Measure Name

Descriptive Information

Measure Name (Measure Title De.2.)
Standardized Readmission Ratio (SRR) for dialysis facilities

Measure Type De.1.
Outcome

Brief Description of Measure De.3.
The Standardized Readmission Ratio (SRR) is defined to be the ratio of the number of Medicare-covered index discharges from acute care hospitals that resulted in an unplanned Medicare-covered readmission to an acute care hospital within 4–30 days of discharge for dialysis patients treated at a particular dialysis facility to the number of readmissions that would be expected given the discharging hospitals, the characteristics of the dialysis facility's patients and the national norm for dialysis facilities. Note that, in this document, "hospital" refers to acute care hospital.

If Paired or Grouped De.4.
It is our view that the SRR should be considered in conjunction with the Standardized Hospitalization Ratio (SHR; NQF #1463). These two measures present two different aspects of dialysis facilities' hospitalization use, both of which are important. The SHR gives a measure of hospitalization rates with reference to the totality of patients being served by a given facility. The SRR on the other hand uses as a denominator the number of hospitalizations for the given facility. A facility that has a very low SHR, corresponding to low hospitalization rates, together with a high SRR suggests the facility is managing patients well overall, but there appear to be some potential problems with transitions of care, such as hospital discharges. Alternatively, a facility might have a high SHR and a low SRR, indicating that there is an overall high utilization of hospital resources, but that the process of care after a discharge seems effective at reducing readmissions.

Another advantage of pairing these measures is that the SHR adjusts for comorbidities at incidence of ESRD, whereas the SRR is able to utilize information on more recent comorbidities (for example, from the index hospitalization) because its denominator is index hospitalizations rather than patients.

Subject/Topic Areas De.5.
Prevention, Renal, Renal : End Stage Renal Disease (ESRD)

Crosscutting Areas De 6.

Care Coordination, Care Coordination : Readmissions, Safety : Readmissions

Measure Specifications

Measure-specific Web Page S.1.

N/A

If This Is an eMeasure S.2a.

No HQMF specs

Data Dictionary, Code Table, or Value Sets S.2b.

No data dictionary

For Endorsement Maintenance S.3.

N/A

Numerator Statement S.4.

Each facility's observed number of hospital discharges that are followed by an unplanned hospital readmission within 4–30 days of discharge

Time Period for Data S.5.

One calendar year

Numerator Details S.6.

Hospitalizations are counted as events in the numerator if they were followed by an unplanned readmission that (a) occurred within 4–30 days of a hospital discharge and (b) was not preceded by a "planned" readmission that also occurred within 4–30 days of discharge. In summary, a readmission is considered "planned" under two scenarios [1]:

1. The patient undergoes a procedure that is always considered planned (e.g., bone marrow transplant) or has a primary diagnosis that always indicates the hospitalization is planned (e.g., maintenance chemotherapy).

2. The patient undergoes a procedure that MAY be considered planned if it is not accompanied by an acute diagnosis. For example, a hospitalization involving a heart valve procedure accompanied by a primary diagnosis of diabetes would be considered planned, whereas a hospitalization involving a heart valve procedure accompanied by a primary diagnosis of acute myocardial infarction (AMI) would be considered unplanned.

    1. Centers for Medicaid and Medicare Services. Hospital Quality Initiative: Measure Methodology website. "Planned Readmission Algorithm" [ZIP file]. Available at:

Denominator Statement S.7.
The expected number hospitalizations followed by an unplanned readmission within 4–30 days in each facility, which is derived from a model that accounts for patient characteristics, the dialysis facility to which the patient is discharged and the discharging hospital.

Target Population Category S.8.
Populations at Risk

Denominator Details S.9.
We calculate each dialysis facility's expected number of hospitalizations followed by an unplanned readmission by fitting a model with random effects for discharging hospitals, fixed effects for facilities and regression adjustments for a set of patient-level characteristics, including measures of patient comorbidities. We compute the expectation for the given facility assuming readmission rates corresponding to an "average" facility with the same patient characteristics and same discharging hospitals as this facility. Model details are provided in the Risk Standardization section below.

