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Use of non-indicated cardiac testing in low-risk patients: Choosing Wisely

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INTRODUCTION

In 2011, the American Board of Internal Medicine Foundation created the Choosing Wisely initiative, which encourages physicians to be responsible stewards of finite healthcare resources.¹ Through this programme, specialty societies have created lists of “Five Things Physicians and Patients Should Question”. Cardiac testing in low-risk patients appears on the Choosing Wisely lists of six specialty societies (see online supplementary table S1). A challenge in studying potential waste or creating incentives for improving healthcare efficiency is the scarcity of accepted definitions of low-value or potentially harmful care. To date, Choosing Wisely recommendations have not been translated into claims-based algorithms for measurement purposes and thus neither the prevalence of these services nor the associated spending has been estimated at a population level.

Using Medicare administrative data from 2006 to 2011, we estimated the proportion of low-risk Medicare beneficiaries receiving non-invasive cardiac screening tests without a clear, pertinent symptomatic indication, as well as the regional variation in and spending associated with these tests. For comparison and as a validation of our patient risk assignment, we measured cardiac testing in beneficiaries with or at high risk for cardiac disease.

METHODS

Using the Medicare 40% denominator file, we identified all fee-for-service Medicare beneficiaries enrolled in Medicare Parts A, B and D (inpatient, outpatient and prescription coverage), 2006–2011, and created six annual enrolment cohorts (see online supplementary table S1 for an expanded version of methods). Each beneficiary was assigned a cardiovascular

disease risk status (low or high) based on records in Medicare Carrier, Outpatient, MedPAR, Hospice and Prescription Drug Event files using a combination of *International Classification of Disease* codes and drug ingredient codes. For each annual enrolment cohort, beneficiaries with no evidence of significant cardiovascular disease or cardiovascular risk were deemed low-risk, and the remaining beneficiaries were deemed high-risk for cardiovascular disease or cardiovascular events.

We identified cardiac tests in each calendar year for beneficiaries in the low-risk cohort and, for comparison, the high-risk cohort, using current procedural terminology codes for ECGs, cardiovascular stress tests, echocardiograms and advanced cardiac imaging (CT, MRI, positron emission tomography). To quantify use of low-value tests, we excluded testing events that had diagnosis codes in any of the first four fields on a claim involving cardiac disease, cardiac-related symptoms or any conditions that might justify the test. As a result, the tests we included in our analysis were considered potentially ‘non-indicated’.

RESULTS

Cohort and validation

We identified 8.2 million low-risk person-years and 10.1 million high-risk person-years for inclusion in our analysis across 2006–2011 (table 1). Each year, low-risk beneficiaries accounted for 42%–46% of total observation time. At the hospital referral region (HRR) level, the mean proportion of person-years assigned to the low-risk group in 2011 was 45.9%, with an SD of 5.0. The mean age of the beneficiaries was similar overall in the two risk groups given the restriction placed on the age range in both groups. Patients in the high-risk cohort, compared with the low-risk cohort, were more likely to be black (9.9% vs 6.2%),



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Table 1 Characteristics of the study population by risk assignment, 2006–2011

Characteristics	High-risk cohort (N=10 077 959 person-years)	Low-risk cohort (N=8 194 085 person-years)
Mean age (SD)	72.4 (4.3) years	71.4 (4.2) years
Female	56.9%	64.6%
Race/ethnicity		
Black	9.9%	6.2%
Hispanic	7.6%	6.5%
Other	82.5%	87.3%
Medicaid enrolled	30.7%	19.5%
Mortality	5.8%	0.6%
Mean annual payments (SD)		
Total	\$15 031 (\$161)	\$2623 (\$40)
Physician	\$3866 (\$31)	\$1353 (\$13)
Hospital/skilled nursing facility	\$7506 (\$124)	\$572 (\$27)
Outpatient	\$1921 (\$27)	\$503 (\$9)
Home health	\$865 (\$18)	\$117 (\$9)

Payments were weighted by mean follow-up time and price-adjusted. Payment information was not available for 673 person-years in the high-risk cohort and 1745 person-years in the low-risk cohort.

Hispanic (7.6% vs 6.5%), Medicaid-eligible (30.7% vs 19.5%) (a poverty indicator) and men (43.1% vs 35.4%). High-risk beneficiaries had higher average Medicare spending (total \$15 031 vs \$2623) and higher mortality rates (5.8% vs 0.6%), validating the approach used to discriminate risk status.

We performed a sensitivity analysis to explore the validity of our cohort assignments by measuring the rate of significant cardiovascular events (acute myocardial infarction and stroke) in 6 years among the 2006 low-risk and high-risk cohorts. We found the cumulative prevalence of acute myocardial infarction was 7.6% in the high-risk cohort and 2.2% in the low-risk cohort (8.6% and 3.1% among men) after 6 years. Similarly, the prevalence of stroke was 6.3% in the high-risk cohort and 2.3% in the low-risk cohort (6.3% and 2.7% among men).

Prevalence

Nationally, the per cent of low-risk and high-risk beneficiaries with one or more potentially non-indicated cardiac tests in a given calendar year was relatively constant from 2006 to 2011. In the low-risk cohort, the rate of non-indicated cardiac testing ranged from a low rate of 11.7% in 2007 to a high rate of 12.8% in 2011. By comparison, for the high-risk cohort, rates of cardiac testing without a pertinent indication each year ranged from 18.9% in 2006 to a high rate of 20.2% in 2011. Testing rates were primarily driven by use of ECGs (table 2). Testing rates were comparable among black, Hispanic and other beneficiaries in both cohorts. Estimated 2011 Medicare

payments for potentially non-indicated cardiac tests among low-risk, fee-for-service beneficiaries, aged 66–80 years, totalled approximately \$9.4 million.

Regional variation

Low-value testing in the low-risk cohort was the least common in the central and north-western parts of the USA (figure 1). In 2011, the non-indicated cardiac testing prevalence across HRRs ranged from 6.6% to 23.6% (coefficient of variation (CV)=0.25) in the low-risk cohort and from 11.5% to 28.2% (CV=0.31) in the high-risk cohort. HRR-level non-indicated cardiac screening in the low-risk cohort was highly correlated with non-indicated screening in the high-risk cohort ($r=0.77$). Non-indicated cardiac screening in the low-risk cohort in 2006 was also positively correlated with the HRR-specific number of cardiologists per capita in 2006 ($r=0.57$).

DISCUSSION

In each year from 2006 to 2011, we found a modest 13% of low-risk Medicare beneficiaries received cardiac tests (largely ECGs) without clear evidence of a pertinent indication, as well as significant geographical variation in the use of these potentially non-indicated tests. The strong association between potentially non-indicated cardiac testing in low-risk groups and cardiac testing in high-risk groups demonstrates that some physicians use more cardiac tests regardless of the clinical scenario, including in low-risk, low-value situations. Our study builds on previous efforts to understand overall testing prevalence and testing among high-risk patients,^{2–6} inappropriate use of particular advanced imaging modalities⁷ and regional variation in cardiologists' propensity to test and treat.⁸

This analysis is built on Medicare claims submitted for billing purposes, which has important limitations; we do not have the clinical detail available in health records. We have used all information available to us (including pharmaceutical claims), however, to conservatively define a low-risk cohort, we have eliminated testing events associated with symptoms and conditions that would appropriately prompt testing. Our data are reassuring in that mortality, acute vascular events and testing rates among our defined high-risk cohort are substantially higher than among the low-risk cohort. The difference in testing rates persists even after excluding testing events with symptomatic indications. A final important limitation of the study is that our criteria for inclusion in the low-risk cohort may select distinct populations in different regions due to differences in coding or intensity of treatment. Prior research has shown substantial differences in diagnostic practices that are unlikely to be related to patient characteristics across the US regions.⁹ This may result in a potentially 'healthier' low-risk group in more intense regions and, more importantly, lead to misclassification of low-risk patients as high-risk in

Table 2 Variation in potentially non-indicated cardiac testing prevalence for high-risk and low-risk cohorts across 306 hospital referral regions, 2011

	Composite (all tests)		ECGs		Cardiovascular stress tests		Echocardiograms		Advanced cardiac imaging	
	High-risk	Low-risk	High-risk	Low-risk	High-risk	Low-risk	High-risk	Low-risk	High-risk	Low-risk
Mean	20.2%	12.8%	19.4%	12.4%	0.71%	0.30%	0.64%	0.25%	0.15%	0.04%
Coefficient of variation	0.31	0.25	0.14	0.26	0.47	0.52	0.90	1.04	0.93	1.46
IQR	18.2–21.9%	10.4–14.7%	17.5–21.1%	10.0–14.3%	0.47–0.92%	0.19–0.41%	0.24–0.93%	0.06–0.37%	0.04–0.22%	0.00–0.05%

Testing prevalence indicates per cent of beneficiaries with one or more tests without associated symptomatic indication in the calendar year. Data reflect 1.9 million person-years in the high-risk cohort and 1.6 million person-years in the low-risk cohort.

these areas. Thus, it is likely that our estimates of unnecessary testing in areas with more intense diagnostic coding are conservative.

Our methodology also does not allow us to estimate the full impact of unnecessary tests and treatments. Greater use of ECGs for low-risk patients in some areas, for example, may represent a cost savings relative to practice patterns in which low-risk patients routinely receive higher cost cardiac imaging. On the other hand, even low-cost tests like ECGs may have significant effects on costs and outcomes by way of incidental or false positive findings that generate further testing and intervention.

The long-standing debate about the appropriateness of cardiac screening may make it especially challenging for Choosing Wisely cardiac-specific recommendations to achieve acceptance and adherence. The debate largely centres on the most common form of such screening, ECGs. Prior to 2009, Medicare required a screening ECG as part of the Initial Preventive Physical Exam. After 2009, this screening was optional, but reimbursed.^{10 11} In 2012, the US Preventive Services Task Force (USPSTF) recommended against ECG screening in asymptomatic adults at low risk for coronary heart disease, giving such tests a 'D' recommendation ('moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits').¹² The USPSTF also found 'insufficient evidence' to provide a recommendation for or against ECG screening in patients at medium-risk and high-risk for coronary heart disease. American College of Cardiology (ACC) and American Heart Association (AHA) guidelines suggest that resting ECGs are 'reasonable' in asymptomatic patients with diabetes or hypertension and 'may be considered' in asymptomatic patients without diabetes or hypertension (evidence ranked C, indicating 'the primary source of the recommendation was consensus opinion, case studies, or standard of care').¹³ The discord between the USPSTF and the ACC and AHA on this issue exemplifies the challenge of identifying low-value services in healthcare.

In this study, we specifically focus on low-value cardiac testing as defined on Choosing Wisely lists, and we believe our interpretation was conservative. Our identification of overuse is, however, retrospective; risk is hard to estimate with precision at the point of care. Commonly used risk calculators would assign a 10%, 10-year risk to most American men over 65 years of age,¹⁴ demonstrating the challenge physicians face in identifying low-risk patients with confidence. Our categorisation of patients with hypertension as low risk may not resonate with those who suggest asymptomatic testing in these patients is 'reasonable'. Our study will not resolve this debate. We note, however, that 33% of the ECGs administered in our low-risk cohort had an associated primary diagnosis of screening. This finding quantifies the potential

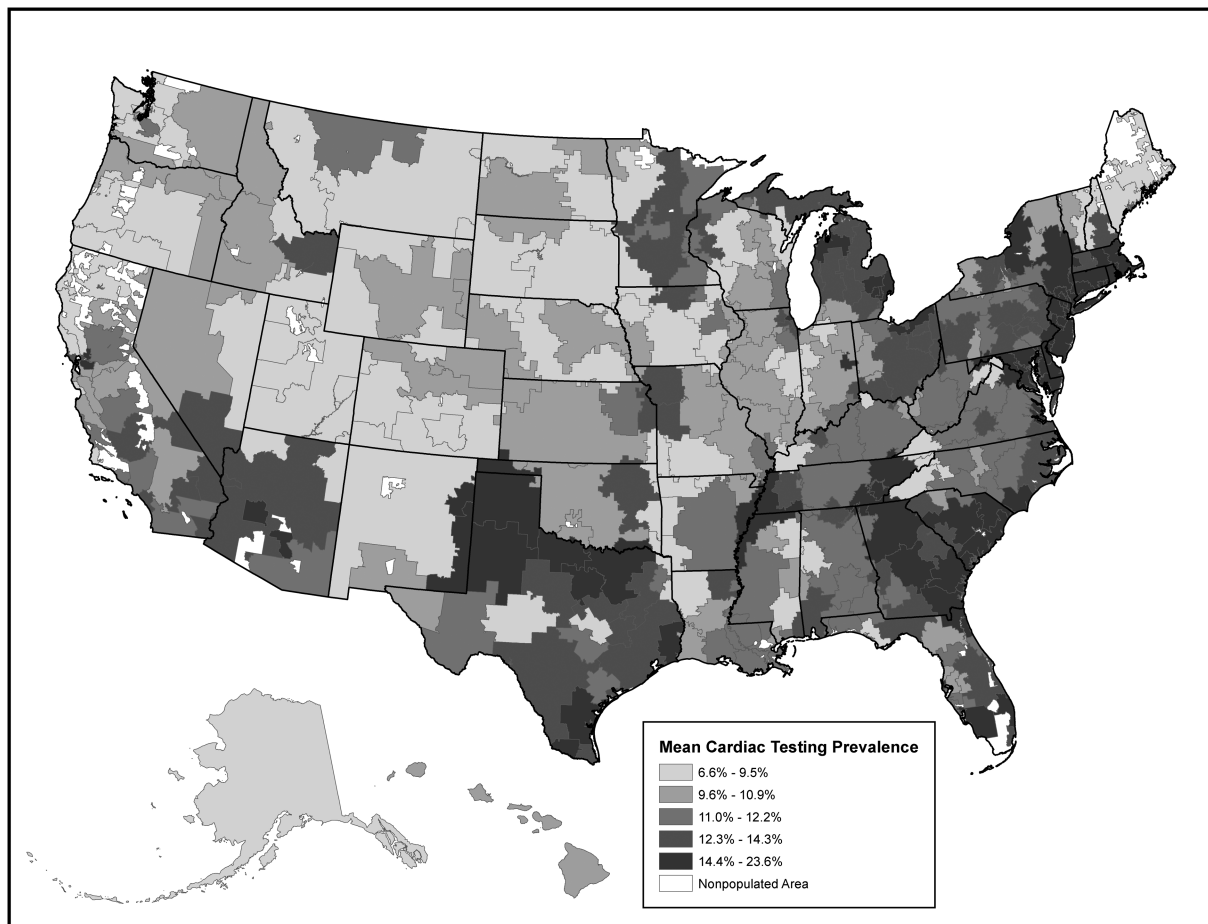


Figure 1 Map of the potentially non-indicated cardiac testing prevalence for the low-risk cohort across 306 hospital referral regions, 2011. Testing prevalence indicates per cent of beneficiaries with one or more tests in the calendar year. Cardiac testing was higher in the southern and eastern regions of the USA. Data reflect 1.6 million person-years in the low-risk cohort.

impact of this disagreement and highlights the need for an evidence-based approach to risk stratification, screening indications and ideally a consensus definition for non-indicated tests, the latter being the aim of the Choosing Wisely campaign.

