than agreement on First and Last Name, it is not intuitive that it is exactly four times as important (Grannis, S. 2005)*

- Does not provide a mechanism for scaling or weighting agreement points

  - *Example: Consider comparisons of Last Name. Agreement on a relatively rare last name such as "Horowitz" should receive more points than agreement on a relatively common name such as "Smith" or "Jones"*

Probabilistic Linkage

- Probabilistic Linking is a process by which records in two files which lack a common, unique id can be "joined"

- A weighted comparison of a number of partially-discriminating but non-unique fields is used to determine whether a pair of records refer to the same person, entity or event

- An estimate of the probability that a given pair of records relate to the same entity is then calculated

- Those pairs of records with an estimated probability that they represent the same entity above a certain cut-off are deemed to be "matches"

Example of Probabilistic Linkage Software
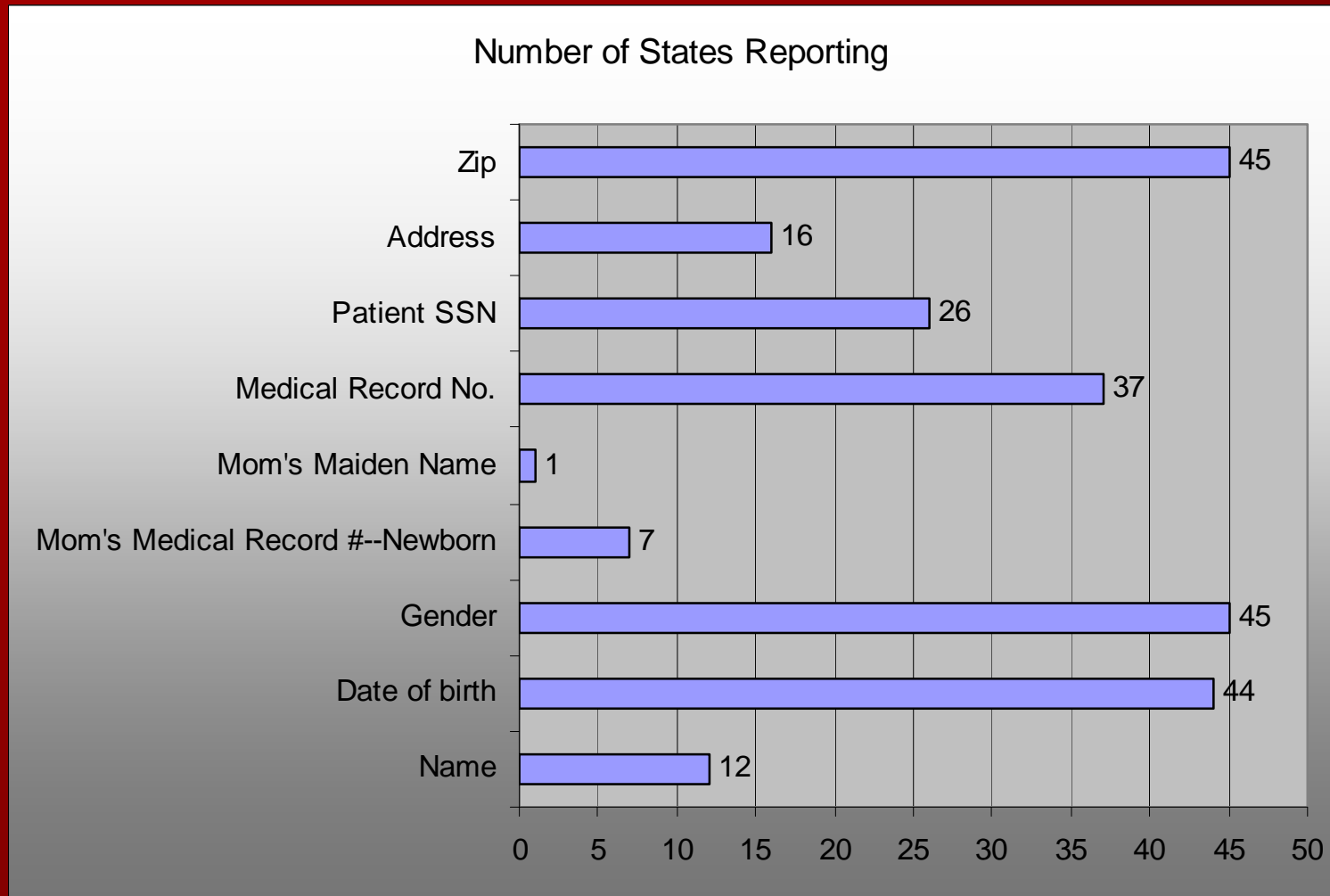

Note probability weights

Refine Probabilistic Linkage with Algorithms

Examples of Rules that can refine the match minimizing error:

- The records match exactly on the following elements (<u>Exact Matches</u>):

    - *Last Name*
    - *First Name*
    - *DOB*
    - *Gender*
    - *SSN*

- The records match on the following elements (<u>Swapped First and Last Names</u>):

    - *First name and last name match exactly but are swapped (reversed)*
    - *SSN*
    - *Gender*
    - *DOB*

- The records match on the following elements (<u>Female Last Name Disagrees</u>):

    - *Gender of Female*
    - *Exact Match on First Name*
    - *DOB*
    - *SSN*

State Variability in Demographics Reporting

Number of States Reporting

Category	Value
Zip	45
Address	16
Patient SSN	26
Medical Record No.	37
Mom's Maiden Name	1
Mom's Medical Record #--Newborn	7
Gender	45
Date of birth	44
Name	12

0 5 10 15 20 25 30 35 40 45 50

Payment reform and state policy implications relating to readmissions

- ## Payment reform

  - *Rehospitalizations are part of a larger problem of building episodes of care*

  - *Readmission CMS will follow public reporting with payment reform*

  - *Medicaid is likely to consider similar approaches*

  - *Other payers will follow*

- ## State public reporting is moving forward in many states

  - *Public reporting will be helpful to hospitals in addressing performance improvement*

  - *Readmission public domain files are useful and could be a revenue stream for state reporting agencies*

Questions & Discussion

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Anita Thigpen Perry School *of* Nursing™

Susan McBride, RN, PhD
Research Professor
susanmcbride@charter.net
817-284-9888