All live discharges of dialysis patients from a Medicare-paid hospitalization in a calendar year are considered eligible for this measure.

Denominator Exclusions (NQF Includes "Exceptions" in the "Exclusion" Field) S.10.
Hospital discharges that:

- Are not live discharges
- Result in a patient dying within 30 days with no readmission
- Are against medical advice
- Include a primary diagnosis for cancer, mental health or rehabilitation
- Occur after a patient's 12th admission in the calendar year
- Are from a PPS-exempt cancer hospital
- Result in a transfer to another hospital on the same day
- Are followed by an unplanned readmission within 3 days (inclusive)

Denominator Exclusion Details (NQF Includes "Exceptions" in the "Exclusion" Field) S.11.

- Death in hospital/within 30 days of discharge: We determine a patient's death date from his/her Death Notification Form (CMS Form 2746) and the Social Security Death Master File.

- Discharged against medical advice: We determine discharge status from the inpatient claim.
- Certain diagnoses: The primary diagnosis at discharge is available on the inpatient claim; we group these diagnoses into more general categories using AHRQ's Clinical Classification Software (CCS; see http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp for descriptions of each CCS).

  The excluded CCSs are shown below.
  - Cancer: 42, 19, 45, 44, 17, 38, 39, 14, 40, 35, 16, 13, 29, 15, 18, 12, 11, 27, 33, 32, 24, 43, 25, 36, 21, 41, 20, 23, 26, 28, 34, 37, 22, 31, 30
  - Psychiatric: 657, 659, 651, 670, 654, 650, 658, 652, 656, 655, 662
  - Rehab for prosthesis: 254

- Number of admissions: We remove any records for a patient after his/her 12th admission in the calendar year.
- PPS-exempt cancer hospitals: The following hospitals are listed as PPS-exempt cancer hospitals in the Federal Register (http://www.gpo.gov/fdsys/pkg/FR-2011-07-18/html/2011-16949.htm): 050146, 050660, 100079, 100271, 220162, 330154, 330354, 360242, 390196, 450076, 500138
- Same-day transfers: We determine same-day transfers using the hospital ID and date of discharge and date of next admission available in the inpatient claims data.

Stratification Details/Variables S.12.
N/A

Risk Adjustment Type S.13.
Statistical risk model

Statistical Risk Model and Variables S.14.
We use a two-stage model, the first of which is a double random-effects logistic regression model. In this model, both dialysis facilities and hospitals are represented as random effects, and we make regression adjustments for a set of patient-level characteristics. From this model, we obtain the estimated standard deviation of the random effects of hospitals.

The second model is a mixed-effects logistic regression model, in which we include facilities are fixed effects and hospitals as random effects, with the standard deviation specified as equal to its estimates from the first model. The expected number of hospitalizations followed by an unplanned readmission for each facility is estimated as the summation of the probabilities of readmission of all patients in this facility and assuming the national norm for facility effect. This model accounts for a given facility's case mix using the same set of patient-level characteristics as those in the first model.

Detailed Risk Model Specifications S.15.
See Appendix

Type of Score S.16.
Ratio

Interpretation of Score S.17.
Better quality = Lower score

Calculation Algorithm/Measure Logic S.18.
1. Identify target hospitalizations (index discharges and readmissions):

   a. Identify all Medicare-covered inpatient hospitalizations for patients discharged on dialysis that ended on or after January 1 of the measure year and began on or before January 31 of the following year. Note that the discharges occurring January 1-31 of the following year are kept temporarily only as potential readmissions, to be identified in the construction of the sample; no discharges in this period are considered index discharges.
   b. Exclude any hospitalizations occurring at non-acute hospitals (e.g., those from long-term care or rehabilitation hospitals).
   c. Classify each hospitalization as planned or unplanned, using the algorithm developed for CMS' Hospital-Wide Readmission (HWR) measure.