The Choosing Wisely initiative has put the weight of physician specialty societies behind the identification of low-value services and care. While identifying low-value services is complex and important, the value of the endeavour would be greater with higher-impact recommendations. The Choosing Wisely lists have been criticised for identifying low-impact and/or long agreed upon services; this appears the case for the Choosing Wisely selected cardiac testing services we studied in the Medicare population.¹⁵ Quantifying the extent to which the observed care patterns are also experienced by the under 65-year-olds would determine with greater precision the true magnitude of low-value cardiac testing in the USA. As definitions of appropriate and wasteful care (based on both efficacy and cost) are improved and providers are educated on the risks of overtreatment, measurement of value can incorporate use of high-value services and avoidance of low-value services.

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Contributors CHC and NEM had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: CHC, TDS, MBR, WLS, DJG, NEM. Acquisition of data: CHC. Analysis and interpretation of data: CHC, WLS, DJG. Drafting of the manuscript: CHC, TDS, MBR, WLS, DJG, NEM. Critical revision of the manuscript for important intellectual content: CHC, TDS, MBR, WLS, DJG, NEM. Statistical analysis: WLS, DJG. Obtained funding: CHC, TDS. Study supervision: CHC.

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Competing interests None.

Ethics approval This study was approved by the institutional review board at Dartmouth College, Hanover, NH, USA.

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Data sharing statement Study data are available from the corresponding author on request.

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SUPPLEMENTAL MATERIAL

Use of Non-Indicated Cardiac Testing in Low-Risk Patients: Choosing Wisely

METHODS SUPPLEMENT

Data Source and Study Population

Using the Medicare 40% denominator file, we identified all fee-for-service Medicare beneficiaries enrolled in Medicare Parts A, B, and D (inpatient, outpatient and prescription coverage), 2006-2011, and created six annual enrollment cohorts. We excluded beneficiaries with a gap of one or more months in fee-for-service Medicare Parts A, B, or D enrollment during a calendar year. We limited our analysis to beneficiaries aged 66-80. Beneficiary characteristics, including age, sex, race/ethnicity (black, Hispanic, other), and Medicaid enrollment, were obtained from the Medicare denominator file. Residential ZIP Codes were used to assign each beneficiary to one of 306 Dartmouth Atlas of Health Care hospital referral regions (HRRs). Information on regional physician workforce in 2006 was obtained from the Dartmouth Atlas of Health Care.

Defining Low- and High-Risk Cohorts

To identify annual cohorts of low-risk patients, each beneficiary was annually assigned a cardiovascular disease risk status (low or high) based on records in Medicare Carrier, Outpatient, MedPAR, Hospice and Prescription Drug Event files. For each annual enrollment cohort, beneficiaries with no evidence of significant cardiovascular disease or cardiovascular disease risk were deemed low-risk and those with such conditions were deemed high-risk. Using Hierarchical Condition Category *International Classification of Disease, Ninth Revision*, code lists, the following diagnoses (appearing in two physician claims or one hospital claim) were considered evidence of high cardiovascular disease risk: HIV/AIDS, diabetes, drug or alcohol abuse/dependence, shock, cardiac disease (e.g. congestive heart failure, acute or old myocardial infarction, angina, arrhythmias, cardio-respiratory failure), cerebrovascular disease, peripheral vascular disease, pulmonary disease, renal failure, autoimmune disease, and all cancers except non-melanoma skin cancers. Part D prescription fill records were also used to assign risk status: patients with one or more fills for the following medication classes were deemed high risk: anticoagulants, platelet inhibitors (excluding non-steroidal anti-inflammatory drugs), anti-anginal agents, hypoglycemic medications (oral and injectable), and peripheral vasodilators. We also assigned beneficiaries to the high-risk cohort if they had more than \$200 in hospice billing in a given calendar year. A full list of the criteria used to define the cardiovascular risk status – including Hierarchical Condition Category and generic drug names – appears in Supplemental Table 2.

Identifying Cardiac Tests

We identified cardiac tests in each calendar year for beneficiaries in the low-risk cohort and, for comparison, the high-risk cohort, using current procedural terminology codes for electrocardiograms, cardiovascular stress tests (including stress imaging), echocardiograms, and advanced cardiac imaging (CT, MRI, PET) (Supplemental Table 3). To quantify use of low-value tests, we did not count testing events if diagnosis codes in any of the first four fields on a claim involved cardiac disease, cardiac-related symptoms, or any conditions that might justify the test (e.g., respiratory conditions, cancer) (Supplemental Table 4).

Analysis

We measured non-indicated cardiac testing prevalence, reflecting the percent of beneficiaries receiving at least one cardiac test, for each cohort, each calendar year, and each type of cardiac test, as well as a composite measure reflecting all types of cardiac testing, at both the national and HRR levels.

To examine geographic variation in non-indicated cardiac testing among low-risk beneficiaries, we calculated HRR-specific testing rates for 2011 using the composite testing measure. We classified HRRs by quintile of testing rates and created a map of the results to assess geographic distribution of high and low testing areas. We also examined the HRR-level association between cardiac testing rates in the low- and high-risk cohorts and between testing rates and regional supply of cardiologists and primary care physicians by plotting the relationship and calculating a correlation coefficient, weighting by the total person-years of observation in each region. We estimated spending on non-indicated cardiac testing in all low-risk Medicare beneficiaries in 2011 by multiplying observed average spending per low-risk person-year by the extrapolated national number of low-risk person-years.

All statistical analyses were performed using SAS (Version 9.3, SAS Institute Inc., Cary, North Carolina) and Stata (Version 12.1, Statacorp LP, College Station, Texas) software programs. The study was approved by the institutional review board at Dartmouth College.

SUPPLEMENTAL TABLES

Table 1: Choosing Wisely specialty society recommendations related to cardiac screening for asymptomatic, low-risk patients

American Academy of Family Physicians	Don't order annual electrocardiograms (EKGs) or any other cardiac screening for low-risk patients without symptoms. There is little evidence that detection of coronary artery stenosis in asymptomatic patients at low risk for coronary heart disease improves health outcomes. False-positive tests are likely to lead to harm through unnecessary invasive procedures, over-treatment and misdiagnosis. Potential harms of this routine annual screening exceed the potential benefit.
American College of Cardiology	Don't perform stress cardiac imaging or advanced non-invasive imaging in the initial evaluation of patients without cardiac symptoms unless high-risk markers are present. Asymptomatic, low-risk patients account for up to 45 percent of unnecessary "screening." Testing should be performed only when the following findings are present: diabetes in patients older than 40-years-old; peripheral arterial disease; or greater than 2 percent yearly risk for coronary heart disease events.
American College of Cardiology	Don't perform annual stress cardiac imaging or advanced non-invasive imaging as part of routine follow-up in asymptomatic patients. Performing stress cardiac imaging or advanced non-invasive imaging in patients without symptoms on a serial or scheduled pattern (e.g., every one to two years or at a heart procedure anniversary) rarely results in any meaningful change in patient management. This practice may, in fact, lead to unnecessary invasive procedures and excess radiation exposure without any proven impact on patients' outcomes. An exception to this rule would be for patients more than five years after a bypass operation.
American College of Cardiology	Don't perform echocardiography as routine follow-up for mild, asymptomatic native valve disease in adult patients with no change in signs or symptoms. Patients with native valve disease usually have years without symptoms before the onset of deterioration. An echocardiogram is not recommended yearly unless there is a change in clinical status.
American College of Physicians	Don't obtain screening exercise electrocardiogram testing in individuals who are asymptomatic and at low risk for coronary heart disease. In asymptomatic individuals at low risk for coronary heart disease (10-year risk <10%) screening for coronary heart disease with exercise electrocardiography does not improve patient outcomes.
American Society of Echocardiography	Avoid using stress echocardiograms on asymptomatic patients who meet "low risk" scoring criteria for coronary disease. Stress

	<p>echocardiography is mostly used in symptomatic patients to assist in the diagnosis of obstructive coronary artery disease. There is very little information on using stress echocardiography in asymptomatic individuals for the purposes of cardiovascular risk assessment, as a stand-alone test or in addition to conventional risk factors.</p>
American Society of Nuclear Cardiology	<p>Don't perform stress cardiac imaging or coronary angiography in patients without cardiac symptoms unless high-risk markers are present. Asymptomatic, low-risk patients account for up to 45 percent of inappropriate stress testing. Testing should be performed only when the following findings are present: diabetes in patients older than 40 years old, peripheral arterial disease, and greater than 2 percent yearly coronary heart disease event rate.</p>
American Society of Nuclear Cardiology	<p>Don't perform cardiac imaging for patients who are at low risk. Chest pain patients at low risk of cardiac death and myocardial infarction (based on history, physical exam, electrocardiograms and cardiac biomarkers) do not merit stress radionuclide myocardial perfusion imaging or stress echocardiography as an initial testing strategy if they have a normal electrocardiogram (without baseline ST-abnormalities, left ventricular hypertrophy, pre-excitation, bundle branch block, intra-ventricular conduction delay, paced rhythm or on digoxin therapy) and are able to exercise.</p>
American Society of Nuclear Cardiology	<p>Don't perform radionuclide imaging as part of routine follow-up in asymptomatic patients. Performing stress radionuclide imaging in patients without symptoms on a serial or scheduled pattern (e.g., every one to two years or at a heart procedure anniversary) rarely results in any meaningful change in patient management. This practice may lead to unnecessary invasive procedures and excess radiation exposure without any proven impact on patients' outcomes. An exception to this rule would be for patients more than five years after a bypass operation.</p>
Society of Cardiovascular Computed Tomography	<p>Don't order coronary artery calcium scoring for screening purposes on low risk asymptomatic individuals except for those with a family history of premature coronary artery disease. Net reclassification of risk by coronary artery calcium scoring, when added to clinical risk scoring, is least effective in low risk individuals.</p>

Table 2: Criteria for defining low-risk and high-risk cohorts

Diagnosis Codes

Label	HCC Code
HIV / AIDS	1
Cancer	7-10
Diabetes	15-19
Drug / Alcohol Dependence	52
Cardio-Respiratory Failure and Shock	79
Congestive Heart Failure	80
Acute Myocardial Infarction	81
Unstable Angina and Other Acute Ischemic Heart Disease	82
Angina Pectoris / Old Myocardial Infarction	83
Specified Heart Arrhythmias	92
Ischemic or Unspecified Stroke	96
Hemiplegia / Hemiparesis	100
Vascular Disease with Complications	104
Vascular Disease	105
Chronic Obstructive Pulmonary Disease	108
Renal Failure	113

Drug Ingredient Codes

Label	Ingredient Code
Anticoagulants	D00519 D04136 D04698 D04744 D07137 D03812 D04114 D04865 D03889 D03041 D04786 D00252 D07385 D04291 D07356 D04659 D00022
Platelet Aggregation Inhibitors	D03811 D04382 D04258 D00213 D04316 D07409 D07721 D00514 D04315
Anti-Anginal Agents	D00666 D00268 D00269 D00321 D05719
Diabetic Agents	D00393 D00394 D03846 D00162 D00042 D05529 D03864 D00246 D00248 D07767 D07466 D03807 D04110 D04743 D04442 D05488 D04267 D04434 D07467 D05896 D04122 D07963 D04697 D05436 D04538 D05278 D05765 D04370 D04373 D04369 D04371 D04372
Peripheral Vasodilators	D00213 D00902 D00693

Table 3: Codes for identifying beneficiaries with cardiac tests

Test	CPT Code
Advanced Imaging (CT, MRI, PET)	0144T 0145T 0146T 0147T 0148T 0149T 0150T 75552 75553 75554 75555 75556 75557 75558 75559 75561 75562 75565 75571 75572 75573 75574 78451 78452 78453 78454 78460 78461 78464 78465 78478 78480 78459 78481 78483 78491 78492 78494 78496 78499
Cardiovascular Stress Test	75560 75563 75564 93015 93016 93017 93018 93024 93350 93351 93352
Echocardiogram	93303 93304 93306 93307 93308 93320 93321 93325
Electrocardiogram	3120F 93000 93005 93010 G0366 G0367 G0368 G0403 G0404 G0405

Table 4: Criteria for excluding cardiac testing events

Advanced Imaging (CT, MRI, PET)

Advanced imaging tests were excluded from the analysis if the associated primary, secondary, tertiary, or quaternary diagnosis involved: (i) cardiac conditions; (ii) respiratory conditions, except acute respiratory infections (e.g. pneumonia); (iii) acute central nervous system conditions, except headaches; (iv) all thoracic and non-thoracic arterial conditions, but not peripheral venous conditions such as deep venous thrombosis; (v) malignant hypertension; (vi) end stage renal disease and acute renal disease; (vii) abdominal pain; (viii) cancer; (ix) drug toxicity or poisoning; or (x) exertional stress and fatigue.

Label	Code
Unspecified septicemia	0389
Sarcoidosis	135
Malignant neoplasm of upper lobe, bronchus, or lung	1623
Malignant neoplasm of bronchus and lung, unspecified site	1629
Malignant neoplasm of breast (female), unspecified site	1749
Malignant neoplasm of prostate	185
Fluid overload	2766
Mitral stenosis	3940
Rheumatic mitral insufficiency	3941
Mitral stenosis with insufficiency	3942
Other and unspecified mitral valve diseases	3949
Rheumatic aortic stenosis	3950
Rheumatic aortic insufficiency	3951
Rheumatic aortic stenosis with insufficiency	3952
Other and unspecified rheumatic aortic diseases	3959
Mitral valve stenosis and aortic valve stenosis	3960
Mitral valve stenosis and aortic valve insufficiency	3961
Mitral valve insufficiency and aortic valve stenosis	3962
Mitral valve insufficiency and aortic valve insufficiency	3963
Multiple involvement of mitral and aortic valves	3968
Unspecified mitral and aortic valve diseases	3969
Diseases of tricuspid valve	3970
Rheumatic heart failure (congestive)	39891
Essential hypertension, malignant	4010
Malignant hypertensive heart disease without heart failure	40200
Malignant hypertensive heart disease with heart failure	40201
Benign hypertensive heart disease without heart failure	40210
Benign hypertensive heart disease with heart failure	40211
Unspecified hypertensive heart disease without heart failure	40290
Hypertensive heart disease, unspecified, with heart failure	40291

Hypertensive heart and chronic kidney disease, malignant, without heart failure and with chronic kidney disease stage I-IV	40400
Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney disease stage I-IV	40401
Hypertensive heart and chronic kidney disease, benign, without heart failure and with chronic kidney disease stage I-IV	40410
Hypertensive heart and chronic kidney disease, benign, without heart failure and with chronic kidney disease stage V	40412
Hypertensive heart and chronic kidney disease, benign, with heart failure and with chronic kidney disease stage V	40413
Hypertensive heart and chronic kidney disease, unspecified, without heart failure and with chronic kidney disease stage I-IV	40490
Hypertensive heart and chronic kidney disease, unspecified, with heart failure and with chronic kidney disease stage I-IV	40491
Hypertensive heart and chronic kidney disease, unspecified, without heart failure and with chronic kidney disease stage V	40492
Hypertensive heart and chronic kidney disease, unspecified, with heart failure and with chronic kidney disease stage V	40493
Acute myocardial infarction of anterolateral wall, episode of care unspecified	41000
Acute myocardial infarction of anterolateral wall, initial episode of care	41001
Acute myocardial infarction of anterolateral wall, subsequent episode of care	41002
Acute myocardial infarction of other anterior wall, episode of care unspecified	41010
Acute myocardial infarction of other anterior wall, initial episode of care	41011
Acute myocardial infarction of other anterior wall, subsequent episode of care	41012
Acute myocardial infarction of inferolateral wall, episode of care unspecified	41020
Acute myocardial infarction of inferolateral wall, initial episode of care	41021
Acute myocardial infarction of inferolateral wall, subsequent episode of care	41022
Acute myocardial infarction of inferoposterior wall, episode of care unspecified	41030
Acute myocardial infarction of inferoposterior wall, initial episode of care	41031
Acute myocardial infarction of inferoposterior wall, subsequent episode of care	41032
Acute myocardial infarction of other inferior wall, episode of care unspecified	41040
Acute myocardial infarction of other inferior wall, initial episode of care	41041
Acute myocardial infarction of other inferior wall, subsequent episode of care	41042
Acute myocardial infarction of other lateral wall, episode of care unspecified	41050
Acute myocardial infarction of other lateral wall, initial episode of care	41051
Acute myocardial infarction of other lateral wall, subsequent episode of care	41052
Acute myocardial infarction, subendocardial infarction, episode of care unspecified	41070
Acute myocardial infarction, subendocardial infarction, initial episode of care	41071

