



# H·CUP

HEALTHCARE COST AND UTILIZATION PROJECT

## HCUP Methods Series



Agency for Healthcare  
Research and Quality



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## OVERVIEW

Hospital readmissions are defined as multiple inpatient stays within a specified time period by the same patient. Sequential hospital visits may occur for any reason and can be separated by days, weeks, months or years. Reducing the number of hospital readmissions is a key strategy for improving the quality of health care and lowering associated costs.<sup>1,2</sup> Section 3025 of the Patient Protection and Affordable Care Act outlines the hospital readmission reduction program that limits payments to hospitals with excessive Medicare readmissions.<sup>3</sup> The National Quality Strategy and the Partnership for Patients initiative include reduction in readmissions as a national goal and are tracking readmissions at a national level.<sup>4</sup> Other incentives come from Federal, State, and local health care policies.

Measuring hospital readmission is complicated by differences in defining the initial index admission, identifying a readmission, and calculating the rate of readmission. A previous HCUP Method Series Report described these types of methodological decisions that affect results.<sup>5</sup> Recent research has demonstrated that slight differences in methodology can influence how hospitals rank on readmission measures.<sup>6</sup>

This HCUP Methods Series Report describes 12 key measures of hospital readmissions from different agencies or companies. The 12 measures were selected for inclusion because they are: (1) endorsed by the National Quality Forum (NQF), (2) currently used by the Agency for Healthcare Research and Quality (AHRQ) in various initiatives, or (3) otherwise well-known and used by researchers. The purpose of this report is to provide an overview of the methods used for each measure. The 12 measures include the following:

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<sup>1</sup> Medicare Payment Advisory Commission. June 2007. Report to Congress: Promoting Greater Efficiency in Medicare. Available at [http://www.medpac.gov/documents/jun07\\_entirereport.pdf](http://www.medpac.gov/documents/jun07_entirereport.pdf). Accessed July 15, 2011.

<sup>2</sup> Axon RN, Williams MV. Hospital readmission as an accountability measure. *JAMA*. 2011;305(5):504–505.

<sup>3</sup> Public Law 111-148, Patient Protection and Affordable Care Act 2010: Part III, Section 3025. March 2010. Available at <http://www.gpo.gov/fdsys/pkg/PLAW-111publ148/pdf/PLAW-111publ148.pdf>. Accessed December 17, 2012.

<sup>4</sup> U.S. Department of Health and Human Services. 2012 Annual Progress Report to Congress National Strategy for Quality Improvement in Health Care. Available at <http://www.ahrq.gov/workingforquality/nqs/nqs2012annlrpt.htm>. Accessed December 20, 2012.

<sup>5</sup> Barrett M, Steiner C, Andrews R, Kassed C, Nagamine M. *Methodological Issues when Studying Readmissions and Revisits Using Hospital Administrative Data*. 2011. HCUP Methods Series Report # 2011-01. ONLINE March 9, 2011. U.S. Agency for Healthcare Research and Quality. Available: <http://www.hcupus.ahrq.gov/reports/methods/methods.jsp>.

<sup>6</sup> Van Walraven C, Wong J, Hawken S, Forster A. Comparing methods to calculate hospital-specific rates of early death or urgent readmission. *CMAJ*. 2012;184(15):E810–E817. DOI: 10.1503/CMAJ.120801. EPUB 2012 OCT 9.

<b>Measure Number</b>	<b>Description</b>
1.	Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) 30-day readmission measure
2-7.	Centers for Medicare and Medicaid Services (CMS) readmission measures: <ul style="list-style-type: none"> <li>• All-cause readmissions following hospitalization for acute myocardial infarction (AMI)</li> <li>• All-cause readmissions following hospitalization for heart failure</li> <li>• All-cause readmissions following hospitalization for pneumonia</li> <li>• Hospital-wide readmissions</li> <li>• Readmissions following elective total hip or knee arthroplasty (THA and/or TKA)</li> <li>• Readmissions following percutaneous coronary intervention (PCI)</li> </ul>
8.	National Cancer Institute (NCI) readmission measure for end-of-life cancer patients
9.	National Committee on Quality Assurance (NCQA) plan-level readmission measure
10.	UnitedHealth Group all-cause readmission measure
11.	Virtual PICU Systems (VPS) (formerly from the National Association of Children’s Hospitals and Related Institutions) Pediatric Intensive Care Unit (PICU) readmission measure
12.	3M™ potentially preventable readmission measure (part of proprietary software to calculate hospital readmission rates).

Each of these measures has different criteria for identifying the initial index event and the subsequent hospital readmission. Based on publicly available information about the 12 measures, we discuss in the next section major features, their commonalities, and their distinctions. We also include information from a commonly cited article by Jencks, Williams, and Coleman<sup>7</sup> that broadly examines the frequency of Medicare readmissions. In Appendix A, we provide a detailed description of the 12 measures and review the Jencks et al. (2009) article. We include references to each source.

## MEASURE CHARACTERISTICS

### Primary Purpose

Most of the 12 readmission measures were developed for public reporting in an effort to improve quality of care. Almost all of the measures are used to calculate hospital-level readmission rates. The exceptions include the HCUP measure, which is used to estimate national readmission rates and the NCQA measure, which is used to estimate insurance plan readmission rates. The Jencks et al. (2009) article includes both national and hospital-level rates.

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<sup>7</sup> Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare fee-for-service program. *N Engl J Med.* 2009;360:1418–1428. (HCUP 12/20/2012)

## **Target Population**

Most of the measures specify an adult population. Only the HCUP, PICU, and 3M measures include pediatric patients. The CMS measures focus on Medicare fee-for-service (FFS) beneficiaries aged 65 years and older. The Jencks et al. (2009) method also targeted Medicare FFS beneficiaries.

## **Data Sources**

Almost all of the readmission measures use administrative inpatient data. The one exception is the VPS measure, which requires data collection by the participating PICU. The CMS measures specific to a condition or procedure also use outpatient data. Most of the measures require insurance enrollment information to track post-discharge enrollment. The CMS measure for PCI is the only one to use clinical data from a disease registry.

## **Risk Adjustment of Rates**

Most of the readmission measures are risk adjusted; those that are not include the HCUP measure, the NCI cancer measure, the VPS PICU measure, and the Jencks et al. (2009) national measure. The measures that are risk-adjusted often use age, sex, and clinical characteristics such as comorbidities and/or severity of illness.

## **DEFINING INDEX ADMISSIONS (DENOMINATORS)**

### **Index Admissions**

The index admission is the starting point for analyzing repeat hospital visits. All but the NCI cancer measures define the index using inpatient admissions for patients who are discharged alive. The NCI denominator is specific to patients who died of cancer; an initial hospitalization is not required. Additionally, the CMS measure for PCI allows the initial procedure to occur in the outpatient setting. Some measures allow a readmission also to be considered an index admission. The HCUP and UnitedHealth Group measures allow a hospitalization to be counted as both index and readmission, whereas the CMS and 3M measures do not.