2. Identify index discharges as all discharges from Step 1, except those meeting one of the following criteria:

   a. those ending in the next calendar year;
   b. for patients who died during the hospitalization (because there was no opportunity for readmission);
   c. for patients who were discharged against medical advice (AMA) (because providers did not have the opportunity to deliver full care and prepare the patient for discharge);
   d. those ending in a transfer to another acute care facility (for patients who are transferred between one acute care hospital and another, the measure considers these multiple contiguous hospitalizations as a single acute episode of care, and any readmission for a transferred patient is attributed to the hospital that ultimately discharges the patient to the dialysis facility);
   e. those taking place at Prospective Payment System (PPS)-exempt cancer hospitals;
   f. those that occur after a patient's 12th hospital admission in the time period; and
   g. those for which the patient was admitted for medical treatment of cancer, primary psychiatric diagnoses or rehabilitation.

3. Classify each index discharge in Step 2 according to whether it was followed within 30 days by an unplanned readmission:

   a. For each index discharge in Step 2, find the first admission among the hospitalizations in Step 1 that occurred within 30 days of the index discharge date.
   b. If no admission is identified AND the patient died within 30 days of the index discharge date then the index discharge is excluded.
   c. If the admission identified was unplanned, then the index discharge is classified as having a readmission.
   d. If no admission is identified (and not excluded in 3b) OR the admission identified was planned, then the index discharge is classified as not having a readmission.

4. Identify final set of index discharges for analysis as those from Step 3 with the following additional exclusions:

   a. Exclude facilities with fewer than 11 index discharges in the time period.
   b. Exclude index discharges that were followed within 3 days (i.e., within 0–3 days, inclusive) by a readmission (either planned or unplanned).

5. Identify all ICD-9 diagnoses for the patient in the full calendar year preceding the respective discharge; group each diagnosis into CMS' Hierarchical Condition Categories. These diagnoses are identified from Medicare-paid institutional claims (inpatient, outpatient, home health, hospice and skilled nursing facility).

6. Using a two-stage modeling process (see Appendix), calculate each facility's expected rate of readmission by regressing the probability of unplanned readmission within 4–30 days on a set of risk factors:

   a. Fixed effect for dialysis facility receiving discharged patient
   b. Random effect for hospital discharging the patient
   c. Sex
   d. Age at index discharge
   e. Years on dialysis as of index discharge
   f. Diabetes as cause of ESRD
   g. BMI at incidence of ESRD
   h. Length (days) of index hospitalization
   i. Past-year comorbidities (grouped into CCs)
   j. Discharged with high-risk condition (grouped into AHRQ CCSs)

Calculate the facility-level measure as the ratio of its actual readmission events to its expected number of readmission events. Standardize the measure in relation to the national median readmission rate.

Calculation Algorithm/Measure Logic Diagram URL or Attachment S.19.

Available in attached appendix at A.1

Sampling S.20.
N/A

Survey/Patient-Reported Data S.21.
N/A

Missing Data S.22.
N/A

Data Source S.23.
Administrative claims

Data Source or Collection Instrument S.24.
Data are derived from an extensive national ESRD patient database based on data from the CMS REMIS and CROWNWeb systems, Medicare dialysis and hospital payment records, the Organ Procurement and Transplant Network (OPTN), the CMS Nursing Home Minimum Dataset, and the Social Security Death Master File. Data from the CMS Annual Facility Survey (Form CMS-2744), the CMS Medical Evidence Form (Form CMS-2728) and the Death Notification Form (Form CMS-2746) come from CROWNWeb. The database is comprehensive for Medicare-covered ESRD patients. Information on hospitalizations is obtained from Medicare Inpatient Claims Standard Analysis Files (SAFs), and information on past-year comorbidities is obtained from multiple types (inpatient, outpatient institutional, physician/supplier, home health, hospice, skilled nursing facility claims) of Medicare Claims Standard Analysis Files (SAFs).

