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# **Specifications for the All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Long-Term Care Hospitals**

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# **1. Specifications for the All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Long-Term Care Hospitals**

## **1.1 Measure Name**

All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Long-Term Care Hospitals

## **1.2 Summary Description of the Measure**

This measure estimates the risk-standardized rate of unplanned, all-cause readmissions for patients discharged from a Long-Term Care Hospital (LTCH) who were readmitted to a short-stay acute-care hospital or an LTCH, within 30 days of an LTCH discharge. The measure will be based on data for 24 months of LTCH discharges to lower levels of care or to the community.

A risk-adjusted readmission rate for each facility is the mean rate of readmissions in the measure population, multiplied by the ratio for each facility of the predicted number of readmissions at the facility to the expected number of readmissions for the same patients if treated at the average facility. The facility-level relative ratio and risk-standardized readmission rate are computed.

The risk adjustment for the predicted (numerator) and expected (denominator) is described below. This risk-standardized ratio is the essential indicator in differentiating a facility's effects on readmission rates.

For this measure, readmissions that are usually for planned procedures are excluded. The measure definition is further described below.

## **1.3 Purpose of Measure**

Because the measure tracks the patients for 30 days after discharge from LTCH, it will provide information to providers that is not easily available to them currently. Rates of readmission are related to quality of care, particularly in the transition from the hospital to the next care setting. Though facility-level readmissions are not expected to be zero, elevated risk-adjusted readmission rates are indicators that there are opportunities for improvements in patient care and transitions of care.

In 2010, about 118,300 Medicare beneficiaries received care for almost 134,700 LTCH stays worth \$5.2 billion in roughly 412 LTCHs nationwide.<sup>1</sup> In 2011, about 123,000 Medicare beneficiaries received care for almost 140,000 LTCH stays worth \$5.4 billion in roughly 424

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<sup>1</sup> Medicare Payment Advisory Commission: Report to the Congress: Medicare Payment Policy, March 2012; see Chapter 10, Long-term care hospital services, pp. 257–278. [http://www.medpac.gov/chapters/Mar12\\_Ch10.pdf](http://www.medpac.gov/chapters/Mar12_Ch10.pdf).

LTCHs nationwide.<sup>2</sup> For patients discharged from an LTCH, the unadjusted rate of readmission to a short-stay acute-care hospital or an LTCH in the 30 days after an LTCH discharge was about 26 percent (RTI analysis of 2010–2011 Medicare Claims data). Faced with such a large proportion of patients being readmitted to an acute level of care (i.e., to either a short-stay acute-care hospital or an LTCH), CMS proposes<sup>3</sup> to monitor the readmission rates for each LTCH to improve patient care and transitions of care. By doing so, CMS hopes to reduce LTCH readmission rates that are inappropriately high and improve patient safety and quality of care. Reducing avoidable readmissions can also reduce costs to the Medicare program.

A hospital's readmission rate is affected by complex and critical aspects of care such as communication between providers or between providers and patients; prevention of and response to complications; patient safety; and coordinated transitions to the outpatient environment.<sup>4</sup> Readmissions have been identified as being sensitive to improvements in coordination of care and discharge planning for patients. Literature on readmissions focuses mainly on discharges from short-stay acute-care hospitals. However, processes that may affect readmission rates, such as discharge planning and transition of care, communications, and care coordination, also occur at other inpatient facilities, such as the LTCHs, and affect readmission rates. Randomized controlled trials in short-stay acute-care hospitals have shown that improvements in the quality of care during the initial admission; improvement in communication with patients, their caregivers, and their clinicians; patient education; pre-discharge assessment; and coordination of care after discharge can directly reduce 30-day readmission rates by 20 to 40 percent. A 2011 meta-analysis of randomized clinical trials found evidence that interventions associated with discharge planning helped to reduce readmission rates.<sup>5</sup> Evidence that hospitals have been able to reduce readmission rates through these quality improvement initiatives illustrates the degree to which hospital best practices in these areas can improve readmission rates. Hospital-wide, all-condition readmission measures could portray a broader sense of the quality of care in hospitals and hence, can promote hospital quality improvement and better inform consumers about care quality.<sup>6</sup>

## 1.4 Population

The population being tracked in the measure includes LTCH Medicare Fee For Service (FFS) patients, aged 18 years and older, who are discharged to lower levels of care or to the community. This group includes patients discharged from the LTCH to inpatient rehabilitation facilities, skilled nursing facilities, or home health care, or who are discharged to the community

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<sup>2</sup> Medicare Payment Advisory Commission: Report to the Congress: Medicare Payment Policy, March 2013; see Chapter 11, Long-term care hospital services, pp. 237–257.

[http://www.medpac.gov/documents/Mar13\\_EntireReport.pdf](http://www.medpac.gov/documents/Mar13_EntireReport.pdf).

<sup>3</sup> See FY 2014 IPPS/LTCH PPS Notice of Proposed Rule Making accessible at <http://www.regulations.gov>, search for FY 2014 IPPS/LTCH PPS Proposed Rule.