### **Clinical Scope for Index Admission**

By definition, six of the measures are specific to hospitalizations for discrete clinical conditions or procedures: CMS measures for AMI, heart failure, and pneumonia; CMS measures for THA and/or TKA and PCI; and the end-of-life measure focused on cancer patients. A number of the measures include exclusions based on clinical criteria such as:

- Certain cancer admissions—CMS hospital-wide and 3M measures
- Maternity—NCQA, UnitedHealth Group, and 3M measures
- Rehabilitation care—CMS hospital-wide and 3M measures.

### **Other Criteria for Index Admissions**

Most readmission measures define an index admission as *excluding* admissions that result in a transfer to another acute care hospital (CMS pneumonia, CMS hospital-wide, CMS THA and/or

TKA, CMS PCI, UnitedHealth Group, VPS PICU, 3M measures, and Jencks et al.). The VPS PICU measure is unique in that it allows transfers out of the PICU into other units of the same hospital. About half of the measures exclude admissions in which the patient was discharged against medical advice (CMS AMI, CMS heart failure, CMS hospital-wide, CMS THA and/or TKA, CMS PCI, and 3M measures). Furthermore, The CMS and NCQA measures include nonclinical criteria such complete 12-month claims history prior to index admission and a minimum length of 30 days post-discharge insurance coverage.

## **DEFINING READMISSIONS (NUMERATORS)**

### **Readmissions**

All of the measures require a readmission to an acute care hospital. Nearly all of the 12 readmission measures use a 30-day post-discharge period for identifying readmissions. The 3M measure allows the user to define the readmission time period. The VPS measure includes the shortest interval of 24 hours from discharge from the PICU.

### **Clinical Criteria for Readmissions**

Although the CMS measures are considered all-cause readmissions, four of the six measures have exclusion for planned readmissions: CMS AMI, hospital-wide, THA and/or TKA, and PCI measures. The VPS measure also excludes planned readmissions to the PICU. The 3M measure only counts potentially preventable readmissions, which are clinically related to the index admission. The HCUP measure is unique in that it considers readmissions for the same condition and for all causes.

### **Other Criteria for Readmissions**

All but one of the measures allows readmissions to the same or different hospitals. The VPS measure is specific to returning to the same PICU. The 3M measure is unique in that it allows the user to calculate readmission rates either for the same hospital as the index admissions or for any acute care hospital.

## **IMPLICATIONS**

Awareness of key differences in readmission measure methods is important both when selecting a measure to use in research and when interpreting rates of readmissions. Even if they were applied to the same data set, the resulting readmission rates would be different. One study using Massachusetts data showed a two-fold range of derived readmission rates from the 8.5 percent for the 3M measure to 19.3 percent for the UnitedHealth measure and 21.9 percent for the CMS condition-specific measures.<sup>8</sup> It is also helpful to remember that, in these and other examples, each sponsoring organization's target for quality improvement is signaled by the exclusion criteria for both the index admission and readmission.

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<sup>8</sup> Boutwell A and Jencks S. *It's Not Six of One, Half-Dozen of the Other: A Comparative Analysis of Three Rehospitalization Measurement Systems for Massachusetts*. Presentation at the 2011 AcademyHealth Annual Research Meeting. Available at [www.academyhealth.org/files/2011/tuesday/boutwell.pdf](http://www.academyhealth.org/files/2011/tuesday/boutwell.pdf). Accessed December 13, 2012. (HCUP 12/20/2012)

## APPENDIX A. READMISSION MEASURES

This appendix provides general information about the 12 key readmission measures and specifications on defining the index admission, readmission, and readmission rate. There is one table for each of the measures below with the three condition-specific CMS measures discussed together:

<b>Measure Number</b>	<b>Description</b>
1.	Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) 30-day readmission measure
2-4.	Centers for Medicare and Medicaid Services (CMS) readmission measures: <ul style="list-style-type: none"><li>• All-cause readmissions following hospitalization for acute myocardial infarction (AMI)</li><li>• All-cause readmissions following hospitalization for heart failure</li><li>• All-cause readmissions following hospitalization for pneumonia</li></ul>
5.	CMS hospital-wide readmissions
6.	CMS readmissions following elective total hip or knee arthroplasty (THA and/or TKA)
7.	CMS readmissions following percutaneous coronary intervention (PCI)
8.	National Cancer Institute (NCI) readmission measure for end-of-life cancer patients
9.	National Committee on Quality Assurance (NCQA) plan-level readmission measure
10.	UnitedHealth Group all-cause readmission measure
11.	Virtual PICU Systems (VPS) (formerly from the National Association of Children's Hospitals and Related Institutions) Pediatric Intensive Care Unit (PICU) readmission measure
12.	3M™ potentially preventable readmission measure (part of proprietary software to calculate hospital readmission rates).

A final table summarizes the Jencks et al. (2009) article on this topic. Information is current as of December, 2012.

<b>Measure 1. Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) 30-Day Readmissions</b>	
<b>General Information</b>	
Primary Purpose	Public reporting of the national burden of 30-day readmissions. The AHRQ-sponsored Web site HCUPnet ( <a href="http://hcupnet.ahrq.gov">http://hcupnet.ahrq.gov</a> ) provides online access to the national readmission statistics.
Measure Title	30-day same- and all-cause national readmission rates
Readmission Rate	This measure is used to calculate national estimates of the percentage of hospital admissions that had at least one readmission within 30 days.
Target Population	Patients aged 1 year or older who were admitted in a calendar year.
Data Source	HCUP readmission analysis file using the HCUP State Inpatient Databases (statewide hospital administrative data) weighted to calculate national estimates of inpatient readmissions.
Hospitals Included	Community, nonrehabilitation, nonspecialty hospitals.
Risk Adjustment	None. In HCUPnet, observed readmission rates are stratified by age, sex, expected payer, community income quartile, and metropolitan location.
Reference	A detailed description of the methodology for the HCUP 30-day readmission rates is available at <a href="http://hcupnet.ahrq.gov/HCUPnet.app/Methods-HCUPnet%20readmissions.pdf?JS=Y">http://hcupnet.ahrq.gov/HCUPnet.app/Methods-HCUPnet%20readmissions.pdf?JS=Y</a>
<b>Definition of Index Admission (Denominator for Rate)</b>	
Qualifying Event	Discharged alive with a condition of interest (see clinical scope).
Clinical Scope	Index admissions are identified by major diagnostic category (MDC), diagnosis-related group (DRG), and AHRQ Clinical Classification Software (CCS) for principal diagnoses and all-listed procedures.
Other Considerations	<p>Transfers identified by one inpatient stay that ends on the same day as a second inpatient stay begins are allowed as an index admission, but they are only counted once. The information reported on the two discharge records related to the transfer is combined into a single inpatient event. The combined inpatient record is allowed to be an index admission.</p> <p>A patient is allowed to have multiple index admissions, regardless of how far apart they occur. In addition, a readmission can also count as an index stay for a subsequent readmission.</p> <p>Patients discharged in December are excluded, because the HCUP databases are calendar-year files and December discharges could not be followed for 30 days.</p>