http://www.cms.gov/Manuals/IOM/itemdetail.asp?filterType=none&filterByDID=-99&sortByDID=1&sortOrder=ascending&itemID=CMS018912

Data Source or Collection Instrument (Reference) S.25.
N/A

Level of Analysis S.26.
Facility

Care Setting S.27.
Dialysis Facility

Composite Performance Measure S.28.
N/A

Detailed Risk Model Specifications

To estimate the probability of 30-day unplanned readmission, we use a two-stage model, the first of which is a double random-effects logistic regression model. In this stage of the model, both dialysis facilities and hospitals are represented as random effects, and regression adjustments are made for a set of patient-level characteristics. From this model, we obtain the estimated standard deviation of the random effects of hospitals (Diggle, et. al., 2002).

The second stage of the model is a mixed-effects logistic regression model, in which dialysis facilities are modeled as fixed effects and hospitals are modeled as random effects, with the standard deviation specified as equal to its estimates from the first model. The expected number of readmissions for each facility is estimated as the summation of the probabilities of readmission of all patients in this facility and assuming the national norm (i.e., the median) for facility effect. This model accounts for a given facility's case mix using the same set of patient-level characteristics as those in the first model.

The equations used in the measure calculation are as follows:

- To estimate the probability of 30-day unplanned readmission, we use a two-stage approach. The main model, which produces the estimates used to calculate SRR, takes the form:

$$\log \frac{p_{ijk}}{1 - p_{ijk}} = \gamma_i + \alpha_j + \beta^T Z_{ijk} , \qquad (1)$$

where p_{ijk} represents the probability of an unplanned readmission for the kth discharge among patients from the ith facility who are discharged from j^{th} hospital, and Z_{ijk} represents the set of patient-level characteristics. Here, γ_i is the fixed effect for facility and α_j is the random effect for hospital j. It is assumed that the α_js arise as independent normal variables (i.e., $\alpha_j \sim N(0, \sigma^2)$).

- We then use the estimates from this model to calculate each facility's SRR:

$$SRR_i = \frac{O_i}{E_i} = \frac{O_i}{\sum_{j \in H(i)} \sum_{k=1}^{n_{ij}} \tilde{p}_{ijk}} , \qquad (2)$$

where, for the ith facility, O_i is the number of observed unplanned readmissions, E_i is the expected number of unplanned readmissions for discharges, $H(i)$ is the collection of indices of hospitals from which patients are discharged, and $\tilde{p}_{ijk}$ is the predicted probability of unplanned readmission under the national norm for each discharge. Specifically, $\tilde{p}_{ijk}$ takes the form

$$\tilde{p}_{ijk} = \frac{\exp(\widehat{\gamma_M} + \widehat{\alpha_j} + \widehat{\beta}^T Z_{ijk})}{1 + \exp(\widehat{\gamma_M} + \widehat{\alpha_j} + \widehat{\beta}^T Z_{ijk})} , \qquad (3)$$

which estimates the probability that a discharge from hospital j of an individual in facility i with characteristics Z_{ijk} would result in an unplanned readmission if the facility effect corresponded to the median of national facility effects, denoted by $\widehat{\gamma_M}$. Here, $\hat{\alpha}_j$ and $\hat{\beta}$ are estimates from model (1). The sum of these probabilities is the expected number of unplanned readmissions E_i at facility i; e.g., the number of readmissions that would have been expected in facility i had they progressed to the readmissions at the same rate as the national population of dialysis patients.