<sup>4</sup> See FY 2013 IPPS/LTCH PPS Final Rule accessible at <http://www.regulations.gov>; see 77 FR 53619 through 53623 and 53667 through 53672. Publication date: August 31, 2013.

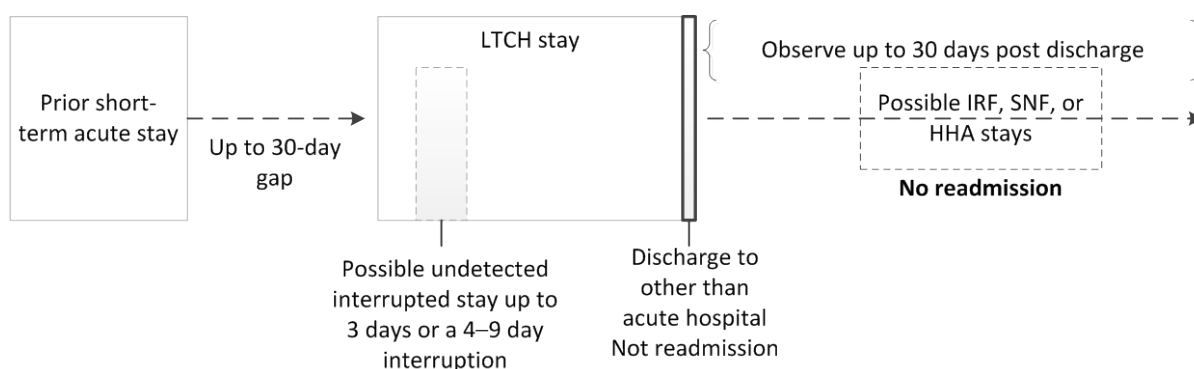
<sup>5</sup> Naylor, M.D., Aiken, L.H., Kurtzman, E.T., et al. The importance of transitional care in achieving health reform. *Health Affairs* 30(4):746–754. 2011.

<sup>6</sup> See FY 2013 IPPS/LTCH PPS Final Rule accessible at <http://www.regulations.gov>; see 77 FR 53619 through 53623 and 53667 through 53672. Publication date: August 31, 2013.

or to a nursing home. It excludes patients who are transferred to short-stay acute-care hospital or an LTCH on the day of discharge or the day following the day of discharge from the LTCH.

To clarify the relationships between events used to define the population included in this measure, Figures 1 through 3 present the time and event relationships. **Figure 1** indicates a patient stay included in the measure. It has a prior short-term acute-care hospital stay within 30 days prior to the LTCH admission. There may have been interruptions to the LTCH stay, which are not considered in the measure. If the discharge from LTCH is a transfer to another acute-level facility, the stay would not be included in the measure. In Figure 1, the observation window of 30 days has no readmissions.<sup>7</sup>

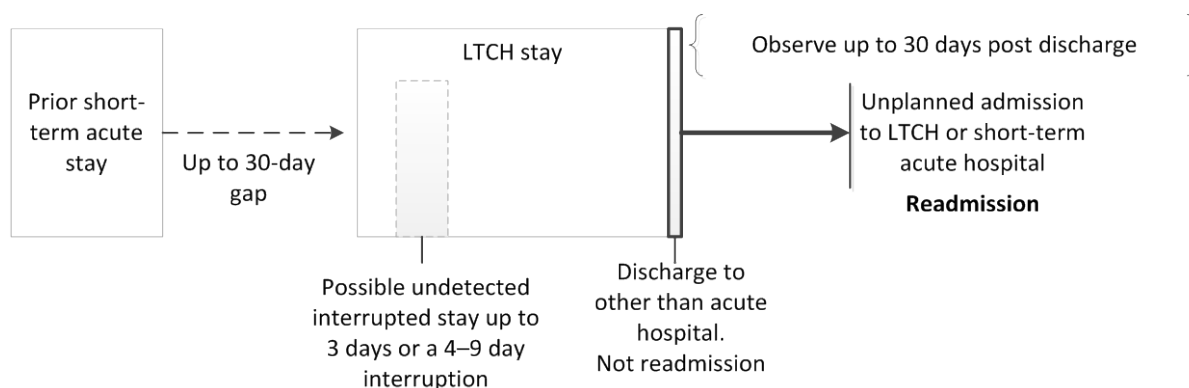
**Figure 1**  
**LTCH Discharge to Lower Level of Care, No Readmission**



HHA = home health agency; IRF = inpatient rehabilitation facility; LTCH = long-term care hospital; SNF = skilled nursing facility.

In **Figure 2**, the situation is similar to Figure 1, except that an unplanned readmission occurs within the 30-day window.