Acute myocardial infarction, subendocardial infarction, subsequent episode of care	41072
Acute myocardial infarction of other specified sites, episode of care unspecified	41080
Acute myocardial infarction of other specified sites, initial episode of care	41081
Acute myocardial infarction of other specified sites, subsequent episode of care	41082
Acute myocardial infarction, unspecified site, episode of care unspecified	41090
Acute myocardial infarction, unspecified site, initial episode of care	41091
Acute myocardial infarction, unspecified site, subsequent episode of care	41092
Postmyocardial infarction syndrome	4110
Intermediate coronary syndrome	4111
Acute coronary occlusion without myocardial infarction	41181
Other acute and subacute form of ischemic heart disease	41189
Old myocardial infarction	412
Angina decubitus	4130
Prinzmetal angina	4131
Other and unspecified angina pectoris	4139
Coronary atherosclerosis of unspecified type of vessel, native or graft	41400
Coronary atherosclerosis of native coronary artery	41401
Coronary atherosclerosis of autologous vein bypass graft	41402
Coronary atherosclerosis of nonautologous biological bypass graft	41403
Coronary atherosclerosis of artery bypass graft	41404
Coronary atherosclerosis of unspecified type of bypass graft	41405
Coronary atherosclerosis, of native coronary artery of transplanted heart	41406
Coronary atherosclerosis, of bypass graft (artery) (vein) of transplanted heart	41407
Aneurysm of heart	41410
Aneurysm of coronary vessels	41411
Other aneurysm of heart	41419
Chronic total occlusion of coronary artery	4142
Coronary atherosclerosis due to lipid rich plaque	4143
Other specified forms of chronic ischemic heart disease	4148
Unspecified chronic ischemic heart disease	4149
Iatrogenic pulmonary embolism and infarction	41511
Other pulmonary embolism and infarction	41519
Primary pulmonary hypertension	4160
Other chronic pulmonary heart diseases	4168
Unspecified chronic pulmonary heart disease	4169
Unspecified acute pericarditis	42090
Acute idiopathic pericarditis	42091
Acute and subacute bacterial endocarditis	4210
Other specified diseases of pericardium	4238

Unspecified disease of pericardium	4239
Mitral valve disorders	4240
Aortic valve disorders	4241
Tricuspid valve disorders, specified as nonrheumatic	4242
Pulmonary valve disorders	4243
Endocarditis, valve unspecified, unspecified cause	42490
Endomyocardial fibrosis	4250
Hypertrophic obstructive cardiomyopathy	4251
Other primary cardiomyopathies	4254
Alcoholic cardiomyopathy	4255
Cardiomyopathy in other diseases classified elsewhere	4258
Unspecified secondary cardiomyopathy	4259
Atrioventricular block, complete	4260
Unspecified atrioventricular block	42610
First degree atrioventricular block	42611
Mobitz (type) II atrioventricular block	42612
Other second degree atrioventricular block	42613
Left bundle branch hemiblock	4262
Other left bundle branch block	4263
Right bundle branch block	4264
Unspecified bundle branch block	42650
Right bundle branch block and left posterior fascicular block	42651
Right bundle branch block and left anterior fascicular block	42652
Other bilateral bundle branch block	42653
Other heart block	4266
Anomalous atrioventricular excitation	4267
Long QT syndrome	42682
Other specified conduction disorder	42689
Unspecified conduction disorder	4269
Paroxysmal supraventricular tachycardia	4270
Paroxysmal ventricular tachycardia	4271
Unspecified paroxysmal tachycardia	4272
Atrial fibrillation	42731
Atrial flutter	42732
Ventricular fibrillation	42741
Ventricular flutter	42742
Cardiac arrest	4275
Unspecified premature beats	42760
Supraventricular premature beats	42761
Other premature beats	42769
Sinoatrial node dysfunction	42781
Other specified cardiac dysrhythmias	42789

Unspecified cardiac dysrhythmia	4279
Congestive heart failure, unspecified	4280
Left heart failure	4281
Unspecified systolic heart failure	42820
Acute systolic heart failure	42821
Chronic systolic heart failure	42822
Acute on chronic systolic heart failure	42823
Unspecified diastolic heart failure	42830
Acute diastolic heart failure	42831
Chronic diastolic heart failure	42832
Acute on chronic diastolic heart failure	42833
Unspecified combined systolic and diastolic heart failure	42840
Acute combined systolic and diastolic heart failure	42841
Chronic combined systolic and diastolic heart failure	42842
Acute on chronic combined systolic and diastolic heart failure	42843
Unspecified heart failure	4289
Unspecified myocarditis	4290
Myocardial degeneration	4291
Unspecified cardiovascular disease	4292
Cardiomegaly	4293
Functional disturbances following cardiac surgery	4294
Acquired cardiac septal defect	42971
Other disorders of papillary muscle	42981
Hyperkinetic heart disease	42982
Other ill-defined heart disease	42989
Unspecified heart disease	4299
Occlusion and stenosis of carotid artery without mention of cerebral infarction	43310
Occlusion and stenosis of carotid artery with cerebral infarction	43311
Occlusion and stenosis of multiple and bilateral precerebral arteries without mention of c	43330
Cerebral embolism with cerebral infarction	43411
Unspecified cerebral artery occlusion without mention of cerebral infarction	43490
Unspecified cerebral artery occlusion with cerebral infarction	43491
Other specified transient cerebral ischemias	4358
Unspecified transient cerebral ischemia	4359
Acute, but ill-defined, cerebrovascular disease	436
Cerebral atherosclerosis	4370
Atherosclerosis of aorta	4400
Atherosclerosis of renal artery	4401
Atherosclerosis of native arteries of the extremities, unspecified	44020
Atherosclerosis of native arteries of the extremities with intermittent	44021

claudication	
Atherosclerosis of native arteries of the extremities with rest pain	44022
Atherosclerosis of native arteries of the extremities with ulceration	44023
Atherosclerosis of native arteries of the extremities with gangrene	44024
Atherosclerosis of other specified arteries	4408
Generalized and unspecified atherosclerosis	4409
Dissecting aortic aneurysm (any part), unspecified site	44100
Dissecting aortic aneurysm (any part), thoracic	44101
Dissecting aortic aneurysm (any part), abdominal	44102
Thoracic aneurysm without mention of rupture	4412
Abdominal aneurysm without mention of rupture	4414
Thoracoabdominal aneurysm without mention of rupture	4417
Aortic aneurysm of unspecified site without mention of rupture	4419
Other peripheral vascular disease	44389
Embolism and thrombosis of arteries of lower extremity	44422
Stricture of artery	4471
Other specified disorders of arteries and arterioles	4478
Unspecified disorders of arteries and arterioles	4479
Orthostatic hypotension	4580
Other iatrogenic hypotension	45829
Unspecified hypotension	4589
Obstructive chronic bronchitis, without exacerbation	49120
Obstructive chronic bronchitis, with (acute) exacerbation	49121
Other emphysema	4928
Chronic obstructive asthma, unspecified	49320
Chronic obstructive asthma, with (acute) exacerbation	49322
Asthma, unspecified, unspecified status	49390
Asthma, unspecified, with (acute) exacerbation	49392
Chronic airway obstruction, not elsewhere classified	496
Pleurisy without mention of effusion or current tuberculosis	5110
Unspecified pleural effusion	5119
Pulmonary congestion and hypostasis	514
Postinflammatory pulmonary fibrosis	515
Unspecified acute edema of lung	5184
Acute respiratory failure	51881
Other pulmonary insufficiency, not elsewhere classified	51882
Acute and chronic respiratory failure	51884
Other diseases of lung, not elsewhere classified	51889
Unspecified disease of the jaws	5269
Acute cholecystitis	5750
Acute pancreatitis	5770
Unspecified acute renal failure	5849

End stage renal disease	5856
Difficulty in walking	7197
Lumbago	7242
Unspecified backache	7245
Muscle weakness (generalized)	72887
Unspecified myalgia and myositis	7291
Swelling of limb	72981
Tietze's disease	7336
Tetralogy of Fallot	7452
Ventricular septal defect	7454
Ostium secundum type atrial septal defect	7455
Congenital stenosis of aortic valve	7463
Congenital insufficiency of aortic valve	7464
Congenital mitral insufficiency	7466
Congenital coronary artery anomaly	74685
Other specified congenital anomaly of heart	74689
Unspecified congenital anomaly of heart	7469
Congenital atresia and stenosis of aorta	74722
Transient alteration of awareness	78002
Other alteration of consciousness	78009
Syncope and collapse	7802
Altered mental status	78097
Edema	7823
Jaw pain	78492
Unspecified tachycardia	7850
Palpitations	7851
Undiagnosed cardiac murmurs	7852
Other abnormal heart sounds	7853
Unspecified shock	78550
Cardiogenic shock	78551
Other shock without mention of trauma	78559
Other symptoms involving cardiovascular system	7859
Unspecified respiratory abnormality	78600
Orthopnea	78602
Shortness of breath	78605
Tachypnea	78606
Wheezing	78607
Other dyspnea and respiratory abnormalities	78609
Chest pain, unspecified	78650
Precordial pain	78651
Painful respiration	78652
Chest pain, other	78659

Other symptoms involving respiratory system and chest	7869
Abdominal pain, unspecified site	78900
Abdominal pain, right upper quadrant	78901
Abdominal pain, epigastric	78906
Abdominal pain, generalized	78907
Abdominal pain, other specified site	78909
Other nonspecific abnormal serum enzyme levels	7905
Nonspecific abnormal findings on radiological and other examination of lung field	7931
Nonspecific abnormal results of pulmonary system function study	7942
Nonspecific abnormal unspecified cardiovascular function study	79430
Nonspecific abnormal electrocardiogram (ECG) (EKG)	79431
Other nonspecific abnormal cardiovascular system function study	79439
Hypoxemia	79902
Mechanical complication due to cardiac pacemaker (electrode)	99601
Mechanical complication due to coronary bypass graft	99603
Other complications due to other cardiac device, implant, and graft	99672
Complications of transplanted heart	99683
Cardiac complications	9971
Unspecified circulatory disease	V1250
Personal history of other diseases of circulatory system	V1259
Personal history of surgery to heart and great vessels, presenting hazards to health	V151
Kidney replaced by transplant	V420
Heart replaced by transplant	V421
Heart valve replaced by transplant	V422
Heart valve replaced by other means	V433
Cardiac pacemaker in situ	V4501
Automatic implantable cardiac defibrillator in situ	V4502
Postprocedural aortocoronary bypass status	V4581
Postprocedural percutaneous transluminal coronary angioplasty status	V4582
Other cardiorespiratory problems	V472
Awaiting organ transplant status	V4983
Fitting and adjustment of cardiac pacemaker	V5331
Encounter for antineoplastic chemotherapy	V5811
Aftercare following organ transplant	V5844
Encounter for long-term (current) use of other medications	V5869
Encounter for therapeutic drug monitoring	V5883
Follow-up examination following completed treatment with high-risk medications, not elsewhere classified	V6751
Observation for suspected cardiovascular disease	V717

Cardiovascular Stress Test

See advanced imaging criteria.

Echocardiogram

Echocardiograms were excluded from the analysis if the associated primary, secondary, tertiary, or quaternary diagnosis involved: (i) proximal fractures; (ii) pulmonary and chest conditions, including anything potentially resulting in chest pain (e.g., chest wall contusion); (iii) esophageal conditions (e.g., esophagitis and esophageal spasm), except those that are painless, mild, and chronic (e.g., esophageal stricture, Barrett's esophagus, and reflux); (iv) cardiac conditions, including shortness of breath, edema, congestive heart failure and anatomic anomalies; (v) end stage renal disease and dialysis, along with all electrolyte abnormalities; (vi) infections, including sepsis, but not urinary tract infections or pneumonia; (vii) anemia and bleeding conditions, except microscopic hematuria; (viii) abdominal conditions (including abdominal pain), but not benign tumor of the colon; (ix) psychiatric conditions; (x) acute central nervous system conditions (e.g., cerebrovascular accident, delirium) and seizure or epilepsy conditions, but not chronic conditions (e.g., dementia), head ache, or migraine; (xi) drug toxicity and poisoning; (xii) transplants; (xiii) malignant hypertension; (xiv) cancers; (xv) conditions involving arterial and pulmonary emboli, but not peripheral deep vein thrombosis; (xvi) falls; (xvii) autoimmune conditions; or (xviii) pain in the anterior and posterior thorax and shoulder areas (eg. back pain), but not specific shoulder conditions such as "capsular adhesion of shoulder" and "osteoarthritis of shoulder."