Patient-Level Risk Adjustors

As mentioned previously, the model accounts for a set of patient-level characteristics:

- Sex
- Age
- Years on dialysis
- Diabetes as cause of ESRD
- BMI at incidence of ESRD
- Length (days) of index hospitalization
- Past-year comorbidities: We identify all unique ICD-9 diagnosis codes from each patient's prior year of Medicare claims. We group these diagnosis codes by diagnosis area using HHS' Hierarchical Condition Categories (CCs). The CCs used in calculation of the SRR are:
    - CCs 177, 178: Amputation status
    - CC 108: COPD
    - CC 79: Cardiorespiratory failure/shock
    - CC 46: Coagulation defects & other specified hematological disorders
    - CCs 51, 52: Drug and alcohol disorders
    - CCs 25, 26: End-Stage Liver Disease
    - CC 109: Fibrosis of lung or other chronic lung disorders
    - CCs 67–69, 100, 101: Hemiplegia, paraplegia, paralysis
    - CC 158: Hip fracture/dislocation
    - CC 174: Major organ transplants (excl. kidney)
    - CC 7: Metastatic cancer/acute leukemia
    - CC 44: Other hematological disorders
    - CCs 6, 111–113: Other infectious disease & pneumonias
    - CCs 10–12: Other major cancers
    - CC 32: Pancreatic disease
    - CCs 54–56, 58, 60: Psychiatric comorbidity
    - CC 77: Respirator dependence/tracheostomy status
    - CC 38: Rheumatoid arthritis & inflammatory connective tissue disease
    - CC 74: Seizure disorders & convulsions
    - CC 2: Septicemia/shock
    - CCs 8,9: Severe cancer
    - CCs 1, 3–5: Severe infection

- o CCs 148, 149: Ulcers
- Discharged with high-risk condition: We define a *high-risk* diagnosis as any diagnosis area that was rare in our population but had a 30-day readmission rate of at least 40%. We did not include high-risk diagnosis groups related to cancer or mental health. We group these conditions using the Agency for Healthcare Research and Quality (AHRQ) Clinical Classifications Software (CCS). The CCS areas identified as high-risk are:
  - o CCS 5: HIV infection
  - o CCS 6: Hepatitis
  - o CCS 56: Cystic fibrosis
  - o CCS 57: Immunity disorders
  - o CCS 61: Sickle cell anemia
  - o CCS 190: Fetal distress and abnormal forces of labor
  - o CCS 151: Other liver diseases
  - o CCS 182: Hemorrhage during pregnancy; abruptio placenta; placenta previa
  - o CCS 186: Diabetes or abnormal glucose tolerance complicating pregnancy; childbirth; or the puerperium
  - o CCS 210: Systemic lupus erythematosus and connective tissue disorders
  - o CCS 243: Poisoning by nonmedicinal substances

The coefficients for the patient characteristics resulting from the logistic model are shown below.

Table 1. Effects of Patient Characteristics on Readmission Rates for Medicare-Covered Dialysis Patients, 2009

Patient Characteristic	Beta	SE	*p*
Age (y)			
<25	0.33	0.03	<.0001
25–45	0.18	0.01	<.0001
45–60 (ref)	—	—	—
60–75	-0.03	0.01	<.0001
>75	0.06	0.01	<.0001
BMI			
Underweight	0.08	0.01	<.0001
Normal Weight (ref)	—	—	—
Overweight	-0.05	0.01	<.0001
Obese	-0.12	0.01	<.0001
Cause of ESRD: Diabetes	0.05	0.01	<.0001
Comorbidity (past year)			
Amputation status	0.06	0.01	<.0001
COPD	0.22	0.01	<.0001
Cardiorespiratory failure/shock	0.23	0.01	<.0001
Coagulation defects & other specified hematological	0.13	0.01	<.0001