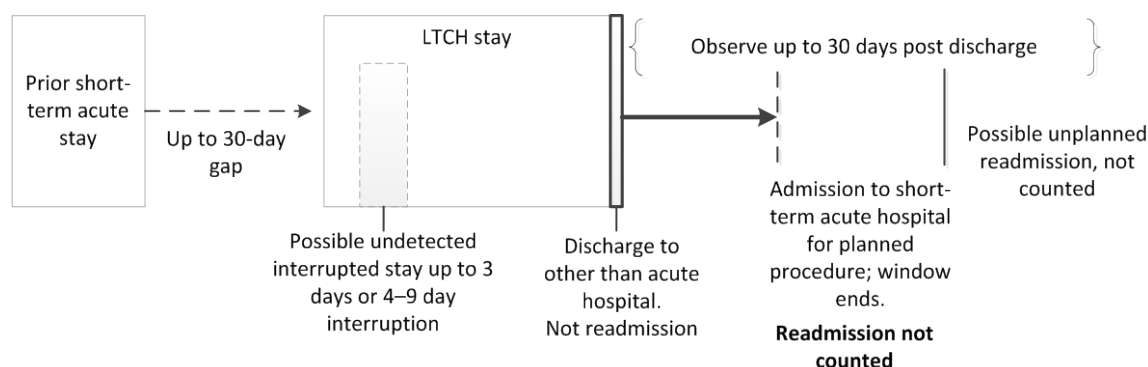
**Figure 2**  
**LTCH Discharge to Lower Level of Care, Unplanned Readmission**



<sup>7</sup> If the admission to the acute-care facility occurs on the day of discharge from the LTCH or the day after, it is counted as a “transfer” to an acute-care facility. The 30-day window starts the next day.

In **Figure 3**, a planned readmission occurs as the first of two readmissions in the 30-day observation window. This readmission is not counted and the observation period ends. Any unplanned readmission thereafter (i.e., after the observation window is terminated) is not counted.

**Figure 3**  
**LTCH Discharge to Lower Level of Care, Planned Readmission**



## 1.5 Numerator

The measure does not have a simple form for the numerator and denominator—that is, the risk adjustment method used does not make the observed number of readmissions the numerator and a predicted number the denominator. Instead, the numerator is the risk-adjusted estimate of the number of unplanned readmissions that occurred within 30 days from discharge. This estimate includes risk adjustment for each facility’s patient characteristics and a statistical estimate of the facility effect beyond patient mix.

The 30-day window of observation excludes the day of discharge and the day thereafter. Admissions to acute hospitals (short-stay acute care and LTCH) on these days are considered transfers.

Planned readmissions are not counted in the numerator. The planned readmissions are defined largely by the definition used for the CMS Hospital-Wide Readmission (HWR) measure,<sup>8</sup> and were revised to include additional procedures determined as suitable for LTCHs with input from a Technical Expert Panel. International Classification of Diseases (ICD-9) codes for these additional procedures were identified by a certified coder. The definition is based on the readmission bill having a code for a procedure that is frequently *planned*, but if a principal diagnosis in a specified list of acute diagnoses is present, the readmission is reclassified as *unplanned*. **Table 1** presents the list of codes for procedures identified as “planned” for LTCHs, which are not in the HWR list. These procedures and diagnoses are currently defined by ICD-9 procedure and diagnosis codes grouped by the Clinical Classification Software (CCS), developed

<sup>8</sup> QualityNet. *Hospital-wide All-Cause Unplanned Readmission (HWR) Measure*. <http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&cid=1228772504318>. As obtained on March 20, 2013.

by the Agency for Healthcare Research and Quality (AHRQ), where large clusters were appropriate and by individual codes, if necessary.

## 1.6 Denominator

The denominator for each facility has two aspects: the LTCH stays that are included in developing the measure and the estimate of the expected number of readmissions for this population at the average LTCH. The measure includes all the LTCH stays in the measurement period that are observed in national Medicare data and do not fall into an excluded category.

The measure excludes some LTCH patient stays; some of these exclusions result from data limitations.

- LTCH patients who died during the LTCH stay.
- LTCH patients less than 18 years old.
- LTCH patients who were transferred at the end of a stay to another LTCH or Inpatient Prospective Payment System (IPPS) hospital.
- Patients who were not continuously enrolled in Part A FFS Medicare for the 12 months prior to the LTCH stay admission date, and at least 30 days after LTCH stay discharge date. The adjustment for comorbid conditions in the measure requires bringing in diagnoses on IPPS bills for 1 year prior to the LTCH admission, and readmissions must be observable in the observation window following discharge. There is insufficient information to include Medicare Advantage enrollees at this time.
- Patients who did not have an acute-care stay within 30 days prior to an LTCH stay admission date. This measure requires information from the prior acute stay in the elements used for risk adjustment.
- LTCH patients discharged against medical advice (AMA).
- LTCH patients for whom the prior acute stay was for medical treatment of cancer (consistent with the IPPS readmission measure as defined in the HWR Measure because patients receiving medical treatment for cancer were identified as following a very different trajectory after discharge, with a particularly high mortality rate).
- LTCH stays with data that are problematic (e.g., hospital stays that overlap wholly or in part).