Label	Code
Streptococcal septicemia	0380
Unspecified staphylococcal septicemia	03810
Methicillin susceptible Staphylococcus aureus septicemia	03811
Methicillin resistant Staphylococcus aureus septicemia	03812
Other staphylococcal septicemia	03819
Pneumococcal septicemia	0382
Septicemia due to anaerobes	0383
Septicemia due to unspecified gram-negative organism	03840
Septicemia due to Escherichia coli (E. coli)	03842
Septicemia due to pseudomonas	03843
Other septicemia due to gram-negative organism	03849
Other specified septicemia	0388
Unspecified septicemia	0389
Methicillin susceptible Staphylococcus aureus	04111
Methicillin resistant Staphylococcus aureus	04112
Human immunodeficiency virus [HIV]	042
Candidal endocarditis	11281
Other and unspecified mycoses	1179
Sarcoidosis	135

Unspecified infectious and parasitic diseases	1369
Malignant neoplasm of esophagus, unspecified site	1509
Malignant neoplasm of cardia	1510
Malignant neoplasm of stomach, unspecified site	1519
Malignant neoplasm of hepatic flexure	1530
Malignant neoplasm of transverse colon	1531
Malignant neoplasm of descending colon	1532
Malignant neoplasm of sigmoid colon	1533
Malignant neoplasm of cecum	1534
Malignant neoplasm of ascending colon	1536
Malignant neoplasm of colon, unspecified site	1539
Malignant neoplasm of rectosigmoid junction	1540
Malignant neoplasm of rectum	1541
Malignant neoplasm of liver, primary	1550
Malignant neoplasm of head of pancreas	1570
Malignant neoplasm of pancreas, part unspecified	1579
Malignant neoplasm of main bronchus	1622
Malignant neoplasm of upper lobe, bronchus, or lung	1623
Malignant neoplasm of middle lobe, bronchus, or lung	1624
Malignant neoplasm of lower lobe, bronchus, or lung	1625
Malignant neoplasm of other parts of bronchus or lung	1628
Malignant neoplasm of bronchus and lung, unspecified site	1629
Malignant neoplasm of heart	1641
Malignant neoplasm of central portion of female breast	1741
Malignant neoplasm of upper-outer quadrant of female breast	1744
Malignant neoplasm of other specified sites of female breast	1748
Malignant neoplasm of breast (female), unspecified site	1749
Malignant neoplasm of corpus uteri, except isthmus	1820
Malignant neoplasm of ovary	1830
Malignant neoplasm of prostate	185
Malignant neoplasm of other specified sites of bladder	1888
Malignant neoplasm of bladder, part unspecified	1889
Malignant neoplasm of kidney, except pelvis	1890
Secondary malignant neoplasm of lung	1970
Secondary malignant neoplasm of pleura	1972
Secondary malignant neoplasm of retroperitoneum and peritoneum	1976
Secondary malignant neoplasm of liver	1977
Secondary malignant neoplasm of brain and spinal cord	1983
Secondary malignant neoplasm of bone and bone marrow	1985
Secondary malignant neoplasm of other specified sites	19889
Other malignant neoplasm of unspecified site	1991

Hodgkin's disease, unspecified type, unspecified site, extranodal and solid organ sites	20190
Nodular lymphoma, unspecified site, extranodal and solid organ sites	20200
Other malignant lymphomas, unspecified site, extranodal and solid organ sites	20280
Other malignant lymphomas of lymph nodes of head, face, and neck	20281
Other malignant lymphomas of intra-abdominal lymph nodes	20283
Other malignant lymphomas of lymph nodes of multiple sites	20288
Multiple myeloma, without mention of having achieved remission	20300
Acute lymphoid leukemia, without mention of having achieved remission	20400
Chronic lymphoid leukemia, without mention of having achieved remission	20410
Acute myeloid leukemia, without mention of having achieved remission	20500
Chronic myeloid leukemia, without mention of having achieved remission	20510
Unspecified leukemia, without mention of having achieved remission	20890
Benign neoplasm of heart	2127
Carcinoma in situ of bronchus and lung	2312
Carcinoma in situ of breast	2330
Myelodysplastic syndrome, unspecified	23875
Neoplasm of uncertain behavior of other specified sites	2388
Neoplasm of uncertain behavior, site unspecified	2389
Neoplasm of unspecified nature of digestive system	2390
Neoplasm of unspecified nature of respiratory system	2391
Neoplasm of unspecified nature of breast	2393
Neoplasm of unspecified nature of brain	2396
Neoplasm of unspecified nature of other specified sites	2398
Neoplasms Of Unspecified Nature, Other Specified Sites	23989
Neoplasm of unspecified nature, site unspecified	2399
Carcinoid syndrome	2592
Volume depletion, unspecified	27650
Fluid overload	2766
Fluid Overload NEC (Other Fluid Overload)	27669
Amyloidosis	2773
Amyloidosis, unspecified	27730
Other amyloidosis	27739
Autoimmune disease, not elsewhere classified	2794
Sickle-cell disease, unspecified	28260
Hb-SS disease with crisis	28262
Drug-induced delirium	29281
Delirium due to conditions classified elsewhere	2930
Carotid sinus syndrome	33701
Encephalopathy, unspecified	34830
Metabolic encephalopathy	34831

Other encephalopathy	34839
Toxic encephalopathy	34982
Myasthenia gravis with (acute) exacerbation	35801
Hereditary progressive muscular dystrophy	3591
Unspecified retinal vascular occlusion	36230
Central artery occlusion of retina	36231
Arterial branch occlusion of retina	36232
Partial arterial occlusion of retina	36233
Transient arterial occlusion of retina	36234
Sudden visual loss	36811
Rheumatic fever without mention of heart involvement	390
Acute rheumatic pericarditis	3910
Acute rheumatic endocarditis	3911
Other acute rheumatic heart disease	3918
Unspecified acute rheumatic heart disease	3919
Chronic rheumatic pericarditis	393
Mitral stenosis	3940
Rheumatic mitral insufficiency	3941
Mitral stenosis with insufficiency	3942
Other and unspecified mitral valve diseases	3949
Rheumatic aortic stenosis	3950
Rheumatic aortic insufficiency	3951
Rheumatic aortic stenosis with insufficiency	3952
Other and unspecified rheumatic aortic diseases	3959
Mitral valve stenosis and aortic valve stenosis	3960
Mitral valve stenosis and aortic valve insufficiency	3961
Mitral valve insufficiency and aortic valve stenosis	3962
Mitral valve insufficiency and aortic valve insufficiency	3963
Multiple involvement of mitral and aortic valves	3968
Unspecified mitral and aortic valve diseases	3969
Diseases of tricuspid valve	3970
Rheumatic diseases of pulmonary valve	3971
Rheumatic diseases of endocardium, valve unspecified	3979
Rheumatic myocarditis	3980
Unspecified rheumatic heart disease	39890
Rheumatic heart failure (congestive)	39891
Other and unspecified rheumatic heart diseases	39899
Malignant hypertensive heart disease without heart failure	40200
Malignant hypertensive heart disease with heart failure	40201
Benign hypertensive heart disease without heart failure	40210
Benign hypertensive heart disease with heart failure	40211

Hypertensive heart disease, unspecified, with heart failure	40291
Hypertensive chronic kidney disease, benign, with chronic kidney disease stage I-IV	40310
Hypertensive heart and chronic kidney disease, malignant, without heart failure and with chronic kidney disease stage I-IV	40400
Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney disease stage I-IV	40401
Hypertensive heart and chronic kidney disease, malignant, without heart failure and with chronic kidney disease stage V	40402
Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney disease stage V	40403
Hypertensive heart and chronic kidney disease, benign, without heart failure and with chronic kidney disease stage I-IV	40410
Hypertensive heart and chronic kidney disease, benign, with heart failure and with chronic kidney disease stage I-IV	40411
Hypertensive heart and chronic kidney disease, benign, without heart failure and with chronic kidney disease stage V	40412
Hypertensive heart and chronic kidney disease, benign, with heart failure and with chronic kidney disease stage V	40413
Hypertensive heart and chronic kidney disease, unspecified, without heart failure and with chronic kidney disease stage I-IV	40490
Hypertensive heart and chronic kidney disease, unspecified, with heart failure and with chronic kidney disease stage I-IV	40491
Hypertensive heart and chronic kidney disease, unspecified, without heart failure and with chronic kidney disease stage V	40492
Hypertensive heart and chronic kidney disease, unspecified, with heart failure and with chronic kidney disease stage V	40493
Secondary renovascular hypertension, malignant	40501
Secondary renovascular hypertension, benign	40511
Acute myocardial infarction of anterolateral wall, episode of care unspecified	41000
Acute myocardial infarction of anterolateral wall, initial episode of care	41001
Acute myocardial infarction of anterolateral wall, subsequent episode of care	41002
Acute myocardial infarction of other anterior wall, episode of care unspecified	41010
Acute myocardial infarction of other anterior wall, initial episode of care	41011
Acute myocardial infarction of other anterior wall, subsequent episode of care	41012
Acute myocardial infarction of inferolateral wall, episode of care unspecified	41020
Acute myocardial infarction of inferolateral wall, initial episode of care	41021
Acute myocardial infarction of inferolateral wall, subsequent episode of care	41022
Acute myocardial infarction of inferoposterior wall, episode of care unspecified	41030
Acute myocardial infarction of inferoposterior wall, initial episode of care	41031
Acute myocardial infarction of inferoposterior wall, subsequent episode of care	41032
Acute myocardial infarction of other inferior wall, episode of care unspecified	41040
Acute myocardial infarction of other inferior wall, initial episode of care	41041
Acute myocardial infarction of other inferior wall, subsequent episode of care	41042

Acute myocardial infarction of other lateral wall, episode of care unspecified	41050
Acute myocardial infarction of other lateral wall, initial episode of care	41051
Acute myocardial infarction of other lateral wall, subsequent episode of care	41052
Acute myocardial infarction, true posterior wall infarction, episode of care unspecified	41060
Acute myocardial infarction, true posterior wall infarction, initial episode of care	41061
Acute myocardial infarction, true posterior wall infarction, subsequent episode of care	41062
Acute myocardial infarction, subendocardial infarction, episode of care unspecified	41070
Acute myocardial infarction, subendocardial infarction, initial episode of care	41071
Acute myocardial infarction, subendocardial infarction, subsequent episode of care	41072
Acute myocardial infarction of other specified sites, episode of care unspecified	41080
Acute myocardial infarction of other specified sites, initial episode of care	41081
Acute myocardial infarction of other specified sites, subsequent episode of care	41082
Acute myocardial infarction, unspecified site, episode of care unspecified	41090
Acute myocardial infarction, unspecified site, initial episode of care	41091
Acute myocardial infarction, unspecified site, subsequent episode of care	41092
Postmyocardial infarction syndrome	4110
Intermediate coronary syndrome	4111
Acute coronary occlusion without myocardial infarction	41181
Other acute and subacute form of ischemic heart disease	41189
Old myocardial infarction	412
Angina decubitus	4130
Prinzmetal angina	4131
Other and unspecified angina pectoris	4139
Coronary atherosclerosis of unspecified type of vessel, native or graft	41400
Coronary atherosclerosis of native coronary artery	41401
Coronary atherosclerosis of autologous vein bypass graft	41402
Coronary atherosclerosis of nonautologous biological bypass graft	41403
Coronary atherosclerosis of artery bypass graft	41404
Coronary atherosclerosis of unspecified type of bypass graft	41405
Coronary atherosclerosis, of native coronary artery of transplanted heart	41406
Coronary atherosclerosis, of bypass graft (artery) (vein) of transplanted heart	41407
Aneurysm of heart	41410
Aneurysm of coronary vessels	41411
Dissection of coronary artery	41412
Other aneurysm of heart	41419
Chronic total occlusion of coronary artery	4142
Coronary atherosclerosis due to lipid rich plaque	4143

Other specified forms of chronic ischemic heart disease	4148
Unspecified chronic ischemic heart disease	4149
Acute cor pulmonale	4150
Iatrogenic pulmonary embolism and infarction	41511
Septic pulmonary embolism	41512
Other pulmonary embolism and infarction	41519
Primary pulmonary hypertension	4160
Kyphoscoliotic heart disease	4161
Chronic pulmonary embolism	4162
Other chronic pulmonary heart diseases	4168
Unspecified chronic pulmonary heart disease	4169
Arteriovenous fistula of pulmonary vessels	4170
Aneurysm of pulmonary artery	4171
Other specified disease of pulmonary circulation	4178
Unspecified disease of pulmonary circulation	4179
Acute pericarditis in diseases classified elsewhere	4200
Unspecified acute pericarditis	42090
Acute idiopathic pericarditis	42091
Other acute pericarditis	42099
Acute and subacute bacterial endocarditis	4210
Acute and subacute infective endocarditis in diseases classified elsewhere	4211
Unspecified acute endocarditis	4219
Acute myocarditis in diseases classified elsewhere	4220
Unspecified acute myocarditis	42290
Idiopathic myocarditis	42291
Septic myocarditis	42292
Toxic myocarditis	42293
Hemopericardium	4230
Adhesive pericarditis	4231
Constrictive pericarditis	4232
Cardiac tamponade	4233
Other specified diseases of pericardium	4238
Unspecified disease of pericardium	4239
Mitral valve disorders	4240
Aortic valve disorders	4241
Tricuspid valve disorders, specified as nonrheumatic	4242
Pulmonary valve disorders	4243
Endocarditis, valve unspecified, unspecified cause	42490
Endocarditis in diseases classified elsewhere	42491
Other endocarditis, valve unspecified	42499
Endomyocardial fibrosis	4250

Hypertrophic obstructive cardiomyopathy	4251
Hypertrophic obstructive cardiomyopathy	42511
Other hypertrophic cardiomyopathy	42518
Obscure cardiomyopathy of Africa	4252
Endocardial fibroelastosis	4253
Other primary cardiomyopathies	4254
Alcoholic cardiomyopathy	4255
Nutritional and metabolic cardiomyopathy	4257
Cardiomyopathy in other diseases classified elsewhere	4258
Unspecified secondary cardiomyopathy	4259
Atrioventricular block, complete	4260
Unspecified atrioventricular block	42610
First degree atrioventricular block	42611
Mobitz (type) II atrioventricular block	42612
Other second degree atrioventricular block	42613
Left bundle branch hemiblock	4262
Other left bundle branch block	4263
Right bundle branch block	4264
Unspecified bundle branch block	42650
Right bundle branch block and left posterior fascicular block	42651
Right bundle branch block and left anterior fascicular block	42652
Other bilateral bundle branch block	42653
Trifascicular block	42654
Other heart block	4266
Anomalous atrioventricular excitation	4267
Long QT syndrome	42682
Other specified conduction disorder	42689
Unspecified conduction disorder	4269
Paroxysmal supraventricular tachycardia	4270
Paroxysmal ventricular tachycardia	4271
Unspecified paroxysmal tachycardia	4272
Atrial fibrillation	42731
Atrial flutter	42732
Ventricular fibrillation	42741
Ventricular flutter	42742
Cardiac arrest	4275
Unspecified premature beats	42760
Supraventricular premature beats	42761
Other premature beats	42769
Sinoatrial node dysfunction	42781
Other specified cardiac dysrhythmias	42789

Unspecified cardiac dysrhythmia	4279
Congestive heart failure, unspecified	4280
Left heart failure	4281
Unspecified systolic heart failure	42820
Acute systolic heart failure	42821
Chronic systolic heart failure	42822
Acute on chronic systolic heart failure	42823
Unspecified diastolic heart failure	42830
Acute diastolic heart failure	42831
Chronic diastolic heart failure	42832
Acute on chronic diastolic heart failure	42833
Unspecified combined systolic and diastolic heart failure	42840
Acute combined systolic and diastolic heart failure	42841
Chronic combined systolic and diastolic heart failure	42842
Acute on chronic combined systolic and diastolic heart failure	42843
Unspecified heart failure	4289
Unspecified myocarditis	4290
Myocardial degeneration	4291
Unspecified cardiovascular disease	4292
Cardiomegaly	4293
Functional disturbances following cardiac surgery	4294
Rupture of chordae tendineae	4295
Rupture of papillary muscle	4296
Acquired cardiac septal defect	42971
Other certain sequelae of myocardial infarction, not elsewhere classified	42979
Other disorders of papillary muscle	42981
Hyperkinetic heart disease	42982
Takotsubo syndrome	42983
Other ill-defined heart disease	42989
Unspecified heart disease	4299
Intracerebral hemorrhage	431
Unspecified intracranial hemorrhage	4329
Occlusion and stenosis of basilar artery without mention of cerebral infarction	43300
Occlusion and stenosis of basilar artery with cerebral infarction	43301
Occlusion and stenosis of carotid artery without mention of cerebral infarction	43310
Occlusion and stenosis of carotid artery with cerebral infarction	43311
Occlusion and stenosis of multiple and bilateral precerebral arteries without mention of cerebral infarction	43330
Occlusion and stenosis of multiple and bilateral precerebral arteries with cerebral infarction	43331
Occlusion and stenosis of unspecified precerebral artery without mention of cerebral infarction	43390