<b>Measure 1. Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) 30-Day Readmissions</b>	
<b>Definition of Readmission (Numerator for Rate)</b>	
Qualifying Event	First admission that occurs within 30 days of an index admission with a condition of interest (see clinical scope).
Limited to Readmission at the Same Hospital?	No, but limited to a readmission to a hospital in the same State.
Clinical Scope	<p>Readmission rates reported on HCUPnet consider readmissions for the same condition and all causes.</p> <ul style="list-style-type: none"> <li>• For rates by MDC and DRG, readmissions for the same MDC or DRG and for all causes are considered.</li> <li>• For rates by principal diagnosis grouped by CCS, readmissions are considered for the same principal diagnosis CCS, for the same diagnosis CCS as a principal or secondary, and for all causes.</li> <li>• For reporting by procedure grouped by CCS, readmissions for all causes are considered.</li> </ul>

**Measures 2, 3, and 4. Centers for Medicare & Medicaid Services (CMS) All-Cause Readmissions Following Hospitalization for Acute Myocardial Infarction (AMI), Heart Failure, and Pneumonia**

**General Information**

Primary Purpose	Public reporting of the CMS 30-day readmission measures fulfills Federal mandates in the Deficit Reduction Act (DRA) of 2005 that require the Secretary of Health and Human Services to make outcome and efficiency measures publicly available under the Hospital Inpatient Quality Reporting Program. Hospital-specific rates are reported on the Hospital Compare Web site ( <a href="http://www.hospitalcompare.hhs.gov/">http://www.hospitalcompare.hhs.gov/</a> ). These measures are also endorsed by the National Quality Forum (NQF) for public reporting and quality improvement with benchmarking.
Measure Title	<p>There are three condition-specific measures:</p> <ol style="list-style-type: none"> <li>1. Hospital 30-day all-cause risk standardized readmission rate following acute myocardial infarction hospitalization (NQF #0505)</li> <li>2. Hospital 30-day, all-cause, risk-standardized readmission rate following heart failure hospitalization (NQF #0330)</li> <li>3. Hospital 30-day all-cause risk standardized readmission rate following pneumonia hospitalization (NQF #0506)</li> </ol> <p>The information reported here relates to all three measures, unless noted otherwise.</p>
Readmission Rate	These measures are used to estimate hospital-specific risk-standardized readmission rates (RSRRs) for any cause within 30 days after the date of discharge of the index admission for patients with a principal diagnosis of the condition of interest.
Target Population	For public reporting by CMS, these measures are restricted to Medicare fee-for-service patients and patients admitted to U.S. Department of Veterans Affairs (VA) hospitals. Patients must be at least 65 years old with a principal diagnosis of heart failure, AMI, or pneumonia. The NQF-endorsed specifications allow for a broadened target population for heart failure and AMI for patients aged 18 years and older.
Data Source	Medicare administrative claims data include Medicare inpatient, outpatient, and carrier (physician) Standard Analytic Files; VA administrative data; and enrollment information for hospitalizations. Although information on the initial hospitalization and any subsequent readmissions are based on inpatient data, the risk adjustment algorithm uses inpatient, outpatient, and physician carriers' administrative data for the 12 months prior to the initial hospitalization.
Hospitals Included	Non-Federal acute care hospitals and VA hospitals

<b>Measures 2, 3, and 4. Centers for Medicare &amp; Medicaid Services (CMS) All-Cause Readmissions Following Hospitalization for Acute Myocardial Infarction (AMI), Heart Failure, and Pneumonia</b>	
Risk Adjustment	<p>Risk-standardized readmission rates (RSRRs) are calculated as the ratio of predicted to expected readmissions to a hospital, multiplied by the national unadjusted rate.</p> <p>The numerator of the ratio is the predicted number of readmissions for each hospital within 30 days, given the hospital's performance with its observed case mix. The denominator is the number of readmissions expected on the basis of the nation's performance with that hospital's case mix. Predicted values are based on hierarchical logistic regression models that include variables such as age, sex, comorbid diseases, and indicators of patient frailty. For each patient, risk-adjustment variables are obtained from Medicare administrative data and VA administrative data (for patients with a VA index admission), extending 12 months prior to and including the index admission.</p>
Reference	<p>National Quality Forum, Quality Positioning System, Measure Title Display Information specifications were accessed December 12, 2012</p> <ul style="list-style-type: none"> <li>• Heart Failure <a href="http://www.qualityforum.org/MeasureDetails.aspx?actid=0&amp;SubmissionId=327#k=330&amp;e=0&amp;st=&amp;sd=&amp;s=n&amp;so=a&amp;p=1&amp;mt=&amp;cs=&amp;ss">http://www.qualityforum.org/MeasureDetails.aspx?actid=0&amp;SubmissionId=327#k=330&amp;e=0&amp;st=&amp;sd=&amp;s=n&amp;so=a&amp;p=1&amp;mt=&amp;cs=&amp;ss</a></li> <li>• AMI <a href="http://www.qualityforum.org/MeasureDetails.aspx?actid=0&amp;SubmissionId=690#k=505&amp;e=0&amp;st=&amp;sd=&amp;mt=&amp;cs=&amp;ss=&amp;s=n&amp;so=a&amp;p=1">http://www.qualityforum.org/MeasureDetails.aspx?actid=0&amp;SubmissionId=690#k=505&amp;e=0&amp;st=&amp;sd=&amp;mt=&amp;cs=&amp;ss=&amp;s=n&amp;so=a&amp;p=1</a></li> <li>• Pneumonia <a href="http://www.qualityforum.org/MeasureDetails.aspx?actid=0&amp;SubmissionId=691#k=506&amp;e=0&amp;st=&amp;sd=&amp;mt=&amp;cs=&amp;ss=&amp;s=n&amp;so=a&amp;p=1">http://www.qualityforum.org/MeasureDetails.aspx?actid=0&amp;SubmissionId=691#k=506&amp;e=0&amp;st=&amp;sd=&amp;mt=&amp;cs=&amp;ss=&amp;s=n&amp;so=a&amp;p=1</a></li> </ul> <p>More detailed information on these three measures is available from the CMS QualityNet at <a href="http://www.qualitynet.org/dcs/ContentServer?c=Page&amp;pagename=QnetPublic%2FPage%2FQnetTier3&amp;cid=1219069855273">http://www.qualitynet.org/dcs/ContentServer?c=Page&amp;pagename=QnetPublic%2FPage%2FQnetTier3&amp;cid=1219069855273</a> with annual measure maintenance detailed at <a href="http://www.qualitynet.org/dcs/ContentServer?c=Page&amp;pagename=QnetPublic%2FPage%2FQnetTier4&amp;cid=1219069855841">http://www.qualitynet.org/dcs/ContentServer?c=Page&amp;pagename=QnetPublic%2FPage%2FQnetTier4&amp;cid=1219069855841</a> (Both sources accessed December 12, 2012).</p>
<b>Definition of Index Admission (Denominator for Rate)</b>	
Qualifying Event	Admissions for patients discharged alive from the hospital with a principal diagnosis for heart failure, AMI, or pneumonia.