For the includable LTCH stays at each facility, the measure denominator is the risk-adjusted expected number of readmissions. This estimate includes risk adjustment for patient characteristics with the facility effect removed. The “expected” number of readmissions is the predicted number of risk-adjusted readmissions if the patients were treated at the average LTCH.

## 1.7 Risk Adjustment and Statistical Method

The statistical method, including risk adjustment, has many similarities with that used in the HWR measure.<sup>9</sup> A hierarchical regression method is used in which a logistic regression predicting the probability of a countable readmission is run. The risk adjusters are predictor variables. The patient characteristics related to each discharge and a marker for the specific discharging LTCH are included in the equation. The equation is hierarchical in that both individual patient characteristics are accounted for as well as the clustering of patients into LTCHs. The statistical model estimates both the average predictive effect of the patient characteristics across all LTCHs and the degree to which each facility has an effect on readmissions that differs from that of the average facility. The facility effects are assumed to be randomly distributed around the average (according to a normal distribution). When computing the facility effect, hierarchical modeling accounts for the known predictors of readmissions, on average, such as patient characteristics, the observed facility rate, and the number of LTCH stays eligible for the measure. The estimated facility effect is determined mostly by the facility's own data if the number of patients is relatively large and the estimate would be relatively precise, but is moved toward the average if the number of patient discharges is small and would yield an estimate of low precision.

The estimated equation is used twice in the measure. The sum of the probabilities of readmission of all patients in the facility measure, including both the effects of patient characteristics and the LTCH, is the predicted number of readmissions after adjusting for case mix. The same equation is used without the LTCH effect to compute the predicted number of admissions for the same patients at the average LTCH. These are often referred to as the predicted and expected readmissions. The ratio of the predicted-to-expected rate is a measure of the degree to which the readmissions are higher or lower than what would be expected. This risk-standardized ratio may also be multiplied by the mean readmission rate in the data to get the risk-standardized readmission rate for each LTCH. This estimation procedure is redone for each measurement period. Reestimating the system for each measurement period allows the estimated effects of the patient characteristics to vary over time as medical treatment patterns change.

Risk-adjustment variables include demographic and eligibility characteristics, principal diagnoses from the immediately prior short-term hospital stay, types of surgery or procedure from the prior short-term stay, and comorbidities from the short-term stay and prior short-term stays in the year preceding the LTCH admission. In addition, the number of short-term discharges in the year prior is an adjuster as are measures of the IPPS length of stay. Hence, the risk adjustment variables include the following:

- Age/sex categories.
- Original reason for entitlement being disability or ESRD.

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<sup>9</sup> QualityNet. *Hospital-wide All-Cause Unplanned Readmission (HWR) Measure*. <http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&cid=1228772504318>. As obtained on March 20, 2013.



- Surgery category if present (e.g., cardiothoracic, orthopedic), defined as in the HWR model; the procedures are grouped using the CCS for ICD-9 procedures developed by the AHRQ.
- Receiving dialysis in prior short-term stay, defined by presence of revenue code.
- Long-term ventilator patient in LTCH, defined by ICD-9 procedure code.
- Principal diagnosis on short-term stay bill (as in the HWR measure, they are grouped clinically using the CCS for ICD-9 diagnoses developed by AHRQ).
- Comorbidities from secondary diagnoses on the prior short-term bill and diagnoses from earlier short-term stays up to 1 year before LTCH admission (these are clustered using the Hierarchical Condition Categories [HCC] groups used by CMS).
- Length of stay and length of stay in intensive care in the prior short-term hospital stay; the squares of these are also included to allow the effect of an additional day to differ for shorter and longer stays.
- Counts of prior short-term admissions in the 365 days before the LTCH admission.

Current specifications make use of ICD-9 codes. Consistent with the approaching change to ICD-10 in FY 2015 (starting October 1, 2014), the code groups will be populated by ICD-10 codes. The specific variables included in the model are provided in **Appendix A**.

## 1.8 Sources of Data

This measure is for Medicare beneficiaries and uses the data in the Medicare eligibility files and inpatient claims data. The eligibility files provide information on date of birth, sex, and reasons for Medicare eligibility. The data elements from the Medicare claims are those basic to the operation of the Medicare payment systems and include date of admission, date of discharge, diagnoses, procedures, and indicators for use of dialysis services. The inpatient claims data files contain beneficiary-level LTCH and other hospital records. No data beyond the bills submitted in the normal course of business are required from the providers.

In the FY 2014 IPPS/LTCH PPS proposed rule,<sup>10</sup> we propose to use 2 years of data to calculate the measure rate for the All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Long-Term Care Hospitals measure, which we believe is sufficient to calculate this measure in a statistically reliable manner. This is because the reliability of a hospital's measure rate is related to its sample size.

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<sup>10</sup> See FY 2014 IPPS/LTCH PPS Notice of Proposed Rule Making accessible at <http://www.regulations.gov>; see 77 FR 53619 through 53623 and 53667 through 53672.