disorders			
Drug and alcohol disorders	0.32	0.02	<.0001
End-Stage Liver Disease	0.27	0.02	<.0001
Fibrosis of lung or other chronic lung disorders	0.04	0.02	0.01
Hemiplegia, paraplegia, paralysis	0.08	0.01	<.0001
Hip fracture/dislocation	0.01	0.02	0.17
Major organ transplants (excl. kidney)	-0.04	0.03	0.04
Metastatic cancer/acute leukemia	0.29	0.04	<.0001
Other hematological disorders	0.18	0.02	<.0001
Other infectious disease & pneumonias	0.15	0.01	<.0001
Other major cancers	0.02	0.01	0.04
Pancreatic disease	0.21	0.01	<.0001
Psychiatric comorbidity	0.19	0.01	<.0001
Respirator dependence/tracheostomy status	-0.03	0.04	0.11
Rheumatoid arthritis & inflammatory connective tissue disease	0.02	0.02	0.06
Seizure disorders & convulsions	0.10	0.01	<.0001
Septicemia/shock	0.13	0.01	<.0001
Severe cancer	0.15	0.02	<.0001
Severe infection	0.06	0.02	0.0002
Ulcers	0.10	0.01	<.0001
Length of Index Hospitalization (days)			
Quartile 1 (ref)	—	—	—
Quartile 2	0.12	0.01	<.0001
Quartile 3	0.23	0.01	<.0001
Quartile 4	0.44	0.01	<.0001
Presence of high-risk diagnosis at index discharge	0.49	0.03	<.0001
Sex: Female	0.06	0.01	<.0001
Time on ESRD (y)			
<1 (ref)	—	—	—
1–2	0.0002	0.01	0.25
2–3	-0.32	0.01	<.0001
3–6	-0.35	0.01	<.0001
>6	-0.38	0.01	<.0001

For more information on the diagnosis codes for the comorbid risk factors as defined in CCs, a crosswalk of CCs to ICD-9-CM codes is available at: (http://www.qualitynet.org) > Hospitals – Inpatient > Claims-Based Measures > Readmission Measures > Resources.

For more information on the diagnosis codes for the discharge diagnosis categories as defined in the CCSs, a crosswalk of CCS categories to ICD-9-CM codes is available at: (http://www.qualitynet.org) > Hospitals – Inpatient > Claims-Based Measures > Readmission Measures > Resources. AHRQ has also developed a crosswalk of CCs to ICD-10-CM codes, which will be used after national implementation of ICD-10 coding on CMS claims: http://www.hcup-us.ahrq.gov/toolssoftware/icd_10/ccs_icd_10.jsp.

ICD-9 to ICD-10 Mapping

Clinician Review of

Individual ICD-9 Codes in SRR

SRR Measure: One-to-One ICD Matches

ICD-9	Description	ICD-10	Description
3282	Diphtheritic myocarditis	A3681	Diphtheritic cardiomyopathy
3640	Meningococcal carditis, unspecified	A3950	Meningococcal carditis, unspecified
3641	Meningococcal pericarditis	A3953	Meningococcal pericarditis
3642	Meningococcal endocarditis	A3951	Meningococcal endocarditis
3643	Meningococcal myocarditis	A3952	Meningococcal myocarditis
7420	Coxsackie carditis, unspecified	B3320	Viral carditis, unspecified
7421	Coxsackie pericarditis	B3323	Viral pericarditis
7422	Coxsackie endocarditis	B3321	Viral endocarditis
7423	Coxsackie myocarditis	B3322	Viral myocarditis
11281	Candidal endocarditis	B376	Candidal endocarditis
1303	Myocarditis due to toxoplasmosis	B5881	Toxoplasma myocarditis
3029	Unspecified psychosexual disorder	F659	Paraphilia, unspecified
3910	Acute rheumatic pericarditis	I010	Acute rheumatic pericarditis
3911	Acute rheumatic endocarditis	I011	Acute rheumatic endocarditis
3912	Acute rheumatic myocarditis	I012	Acute rheumatic myocarditis
3918	Other acute rheumatic heart disease	I018	Other acute rheumatic heart disease
3919	Acute rheumatic heart disease, unspecified	I019	Acute rheumatic heart disease, unspecified
3920	Rheumatic chorea with heart involvement	I020	Rheumatic chorea with heart involvement
3980	Rheumatic myocarditis	I090	Rheumatic myocarditis
39890	Rheumatic heart disease, unspecified	I099	Rheumatic heart disease, unspecified
39899	Other rheumatic heart diseases	I0989	Other specified rheumatic heart diseases
4200	Acute pericarditis in diseases classified elsewhere	I32	Pericarditis in diseases classified elsewhere
42090	Acute pericarditis, unspecified	I309	Acute pericarditis, unspecified
42091	Acute idiopathic pericarditis	I300	Acute nonspecific idiopathic pericarditis
42099	Other acute pericarditis	I308	Other forms of acute pericarditis
4210	Acute and subacute bacterial endocarditis	I330	Acute and subacute infective endocarditis
4211	Acute and subacute infective endocarditis in diseases classified elsewhere	I39	Endocarditis and heart valve disorders in diseases classified elsewhere
4219	Acute endocarditis, unspecified	I339	Acute and subacute endocarditis, unspecified
4220	Acute myocarditis in diseases classified elsewhere	I41	Myocarditis in diseases classified elsewhere
42290	Acute myocarditis, unspecified	I409	Acute myocarditis, unspecified
42291	Idiopathic myocarditis	I401	Isolated myocarditis
42292	Septic myocarditis	I400	Infective myocarditis
42293	Toxic myocarditis	I408	Other acute myocarditis