**Measures 2, 3, and 4. Centers for Medicare & Medicaid Services (CMS) All-Cause Readmissions Following Hospitalization for Acute Myocardial Infarction (AMI), Heart Failure, and Pneumonia**

<p>Clinical Scope</p>	<p>Specific to the measure:</p> <ul style="list-style-type: none"> <li>• Principal diagnosis of heart failure (ICD-9-CM codes 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, and 428.xx).</li> <li>• Principal diagnosis of AMI (ICD-9-CM 410.0n–410.9n, where n equals 0 or 1)</li> <li>• Principal diagnosis of pneumonia (ICD-9-CM codes 480–483, 485, 486, 487.0, and 488.11).</li> </ul>
<p>Other Considerations</p>	<p>For CMS reporting, patients with either of the following conditions are excluded: incomplete claims history for the 12 months prior to admission and less than 30 days post-discharge enrollment in fee-for-service Medicare.</p> <p>Only one index admission within 30 days is allowed. Any admissions within 30 days of discharge of an index admission will be considered readmissions. No admission is counted as both a readmission and an index admission.</p> <p>Consideration specific to the heart failure and AMI measures:</p> <ul style="list-style-type: none"> <li>• When a patient is transferred from one acute care hospital to another, these multiple contiguous hospitalizations are considered one episode of care. Transferred patients are included as an index admission with any readmission being attributed to the final hospital.</li> <li>• Patients discharged against medical advice are excluded.</li> </ul> <p>Considerations specific to AMI measure: patients discharged on the same day of admission are excluded because they are unlikely to have been admitted for a true AMI.</p> <p>Considerations specific to pneumonia measure: when a patient is transferred from one acute care hospital to another, the admission is excluded because the measure focuses on discharges to nonacute care settings.</p>

**Measures 2, 3, and 4. Centers for Medicare & Medicaid Services (CMS) All-Cause Readmissions Following Hospitalization for Acute Myocardial Infarction (AMI), Heart Failure, and Pneumonia**

**Definition of Readmission (Numerator for Rate)**

Qualifying Event	<p>Inpatient readmission to an acute care facility for any cause within 30 days from the date of discharge of the index admission.</p> <p>Specific to the AMI measure, planned readmissions are not counted as readmissions because they are considered a continuation of care from the index admission. (See additional details under clinical scope.)</p>
Limited to Readmission at the Same Hospital?	No.
Clinical Scope	<p>Readmissions for any cause are allowed, with the exception of specific <i>planned</i> readmissions for the AMI measure.</p> <p>For the AMI patients, a return to the hospital may be scheduled for revascularization procedures. These procedures include percutaneous transluminal coronary angioplasty (PTCA) on a second vessel or a second location in the same vessel, or coronary artery bypass graft (CABG) surgery after AMI and a period of recovery outside the hospital. For the readmission of PTCA or CABG to be considered as planned, it cannot have one of the following acute principal diagnoses: heart failure, AMI, other acute or subacute forms of ischemic heart disease, arrhythmia, or cardiac arrest. These diagnoses are not considered as consistent with a scheduled, planned readmission.</p>

<b>Measure 5. CMS Hospital-Wide Readmissions</b>	
<b>General Information</b>	
Primary Purpose	CMS added hospital-wide readmissions to the Inpatient Quality Reporting program in 2012, and they added the public reporting of hospital-specific rates in 2013. This measure also is endorsed by the NQF for public reporting and quality improvement with benchmarking.
Measure Title	Hospital-Wide All-Cause Unplanned Readmission Measure (NQF #1789)
Readmission Rate	This measure is used to estimate hospital-specific risk-standardized readmission rates (RSRRs), based on unplanned readmissions to any acute care hospital for any cause within 30 days of discharge.
Target Population	For public reporting by CMS, these measures are restricted to Medicare fee-for-service patients who are at least 65 years old. The NQF-endorsed specifications allow for a broadened target population for patients aged 18 years and older.
Data Source	Administrative inpatient data from the Medicare Provider Analysis and Review (MedPAR) file and enrollment and post-discharge mortality status from the Medicare Enrollment Database, which includes beneficiary demographic, benefit, coverage, and vital status information.
Hospitals Included	Non-Federal acute care hospitals and critical access hospitals. Prospective payment system (PPS) exempt cancer hospitals and PPS-exempt psychiatric facilities and units are excluded from the measure.
Risk Adjustment	The RSRR is calculated using results from five different regression models specific to the following cohorts, based on organization of care: general medicine, surgery or gynecology, cardiorespiratory, cardiovascular, and neurology. The measure is adjusted for each hospital's case mix (i.e., patient age and comorbidities), so that hospitals that care for older, sicker patients are on a "level playing field" with hospitals serving healthier patients. The measure also adjusts for service mix (i.e., discharge diagnosis category), which accounts for differences in the types of conditions and procedures served by hospitals. The RSRR summary score is calculated by a volume-weighted log average of the predicted over expected ratios from each model, with the resulting ratio multiplied by the average national readmission rate.
Reference	National Quality Forum, Quality Positioning System, Measure Title Display Information accessed December 9, 2012 at <a href="http://www.qualityforum.org/MeasureDetails.aspx?actid=0&amp;SubmissionId=1789#k=1789&amp;e=0&amp;st=&amp;sd=&amp;mt=&amp;cs=&amp;ss=&amp;s=n&amp;so=a&amp;p=1">http://www.qualityforum.org/MeasureDetails.aspx?actid=0&amp;SubmissionId=1789#k=1789&amp;e=0&amp;st=&amp;sd=&amp;mt=&amp;cs=&amp;ss=&amp;s=n&amp;so=a&amp;p=1</a>  More detailed information on this measure is available from the CMS QualityNet at <a href="http://www.qualitynet.org/dcs/ContentServer?cid=1228772504318&amp;pagename=QnetPublic%2FPage%2FQnetTier4&amp;c=Page">http://www.qualitynet.org/dcs/ContentServer?cid=1228772504318&amp;pagename=QnetPublic%2FPage%2FQnetTier4&amp;c=Page</a>

<b>Measure 5. CMS Hospital-Wide Readmissions</b>	
<b>Definition of Index Admission (Denominator for Rate)</b>	
Qualifying Event	Admissions for patients discharged alive from the hospital.
Clinical Scope	Admissions for medical treatment of cancer, primary psychiatric disease, and rehabilitation care are excluded.
Other Considerations	<p>For CMS reporting, patients with either of the following conditions are excluded: (1) incomplete claims history for the 12 months prior to admission and (2) less than 30 days post-discharge enrollment in fee-for-service Medicare.</p> <p>If a patient is transferred from one acute care hospital to another or is discharged from the hospital against medical advice, the admission is excluded.</p> <p>Any admissions within 30 days of discharge of an index admission will be considered readmissions. No admission is counted as both a readmission and an index admission.</p>
<b>Definition of Readmission (Numerator for Rate)</b>	
Qualifying Event	An unplanned inpatient admission for any cause to an acute care facility that occurs within 30 days of the discharge date of an index admission.
Limited to Readmission at the Same Hospital?	No
Clinical Scope	Planned readmissions are excluded and are defined as either a nonacute readmission in which a planned procedure occurs or a readmission for maintenance chemotherapy and rehabilitation. The algorithm to identify a planned procedure is based on a predefined list of procedures that are typically planned and require an inpatient stay. Readmissions in which any of these procedures are performed are only considered planned if the patient was not admitted for an acute illness or complication of care. Acuity and complications are identified by diagnoses.