**Table 1**  
**Additions to List of Planned Readmissions Currently Used in the Hospital-Wide**  
**Readmission Measure,\* for Use in the LTCH Measure**

Code	Description	Comment
<b>AHRQ CCS Single-Level Procedure Codes</b>		
37	Diagnostic Bronchoscopy and Biopsy of Bronchus	
71	Gastrostomy: temporary and permanent	
82	Endoscopic retrograde cannulation of pancreases (ERCP)	
87	Laparoscopy (GI only)	
89	Exploratory laparotomy	
160	Other therapeutic procedure on muscles and tendons	
164	Other OR therapeutic procedures on musculoskeletal system	
171	Suture of skin and subcutaneous tissue	
<b>ICD-9 Procedure Codes</b>		
<b>Topic: Amputation of Lower Extremity</b>		
83.82	Graft of muscle or fascia	
86.87	Fat graft of skin and subcutaneous tissue	Required, Diagnosis V58.41, encounter for planned postoperative wound closure
<b>Topic: Amputations of Upper Extremity</b>		
84.00	Upper-limb amputation, not otherwise specified	
84.01	Amputation and disarticulation of finger	
84.02	Amputation and disarticulation of thumb	
84.03	Amputation through hand	
84.04	Disarticulation of wrist	
84.05	Amputation through forearm	
84.06	Disarticulation of elbow	
84.07	Amputation through humerus	
84.08	Disarticulation of shoulder	
84.09	Interthoracoscaphular amputation	

(continued)

**Table 1 (continued)**  
**Additions to List of Planned Readmissions Currently Used in the Hospital-Wide**  
**Readmission Measure,\* for Use in the LTCH Measure**

Code	Description	Comment
<b>Topic: Removal of Vascular Obstruction, Non-Coronary</b>		
39.50	Angioplasty or atherectomy of other noncoronary vessels	
38.18	Endarterectomy, intracranial vessels	
38.08	Embolectomy, lower limb arteries	
00.55	Insertion of drug-eluting stent(s) of other peripheral vessel(s)	
00.60	Insertion of drug-eluting stent(s) of superficial femoral artery	
39.90	Insertion of nondrug-eluting peripheral (noncoronary) vessel stent(s)	
<b>Topic: Colon and Rectal Procedures, Selected</b>		
46.85	Dilation of intestine (includes endoscopic approach)	
96.08	Insertion of naso-intestinal tube (includes for decompression)	
96.09	insertion of rectal tube	
46.50	Closure of intestinal stoma, not otherwise specified	Required, diagnosis codes V55.2: attention to ileostomy and V55.3: attention to colostomy
46.51	Closure of stoma of small intestine	Required, diagnosis codes V55.2: attention to ileostomy and V55.3: attention to colostomy
46.52	Closure of stoma of large intestine	Required, diagnosis codes V55.2: attention to ileostomy and V55.3: attention to colostomy
46.86	Endoscopic insertion of colonic stent(s)	
46.87	Other insertion of colonic stent(s)	

(continued)

**Table 1 (continued)**  
**Additions to List of Planned Readmissions Currently Used in the Hospital-Wide**  
**Readmission Measure,\* for Use in the LTCH Measure**

Code	Description	Comment
<b>Topic: Endoscope</b>		
51.14	Other close (endoscopic) biopsy of biliary duct or sphincter of Oddi	
51.64	Endoscopic excision or destruction of lesion of biliary ducts or sphincter of Oddi	
51.84	Endoscopic dilation of ampulla and biliary duct	
51.85	Endoscopic sphincterotomy and papillotomy	
51.86	Endoscopic insertion of nasobiliary drainage tube	
51.87	Endoscopic insertion of stent (tube) into bile duct	
51.88	Endoscopic removal of stone(s) from biliary tract	
<b>Topic: Insertion of Feeding Tubes</b>		
44.39	Other gastroenterostomy (GastroJejunal-tube)	
46.39	Other enterostomy (J-tube)	
<b>Topic: Routine Device Replacement</b>		
86.06	Insertion of totally implanted infusion pump	
<b>Topic: Routine Removal of Devices</b>		
84.57	Removal of (cement) spacer (includes antibiotic impregnated spacer)	
97.41	Removal of thoracotomy tube or pleural cavity drain (nonincisional)	
02.43	Removal of ventricular shunt	
97.37	Removal of tracheostomy tube (nonincisional)	
1.27	Removal of catheter (s) from cranial cavity or tissue	
86.05	Incision with removal of foreign body or device from skin and subcutaneous tissue	
02.95	Removal of skull tongs or halo traction device	
78.60–78.69	Removal of implanted devices from bone (includes internal and external fixation)	
80.00–80.09	Orthopedic implants arthrotomy for removal of prosthesis without replacement	

(continued)

**Table 1 (continued)**  
**Additions to List of Planned Readmissions Currently Used in the Hospital-Wide**  
**Readmission Measure,\* for Use in the LTCH Measure**