SRR Measure: One-to-One ICD Matches

ICD-9	Description	ICD-10	Description
42299	Other acute myocarditis	I408	Other acute myocarditis
4230	Hemopericardium	I312	Hemopericardium, not elsewhere classified
4231	Adhesive pericarditis	I310	Chronic adhesive pericarditis
4232	Constrictive pericarditis	I311	Chronic constrictive pericarditis
4233	Cardiac tamponade	I314	Cardiac tamponade
4260	Atrioventricular block, complete	I442	Atrioventricular block, complete
42610	Atrioventricular block, unspecified	I4430	Unspecified atrioventricular block
42611	First degree atrioventricular block	I440	Atrioventricular block, first degree
42612	Mobitz (type) II atrioventricular block	I441	Atrioventricular block, second degree
42613	Other second degree atrioventricular block	I441	Atrioventricular block, second degree
4264	Right bundle branch block	I4510	Unspecified right bundle-branch block
42650	Bundle branch block, unspecified	I454	Nonspecific intraventricular block
42651	Right bundle branch block and left posterior fascicular block	I452	Bifascicular block
42652	Right bundle branch block and left anterior fascicular block	I452	Bifascicular block
42653	Other bilateral bundle branch block	I452	Bifascicular block
42654	Trifascicular block	I453	Trifascicular block
4266	Other heart block	I455	Other specified heart block
4267	Anomalous atrioventricular excitation	I456	Pre-excitation syndrome
42681	Lown-Ganong-Levine syndrome	I456	Pre-excitation syndrome
42682	Long QT syndrome	I4581	Long QT syndrome
4269	Conduction disorder, unspecified	I459	Conduction disorder, unspecified
4272	Paroxysmal tachycardia, unspecified	I479	Paroxysmal tachycardia, unspecified
42769	Other premature beats	I4949	Other premature depolarization
4279	Cardiac dysrhythmia, unspecified	I499	Cardiac arrhythmia, unspecified
42821	Acute systolic heart failure	I5021	Acute systolic (congestive) heart failure
42823	Acute on chronic systolic heart failure	I5023	Acute on chronic systolic (congestive) heart failure
42831	Acute diastolic heart failure	I5031	Acute diastolic (congestive) heart failure
42833	Acute on chronic diastolic heart failure	I5033	Acute on chronic diastolic (congestive) heart failure
42841	Acute combined systolic and diastolic heart failure	I5041	Acute combined systolic (congestive) and diastolic (congestive) heart failure
42843	Acute on chronic combined systolic and diastolic heart failure	I5043	Acute on chronic combined systolic (congestive) and diastolic (congestive) heart failure
4290	Myocarditis, unspecified	I514	Myocarditis, unspecified
7850	Tachycardia, unspecified	R000	Tachycardia, unspecified

Needs Clinician Review: Choose Appropriate ICD-10 Code(s)