Occlusion and stenosis of unspecified precerebral artery with cerebral infarction	43391
Cerebral thrombosis without mention of cerebral infarction	43400
Cerebral thrombosis with cerebral infarction	43401
Cerebral embolism without mention of cerebral infarction	43410
Cerebral embolism with cerebral infarction	43411
Unspecified cerebral artery occlusion without mention of cerebral infarction	43490
Unspecified cerebral artery occlusion with cerebral infarction	43491
Basilar artery syndrome	4350
Vertebral artery syndrome	4351
Subclavian steal syndrome	4352
Vertebrobasilar artery syndrome	4353
Other specified transient cerebral ischemias	4358
Unspecified transient cerebral ischemia	4359
Acute, but ill-defined, cerebrovascular disease	436
Other generalized ischemic cerebrovascular disease	4371
Hypertensive encephalopathy	4372
Transient global amnesia	4377
Unspecified cerebrovascular disease	4379
Hemiplegia affecting unspecified side due to cerebrovascular disease	43820
Atherosclerosis of aorta	4400
Atherosclerosis of native arteries of the extremities, unspecified	44020
Atherosclerosis of native arteries of the extremities with intermittent claudication	44021
Atherosclerosis of native arteries of the extremities with rest pain	44022
Atherosclerosis of native arteries of the extremities with ulceration	44023
Atherosclerosis of native arteries of the extremities with gangrene	44024
Other atherosclerosis of native arteries of the extremities	44029
Generalized and unspecified atherosclerosis	4409
Dissecting aortic aneurysm (any part), unspecified site	44100
Dissecting aortic aneurysm (any part), thoracic	44101
Dissecting aortic aneurysm (any part), abdominal	44102
Dissecting aortic aneurysm (any part), thoracoabdominal	44103
Thoracic aneurysm, ruptured	4411
Thoracic aneurysm without mention of rupture	4412
Abdominal aneurysm, ruptured	4413
Abdominal aneurysm without mention of rupture	4414
Aortic aneurysm of unspecified site, ruptured	4415
Thoracoabdominal aneurysm, ruptured	4416
Thoracoabdominal aneurysm without mention of rupture	4417
Aortic aneurysm of unspecified site without mention of rupture	4419
Aneurysm of iliac artery	4422

Aneurysm of artery of lower extremity	4423
Aneurysm of artery of neck	44281
Other aneurysm of unspecified site	4429
Thromboangiitis obliterans (Buerger's disease)	4431
Peripheral angiopathy in diseases classified elsewhere	44381
Embolism and thrombosis of abdominal aorta	4440
Embolism and thrombosis of thoracic aorta	4441
Embolism and thrombosis of arteries of upper extremity	44421
Embolism and thrombosis of arteries of lower extremity	44422
Embolism and thrombosis of iliac artery	44481
Embolism and thrombosis of other specified artery	44489
Embolism and thrombosis of unspecified artery	4449
Atheroembolism of other site	44589
Giant cell arteritis	4465
Takayasu's disease	4467
Stricture of artery	4471
Unspecified arteritis	4476
Aortic ectasia unspecified site	44770
Thoracic aortic ectasia	44771
Other specified disorders of arteries and arterioles	4478
Unspecified disorders of arteries and arterioles	4479
Embolism and thrombosis of vena cava	4532
Venous embolism and thrombosis of unspecified deep vessels of lower extremity	45340
Venous embolism and thrombosis of deep vessels of proximal lower extremity	45341
Venous embolism and thrombosis of deep vessels of distal lower extremity	45342
Venous embolism and thrombosis of other specified veins	4538
Embolism and thrombosis of unspecified site	4539
Orthostatic hypotension	4580
Chronic hypotension	4581
Hypotension of hemodialysis	45821
Other iatrogenic hypotension	45829
Other specified hypotension	4588
Unspecified hypotension	4589
Other specified circulatory system disorders	45989
Unspecified circulatory system disorder	4599
Acute upper respiratory infections of unspecified site	4659
Methicillin susceptible pneumonia due to Staphylococcus aureus	48241
Obstructive chronic bronchitis, with (acute) exacerbation	49121
Obstructive chronic bronchitis with acute bronchitis	49122
Extrinsic asthma, unspecified	49300

Intrinsic asthma, unspecified	49310
Chronic obstructive asthma, unspecified	49320
Chronic obstructive asthma with status asthmaticus	49321
Chronic obstructive asthma, with (acute) exacerbation	49322
Asthma, unspecified, unspecified status	49390
Asthma, unspecified with status asthmaticus	49391
Asthma, unspecified, with (acute) exacerbation	49392
Bronchiectasis with acute exacerbation	4941
Chronic airway obstruction, not elsewhere classified	496
Empyema without mention of fistula	5109
Pleurisy without mention of effusion or current tuberculosis	5110
Pleurisy with effusion, with mention of bacterial cause other than tuberculosis	5111
Other specified forms of pleural effusion, except tuberculous	5118
Malignant pleural effusion	51181
Other specified forms of effusion, except tuberculous	51189
Unspecified pleural effusion	5119
Other spontaneous pneumothorax	5128
Abscess of lung	5130
Pulmonary congestion and hypostasis	514
Postinflammatory pulmonary fibrosis	515
Idiopathic fibrosing alveolitis	5163
Other specified alveolar and parietoalveolar pneumonopathies	5168
Pulmonary collapse	5180
Unspecified acute edema of lung	5184
Pulmonary insufficiency following trauma and surgery	5185
Acute respiratory failure	51881
Other pulmonary insufficiency, not elsewhere classified	51882
Chronic respiratory failure	51883
Acute and chronic respiratory failure	51884
Other diseases of lung, not elsewhere classified	51889
Acute bronchospasm	51911
Unspecified disease of respiratory system	5199
Acute vascular insufficiency of intestine	5570
Unspecified vascular insufficiency of intestine	5579
Diverticulosis of colon with hemorrhage	56212
Hemoperitoneum (nontraumatic)	56881
Hepatic coma	5722
Acute pancreatitis	5770
Acute renal failure with lesion of tubular necrosis	5845
Unspecified acute renal failure	5849
End stage renal disease	5856

Suspected damage to fetus from drugs, affecting management of mother, antepartum condition or complication	65553
Other known or suspected fetal abnormality, not elsewhere classified, affecting management of mother, antepartum condition or complication	65583
Unspecified fetal abnormality affecting management of mother, antepartum condition or complication	65593
Systemic lupus erythematosus	7100
Systemic sclerosis	7101
Rheumatoid arthritis	7140
Effusion of lower leg joint	71906
Pain in thoracic spine	7241
Swelling of limb	72981
Tietze's disease	7336
Bulbus cordis anomalies and anomalies of cardiac septal closure, common truncus	7450
Complete transposition of great vessels	74510
Transposition of great vessels, double outlet right ventricle	74511
Corrected transposition of great vessels	74512
Other transposition of great vessels	74519
Tetralogy of Fallot	7452
Bulbus cordis anomalies and anomalies of cardiac septal closure, common ventricle	7453
Ventricular septal defect	7454
Ostium secundum type atrial septal defect	7455
Unspecified type congenital endocardial cushion defect	74560
Ostium primum defect	74561
Other congenital endocardial cushion defect	74569
Other bulbus cordis anomalies and anomalies of cardiac septal closure	7458
Unspecified congenital defect of septal closure	7459
Unspecified congenital pulmonary valve anomaly	74600
Congenital atresia of pulmonary valve	74601
Congenital stenosis of pulmonary valve	74602
Other congenital anomalies of pulmonary valve	74609
Congenital tricuspid atresia and stenosis	7461
Ebstein's anomaly	7462
Congenital stenosis of aortic valve	7463
Congenital insufficiency of aortic valve	7464
Congenital mitral stenosis	7465
Congenital mitral insufficiency	7466
Hypoplastic left heart syndrome	7467
Congenital subaortic stenosis	74681
Congenital obstructive anomalies of heart, not elsewhere classified	74684

Congenital coronary artery anomaly	74685
Congenital heart block	74686
Congenital malposition of heart and cardiac apex	74687
Other specified congenital anomaly of heart	74689
Unspecified congenital anomaly of heart	7469
Patent ductus arteriosus	7470
Coarctation of aorta (preductal) (postductal)	74710
Unspecified congenital anomaly of aorta	74720
Congenital anomaly of aortic arch	74721
Congenital atresia and stenosis of aorta	74722
Other congenital anomaly of aorta	74729
Congenital anomalies of pulmonary artery	7473
Partial congenital anomalous pulmonary venous connection	74742
Down's syndrome	7580
Marfan's syndrome	75982
Other specified multiple congenital anomalies, so described	75989
Coma	78001
Transient alteration of awareness	78002
Other alteration of consciousness	78009
Syncope and collapse	7802
Dizziness and giddiness	7804
Fever and other physiologic disturbances of temperature regulation	7806
Fever, unspecified	78060
Fever presenting with conditions classified elsewhere	78061
Chronic fatigue syndrome	78071
Memory loss	78093
Altered mental status	78097
Edema	7823
Cyanosis	7825
Unspecified tachycardia	7850
Palpitations	7851
Undiagnosed cardiac murmurs	7852
Other abnormal heart sounds	7853
Gangrene	7854
Unspecified shock	78550
Cardiogenic shock	78551
Septic shock	78552
Other shock without mention of trauma	78559
Other symptoms involving cardiovascular system	7859
Unspecified respiratory abnormality	78600
Apnea	78603

Cheyne-Stokes respiration	78604
Shortness of breath	78605
Tachypnea	78606
Wheezing	78607
Other dyspnea and respiratory abnormalities	78609
Hemoptysis	7863
Chest pain, unspecified	78650
Precordial pain	78651
Painful respiration	78652
Chest pain, other	78659
Abnormal chest sounds	7867
Other symptoms involving respiratory system and chest	7869
Bacteremia	7907
Nonspecific abnormal findings on radiological and other examination of other intrathoracic organs	7932
Nonspecific abnormal findings on radiological and other examination of abdominal area, including retroperitoneum	7936
Nonspecific abnormal unspecified cardiovascular function study	79430
Nonspecific abnormal electrocardiogram (ECG) (EKG)	79431
Other nonspecific abnormal cardiovascular system function study	79439
Nonspecific abnormal findings on chromosomal analysis	7952
Nonspecific low blood pressure reading	7963
Asphyxia	79901
Hypoxemia	79902
Respiratory arrest	7991
Closed fracture of rib(s), unspecified	80700
Closed fracture of one rib	80701
Closed fracture of two ribs	80702
Closed fracture of three ribs	80703
Closed fracture of multiple ribs, unspecified	80709
Closed fracture of sternum	8072
Flail chest	8074
Subarachnoid hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness	85200
Subarachnoid hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness	85201
Subdural hemorrhage following injury, without mention of open intracranial wound, with brief [less than one hour] loss of consciousness	85222
Subdural hemorrhage following injury, without mention of open intracranial wound, loss of consciousness of unspecified duration	85226
Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness	85300

Traumatic pneumothorax without mention of open wound into thorax	8600
Traumatic hemothorax without mention of open wound into thorax	8602
Unspecified injury to heart without mention of open wound into thorax	86100
Heart contusion without mention of open wound into thorax	86101
Contusion of chest wall	9221
Traumatic shock	9584
Other injury of chest wall	95911
Poisoning by antineoplastic antibiotics	9607
Poisoning by antineoplastic and immunosuppressive drugs	9631
Poisoning by anticoagulants	9642
Poisoning by opium (alkaloids), unspecified	96500
Poisoning by opiates and related narcotics, other	96509
Poisoning by benzodiazepine-based tranquilizers	9694
Poisoning by cardiotonic glycosides and drugs of similar action	9721
Poisoning by unspecified drug or medicinal substance	9779
Effects of radiation, unspecified	990
Angioneurotic edema not elsewhere classified	9951
Other and unspecified adverse effect of drug, medicinal and biological substance	9952
Unspecified adverse effect of unspecified drug, medicinal and biological substance	99520
Unspecified adverse effect of other drug, medicinal and biological substance	99529
Sepsis	99591
Severe sepsis	99592
Mechanical complication of unspecified cardiac device, implant, and graft	99600
Mechanical complication due to cardiac pacemaker (electrode)	99601
Mechanical complication due to heart valve prosthesis	99602
Mechanical complication due to coronary bypass graft	99603
Mechanical complication due to automatic implantable cardiac defibrillator	99604
Mechanical complication of cardiac device, implant, and graft, other	99609
Mechanical complication of other vascular device, implant, and graft	9961
Infection and inflammatory reaction due to cardiac device, implant, and graft	99661
Infection and inflammatory reaction due to other vascular device, implant, and graft	99662
Infection and inflammatory reaction due to peritoneal dialysis catheter	99668
Other complications due to heart valve prosthesis	99671
Other complications due to other cardiac device, implant, and graft	99672
Other complications due to renal dialysis device, implant, and graft	99673
Other complications due to other vascular device, implant, and graft	99674
Complications of transplanted kidney	99681
Complications of transplanted heart	99683
Complications of transplanted lung	99684

Cardiac complications	9971
Respiratory complications	9973
Postoperative shock, not elsewhere classified	9980
Accidental puncture or laceration during procedure	9982
Antineoplastic and immunosuppressive drugs causing adverse effect in therapeutic use	E9331
Personal history of malignant neoplasm of breast	V103
Personal history of venous thrombosis and embolism	V1251
Personal history of transient ischemic attack [TIA], and cerebral infarction without residual deficits	V1254
Personal history of other diseases of circulatory system	V1259
Personal history of surgery to heart and great vessels, presenting hazards to health	V151
Family history of other cardiovascular diseases	V1749
Kidney replaced by transplant	V420
Heart replaced by transplant	V421
Heart valve replaced by transplant	V422
Lung replaced by transplant	V426
Organ or tissue replaced by other means, Heart assist device	V4321
Heart valve replaced by other means	V433
Blood vessel replaced by other means	V434
Unspecified cardiac device in situ	V4500
Cardiac pacemaker in situ	V4501
Automatic implantable cardiac defibrillator in situ	V4502
Other specified cardiac device in situ	V4509
Postprocedural aortocoronary bypass status	V4581
Postprocedural percutaneous transluminal coronary angioplasty status	V4582
Other cardiorespiratory problems	V472
Fitting and adjustment of cardiac pacemaker	V5331
Fitting and adjustment of automatic implantable cardiac defibrillator	V5332
Encounter for antineoplastic chemotherapy	V5811
Encounter for antineoplastic immunotherapy	V5812
Aftercare following organ transplant	V5844
Encounter for long-term (current) use of other medications	V5869
Encounter for therapeutic drug monitoring	V5883
Chemotherapy follow-up examination	V672
Follow-up examination following completed treatment with high-risk medications, not elsewhere classified	V6751
Observation for suspected cardiovascular disease	V717

Electrocardiogram

Electrocardiograms were excluded from the analysis if the associated primary, secondary, tertiary, or quaternary diagnosis involved: (i) proximal fractures; (ii) pulmonary and chest conditions, including anything potentially resulting in chest pain (e.g., chest wall contusion); (iii) esophageal conditions (e.g., esophagitis and esophageal spasm), except those that are painless, mild, and chronic (e.g., esophageal stricture, Barrett’s esophagus, and reflux); (iv) cardiac conditions, including shortness of breath, edema, congestive heart failure and anatomic anomalies; (v) end stage renal disease and dialysis, along with all electrolyte abnormalities; (vi) infections, including sepsis, but not urinary tract infections or pneumonia; (vii) anemia and bleeding conditions, except microscopic hematuria; (viii) abdominal conditions (including abdominal pain), but not benign tumor of the colon; (ix) psychiatric conditions; (x) acute central nervous system conditions (e.g., cerebrovascular accident, delirium) and seizure or epilepsy conditions, but not chronic conditions (e.g., dementia), head ache, or migraine; (xi) drug toxicity and poisoning; (xii) transplants; (xiii) malignant hypertension; (xiv) cancers; (xv) conditions involving arterial and pulmonary emboli, but not peripheral deep vein thrombosis; (xvi) falls; (xvii) autoimmune conditions; or (xviii) pain in the anterior and posterior thorax and shoulder areas (eg. back pain), but not specific shoulder conditions such as “capsular adhesion of shoulder” and “osteoarthritis of shoulder.”