Code	Description	Comment
<b>Topic: Pleurosclerosis</b>		
34.6	Scarification of pleura	
34.92	Injection into thoracic cavity	
<b>Topic: Fistula</b>		
42.84	Repair of esophageal fistula, not elsewhere classified	
44.63	Closure of other gastric fistula (include gastrocolic, gastrojejunocolic fistula)	
46.72	Closure of fistula of duodenum	
46.74	Closure of fistula of small intestine, except duodenum (includes enterocutaneous)	
46.76	Closure of fistula of large intestine	
47.92	Closure of appendiceal fistula	
48.73	Closure of other rectal fistula	
48.93	Repair of perirectal fistula	
49.11	Anal fistulotomy	
49.12	Anal fistulectomy	
49.73	Closure of anal fistula	
19.9	Other repair of middle ear (includes closure of mastoid fistula)	
20.93	Repair of oval and round windows (includes closure of fistula)	
21.82	Closure of nasal fistula	
31.62	Closure of fistula of larynx (includes laryngotracheal)	
31.73	Closure of other fistula of trachea (includes tracheoesophageal)	
33.42	Closure of bronchial fistula (includes bronchocutaneous, bronchoesophageal, bronchovisceral)	

(continued)

**Table 1 (continued)**  
**Additions to List of Planned Readmissions Currently Used in the Hospital-Wide  
Readmission Measure,\* for Use in the LTCH Measure**

Code	Description	Comment
<b>Topic: Fistula (continued)</b>		
34.73	Closure of other fistula of thorax (includes bronchopleural, bronchopleurocutaneous, bronchopleuromediastinal)	
34.83	Closure of fistula of diaphragm (includes thoracoabdominal, thoracogastric, thoracointestinal)	
34.93	Repair of pleura (includes closure of unspecified pleural fistula)	
61.42	Repair of scrotal fistula	
<b>Topic: Tendon Repair (eye)</b>		
15.7	Repair of injury of extraocular muscle (includes repair of tendon)	
<b>Topic: Aneurysm</b>		
39.51	Clipping of aneurysm	

\* We refer readers to the measure methodology report for the HWR measure for the list of procedure codes and discharge diagnosis categories for each readmission to identify planned readmissions. See QualityNet. *Hospital-wide All-Cause Unplanned Readmission (HWR) Measure. Hospital-Wide Readmission Technical Report.*  
[http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&c\\_id=1228772504318](http://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&c_id=1228772504318). As obtained on March 20, 2013.

For the most current list of planned procedures for the HWR measure, see NQF #0505 Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization at <http://www.qualityforum.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=72189>; specifically, refer to Tables A1–A4 at <http://www.qualityforum.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=72212>. As obtained on April 3, 2013.

**APPENDIX A**  
**VARIABLES IN THE LTCH MODEL FOR UNPLANNED READMISSIONS WITHIN 30**  
**DAYS OF DISCHARGE TO A NON-ACUTE LEVEL OF CARE**

## Variables in the LTCH Model for Unplanned Readmissions within 30 days of Discharge to a Non-Acute Level of Care

Numbers in the variable descriptions refer to the AHRQ CCS groupings or CMS HCC groupings of diagnoses.

Variable	Variable Description
Intercept	Intercept
<b>Age-Sex Groups (Ref: Male 18–44)</b>	
m45_54	Male age 45-54
m55_59	Male age 55-59
m60_64	Male age 60-64
m65_69	Male age 65-69
m70_74	Male age 70-74
m75_79	Male age 75-79
m80_84	Male age 80-84
m85_GT	Male age 85+
w18_44	Female age 18-44
w45_54	Female age 45-54
w55_59	Female age 55-59
w60_64	Female age 60-64
w65_69	Female age 65-69
w70_74	Female age 70-74
w75_79	Female age 75-79
w80_84	Female age 80-84
w85_GT	Female age 85+
<b>CCS Groupings</b> – Based on primary diagnosis (Reference group includes Back problem (205); Gangrene (248); Misc Neg: NeoplLow (22–26, 28–31, 36); NervSystLow (84–94); Ortho (54, 201, 203-204, 206, 208-209, 212); Dis Nerv Syst: Parkinsons, MS, Other hereditary CNS disorder, Paralysis (79-82); Poison (241-243); Pregnancy (176–196))	
p_CCSv1_AdltRespFl	Resp Syst: Adlt Resp Fl (131)
p_CCSv1_AMICardArrst	Circ Syst: AMI & Cardiac arrst (100, 107)
p_CCSv1_Anys_ArtEmOt	Circ Syst: Aneurysm (115) Art embolism and Ot circul dx (116-117)
p_CCSv1_AspPneum	Resp Syst: Asp Pneumonia (129)
p_ccsv1_bil_diab	Biliary Dx, Liver Dx, Other Liver Dx, Pancreas (149-152); Diabetes (49-50)
p_CCSv1_BloodDx	Diseases of blood and blood-forming organs (56-57, 59-64)
p_CCSv1_CHF	Circ Syst: CHF, Nonhypertensive (108)
p_CCSv1_CirCardOthVl	Circ Syst: Carditis and Other heart dx (97, 104) Heart Valve (96)
p_CCSv1_CircHtn	Circ Syst: Htn & Htn complicn (98-99)
p_CCSv1_CmplDevProc	Complic Devi & Complic Proc (237–238)
p_CCSv1_CondDysr	Circ Syst: Conduction & Dysrhythmia (105-106)
p_CCSv1_COPDAsthm	Resp Syst: COPD & Asthma (127-128)
p_CCSv1_CoroAthChsPn	Circ Syst: Coron Athero & Chest pain (101-102)
p_CCSv1_CVD	Circ Syst: CVD (109-111, 113)
p_CCSv1_DigSyst	Diseases of Digestive System (135-144, 146-148, 154-155)
p_CCSv1_FluidElecDx	Fluid/elec dx (55)