ICD-9	Description	ICD-10	Description	Which ICD-10?
11503	Infection by Histoplasma capsulatum, pericarditis	B394	Histoplasmosis capsulati, unspecified	x
		I32	Pericarditis in diseases classified elsewhere	x
11504	Infection by Histoplasma capsulatum, endocarditis	B394	Histoplasmosis capsulati, unspecified	x
		I39	Endocarditis and heart valve disorders in diseases classified elsewhere	x
11513	Infection by Histoplasma duboisii, pericarditis	B395	Histoplasmosis duboisii	x
		I32	Pericarditis in diseases classified elsewhere	x
11514	Infection by Histoplasma duboisii, endocarditis	B395	Histoplasmosis duboisii	x
		I39	Endocarditis and heart valve disorders in diseases classified elsewhere	x
11593	Histoplasmosis, unspecified, pericarditis	B399	Histoplasmosis, unspecified	x
		I32	Pericarditis in diseases classified elsewhere	x
11594	Histoplasmosis, unspecified, endocarditis	B399	Histoplasmosis, unspecified	x
		I39	Endocarditis and heart valve disorders in diseases classified elsewhere	x
41002	Acute myocardial infarction of anterolateral wall, subsequent episode of care	I2109	ST elevation (STEMI) myocardial infarction involving other coronary artery of anterior wall	x
		R0989	Other specified symptoms and signs involving the circulatory and respiratory systems	x
41012	Acute myocardial infarction of other anterior wall, subsequent episode of care	I2109	ST elevation (STEMI) myocardial infarction involving other coronary artery of anterior wall	x
		R0989	Other specified symptoms and signs involving the circulatory and respiratory systems	
41022	Acute myocardial infarction of inferolateral wall, subsequent episode of care	I2119	ST elevation (STEMI) myocardial infarction involving other coronary artery of inferior wall	x
		R0989	Other specified symptoms and signs involving the circulatory and respiratory systems	
41032	Acute myocardial infarction of inferoposterior wall, subsequent episode of care	I2111	ST elevation (STEMI) myocardial infarction involving right coronary artery	x
		R0989	Other specified symptoms and signs involving the circulatory and respiratory systems	
41042	Acute myocardial infarction of other inferior wall, subsequent episode of care	I2119	ST elevation (STEMI) myocardial infarction involving other coronary artery of inferior wall	x
		R0989	Other specified symptoms and signs involving the circulatory and respiratory systems	
41052	Acute myocardial infarction of other lateral wall, subsequent episode of care	I2129	ST elevation (STEMI) myocardial infarction involving other sites	x
		R0989	Other specified symptoms and signs involving the circulatory and respiratory systems	
41062	True posterior wall infarction, subsequent episode of care	I2129	ST elevation (STEMI) myocardial infarction involving other sites	x
		R0989	Other specified symptoms and signs involving the circulatory and respiratory systems	
41072	Subendocardial infarction, subsequent episode of care	I214	Non-ST elevation (NSTEMI) myocardial infarction	x
		R0989	Other specified symptoms and signs involving the circulatory and respiratory systems	
41082	Acute myocardial infarction of other specified sites, subsequent episode of care	I2121	ST elevation (STEMI) myocardial infarction involving left circumflex coronary artery	x
		R0989	Other specified symptoms and signs involving the circulatory and respiratory systems	
41092	Acute myocardial infarction of unspecified site, subsequent episode of care	I213	ST elevation (STEMI) myocardial infarction of unspecified site	x
		R0989	Other specified symptoms and signs involving the circulatory and respiratory systems	
4262	Left bundle branch hemiblock	I444	Left anterior fascicular block	x
		I445	Left posterior fascicular block	x
4263	Other left bundle branch block	I4469	Other fascicular block	x
		I447	Left bundle-branch block, unspecified	x
42789	Other specified cardiac dysrhythmias	I498	Other specified cardiac arrhythmias	x
		R001	Bradycardia, unspecified	x