<b>Measure 6. CMS Readmissions Following Elective Total Hip and/or Knee Arthroplasty (THA and/or TKA)</b>	
<b>General Information</b>	
Primary Purpose	CMS added this measure to the Inpatient Quality Reporting program in 2012, and they added public reporting of hospital-specific rates in 2013. This measure also is endorsed by the NQF for public reporting and quality improvement with benchmarking.
Measure Title	Hospital-level 30-day all-cause risk-standardized readmission rate following elective primary total hip arthroplasty and/or total knee arthroplasty (NQF #1551)
Readmission Rate	This measure is used to estimate hospital-specific risk-standardized readmission rates (RSRRs) for any cause within 30 days of an elective, primary THA and/or TKA.
Target Population	These measures are restricted to patients who are at least 65 years old.
Data Source	Medicare inpatient, outpatient, and carrier (physician) Standard Analytic Files. Although information on the initial hospitalization and any subsequent readmissions are based on inpatient data, the risk-adjustment algorithm uses inpatient, outpatient, and physician carriers' administrative data for the 12 months prior to the initial hospitalization. Inpatient and outpatient data are used to identify comorbidities. The Medicare Enrollment Database is used to determine post-discharge enrollment and mortality status.
Hospitals Included	Non-Federal acute care hospitals and critical access hospitals.
Risk Adjustment	Risk-standardized readmission rates (RSRRs) are calculated as the ratio of predicted to expected readmissions for a hospital, multiplied by the national unadjusted rate. The numerator of the ratio is the predicted number of readmissions for each hospital within 30 days, given the hospital's performance with its observed case mix. The denominator is the number of readmissions expected on the basis of the nation's performance with that hospital's case-mix. Predicted values are based on hierarchical logistic regression models that include variables such as age, sex, and comorbid diseases. For each patient, comorbidity is determined using inpatient and outpatient data for the 12 months prior to and including the index admission.
Reference	National Quality Forum, Quality Positioning System, Measure Title Display Information accessed December 12, 2012 at <a href="http://www.qualityforum.org/MeasureDetails.aspx?actid=0&amp;SubmissionId=1551#k=1551&amp;e=0&amp;st=&amp;sd=&amp;mt=&amp;cs=&amp;ss=&amp;s=n&amp;so=a&amp;p=1">http://www.qualityforum.org/MeasureDetails.aspx?actid=0&amp;SubmissionId=1551#k=1551&amp;e=0&amp;st=&amp;sd=&amp;mt=&amp;cs=&amp;ss=&amp;s=n&amp;so=a&amp;p=1</a>  More detailed information on this measure is available from the CMS QualityNet at <a href="http://www.qualitynet.org/dcs/ContentServer?c=Page&amp;pagename=QnetPublic%2FPage%2FQnetTier4&amp;cid=1228772504368">http://www.qualitynet.org/dcs/ContentServer?c=Page&amp;pagename=QnetPublic%2FPage%2FQnetTier4&amp;cid=1228772504368</a>

<b>Measure 6. CMS Readmissions Following Elective Total Hip and/or Knee Arthroplasty (THA and/or TKA)</b>	
<b>Definition of Index Admission (Denominator for Rate)</b>	
Qualifying Event	Admissions with an elective, primary procedure of THA and/or TKA that were discharged alive. There cannot be more than two THA or TKA procedure codes during the index hospitalization
Clinical Scope	The following ICD-9-CM procedure codes are used to identify the procedures: 81.51 Total Hip Arthroplasty 81.54 Total Knee Arthroplasty
Other Considerations	<p>The following types of nonelective admissions are excluded:</p> <ul style="list-style-type: none"> <li>• Patients who have a principal diagnosis on the index admission that is indicative of a nonelective arthroplasty (e.g., hip fracture, mechanical complication).</li> <li>• Patients who have a procedure code for an arthroplasty procedure that is not an elective primary arthroplasty (e.g., partial hip arthroplasty, revision procedures) or represents a different procedure (e.g., hip resurfacing, removal of implanted device).</li> </ul> <p>For CMS reporting, patients with either of the following conditions are excluded: (1) incomplete claims history for the 12 months prior to admission, and (2) less than 30 days post-discharge enrollment in fee-for-service Medicare.</p> <p>If a patient is transferred from one acute care hospital to another or is discharged from the hospital against medical advice, the admission is excluded.</p> <p>Any admissions within 30 days of discharge of an index admission will be considered readmissions. No admission is counted as both a readmission and an index admission.</p>
<b>Definition of Readmission (Numerator for Rate)</b>	
Qualifying Event	An unplanned inpatient admission for any cause to an acute care facility that occurs within 30 days of the discharge date of an index admission.
Limited to Readmission at the Same Hospital?	No

**Measure 6. CMS Readmissions Following Elective Total Hip and/or Knee Arthroplasty (THA and/or TKA)**

Clinical Scope	Planned readmissions for THA and/or TKA are excluded. If a patient undergoes a second elective primary THA or TKA within 30 days of the discharge date for the index admission and the admission is associated with a principal diagnosis of osteoarthritis, rheumatoid arthritis, osteonecrosis, or arthropathy (excluding septic arthropathy), the readmission is considered “planned” and is not counted as a readmission in the measure.
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<b>Measure 7. CMS Readmissions Following Percutaneous Coronary Intervention (PCI)</b>	
<b>General Information</b>	
Primary Purpose	This measure is endorsed by the NQF for public reporting and quality improvement with benchmarking. It is being considered by CMS for public reporting of hospital-specific rates.
Measure Title	Hospital 30-day Risk-Standardized Readmission Rate following Percutaneous Coronary Intervention (NQF #0695)
Readmission Rate	This measure is used to estimate hospital-specific rates of inpatient readmission for any cause within 30 days of discharge from a PCI that is performed in an inpatient or outpatient setting.
Target Population	Patients at least 65 years old who have matching information in the NCDR CathPCI Registry at the time of the PCI procedure.
Data Source	Administrative inpatient and outpatient claims data, in addition to clinical data available in the National Cardiovascular Disease Registry (NCDR) CathPCI Registry. The Medicare Enrollment Database is used to determine post-discharge enrollment.
Hospitals Included	Non-Federal acute care inpatient hospitals and outpatient facilities performing PCIs.
Risk Adjustment	Risk adjustment utilizes clinical data from the NCDR CathPCI Registry. Additional details on the risk adjustment are not included on the NQF or CMS QualityNet Web sites.
Reference	National Quality Forum, Quality Positioning System, Measure Title Display Information accessed December 9, 2012 at <a href="http://www.qualityforum.org/MeasureDetails.aspx?actid=0&amp;SubmissionId=10#k=695&amp;e=0&amp;st=&amp;sd=&amp;mt=&amp;cs=&amp;ss=&amp;s=n&amp;so=a&amp;p=1">http://www.qualityforum.org/MeasureDetails.aspx?actid=0&amp;SubmissionId=10#k=695&amp;e=0&amp;st=&amp;sd=&amp;mt=&amp;cs=&amp;ss=&amp;s=n&amp;so=a&amp;p=1</a>  Additional information on this measure is not available on the CMS QualityNet.
<b>Definition of Index Admission (Denominator for Rate)</b>	
Qualifying Event	Inpatient admission with a PCI procedure or an outpatient PCI procedure for patients at least 65 years old who are discharged alive.
Clinical Scope	ICD-9-CM procedure codes for PCI and Current Procedural Terminology (CPT) procedure codes for PCI on outpatient claims.  In addition, if the PCI is performed in an inpatient setting, the procedure must be performed within 10 days of admission.