(continued)



**Variables in the LTCH Model for Unplanned Readmissions within 30 days of Discharge to a Non-Acute Level of Care (continued)**

Variable	Variable Description
<b><u>CCS Groupings</u></b> – Based on primary diagnosis (continued)	
p_CCSv1_Geni_UTI	Diseases of the genitourinary system (156, 160-166, 168-173, 175) UTI (159)
p_CCSv1_GIHemorr	GI Hemorrhage (153)
p_CCSv1_HipFx	Fx hip (226)
p_CCSv1_InfecParasDx	Infectious and parasitic diseases (1, 3-10)
p_CCSv1_IntObstruct	Digestive System-Int Obstruct (145)
p_CCSv1_IntracranInj	Intracrn Inj (233)
p_CCSv1_MeninEnceCNS	Dis Nerv Syst: Meningitis, Encephalitis, Other CNS infx (76-78)
p_CCSv1_MentIllness	Mental Illness (650–670)
p_CCSv1_Neo_Med_2_HI	Neoplasms-Medium (11-15, 18, 20-21, 32-34, 37-41, 43), 2nd Malign (42) Neoplasms Hi (16-17, 19, 27, 35, 42)
p_CCSv1_PhIVnPeriAth	Circ Syst: Phlebitis, Varicose vn, Hemorrhoids, Oth vein dx (118–121) Perip Athero (114)
p_CCSv1_PneumInf	Resp Syst: Pneum, Infla, Bronc, Oth up rsp (122-123, 125-126)
p_CCSv1_PulmHart	Circ Syst: Pulm hart dx (103)
p_CCSv1_Renl_fail	Genitourinary: Ac & Chr renl fail (157-158)
p_CCSv1_RespPleurEtc	Resp Syst: Pleurisy, Lung externl, Oth low resp, Oth uppr resp, Tonsillitis (124, 130, 132-134)
p_CCS_RASLEOCT_MP	Rheum arth (202), SLE (210), OthConnTiss (211), NeoplBenign (44–47), Endocrn (48, 51, 53), NutritDef (52, 58), TIA (112), CongAnom (213–217) (miscellaneous positive signed groups)
p_CCSv1_SCI	Spin cor inj (227)
p_CCSv1_Septicemia	Infect & Paras Dx: Septicemia (2)
p_CCSv1_SxSigns	Symptoms, Signs, and Ill-Defined Conditions and Factors influencing health status (245-247, 249-259)
p_CCSv2_EpiCNVOthNer	DisNervSyst: Epilepsy/CNV (83) & Oth Nerv Dx (95)
p_CCSv2_Fractures	Fractures regroup (Path, Skull, Arm, Leg, Oth) (207, 228–231)
p_CCSv2_Skin_Inj	Injury(Joint inj, Sprain, Crush inj, Opn wnds, Superfic) (225, 232, 234-236, 239, 244) Skin-Diseases skin/subcut tissue; Burns (167, 197–200, 240)
<b><u>Surgical Groups</u></b>	
p_ct	Cardio Thoracic
p_gen_uro_obgyn	General surgery, Obstetrics/Gynecology, and urologic surgical procedures
p_neuro_vas	Neurosurgery, Vascular Surgery
p_ortho	Orthopedics
p_plastic	Plastic Surgery
<b><u>Vent Indicator</u></b>	
Vent	Prolonged Ventilation in LTCH
<b><u>HCC Comorbidities*</u></b> – based on prior acute (p_HCC*) or 365-day look-back (HCC*)	
HCC1	HIV/AIDS
p_HCC2	Septicemia, Sepsis, Systemic Inflammatory Response Syndrome/Shock
HCC3	Bacterial, Fungal, and Parasitic Central Nervous System Infections

(continued)

**Variables in the LTCH Model for Unplanned Readmissions within 30 days of Discharge to a Non-Acute Level of Care (continued)**

