

Measure: Pediatric All-Condition Readmission Measure

Measure Developer: Center of Excellence for Pediatric Quality Measurement (CEPQM)

Numerator	Denominator	Exclusions	Data Source(s)
Hospitalizations at general acute care hospitals for patients less than 18 years old that are followed by one or more readmissions to general acute care hospitals within 30 days.	Hospitalizations at general acute care hospitals for patients less than 18 years old.	Numerator: Readmissions for a planned procedure or for chemotherapy. Denominator: Certain hospitalizations based on clinical criteria or for issues of data completeness or quality that could prevent assessment of eligibility for the measure cohort or compromise the accuracy of readmission rates. In addition, hospitalizations are excluded from the measure entirely if they meet specified clinical or data quality criteria, including: primary diagnosis for a mental health condition, hospitalization for birth of a healthy newborn, or hospitalization for obstetric care.	Administrative data (e.g., claims data).

Measure Importance

- Recent research indicates that between 2 percent and 6 percent of hospitalizations among children are followed by a readmission within 30 days.[1,2]
- Readmissions can affect parent/caregiver work and school arrangements and expose children to risk of infections and medical errors that can happen during a hospital stay.[3]
- Readmissions are costly. A study of 48,000 pediatric patients found that readmission within 6 months of an initial preventable admission resulted in approximately $136 million in hospital expenditures.[4] Another

study found that readmissions for children with frequent rehospitalizations accounted for about $2.8 billion of the $14.7 billion in total annual hospital charges for the entire cohort in the study.[5]

For a related measure, see the **Pediatric Lower Respiratory Infection (LRI) Readmission Measure**.

Evidence Base for the Focus of the Measure

Readmission rates can reflect the quality of health care delivered to patients. For example, adult-focused studies have demonstrated that QI interventions focused on improving the quality of the discharge process, the transition from hospital to ambulatory care, and the provision of timely followup care have been associated with reduced hospital readmission rates.[6-9]

Advantages of the Measure

- The measure fills a significant gap in pediatric quality measurement.[10]
- The measure uses administrative (claims) data and has been specified to use either ICD-9 (International Classification of Diseases, 9th Revision) or ICD-10 (ICD, 10th Revision) codes, making it highly feasible.
- The measure provides guidance on case-mix adjustment.
- Feedback from testing indicates that the measure is straightforward and easy to implement.
- The measure is available for public non-commercial use.

Levels of Aggregation Applicable to the Measure

The measure is intended for aggregation[11] and comparison at the State, regional, health plan, and hospital levels if appropriate approaches to calculating the measure are taken at each level.[12]

Reliability and Validity of the Measure

- Measure reliability depends on the number of annual pediatric hospital admissions per hospital. Most index hospitalizations occurred at hospitals with a readmission rate reliability of at least 0.7.
- The validity of the measure's case-mix adjustment model—assessed according to how well the model distinguishes between subjects with and without the outcome (i.e., readmission)—was in the same range as the c-statistic for models used for other 30-day readmissions measures.

Measure Testing

This measure used four large, administrative claims datasets to develop and evaluate the performance of the measure:[13]

- 2008 Medicaid Analytic eXtract (MAX) data for 26 States, which include Medicaid claims from children's and non-children's hospitals.
- 2005-2009 AHRQ Revisit data for New York and Nebraska, which include claims for all payers from children's and non-children's hospitals.

- July 2009 to June 2010 National Association of Children's Hospitals and Related Institutions case-mix data, which include claims for all payers from 72 acute care children's hospitals in 34 States.
- 2009 Kids' Inpatient Database (KID), which includes claims for all payers from children's and non-children's hospitals in 44 States. Go to http://www.hcup-us.ahrq.gov/kidoverview.jsp.