<b>Measure 7. CMS Readmissions Following Percutaneous Coronary Intervention (PCI)</b>	
Other Considerations	<p>Patients are excluded if they do not have information in the NCDR CathPCI Registry for the date of the PCI.</p> <p>For CMS reporting, patients are excluded if they are not enrolled in fee-for-service Medicare for at least 30 days after discharged from the index admission.</p> <p>If a patient is transferred from one acute care hospital to another or is discharged from the hospital against medical advice, the admission is excluded.</p> <p>Any admissions within 30 days of discharge of an index admission will be considered readmissions. No admission is counted as both a readmission and an index admission.</p>
<b>Definition of Readmission (Numerator for Rate)</b>	
Qualifying Event	A subsequent hospital inpatient admission within 30 days of either the discharge date of an admission with PCI (for admitted patients) or the outpatient PCI claim end date (for patients whose PCI was performed as an outpatient service).
Limited to Readmission at the Same Hospital?	No.
Clinical scope	Patients readmitted electively for staged revascularization procedures are excluded. Additional details on the criteria used to define elective, staged revascularization procedures are not included on the NQF or CMS QualityNet Web sites.

<b>Measure 8. National Cancer Institute (NCI) Readmissions for End-of-Life Cancer Patients</b>	
<b>General Information</b>	
Primary Purpose	Phase II of the NCI Cancer Quality of Care Measures Project included recommendations to the NQF for 19 measures that might be used to assess the quality of care for cancer patients. This readmission measure was endorsed by the NQF in August 2009 (NQF #0212), but the endorsement was removed in late 2012.
Measure Title	Palliative Care and End-of-Life Care: Proportion of cancer patients with more than one hospitalization in the last 30 days of life
Readmission Rate	Percentage of patients who died from cancer with more than one hospitalization in the last 30 days of life. The level of analysis (e.g., hospital, health plan, and clinician) is not specified.
Target Population	Medicare fee-for-service patients who died from cancer
Data Source	Administrative inpatient data from the Medicare Provider Analysis and Review (MedPAR) file and enrollment and post-discharge mortality status from the Medicare Enrollment Database
Hospitals Included	Non-Federal acute care hospitals
Risk Adjustment	None.
Reference	National Quality Forum description accessed May of 2012 ( <a href="http://www.qualityforum.org">www.qualityforum.org</a> ) is no longer available (as of December 2012). Details on the Cancer Quality of Care Measure Project are available on the NCI Web site (Phase II description <a href="http://outcomes.cancer.gov/areas/qoc/canqual/phase2.html">http://outcomes.cancer.gov/areas/qoc/canqual/phase2.html</a> ; current activities <a href="http://outcomes.cancer.gov/areas/qoc/canqual/current.html">http://outcomes.cancer.gov/areas/qoc/canqual/current.html</a> ).
<b>Definition of Index Admission (Denominator for Rate)</b>	
Qualifying Event	Patients who died from cancer. An initial hospital admission is not required to be included in the denominator.
Clinical Scope	No information was available on how patients who died from cancer are identified.
Other Considerations	None
<b>Definition of Readmission (Numerator for Rate)</b>	
Qualifying Event	At least two acute care hospital admissions for any cause in the 30 days preceding the date of death
Limited to Readmission at the Same Hospital?	No.
Clinical Scope	None specified.

<b>Measure 9. National Committee on Quality Assurance (NCQA) Plan-Level Readmissions</b>	
<b>General Information</b>	
Primary Purpose	The purpose of the NCQA measure is to recognize the important role health plans can play in reducing readmission rates through improvement of post-discharge planning, care coordination, and chronic care management. The focus is specific to health plans instead of hospitals.
Measure Title	Plan All-Cause Readmissions (NQF #1768)
Readmission rate	This measure is used to calculate plan-specific readmission rates of the number of hospital admissions that had at least one readmission within 30 days.
Target Population	The target population varies by plan type: <ul style="list-style-type: none"> <li>• For commercial plans, the target population is enrolled members aged 18–64 years.</li> <li>• For Medicare and Special Needs Plans, the target population is members aged 18 years and older.</li> </ul>
Data source	Administrative inpatient claims data and plan enrollment information
Hospitals Included	Acute care hospitals
Risk adjustment	Both an observed, unadjusted readmission rate and an average adjusted probability of readmission are calculated. The measure is risk adjusted using indirect standardization, with predicted probabilities of readmission estimated through logistic regression. Risk adjustment includes the presence of surgery, discharge condition, comorbidity, age, and sex. The Medicare Clinical Conditions and Hierarchical Condition Categories are used to identify comorbidities.
Reference	National Quality Forum, Quality Positioning System, Measure Title Display Information accessed December 12, 2012 at <a href="http://www.qualityforum.org/MeasureDetails.aspx?actid=0&amp;SubmissionId=1768#k=1768&amp;e=0&amp;s=n&amp;so=a&amp;p=1&amp;st=&amp;sd=&amp;mt=&amp;cs=&amp;ss">http://www.qualityforum.org/MeasureDetails.aspx?actid=0&amp;SubmissionId=1768#k=1768&amp;e=0&amp;s=n&amp;so=a&amp;p=1&amp;st=&amp;sd=&amp;mt=&amp;cs=&amp;ss</a>  More detailed information on this measure is available from the NCQA Web site in the report <i>2012 Insights for Improvement, Reducing Readmissions: Measuring Health Plan Performance</i> <a href="http://www.ncqa.org/Portals/0/Publications/2012%20BI_NCQA%20ReAdMi%20_Pub.pdf">http://www.ncqa.org/Portals/0/Publications/2012%20BI_NCQA%20ReAdMi%20_Pub.pdf</a>
<b>Definition of Index Admission (Denominator for Rate)</b>	
Qualifying Event	Admissions for patients discharged alive from the hospital
Clinical Scope	Maternity-related stays are excluded.