Variable	Variable Description
<b><u>HCC Comorbidities*</u></b> – based on prior acute (p_HCC*) or 365-day look-back (HCC*) (continued)	
p_HCC6_7	Opportunistic Infections, Other Infectious Diseases
HCC_17_20	Diabetes: 17-with acute comp, 18-with chronic comp, 19-without comp, 20-Type 1
p_HCC21_24	Protein-Calorie Malnutrition, Disorders of Fluid/Electrolyte/Acid-Base Balance
HCC23_26	Other Significant Endocrine/Metabolic/Nutritional Disorders
HCC25	Disorders of Lipoid Metabolism
p_HCC27_28_29_31	End-Stage Liver Disease, Cirrhosis of Liver, Chronic Hepatitis, Other Hepatitis and Liver Disease
HCC32	Gallbladder and Biliary Tract Disorders
HCC34	Chronic Pancreatitis
HCC35_38	Inflammatory Bowel Disease, Other Gastrointestinal Disorders
p_HCC36	Peptic Ulcer, Hemorrhage, Other Specified Gastrointestinal Disorders
p_HCC39	Bone/Joint/Muscle Infections/Necrosis
HCC41_45	Vert/Spinal Discs, Osteoarthritis/Hip/Knee, Osteoporosis Bone/Cart Disord, Congen/Dev Skeletal/Connect Tis, Other Musculoskel/Connect Tis
p_HCC46	Severe Hematological Disorders
p_HCC50	Delirium and Encephalopathy
p_HCC51	Dementia With Complications
p_HCC52	Dementia Without Complication
p_HCC53	Nonpsychotic Organic Brain Syndromes/Conditions
p_HCC54_56	Drug/Alcohol Psychosis, Dependence, Abuse Without Dependence
p_HCC57	Schizophrenia
p_HCC58_63	Disorders: Major Depressive, Bipolar, Paranoid/Reactive and Unspecified Psychosis/Personality/Depression/Anxiety/Other Psychiatric
HCC64_65_66_67	Profound, Severe, Moderate, Mild Mental Retardation/Developmental Disability, Autism, Down Syndrome
p_HCC_75_81	Neuropathies: 75-poly; 76-MD; 77-MS; 78-Park/Hunt; 79-Seiz; 80-Coma; 81-Mononeur
p_HCC83_84	Respiratory Arrest, Cardio-Respiratory Failure and Shock
p_HCC85	Congestive Heart Failure
p_HCC86	Acute Myocardial Infarction
HCC95	Hypertension
p_HCC99_100	Cerebral Hemorrhage Merge, Ischemic or Unspecified Stroke
HCC106	Atherosclerosis of the Extremities with Ulceration or Gangrene
p_HCC111_112	COPD, Fibrosis of Lung and Other Chronic Lung Disorders
p_HCC114_115_116	Aspiration/Specified Bacterial Viral/Unspecified Pneumonias, Pneumococcal Pneumonia, Empyema, Lung Abscess, Pleurisy
p_HCC132	Kidney Transplant Status
p_HCC133	End Stage Renal Disease
p_HCC135	Acute Renal Failure
p_HCC136_137_140	Chronic Kidney Disease, Stage 5/Severe (Stage 4)/Unspecified Renal Failure

(continued)

**Variables in the LTCH Model for Unplanned Readmissions within 30 days of Discharge to a Non-Acute Level of Care (continued)**

<b>Variable</b>	<b>Variable Description</b>
<b><u>HCC Comorbidities*</u></b> – based on prior acute (p_HCC*) or 365-day look-back (HCC*) (continued)	
p_HCC142_144	Urinary Obstruction and Retention/Urinary Tract Infection
p_HCC147	Pelvic Inflammatory Disease and Other Specified Female Genital Disorders
p_HCC148_149	Other Female Genital Disorders, Male Genital Disorders
p_HCC157_158	Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone, with Full Thickness Skin Loss
p_HCC164	Cellulitis, Local Skin Infection
p_HCC173_189	Traumatic Amputations and Complications, Amputation Status, Lower Limb/Amputation Complications
p_HCC_186_187	Organ Transplant: 186-Major Organ; 187-Other Organ
p_HCC188	Artificial Openings for Feeding or Elimination
<b><u>Prior Acute Care Length of Stay</u></b>	
p_LOS	Prior Acute Length of Stay
p_LOS_sq	Prior Acute Length of Stay, Squared
<b><u>Prior Acute Intensive Care Days</u></b>	
INT_care_days	ICU + CCU days
INT_care_days_sq	ICU + CCU days, Squared
<b><u>Original Reason for Entitlement Codes</u></b>	
OREC_1	Original reason for entitlement: 1-Disability Insurance Benefits (DIB)
OREC_23	Original reason for entitlement: 2-ESRD; 3-BOTH Disability Insurance Benefit (DIB) and ESRD
<b><u>Prior Acute Care Utilization-Count of prior stays</u></b>	
history_stay_1	1 Stay - Acute history
history_stay_2	2 Stays - Acute history
history_stay_3	3 Stays - Acute history
history_stay_4	4 Stays - Acute history
history_stay_5	5 Stays - Acute history
history_stay_6	6 Stays - Acute history
history_stay_7	7 Stays - Acute history
history_stay_8	8 Stays - Acute history
history_stay_9	9 Stays - Acute history
history_stay_10plus	10+ Stays - Acute history