Label	Code
Salmonella septicemia	0031
Human immunodeficiency virus [HIV]	042
Unspecified food poisoning	0059
Sarcoidosis	135
Malignant neoplasm of uterus, part unspecified	179
Malignant neoplasm of prostate	185
Malignant neoplasm of thyroid gland	193
Nutritional marasmus	261
Other severe protein-calorie malnutrition	262
Depressive disorder, not elsewhere classified	311
Disseminated diseases due to other mycobacteria	0312
Multiple sclerosis	340
Streptococcal septicemia	0380
Pneumococcal septicemia	0382
Septicemia due to anaerobes	0383
Other specified septicemia	0388
Unspecified septicemia	0389
Rheumatic fever without mention of heart involvement	390
Gas gangrene	0400
Old myocardial infarction	412
Subarachnoid hemorrhage	430
Intracerebral hemorrhage	431

Acute, but ill-defined, cerebrovascular disease	436
Portal vein thrombosis	452
Unspecified viral meningitis	0479
Bronchitis, not specified as acute or chronic	490
Unspecified non-arthropod-borne viral disease of central nervous system	0499
Coal workers' pneumoconiosis	500
Asbestosis	501
Pulmonary congestion and hypostasis	514
Postinflammatory pulmonary fibrosis	515
Appendicitis, unqualified	541
Herpetic meningoencephalitis	0543
Acute and subacute necrosis of liver	570
Unspecified renal failure	586
Respiratory distress syndrome in newborn	769
Toxic effect of carbon monoxide	986
Effects of radiation, unspecified	990
Candidiasis of lung	1124
Disseminated candidiasis	1125
Aspergillosis	1173
Malignant neoplasm of lower lip, vermilion border	1401
Malignant neoplasm of base of tongue	1410
Malignant neoplasm of anterior two-thirds of tongue, part unspecified	1414
Malignant neoplasm of tongue, unspecified site	1419
Malignant neoplasm of parotid gland	1420
Malignant neoplasm of floor of mouth, part unspecified	1449
Malignant neoplasm of mouth, unspecified site	1459
Malignant neoplasm of tonsil	1460
Malignant neoplasm of oropharynx, unspecified site	1469
Malignant neoplasm of nasopharynx, unspecified site	1479
Malignant neoplasm of thoracic esophagus	1501
Malignant neoplasm of upper third of esophagus	1503
Malignant neoplasm of middle third of esophagus	1504
Malignant neoplasm of lower third of esophagus	1505
Malignant neoplasm of other specified part of esophagus	1508
Malignant neoplasm of esophagus, unspecified site	1509
Malignant neoplasm of cardia	1510
Malignant neoplasm of pylorus	1511
Malignant neoplasm of pyloric antrum	1512
Malignant neoplasm of fundus of stomach	1513
Malignant neoplasm of body of stomach	1514
Malignant neoplasm of lesser curvature of stomach, unspecified	1515

Malignant neoplasm of other specified sites of stomach	1518
Malignant neoplasm of stomach, unspecified site	1519
Malignant neoplasm of duodenum	1520
Malignant neoplasm of ileum	1522
Malignant neoplasm of small intestine, unspecified site	1529
Malignant neoplasm of hepatic flexure	1530
Malignant neoplasm of transverse colon	1531
Malignant neoplasm of descending colon	1532
Malignant neoplasm of sigmoid colon	1533
Malignant neoplasm of cecum	1534
Malignant neoplasm of appendix	1535
Malignant neoplasm of ascending colon	1536
Malignant neoplasm of splenic flexure	1537
Malignant neoplasm of other specified sites of large intestine	1538
Malignant neoplasm of colon, unspecified site	1539
Malignant neoplasm of rectosigmoid junction	1540
Malignant neoplasm of rectum	1541
Malignant neoplasm of anal canal	1542
Malignant neoplasm of anus, unspecified site	1543
Malignant neoplasm of other sites of rectum, rectosigmoid junction, and anus	1548
Malignant neoplasm of liver, primary	1550
Malignant neoplasm of intrahepatic bile ducts	1551
Malignant neoplasm of liver, not specified as primary or secondary	1552
Malignant neoplasm of gallbladder	1560
Malignant neoplasm of extrahepatic bile ducts	1561
Malignant neoplasm of ampulla of Vater	1562
Malignant neoplasm of biliary tract, part unspecified site	1569
Malignant neoplasm of head of pancreas	1570
Malignant neoplasm of body of pancreas	1571
Malignant neoplasm of tail of pancreas	1572
Malignant neoplasm of other specified sites of pancreas	1578
Malignant neoplasm of pancreas, part unspecified	1579
Malignant neoplasm of retroperitoneum	1580
Malignant neoplasm of specified parts of peritoneum	1588
Malignant neoplasm of peritoneum, unspecified	1589
Malignant neoplasm of intestinal tract, part unspecified	1590
Malignant neoplasm of nasal cavities	1600
Malignant neoplasm of maxillary sinus	1602
Malignant neoplasm of glottis	1610
Malignant neoplasm of supraglottis	1611
Malignant neoplasm of other specified sites of larynx	1618

Malignant neoplasm of larynx, unspecified site	1619
Malignant neoplasm of trachea	1620
Malignant neoplasm of main bronchus	1622
Malignant neoplasm of upper lobe, bronchus, or lung	1623
Malignant neoplasm of middle lobe, bronchus, or lung	1624
Malignant neoplasm of lower lobe, bronchus, or lung	1625
Malignant neoplasm of other parts of bronchus or lung	1628
Malignant neoplasm of bronchus and lung, unspecified site	1629
Malignant neoplasm of other specified sites of pleura	1638
Malignant neoplasm of pleura, unspecified site	1639
Malignant neoplasm of thymus	1640
Malignant neoplasm of heart	1641
Malignant neoplasm of mediastinum, part unspecified	1649
Malignant neoplasm of bone and articular cartilage, site unspecified	1709
Malignant neoplasm of connective and other soft tissue of head, face, and neck	1710
Malignant neoplasm of connective and other soft tissue of upper limb, including shoulder	1712
Malignant neoplasm of connective and other soft tissue of lower limb, including hip	1713
Malignant neoplasm of connective and other soft tissue of thorax	1714
Malignant neoplasm of connective and other soft tissue of abdomen	1715
Malignant neoplasm of connective and other soft tissue, site unspecified	1719
Malignant melanoma of skin of ear and external auditory canal	1722
Malignant melanoma of skin of other and unspecified parts of face	1723
Malignant melanoma of skin of scalp and neck	1724
Malignant melanoma of skin of trunk, except scrotum	1725
Malignant melanoma of skin of upper limb, including shoulder	1726
Malignant melanoma of skin of lower limb, including hip	1727
Malignant melanoma of other specified sites of skin	1728
Melanoma of skin, site unspecified	1729
Other malignant neoplasm of skin of lip	1730
Other malignant neoplasm of skin of eyelid, including canthus	1731
Other malignant neoplasm of skin of ear and external auditory canal	1732
Other malignant neoplasm of skin of other and unspecified parts of face	1733
Other malignant neoplasm of scalp and skin of neck	1734
Other malignant neoplasm of skin of trunk, except scrotum	1735
Other malignant neoplasm of skin of upper limb, including shoulder	1736
Other malignant neoplasm of skin of lower limb, including hip	1737
Other malignant neoplasm of other specified sites of skin	1738
Other malignant neoplasm of skin, site unspecified	1739
Malignant neoplasm of nipple and areola of female breast	1740
Malignant neoplasm of central portion of female breast	1741

Malignant neoplasm of upper-inner quadrant of female breast	1742
Malignant neoplasm of lower-inner quadrant of female breast	1743
Malignant neoplasm of upper-outer quadrant of female breast	1744
Malignant neoplasm of lower-outer quadrant of female breast	1745
Malignant neoplasm of other specified sites of female breast	1748
Malignant neoplasm of breast (female), unspecified site	1749
Malignant neoplasm of other and unspecified sites of male breast	1759
Malignant neoplasm of endocervix	1800
Malignant neoplasm of cervix uteri, unspecified site	1809
Malignant neoplasm of corpus uteri, except isthmus	1820
Malignant neoplasm of ovary	1830
Malignant neoplasm of fallopian tube	1832
Malignant neoplasm of vagina	1840
Malignant neoplasm of vulva, unspecified site	1844
Malignant neoplasm of other and unspecified testis	1869
Malignant neoplasm of penis, part unspecified	1874
Malignant neoplasm of trigone of urinary bladder	1880
Malignant neoplasm of dome of urinary bladder	1881
Malignant neoplasm of lateral wall of urinary bladder	1882
Malignant neoplasm of anterior wall of urinary bladder	1883
Malignant neoplasm of posterior wall of urinary bladder	1884
Malignant neoplasm of bladder neck	1885
Malignant neoplasm of ureteric orifice	1886
Malignant neoplasm of other specified sites of bladder	1888
Malignant neoplasm of bladder, part unspecified	1889
Malignant neoplasm of kidney, except pelvis	1890
Malignant neoplasm of renal pelvis	1891
Malignant neoplasm of ureter	1892
Malignant neoplasm of urethra	1893
Malignant neoplasm of urinary organ, site unspecified	1899
Malignant neoplasm of choroid	1906
Malignant neoplasm of cerebrum, except lobes and ventricles	1910
Malignant neoplasm of frontal lobe of brain	1911
Malignant neoplasm of temporal lobe of brain	1912
Malignant neoplasm of parietal lobe of brain	1913
Malignant neoplasm of occipital lobe of brain	1914
Malignant neoplasm of other parts of brain	1918
Malignant neoplasm of brain, unspecified site	1919
Malignant neoplasm of cerebral meninges	1921
Malignant neoplasm of adrenal gland	1940
Malignant neoplasm of head, face, and neck	1950

Malignant neoplasm of thorax	1951
Malignant neoplasm of abdomen	1952
Secondary and unspecified malignant neoplasm of lymph nodes of head, face, and neck	1960
Secondary and unspecified malignant neoplasm of intrathoracic lymph nodes	1961
Secondary and unspecified malignant neoplasm of intra-abdominal lymph nodes	1962
Secondary and unspecified malignant neoplasm of lymph nodes of axilla and upper limb	1963
Secondary and unspecified malignant neoplasm of lymph nodes of inguinal region and lower limb	1965
Secondary malignant neoplasm of lung	1970
Secondary malignant neoplasm of mediastinum	1971
Secondary malignant neoplasm of pleura	1972
Secondary malignant neoplasm of small intestine including duodenum	1974
Secondary malignant neoplasm of large intestine and rectum	1975
Secondary malignant neoplasm of retroperitoneum and peritoneum	1976
Secondary malignant neoplasm of liver	1977
Secondary malignant neoplasm of other digestive organs and spleen	1978
Secondary malignant neoplasm of kidney	1980
Secondary malignant neoplasm of other urinary organs	1981
Secondary malignant neoplasm of skin	1982
Secondary malignant neoplasm of brain and spinal cord	1983
Secondary malignant neoplasm of other parts of nervous system	1984
Secondary malignant neoplasm of bone and bone marrow	1985
Secondary malignant neoplasm of adrenal gland	1987
Disseminated malignant neoplasm	1990
Other malignant neoplasm of unspecified site	1991
Benign neoplasm of bronchus and lung	2123
Benign neoplasm of heart	2127
Benign neoplasm of brain	2250
Benign neoplasm of cerebral meninges	2252
Benign neoplasm of spinal meninges	2254
Carcinoma in situ of esophagus	2301
Carcinoma in situ of stomach	2302
Carcinoma in situ of colon	2303
Carcinoma in situ of rectum	2304
Carcinoma in situ of larynx	2310
Carcinoma in situ of bronchus and lung	2312
Carcinoma in situ of breast	2330
Carcinoma in situ of cervix uteri	2331
Carcinoma in situ of other and unspecified parts of uterus	2332
Carcinoma in situ, other and unspecified female genital organs	2333

Carcinoma in situ of prostate	2334
Carcinoma in situ of bladder	2337
Carcinoma in situ of other specified sites	2348
Neoplasm of uncertain behavior of major salivary glands	2350
Neoplasm of uncertain behavior of lip, oral cavity, and pharynx	2351
Neoplasm of uncertain behavior of stomach, intestines, and rectum	2352
Neoplasm of uncertain behavior of liver and biliary passages	2353
Neoplasm of uncertain behavior of other and unspecified digestive organs	2355
Neoplasm of uncertain behavior of larynx	2356
Neoplasm of uncertain behavior of trachea, bronchus, and lung	2357
Neoplasm of uncertain behavior of ovary	2362
Neoplasm of uncertain behavior of prostate	2365
Neoplasm of uncertain behavior of bladder	2367
Neoplasm of uncertain behavior of pituitary gland and craniopharyngeal duct	2370
Neoplasm of uncertain behavior of other and unspecified endocrine glands	2374
Neoplasm of uncertain behavior of brain and spinal cord	2375
Neoplasm of uncertain behavior of bone and articular cartilage	2380
Neoplasm of uncertain behavior of connective and other soft tissue	2381
Neoplasm of uncertain behavior of skin	2382
Neoplasm of uncertain behavior of breast	2383
Neoplasm of uncertain behavior of polycythemia vera	2384
Neoplasm of uncertain behavior of other specified sites	2388
Neoplasm of uncertain behavior, site unspecified	2389
Neoplasm of unspecified nature of digestive system	2390
Neoplasm of unspecified nature of respiratory system	2391
Neoplasms of unspecified nature of bone, soft tissue, and skin	2392
Neoplasm of unspecified nature of breast	2393
Neoplasm of unspecified nature of bladder	2394
Neoplasm of unspecified nature of other genitourinary organs	2395
Neoplasm of unspecified nature of brain	2396
Neoplasm of unspecified nature of endocrine glands and other parts of nervous system	2397
Neoplasm of unspecified nature of other specified sites	2398
Neoplasm of unspecified nature, site unspecified	2399
Acute thyroiditis	2450
Unspecified thyroiditis	2459
Hypoglycemic coma	2510
Other specified hypoglycemia	2511
Hypoglycemia, unspecified	2512
Diabetes insipidus	2535
Carcinoid syndrome	2592

Unspecified protein-calorie malnutrition	2639
Other and unspecified manifestations of thiamine deficiency	2651
Monoclonal paraproteinemia	2731
Disorders of magnesium metabolism	2752
Disorders of phosphorus metabolism	2753
Hyperosmolality and/or hypernatremia	2760
Hyposmolality and/or hyponatremia	2761
Acidosis	2762
Alkalosis	2763
Mixed acid-base balance disorder	2764
Fluid overload	2766
Hyperpotassemia	2767
Hypopotassemia	2768
Electrolyte and fluid disorders not elsewhere classified	2769
Amyloidosis	2773
Unspecified disorder of metabolism	2779
Iron deficiency anemia secondary to blood loss (chronic)	2800
Iron deficiency anemia secondary to inadequate dietary iron intake	2801
Other specified iron deficiency anemias	2808
Unspecified iron deficiency anemia	2809
Pernicious anemia	2810
Other vitamin B12 deficiency anemia	2811
Folate-deficiency anemia	2812
Other specified megaloblastic anemias not elsewhere classified	2813
Anemia associated with other specified nutritional deficiency	2818
Unspecified deficiency anemia	2819
Autoimmune hemolytic anemias	2830
Acquired hemolytic anemia, unspecified	2839
Pancytopenia	2841
Other specified aplastic anemias	2848
Unspecified aplastic anemia	2849
Sideroblastic anemia	2850
Acute posthemorrhagic anemia	2851
Chemotherapy induced anemia	2853
Other specified anemias	2858
Unspecified anemia	2859
Hemorrhagic disorder due to intrinsic circulating anticoagulants	2865
Defibrination syndrome	2866
Unspecified hemorrhagic conditions	2879
Polycythemia, secondary	2890
Senile dementia with delirium	2903