Selected Results from Disparities Analyses Using the Measure

- Racial and ethnic disparities in readmission risk were found even after controlling for age, sex, chronic conditions, and hospital.
- Patients with public insurance were found to have higher readmission rates in comparison with patients with private insurance, other types of insurance, or self-pay status, even after controlling for age, sex, chronic conditions, and hospital.
- Caveats
  - Data quality varies; however, the measure report includes technical specifications for assessing data quality and methods that enhance the ability to perform national comparisons.
  - Readmission measures do not indicate which factors most influence readmissions for a given population.
  - Claims data are limited, as billing codes do not reflect certain information such as disease severity of illness at the time of admission.

More Information

For more information about the measure:

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- CEPQM: Mari Nakamura, Mari.Nakamura@childrens.harvard.edu

For more information about the PQMP, visit www.ahrq.gov/CHIPRA.

Notes

[1]Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare fee-for-service program. N Engl J Med. 2009;360(14):1418–28.

[2]Wick EC, Shore AD, Hirose K, et al. Readmission rates and cost following colorectal surgery. Dis Colon Rectum. 2011;54(12):1475–9.

[3]Shudy M, de Almeida ML, Ly S, et al. Impact of pediatric critical illness and injury on families: a systematic literature review. Pediatrics. 2006;118 Suppl 3:S203–18.

[4]Friedman B, Basu J. The rate and cost of hospital readmissions for preventable conditions. Med Care Res Rev MCRR. 2004;61(2):225–40.

[5]Berry JG, Hall DE, Kuo DZ, et al. Hospital utilization and characteristics of patients experiencing recurrent readmissions within children's hospitals. JAMA. 2011;305(7):682–90.

[6]Phillips CO, Wright SM, Kern DE, et al. Comprehensive discharge planning with postdischarge support for older patients with congestive heart failure: a meta-analysis. JAMA. 2004;291(11):1358–67.

[7]Scott IA. Preventing the rebound: improving care transition in hospital discharge processes. Aust Health Rev. 2010;34(4):445–51.

[8]Coleman EA, Parry C, Chalmers S, et al. The care transitions intervention: results of a randomized controlled trial. Arch Intern Med. 2006;166(17):1822–8.

[9]Evans RL, Hendricks RD. Evaluating hospital discharge planning: a randomized clinical trial. Med Care. 1993;31(4):358–70.

[10]Dougherty D, Schiff J, Mangione-Smith R. The Children's Health Insurance Program Reauthorization Act quality measures initiatives: moving forward to improve measurement, care, and child and adolescent outcomes. Acad Pediatr. 2011 May-Jun;11(3 Suppl):S1-10.

[11]The Children's Health Insurance Program Reauthorization Act required measures developed under this program to "permit comparison of quality and data at a State, plan, and provider level." The measure developer identified the intended levels of aggregation and comparison as reported here.

[12]See technical specifications for more information. Available on request from AHRQ, CHIPRAqualitymeasures@ahrq.hhs.gov or CEPQM, Mari.Nakamura@childrens.harvard.edu.

[13]2008 Medicaid Analytic eXtract (MAX) data, 2005-2009 AHRQ Revisit data for New York and Nebraska, National Association of Children's Hospitals and Related Institutions (NACHRI) Casemix data July 2009-June 2010, and the 2009 Kids' Inpatient Database (KID), respectively.

The Children's Health Insurance Program Reauthorization Act (CHIPRA) called for establishment of a Pediatric Quality Measures Program (PQMP) as a followup to identifying the initial core set of children's health care quality measures. This fact sheet was produced by the Agency for Healthcare Research and Quality (AHRQ), with contributions from RTI International, Inc., a contractor to AHRQ and the Centers for Medicare & Medicaid Services (CMS), based on information provided by the AHRQ-CMS Children's Hospital Boston Center of Excellence for Pediatric Quality Measurement (CEPQM), which was funded by an AHRQ/CMS grant as a CHIPRA Center of Excellence. A listing of all submitted PQMP Centers of Excellence measures can be found at www.ahrq.gov/CHIPRA.

AHRQ Pub. No. 14(15)-P008-1-EF
October 2014