<b>Measure 9. National Committee on Quality Assurance (NCQA) Plan-Level Readmissions</b>	
Other Considerations	<p>Patients with either of the following conditions are excluded: (1) disrupted enrollment of more than 45 days in the plan for the 12 months prior to admission and (2) any gap in enrollment for 30 days post-discharge.</p> <p>Patients discharged in December are excluded, because rates are calculated using calendar-year files and December discharges could not be followed for 30 days.</p> <p>Same-day stays in which the admission date is the same as the discharge date) are excluded.</p> <p>If the patient dies during a readmission within 30 days, the index admission and readmission are excluded.</p>
<b>Definition of Readmission (Numerator for Rate)</b>	
Qualifying Event	An inpatient admission for any cause within 30 days of the index discharge date.
Limited to Readmission at the Same Hospital?	No
Clinical Scope	Maternity-related inpatient discharges are excluded.

<b>Measure 10. UnitedHealth Group All-Cause Readmissions</b>	
<b>General Information</b>	
Primary Purpose	UnitedHealth Group developed a measure on readmissions to help examine and reduce avoidable hospital readmissions. This measure was endorsed by the NQF in May 2008 (NQF #0329), but the endorsement was removed in June 2012.
Measure Title	All-Cause Readmission Index, Risk Adjusted
Readmission rate	This measure is used to estimate hospital-specific rates of inpatient readmission for any cause within 30 days of discharge
Target Population	Adult patients admitted in 1 year
Data source	Inpatient administrative data and plan enrollment data
Hospitals Included	Acute care facilities
Risk adjustment	Risk-adjusted rates are calculated as the ratio of observed to expected readmissions for a hospital. The expected number of readmissions for each hospital within 30 days is based on all patients statewide with the same diagnosis-related group (DRG). Expected values are based on logistic regression models that include the DRG relative weight (but not other factors such as age, sex, and comorbidities).
Reference	National Quality Forum description accessed May of 2012 ( <a href="http://www.qualityforum.org">www.qualityforum.org</a> ) is no longer available (as of December 2012).  Additional details were found in: Boutwell A and Jencks S. <i>It's Not Six of One, Half-Dozen of the Other: A Comparative Analysis of Three Rehospitalization Measurement Systems for Massachusetts</i> . Presentation at the 2011 AcademyHealth Annual Research Meeting. Available at <a href="http://www.academyhealth.org/files/2011/tuesday/boutwell.pdf">www.academyhealth.org/files/2011/tuesday/boutwell.pdf</a> . Accessed December 13, 2012.
<b>Definition of Index Admission (Denominator for Rate)</b>	
Qualifying Event	Admissions for any cause for patients discharged alive from the hospital.
Clinical Scope	Excludes maternal discharges (DRG 370–375) and pediatric discharges (criteria not specified).
Other Considerations	If a patient is admitted to another acute care facility within a day of being discharged, both admissions are excluded.  A patient is allowed to have multiple index admissions, regardless of how far apart. In addition, a readmission can also count as an index stay for a subsequent readmission.
<b>Definition of Readmission (Numerator for Rate)</b>	
Qualifying Event	An inpatient admission for any cause to an acute care facility that occurs within 30 days of the discharge date of an index admission.

<b>Measure 10. UnitedHealth Group All-Cause Readmissions</b>	
Limited to Readmission at the Same Hospital?	No
Clinical Scope	None specified.

<b>Measure 11. Virtual PICU Systems (VPS) Pediatric Intensive Care Unit (PICU) Readmissions</b>	
<b>General Information</b>	
Primary Purpose	This measure is part of the VPS software designed to help PICUs improve quality, benchmark with peers and establish best practices. The software and comparative data collection program were developed in collaboration among the National Association of Children's Hospitals and Related Institutions (NACHRI), Children's Hospital of Wisconsin, and Children's Hospital Los Angeles.
Measure Title	PICU Unplanned Readmission Rate (NQF #0335)
Readmission Rate	This measure is used to estimate a hospital-specific rate of unplanned readmissions to the PICU within 24 hours of being discharged from the PICU.
Target Population	Patients younger than 18 years who are treated in a participating PICU
Data Source	Clinical and demographic data are collected by participating PICUs and entered into the VPS database.
Hospitals Included	Acute care hospitals with PICUs
Risk Adjustment	None.
Reference	National Quality Forum, Quality Positioning System, Measure Title Display Information accessed December 13, 2012 at <a href="http://www.qualityforum.org/QPS/QPSTool.aspx?m=1768&amp;e=1#k=1768&amp;e=0&amp;s=n&amp;so=a&amp;p=1&amp;st=&amp;sd=&amp;mt=&amp;cs=&amp;ss=&amp;qpsPageState={%22TabType%22%3A1,%22TabContentType%22%3A2,%22SearchCriteriaForStandard%22%3A{%22TaxonomyIDs%22%3A[],%22SelectedTypeAheadFilterOption%22%3Anull,%22Keyword%22%3A%22%22,%22PageSize%22%3A%2225%22,%22OrderType%22%3A%2210%22,%22OrderBy%22%3A%22ASC%22,%22PageNo%22%3A%2210%22,%22IsExactMatch%22%3Afalse,%22QueryStringType%22%3A%22%22,%22ProjectActivityId%22%3A%220%22},%22SearchCriteriaForForPortfolio%22%3A{%22Tags%22%3A[],%22FilterTypes%22%3A0,%22PageStartIndex%22%3A1,%22PageEndIndex%22%3A25,%22PageNumber%22%3Anull,%22PageSize%22%3A%2225%22,%22SortBy%22%3A%22Title%22,%22SortOrder%22%3A%22ASC%22},%22ItemsToCompare%22%3A[],%22StandardID%22%3A346,%22EntityTypeID%22%3A1}">http://www.qualityforum.org/QPS/QPSTool.aspx?m=1768&amp;e=1#k=1768&amp;e=0&amp;s=n&amp;so=a&amp;p=1&amp;st=&amp;sd=&amp;mt=&amp;cs=&amp;ss=&amp;qpsPageState={%22TabType%22%3A1,%22TabContentType%22%3A2,%22SearchCriteriaForStandard%22%3A{%22TaxonomyIDs%22%3A[],%22SelectedTypeAheadFilterOption%22%3Anull,%22Keyword%22%3A%22%22,%22PageSize%22%3A%2225%22,%22OrderType%22%3A%2210%22,%22OrderBy%22%3A%22ASC%22,%22PageNo%22%3A%2210%22,%22IsExactMatch%22%3Afalse,%22QueryStringType%22%3A%22%22,%22ProjectActivityId%22%3A%220%22},%22SearchCriteriaForForPortfolio%22%3A{%22Tags%22%3A[],%22FilterTypes%22%3A0,%22PageStartIndex%22%3A1,%22PageEndIndex%22%3A25,%22PageNumber%22%3Anull,%22PageSize%22%3A%2225%22,%22SortBy%22%3A%22Title%22,%22SortOrder%22%3A%22ASC%22},%22ItemsToCompare%22%3A[],%22StandardID%22%3A346,%22EntityTypeID%22%3A1}</a>
<b>Definition of Index Admission (Denominator for Rate)</b>	
Qualifying Event	PICU discharges that are discharged from the PICU alive.
Clinical Scope	None specified.
Other Considerations	PICU discharges that that not discharged to home or transferred to an acute or intermediate inpatient unit within the same hospital are excluded.
<b>Definition of Readmission (Numerator for Rate)</b>	
Qualifying Event	An unplanned readmission to the PICU within 24 hours of the index PICU discharge.