Unspecified senile psychotic condition	2909
Alcohol withdrawal delirium	2910
Drug withdrawal	2920
Unspecified drug-induced mental disorder	2929
Delirium due to conditions classified elsewhere	2930
Subacute delirium	2931
Unspecified transient mental disorder in conditions classified elsewhere	2939
Other persistent mental disorders due to conditions classified elsewhere	2948
Unspecified persistent mental disorders due to conditions classified elsewhere	2949
Bipolar I disorder, most recent episode (or current) unspecified	2967
Delusional disorder	2971
Unspecified paranoid state	2979
Reactive confusion	2982
Other and unspecified reactive psychosis	2988
Unspecified psychosis	2989
Obsessive-compulsive disorders	3003
Dysthymic disorder	3004
Unspecified nonpsychotic mental disorder	3009
Respiratory malfunction arising from mental factors	3061
Cardiovascular malfunction arising from mental factors	3062
Anorexia nervosa	3071
Predominant disturbance of emotions	3080
Unspecified acute reaction to stress	3089
Adjustment disorder with depressed mood	3090
Prolonged depressive reaction as adjustment reaction	3091
Adjustment disorder with mixed disturbance of emotions and conduct	3094
Unspecified adjustment reaction	3099
Personality change due to conditions classified elsewhere	3101
Postconcussion syndrome	3102
Unspecified nonpsychotic mental disorder following organic brain damage	3109
Meningitis due to unspecified bacterium	3209
Unspecified meningitis	3229
Unspecified causes of encephalitis, myelitis, and encephalomyelitis	3239
Intracranial abscess	3240
Communicating hydrocephalus	3313
Obstructive hydrocephalus	3314
Idiopathic normal pressure hydrocephalus [INPH]	3315
Paralysis agitans	3320
Secondary Parkinsonism	3321
Neoplasm related pain (acute) (chronic)	3383
Unspecified infantile cerebral palsy	3439

Unspecified paralysis	3449
Anoxic brain damage	3481
Benign intracranial hypertension	3482
Cerebral edema	3485
Atypical face pain	3502
Unspecified inflammatory and toxic neuropathy	3579
Toxic myopathy	3594
Unspecified visual disturbance	3689
Unspecified visual loss	3699
Unspecified staphylococcal septicemia	03810
Methicillin susceptible Staphylococcus aureus septicemia	03811
Methicillin resistant Staphylococcus aureus septicemia	03812
Other staphylococcal septicemia	03819
Septicemia due to unspecified gram-negative organism	03840
Septicemia due to hemophilus influenzae (H. influenzae)	03841
Septicemia due to Escherichia coli (E. coli)	03842
Septicemia due to pseudomonas	03843
Septicemia due to serratia	03844
Other septicemia due to gram-negative organism	03849
Acute rheumatic pericarditis	3910
Acute rheumatic endocarditis	3911
Other acute rheumatic heart disease	3918
Unspecified acute rheumatic heart disease	3919
Mitral stenosis	3940
Rheumatic mitral insufficiency	3941
Mitral stenosis with insufficiency	3942
Other and unspecified mitral valve diseases	3949
Rheumatic aortic stenosis	3950
Rheumatic aortic insufficiency	3951
Rheumatic aortic stenosis with insufficiency	3952
Other and unspecified rheumatic aortic diseases	3959
Mitral valve stenosis and aortic valve stenosis	3960
Mitral valve stenosis and aortic valve insufficiency	3961
Mitral valve insufficiency and aortic valve stenosis	3962
Mitral valve insufficiency and aortic valve insufficiency	3963
Multiple involvement of mitral and aortic valves	3968
Unspecified mitral and aortic valve diseases	3969
Diseases of tricuspid valve	3970
Rheumatic diseases of pulmonary valve	3971
Essential hypertension, malignant	4010
Postmyocardial infarction syndrome	4110

Intermediate coronary syndrome	4111
Angina decubitus	4130
Prinzmetal angina	4131
Other and unspecified angina pectoris	4139
Chronic total occlusion of coronary artery	4142
Coronary atherosclerosis due to lipid rich plaque	4143
Other specified forms of chronic ischemic heart disease	4148
Unspecified chronic ischemic heart disease	4149
Acute cor pulmonale	4150
Primary pulmonary hypertension	4160
Chronic pulmonary embolism	4162
Other chronic pulmonary heart diseases	4168
Unspecified chronic pulmonary heart disease	4169
Arteriovenous fistula of pulmonary vessels	4170
Aneurysm of pulmonary artery	4171
Other specified disease of pulmonary circulation	4178
Unspecified disease of pulmonary circulation	4179
Acute pericarditis in diseases classified elsewhere	4200
Acute and subacute bacterial endocarditis	4210
Acute and subacute infective endocarditis in diseases classified elsewhere	4211
Unspecified acute endocarditis	4219
Hemopericardium	4230
Adhesive pericarditis	4231
Constrictive pericarditis	4232
Cardiac tamponade	4233
Other specified diseases of pericardium	4238
Unspecified disease of pericardium	4239
Mitral valve disorders	4240
Aortic valve disorders	4241
Tricuspid valve disorders, specified as nonrheumatic	4242
Pulmonary valve disorders	4243
Endomyocardial fibrosis	4250
Hypertrophic obstructive cardiomyopathy	4251
Obscure cardiomyopathy of Africa	4252
Endocardial fibroelastosis	4253
Other primary cardiomyopathies	4254
Alcoholic cardiomyopathy	4255
Nutritional and metabolic cardiomyopathy	4257
Cardiomyopathy in other diseases classified elsewhere	4258
Unspecified secondary cardiomyopathy	4259
Atrioventricular block, complete	4260

Left bundle branch hemiblock	4262
Other left bundle branch block	4263
Right bundle branch block	4264
Other heart block	4266
Anomalous atrioventricular excitation	4267
Unspecified conduction disorder	4269
Paroxysmal supraventricular tachycardia	4270
Paroxysmal ventricular tachycardia	4271
Unspecified paroxysmal tachycardia	4272
Cardiac arrest	4275
Unspecified cardiac dysrhythmia	4279
Congestive heart failure, unspecified	4280
Left heart failure	4281
Unspecified heart failure	4289
Unspecified myocarditis	4290
Myocardial degeneration	4291
Unspecified cardiovascular disease	4292
Cardiomegaly	4293
Functional disturbances following cardiac surgery	4294
Rupture of chordae tendineae	4295
Rupture of papillary muscle	4296
Unspecified heart disease	4299
Nontraumatic extradural hemorrhage	4320
Subdural hemorrhage	4321
Unspecified intracranial hemorrhage	4329
Basilar artery syndrome	4350
Vertebral artery syndrome	4351
Subclavian steal syndrome	4352
Vertebrobasilar artery syndrome	4353
Other specified transient cerebral ischemias	4358
Unspecified transient cerebral ischemia	4359
Cerebral atherosclerosis	4370
Other generalized ischemic cerebrovascular disease	4371
Hypertensive encephalopathy	4372
Cerebral aneurysm, nonruptured	4373
Transient global amnesia	4377
Unspecified cerebrovascular disease	4379
Atherosclerosis of aorta	4400
Atherosclerosis of renal artery	4401
Chronic total occlusion of artery of the extremities	4404
Atherosclerosis of other specified arteries	4408

Generalized and unspecified atherosclerosis	4409
Thoracic aneurysm, ruptured	4411
Thoracic aneurysm without mention of rupture	4412
Abdominal aneurysm, ruptured	4413
Abdominal aneurysm without mention of rupture	4414
Aortic aneurysm of unspecified site, ruptured	4415
Thoracoabdominal aneurysm, ruptured	4416
Thoracoabdominal aneurysm without mention of rupture	4417
Aortic aneurysm of unspecified site without mention of rupture	4419
Aneurysm of artery of upper extremity	4420
Aneurysm of renal artery	4421
Aneurysm of iliac artery	4422
Aneurysm of artery of lower extremity	4423
Other aneurysm of unspecified site	4429
Thromboangiitis obliterans (Buerger's disease)	4431
Embolism and thrombosis of abdominal aorta	4440
Embolism and thrombosis of thoracic aorta	4441
Embolism and thrombosis of unspecified artery	4449
Polyarteritis nodosa	4460
Wegener's granulomatosis	4464
Giant cell arteritis	4465
Takayasu's disease	4467
Stricture of artery	4471
Rupture of artery	4472
Celiac artery compression syndrome	4474
Unspecified arteritis	4476
Other specified disorders of arteries and arterioles	4478
Unspecified disorders of arteries and arterioles	4479
Embolism and thrombosis of vena cava	4532
EMB/THROM SUPERFICIAL LOWER EXT	4536
Venous embolism and thrombosis of other specified veins	4538
Embolism and thrombosis of unspecified site	4539
Esophageal varices with bleeding	4560
Other noninfectious lymphedema	4571
Orthostatic hypotension	4580
Chronic hypotension	4581
Other specified hypotension	4588
Unspecified hypotension	4589
Unspecified hemorrhage	4590
Unspecified circulatory system disorder	4599
Acute upper respiratory infections of other multiple sites	4658

Acute upper respiratory infections of unspecified site	4659
Acute bronchitis	4660
Other and unspecified diseases of upper respiratory tract	4789
Emphysematous bleb	4920
Other emphysema	4928
Bronchiectasis with acute exacerbation	4941
Acute pulmonary edema due to fumes and vapors	5061
Other acute and subacute respiratory conditions due to fumes and vapors	5063
Acute pulmonary manifestations due to radiation	5080
Empyema without mention of fistula	5109
Pleurisy without mention of effusion or current tuberculosis	5110
Pleurisy with effusion, with mention of bacterial cause other than tuberculosis	5111
Other specified forms of pleural effusion, except tuberculous	5118
Unspecified pleural effusion	5119
Spontaneous tension pneumothorax	5120
Iatrogenic pneumothorax	5121
Other spontaneous pneumothorax	5128
Abscess of lung	5130
Idiopathic fibrosing alveolitis	5163
Other specified alveolar and parietoalveolar pneumonopathies	5168
Acute chest syndrome	5173
Lung involvement in other diseases classified elsewhere	5178
Pulmonary collapse	5180
Compensatory emphysema	5182
Pulmonary eosinophilia	5183
Unspecified acute edema of lung	5184
Pulmonary insufficiency following trauma and surgery	5185
Other diseases of trachea and bronchus, not elsewhere classified	5191
Other diseases of respiratory system, not elsewhere classified	5198
Unspecified disease of respiratory system	5199
Inflammatory conditions of jaw	5264
Achalasia and cardiospasm	5300
Stricture and stenosis of esophagus	5303
Perforation of esophagus	5304
Gastroesophageal laceration-hemorrhage syndrome	5307
Unspecified disorder of esophagus	5309
Dyspepsia and other specified disorders of function of stomach	5368
Acute appendicitis with generalized peritonitis	5400
Acute appendicitis with peritoneal abscess	5401
Acute appendicitis without mention of peritonitis	5409
Hernia of other specified site, with obstruction	5528

Acute vascular insufficiency of intestine	5570
Volvulus	5602
Unspecified intestinal obstruction	5609
Unspecified peritonitis	5679
Hemorrhage of rectum and anus	5693
Abscess of liver	5720
Hepatic coma	5722
Portal hypertension	5723
Acute cholecystitis	5750
Perforation of gallbladder	5754
Cholangitis	5761
Acute pancreatitis	5770
Chronic pancreatitis	5771
Hematemesis	5780
Blood in stool	5781
Hemorrhage of gastrointestinal tract, unspecified	5789
Other and unspecified postsurgical nonabsorption	5793
Acute renal failure with lesion of tubular necrosis	5845
Acute renal failure with lesion of renal cortical necrosis	5846
Acute renal failure with other specified pathological lesion in kidney	5848
End stage renal disease	5856
Hemorrhage into bladder wall	5967
Excessive or frequent menstruation	6262
Other disorder of menstruation and other abnormal bleeding from female genital tract	6268
Postmenopausal bleeding	6271
West Nile fever with encephalitis	06641
Lupus erythematosus	6954
Circumscribed scleroderma	7010
Chronic hepatitis C with hepatic coma	07044
Systemic lupus erythematosus	7100
Unspecified diffuse connective tissue disease	7109
Pain in thoracic spine	7241
Lumbago	7242
Thoracic or lumbosacral neuritis or radiculitis, unspecified	7244
Unspecified backache	7245
Other symptoms referable to back	7248
Other affections of shoulder region, not elsewhere classified	7262
Tietze's disease	7336
Nonallopathic lesion of thoracic region, not elsewhere classified	7392
Bulbus cordis anomalies and anomalies of cardiac septal closure, common truncus	7450

Tetralogy of Fallot	7452
Bulbus cordis anomalies and anomalies of cardiac septal closure, common ventricle	7453
Ventricular septal defect	7454
Ostium secundum type atrial septal defect	7455
Unspecified congenital defect of septal closure	7459
Congenital tricuspid atresia and stenosis	7461
Ebstein's anomaly	7462
Congenital stenosis of aortic valve	7463
Congenital insufficiency of aortic valve	7464
Congenital mitral stenosis	7465
Congenital mitral insufficiency	7466
Hypoplastic left heart syndrome	7467
Unspecified congenital anomaly of heart	7469
Patent ductus arteriosus	7470
Congenital anomalies of pulmonary artery	7473
Congenital tracheoesophageal fistula, esophageal atresia and stenosis	7503
Down's syndrome	7580
Hallucinations	7801
Syncope and collapse	7802
Dizziness and giddiness	7804
Transient paralysis of limb	7814
Edema	7823
Cyanosis	7825
Anorexia	7830
Polydipsia	7835
Adult failure to thrive	7837
Other speech disturbance	7845
Unspecified tachycardia	7850
Palpitations	7851
Undiagnosed cardiac murmurs	7852
Other abnormal heart sounds	7853
Gangrene	7854
Other symptoms involving cardiovascular system	7859
Stridor	7861
Cough	7862
Hemoptysis	7863
Abnormal chest sounds	7867
Other symptoms involving respiratory system and chest	7869
Heartburn	7871
Dysphagia	7872

