

Measure: Pediatric Lower Respiratory Infection (LRI) 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 LRI in 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 LRI in 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. For full list of exclusions, see technical specifications.	Administrative data (e.g., claims data).

Measure Importance

Lower respiratory infections (defined as bronchiolitis, influenza, and community-acquired pneumonia) are common reasons for hospitalization. LRIs are also among the diagnoses with the most prevalent readmissions among children.

- Recent research indicates that between 3.7 percent and 4.5 percent of all pediatric bronchiolitis hospitalizations and 4.5 percent of pneumonia hospitalizations among children are followed by a readmission within 30 days.[1]

- Readmissions can affect parent/caregiver work and school arrangements and expose children to infections and medical errors, which are common during a hospital stay.[2]
- Readmissions are costly. The average cost of hospitalizations for bronchiolitis can be as much as $9,063 per child.[3] Similarly, the average cost of a hospitalization to treat pneumonia can be as high as $12,000 per patient.[4]

For a related measure, see the Pediatric All-Condition Readmission Measure.

Evidence Base for the Focus of the Measure[5]

Readmission rates can reflect the quality of health care delivered to patients. For example, adult-focused studies have demonstrated that interventions focused on improving the quality of the discharge process, the transition from hospital to ambulatory care, and the provision of timely follow-up care have been associated with reduced hospital readmission rates.[6-7]

Advantages of the Measure

- The measure fills a significant gap in pediatric quality measurement.[8]
- The measure uses administrative (claims) data and has been specified to use either ICD-9 or ICD-10 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.

Levels of Aggregation Applicable to the Measure[9]

The measure is intended for aggregation and comparison at the State, regional, health plan, and hospital levels if appropriate approaches to calculating the measure are taken at each level.[10]

Reliability and Validity of the Measure

- Measure reliability depends on the number of annual pediatric LRI hospital admissions per hospital. Most index hospitalizations occurred at hospitals whose readmission rate reliability was 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 other models used for other condition-specific 30-day readmissions measures.

Measure Testing

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

- 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.

Selected Results from Disparities Analyses Using the Measure

- Racial and ethnic disparities in readmission risk were found even after controlling for age, gender, chronic conditions, and hospital.
- Patients with public insurance were found to have higher readmissions rates in comparison with patients with private insurance, other types of insurance, or self-pay status, even after controlling for age, gender, 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 or illness at the time of admission.

More Information

- AHRQ: CHIPRAqualitymeaures@ahrq.hhs.gov
- CEPQM: Mari Nakamura, Mari.Nakamura@childrens.harvard.edu
- Coming soon: Link to measure details on the AHRQ Web site.

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

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), based on information provided by the AHRQ-CMS Center of Excellence for Pediatric Quality Measurement (CEPQM) at Boston Children's Hospital. A listing of all submitted PQMP Centers of Excellence can be found at www.ahrq.gov/CHIPRA. All measures are publicly available for noncommercial use.

Notes

[1]Berry JG, Toomey SL, Zaslavsky AM, et al. Pediatric readmission prevalence and variability across hospitals. JAMA. 2013;309(4):372 380.

[2]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:S203–218.

[3]Willson DF, Landrigan CP, Horn SD, et al. Complications in infants hospitalized for bronchiolitis or respiratory syncytial virus pneumonia. J Pediatr. 2003;143(5, Supplement):142–149.

[4]Paladino JA, Adelman MH, Schentag JJ, et al. Direct costs in patients hospitalized with community-acquired pneumonia after non-response to outpatient treatment with macrolide antibacterials in the US. Pharmacoeconomics. 2007;25(8):677–683.

[5]An evidence base comprises the breadth and rigor of studies demonstrating valid relationship(s) among the structure, process, and/or outcome of health care that is the focus of the measure. For example, evidence exists for the relationship between immunizing a child or adolescent (process of care) and improved outcomes for the child and the public. If sufficient evidence existed for the use of immunization registries in practice or at the State level and the provision of immunizations to children and adolescents, such evidence would support the focus of a measure on immunization registries (a structural measure).

[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):1358–1367.

[7]Evans RL, Hendricks RD. Evaluating hospital discharge planning: a randomized clinical trial. Med Care. 1993;31(4):358–370.

[8]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-S10.

[9]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.

[10]See technical specifications for more information.

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