<b>Measure 11. Virtual PICU Systems (VPS) Pediatric Intensive Care Unit (PICU) Readmissions</b>	
Limited to Readmission at the Same Hospital?	Yes.
Clinical Scope	The criteria used to determine an unplanned readmission are not specified. It is unclear whether this is decided during data entry or as part of an algorithm that examines available clinical data.

<b>Measure 12. 3M™ Potentially Preventable Readmissions</b>	
<b>General Information</b>	
Primary Purpose	This measure is part of the 3M Potentially Preventable Readmission (3M PPR) grouping software, which allows hospitals to identify the readmissions that are potentially preventable. The assessment helps the hospital focus attention on and target areas for improvement.
Measure Title	Potentially Preventable Readmissions
Readmission Rate	This measure is used to estimate hospital-specific rates of potentially preventable readmissions.
Target Population	Non-neonatal inpatient admissions.
Data Source	Administrative inpatient data
Hospitals Included	Acute care hospitals
Risk Adjustment	Risk-adjusted rates are calculated as the ratio of observed to expected readmissions for a hospital. The expected number of readmissions is based on the 3M All Patient Refined DRGs (APR-DRGs) and severity of illness, age, and presence or absence of comorbid substance use or mental health disorder diagnosis.
Reference	3M Health Information Systems <i>Potentially Preventable Readmissions Classification System, Methodology Overview</i> , Document number GRP-139 05/08. Available at <a href="http://multimedia.3m.com/mws/mediawebserver?66666UuZjcFSLXTtNXMtmxMEEVuQEcuZgVs6EVs6E666666--">http://multimedia.3m.com/mws/mediawebserver?66666UuZjcFSLXTtNXMtmxMEEVuQEcuZgVs6EVs6E666666--</a> . Accessed December 13, 2012.
<b>Definition of Index Admission (Denominator for Rate)</b>	
Qualifying Event	Admissions for patients discharged alive from the hospital.
Clinical Scope	Exclusions are: <ul style="list-style-type: none"> <li>• Neonatal and obstetrical admissions</li> <li>• Admissions for major or metastatic malignancies, multiple trauma, burns, and certain chronic conditions such as cystic fibrosis</li> <li>• Admissions for specific eye procedures</li> <li>• Admissions to an acute care hospital for nonacute care such as rehabilitation, aftercare, convalescence, or hospice.</li> </ul>
Other Considerations	If a patient is transferred from one acute care hospital to another or is discharged from the hospital against medical advice, the admission is excluded.  If an admission occurs within the specified time from a preceding admission but it does not qualify as a potentially preventable readmission, it is considered as another index admission.

**Measure 12. 3M™ Potentially Preventable Readmissions**

**Definition of Readmission (Numerator for Rate)**

Qualifying Event	<p>Potentially preventable readmissions to an acute care hospital within a specified time interval. The software allows the data user to specify the time interval, but recommends 15 or 30 days.</p> <p>If multiple readmissions occur within the readmission time interval, each is considered with respect to the index admission. This defines a readmission chain of admissions that are evaluated for being clinically-related to the index admission. A readmission chain can include one or many potentially preventable readmissions.</p>
Limited to Readmission at the Same Hospital?	<p>The software can be configured to consider readmissions to any hospital or limited to the same hospital.</p>
Clinical Scope	<p>3M defines a potentially preventable readmission as a return hospitalization that is clinically related to the index admission. The 3M APR-DRGs are used as the basis for establishing the clinical relationship between the index admission and the readmission. For each APR-DRG at an index admission, 3M has determined the APR-DRGs that would be considered clinically related and, therefore, identify a potentially preventable readmission.</p>

<b>Jencks Article on Medicare Readmissions</b>	
<b>General Information</b>	
Primary Purpose	Journal article that broadly examines the frequency of Medicare readmissions. The paper also examines the duration of elevated risk of rehospitalization and the frequency of post-discharge outpatient visits with a physician.
Measure Title	Rate of Rehospitalization After Hospital Discharge
Readmission Rate	Two types of readmission rates are presented: <ul style="list-style-type: none"> <li>• Overall readmission rate for the percentage of patients readmitted during the study period</li> <li>• Hospital-specific expected rehospitalization rates.</li> </ul>
Target Population	Medicare fee-for-service beneficiaries admitted between October 1, 2003 through December 31, 2004
Data Source	Administrative inpatient data from the Medicare Provider Analysis and Review (MedPAR) file and enrollment status from the Medicare Enrollment Database
Hospitals Included	Non-Federal acute care hospitals. Critical access hospitals were not included.
Risk Adjustment	The overall readmission rate is not risk adjusted. The hospital-specific rehospitalization rates use an indirect adjustment. The authors assume that the rehospitalization rate of each Medicare discharge in the hospital is the same as rehospitalization risk for the national average for Medicare discharges in the same diagnosis-related group (DRG).
Reference	Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare fee-for-service program. <i>N Engl J Med.</i> 2009;360:1418-1428. See <a href="http://www.nejm.org/doi/full/10.1056/NEJMsa0803563">http://www.nejm.org/doi/full/10.1056/NEJMsa0803563</a> .
<b>Definition of Index Admission (Denominator for Rate)</b>	
Qualifying Event	Admissions for any cause for patients discharged alive from the hospital.
Clinical Scope	Index admissions are identified by all causes, medical versus surgical stays (defined by medical and surgical DRGs), and by the most frequent five medical and surgical DRGs, based on the total number of readmissions.

<b>Jencks Article on Medicare Readmissions</b>	
Other Considerations	<p>If a patient is transferred from one acute care hospital to another, the admission is excluded.</p> <p>If a patient is readmitted for rehabilitation (identified by DRG 462) within 30 days of an admission, the admission and subsequent rehabilitation stay are excluded.</p> <p>Any admissions within 30 days of discharge of an index admission are considered readmissions. No admission is counted as both a readmission and an index admission.</p>
<b>Definition of Readmission (Numerator for Rate)</b>	
Qualifying Event	An inpatient admission for any cause to an acute care facility that occurs within a specific number of days from the discharge date of an index admission. For the analysis of overall readmission rates, the time frame ranges from 30, 60, 90, 180, 365, to more than 365 days. Readmissions included in the hospital-level analysis are required to be within 30 days.
Limited to Readmission at the Same Hospital?	No.
Clinical Scope	None specified.