Nonspecific elevation of levels of transaminase or lactic acid dehydrogenase (LDH)	7904
Other nonspecific abnormal serum enzyme levels	7905
Other abnormal blood chemistry	7906
Bacteremia	7907
Nonspecific abnormal findings on radiological and other examination of lung field	7931
Nonspecific abnormal findings on radiological and other examination of other intrathoracic organs	7932
Nonspecific abnormal results of pulmonary system function study	7942
Nonspecific abnormal toxicological findings	7960
Nonspecific low blood pressure reading	7963
Respiratory arrest	7991
Cachexia	7994
Closed fracture of dorsal (thoracic) vertebra without mention of spinal cord injury	8052
Closed fracture of lumbar spine with spinal cord injury	8064
Closed fracture of sternum	8072
Flail chest	8074
Closed fracture of acetabulum	8080
Closed fracture of pubis	8082
Unspecified closed fracture of pelvis	8088
Ill-defined closed fractures of upper limb	8180
Closed fracture of unspecified part of neck of femur	8208
Open fracture of unspecified part of neck of femur	8209
Sprain and strain of other specified sites of shoulder and upper arm	8408
Sprain and strain of unspecified site of shoulder and upper arm	8409
Thoracic sprain and strain	8471
Sprain and strain of unspecified site of back	8479
Sprain and strain of ribs	8483
Concussion with loss of consciousness of unspecified duration	8505
Unspecified concussion	8509
Traumatic pneumothorax without mention of open wound into thorax	8600
Traumatic hemothorax without mention of open wound into thorax	8602
Traumatic pneumohemothorax without mention of open wound into thorax	8604
Injury to multiple and unspecified intrathoracic organs without mention of open wound into cavity	8628
Thoracic aorta injury	9010
Late effect of adverse effect of drug, medical or biological substance	9095
Contusion of breast	9220
Contusion of chest wall	9221
Contusion of abdominal wall	9222

Contusion of unspecified part of trunk	9229
Syphilitic endocarditis, aortic valve	09322
Foreign body in trachea	9340
Foreign body in main bronchus	9341
Foreign body in other specified parts of trachea, bronchus, and lung	9348
Unspecified site of spinal cord injury without spinal bone injury	9529
Traumatic shock	9584
Injury, other and unspecified, shoulder and upper arm	9592
Injury, other and unspecified, other specified sites, including multiple	9598
Poisoning by adrenal cortical steroids	9620
Poisoning by insulins and antidiabetic agents	9623
Poisoning by antiallergic and antiemetic drugs	9630
Poisoning by antineoplastic and immunosuppressive drugs	9631
Poisoning by anticoagulants	9642
Poisoning by salicylates	9651
Poisoning by aromatic analgesics, not elsewhere classified	9654
Poisoning by other specified analgesics and antipyretics	9658
Poisoning by unspecified analgesic and antipyretic	9659
Poisoning by hydantoin derivatives	9661
Poisoning by other and unspecified anticonvulsants	9663
Poisoning by barbiturates	9670
Poisoning by other sedatives and hypnotics	9678
Poisoning by unspecified sedative or hypnotic	9679
Poisoning by central nervous system muscle-tone depressants	9680
Poisoning by surface (topical) and infiltration anesthetics	9685
Poisoning by antidepressants	9690
Poisoning by phenothiazine-based tranquilizers	9691
Poisoning by butyrophenone-based tranquilizers	9692
Poisoning by other antipsychotics, neuroleptics, and major tranquilizers	9693
Poisoning by benzodiazepine-based tranquilizers	9694
Poisoning by other tranquilizers	9695
Poisoning by psychodysleptics (hallucinogens)	9696
Poisoning by psychostimulants	9697
Poisoning by other specified psychotropic agents	9698
Poisoning by opiate antagonists	9701
Poisoning by other specified central nervous system stimulants	9708
Poisoning by parasympathomimetics (cholinergics)	9710
Poisoning by parasympatholytics (anticholinergics and antimuscarinics) and spasmolytics	9711
Poisoning by sympathomimetics (adrenergics)	9712
Poisoning by sympatholytics (antiadrenergics)	9713

Poisoning by cardiac rhythm regulators	9720
Poisoning by cardiotonic glycosides and drugs of similar action	9721
Poisoning by antilipemic and antiarteriosclerotic drugs	9722
Poisoning by coronary vasodilators	9724
Poisoning by other antihypertensive agents	9726
Poisoning by other and unspecified agents primarily affecting the cardiovascular system	9729
Poisoning by other diuretics	9744
Poisoning by electrolytic, caloric, and water-balance agents	9745
Poisoning by skeletal muscle relaxants	9752
Poisoning by antitussives	9754
Poisoning by other specified drugs and medicinal substances	9778
Poisoning by unspecified drug or medicinal substance	9779
Toxic effect of ethyl alcohol	9800
Toxic effect of isopropyl alcohol	9802
Toxic effect of unspecified alcohol	9809
Toxic effect of other nonpetroleum-based solvents	9828
Toxic effect of caustic, unspecified	9839
Toxic effect of other specified metals	9858
Toxic effect of other specified gases, fumes, or vapors	9878
Toxic effect of unspecified gas, fume, or vapor	9879
Toxic effect of other pesticides, not elsewhere classified	9894
Toxic effect of venom	9895
Toxic effect of unspecified substance, chiefly nonmedicinal as to source	9899
Effects of hypothermia	9916
Heat stroke and sunstroke	9920
Heat syncope	9921
Heat exhaustion, anhydrotic	9923
Heat exhaustion, unspecified	9925
Other specified heat effects	9928
Unspecified effects of heat and light	9929
Other and unspecified effects of high altitude	9932
Effects of lightning	9940
Drowning and nonfatal submersion	9941
Exhaustion due to excessive exertion	9945
Electrocution and nonfatal effects of electric current	9948
Other anaphylactic shock not elsewhere classified	9950
Angioneurotic edema not elsewhere classified	9951
Other and unspecified adverse effect of drug, medicinal and biological substance	9952
Mechanical complication of other vascular device, implant, and graft	9961
Cardiac complications	9971

Respiratory complications	9973
Postoperative shock, not elsewhere classified	9980
Accidental puncture or laceration during procedure	9982
Other infusion and transfusion reaction	9998
Candidiasis of the esophagus	11284
Secondary malignant neoplasm of breast	19881
Secondary malignant neoplasm of genital organs	19882
Secondary malignant neoplasm of other specified sites	19889
Mantle cell lymphoma, unspecified site, extranodal and solid organ sites	20040
Large cell lymphoma, unspecified site, extranodal and solid organ sites	20070
Hodgkin's disease, unspecified type, unspecified site, extranodal and solid organ sites	20190
Nodular lymphoma, unspecified site, extranodal and solid organ sites	20200
Nodular lymphoma of lymph nodes of head, face, and neck	20201
Nodular lymphoma of intra-abdominal lymph nodes	20203
Nodular lymphoma of lymph nodes of multiple sites	20208
Mycosis fungoides, unspecified site, extranodal and solid organ sites	20210
Leukemic reticuloendotheliosis, unspecified site, extranodal and solid organ sites	20240
Other malignant lymphomas, unspecified site, extranodal and solid organ sites	20280
Other malignant lymphomas of lymph nodes of head, face, and neck	20281
Other malignant lymphomas of intrathoracic lymph nodes	20282
Other malignant lymphomas of intra-abdominal lymph nodes	20283
Other malignant lymphomas of lymph nodes of axilla and upper limb	20284
Other malignant lymphomas of lymph nodes of inguinal region and lower limb	20285
Other malignant lymphomas of lymph nodes of multiple sites	20288
Multiple myeloma, without mention of having achieved remission	20300
Multiple myeloma in remission	20301
Acute lymphoid leukemia, without mention of having achieved remission	20400
Chronic lymphoid leukemia, without mention of having achieved remission	20410
Chronic lymphoid leukemia in remission	20411
Unspecified lymphoid leukemia, without mention of having achieved remission	20490
Acute myeloid leukemia, without mention of having achieved remission	20500
Acute myeloid leukemia in remission	20501
Chronic myeloid leukemia, without mention of having achieved remission	20510
Acute leukemia of unspecified cell type, without mention of having achieved remission	20800
Chronic leukemia of unspecified cell type, without mention of having achieved remission	20810
Unspecified leukemia, without mention of having achieved remission	20890
Malignant carcinoid tumor of the bronchus and lung	20921
Carcinoma in situ, vulva	23332
Neoplasm of uncertain behavior of kidney and ureter	23691

Low grade myelodysplastic syndrome lesions	23872
High grade myelodysplastic syndrome lesions	23873
Myelodysplastic syndrome, unspecified	23875
Myelofibrosis with myeloid metaplasia	23876
Neoplasms of unspecified nature, other specified sites	23989
Thyrotoxicosis of other specified origin without mention of thyrotoxic crisis or storm	24280
Thyrotoxicosis without mention of goiter or other cause, without mention of thyrotoxic crisis or storm	24290
Thyrotoxicosis without mention of goiter or other cause, with mention of thyrotoxic crisis	24291
Diabetes with ketoacidosis, type II or unspecified type, not stated as uncontrolled	25010
Diabetes with ketoacidosis, type I [juvenile type], not stated as uncontrolled	25011
Diabetes with ketoacidosis, type II or unspecified type, uncontrolled	25012
Diabetes with ketoacidosis, type I [juvenile type], uncontrolled	25013
Diabetes with hyperosmolarity, type II or unspecified type, not stated as uncontrolled	25020
Diabetes with hyperosmolarity, type II or unspecified type, uncontrolled	25022
Diabetes with other coma, type II or unspecified type, not stated as uncontrolled	25030
Diabetes with other coma, type II or unspecified type, uncontrolled	25032
Diabetes with other coma, type I [juvenile type], uncontrolled	25033
Glucocorticoid deficiency	25541
Unspecified disorder of calcium metabolism	27540
Hypocalcemia	27541
Hypercalcemia	27542
Other disorders of calcium metabolism	27549
Volume depletion, unspecified	27650
Dehydration	27651
Hypovolemia	27652
Fluid Overload NEC (Other Fluid Overload)	27669
Cystic fibrosis without mention of meconium ileus	27700
Cystic fibrosis with pulmonary manifestations	27702
Amyloidosis, unspecified	27730
Other amyloidosis	27739
Other thalassemia	28249
Sickle-cell disease, unspecified	28260
Hb-SS disease with crisis	28262
Sickle-cell/Hb-C disease with crisis	28264
Other sickle-cell disease with crisis	28269
Other non-autoimmune hemolytic anemias	28319
Other pancytopenia	28419
Red cell aplasia (acquired) (adult) (with thymoma)	28481

Other specified aplastic anemias	28489
Anemia in chronic kidney disease	28521
Anemia in neoplastic disease	28522
Anemia of other chronic disease	28529
Neutropenia, unspecified	28800
Myelofibrosis	28983
Vascular dementia, with delirium	29041
Alcohol withdrawal	29181
Drug-induced psychotic disorder with hallucinations	29212
Drug-induced delirium	29281
Drug-induced mood disorder	29284
Other specified drug-induced mental disorder	29289
Mood disorder in conditions classified elsewhere	29383
Anxiety disorder in conditions classified elsewhere	29384
Simple schizophrenia, unspecified condition	29500
Catatonic schizophrenia, unspecified condition	29520
Paranoid schizophrenia, unspecified condition	29530
Paranoid schizophrenia, chronic condition	29532
Paranoid schizophrenia, chronic condition with acute exacerbation	29534
Schizophreniform disorder, unspecified	29540
Schizophrenic disorders, residual type, unspecified	29560
Schizoaffective disorder, unspecified	29570
Schizoaffective disorder, chronic	29572
Schizoaffective disorder, chronic with acute exacerbation	29574
Other specified types of schizophrenia, unspecified condition	29580
Other specified types of schizophrenia, chronic condition with acute exacerbation	29584
Unspecified schizophrenia, unspecified condition	29590
Unspecified schizophrenia, chronic condition	29592
Unspecified schizophrenia, chronic condition with acute exacerbation	29594
Bipolar I disorder, single manic episode, unspecified	29600
Major depressive disorder, single episode, unspecified	29620
Major depressive disorder, single episode, mild	29621
Major depressive disorder, single episode, moderate	29622
Major depressive disorder, single episode, severe, without mention of psychotic behavior	29623
Major depressive disorder, single episode, severe, specified as with psychotic behavior	29624
Major depressive disorder, recurrent episode, unspecified	29630
Major depressive disorder, recurrent episode, mild	29631
Major depressive disorder, recurrent episode, moderate	29632
Major depressive disorder, recurrent episode, severe, without mention of psychotic behavior	29633

Major depressive disorder, recurrent episode, severe, specified as with psychotic behavior	29634
Bipolar I disorder, most recent episode (or current) manic, unspecified	29640
Bipolar I disorder, most recent episode (or current) manic, severe, without mention of psychotic behavior	29643
Bipolar I disorder, most recent episode (or current) manic, severe, specified as with psychotic behavior	29644
Bipolar I disorder, most recent episode (or current) depressed, unspecified	29650
Bipolar I disorder, most recent episode (or current) depressed, moderate	29652
Bipolar I disorder, most recent episode (or current) depressed, severe, without mention of psychotic behavior	29653
Bipolar I disorder, most recent episode (or current) depressed, severe, specified as with psychotic behavior	29654
Bipolar I disorder, most recent episode (or current) mixed, unspecified	29660
Bipolar I disorder, most recent episode (or current) mixed, moderate	29662
Bipolar I disorder, most recent episode (or current) mixed, severe, without mention of psychotic behavior	29663
Bipolar I disorder, most recent episode (or current) mixed, severe, specified as with psychotic behavior	29664
Bipolar disorder, unspecified	29680
Atypical depressive disorder	29682
Unspecified episodic mood disorder	29690
Other specified episodic mood disorder	29699
Autistic disorder, current or active state	29900
Anxiety state, unspecified	30000
Generalized anxiety disorder	30002
Other anxiety states	30009
Conversion disorder	30011
Borderline personality disorder	30183
Acute alcoholic intoxication, unspecified drunkenness	30300
Acute alcoholic intoxication, continuous drunkenness	30301
Acute alcoholic intoxication, episodic drunkenness	30302
Other and unspecified alcohol dependence, unspecified drunkenness	30390
Other and unspecified alcohol dependence, continuous drunkenness	30391
Opioid type dependence, unspecified abuse	30400
Opioid type dependence, continuous abuse	30401
Cocaine dependence, unspecified abuse	30420
Cocaine dependence, continuous abuse	30421
Combinations of opioid type drug with any other drug dependence, continuous abuse	30471
Combinations of drug dependence excluding opioid type drug, unspecified abuse	30480
Unspecified drug dependence, unspecified abuse	30490
Nondependent alcohol abuse, unspecified drunkenness	30500

Nondependent alcohol abuse, continuous drunkenness	30501
Nondependent alcohol abuse, episodic drunkenness	30502
Nondependent cannabis abuse, unspecified	30520
Nondependent sedative, hypnotic or anxiolytic abuse, unspecified	30540
Nondependent opioid abuse, unspecified	30550
Nondependent cocaine abuse, unspecified	30560
Nondependent amphetamine or related acting sympathomimetic abuse, unspecified	30570
Other, mixed, or unspecified nondependent drug abuse, unspecified	30590
Eating disorder, unspecified	30750
Adjustment disorder with anxiety	30924
Adjustment disorder with mixed anxiety and depressed mood	30928
Posttraumatic stress disorder	30981
Impulse control disorder, unspecified	31230
Intermittent explosive disorder	31234
Attention deficit disorder of childhood without mention of hyperactivity	31400
Attention deficit disorder of childhood with hyperactivity	31401
Idiopathic sleep related nonobstructive alveolar hypoventilation	32724
Confusional arousals	32741
Subacute dyskinesia due to drugs	33385
Neuroleptic malignant syndrome	33392
Carotid sinus syndrome	33701
Acute pain due to trauma	33811
Acute post-thoracotomy pain	33812
Other acute pain	33819
Other specified paralytic syndrome	34489
Other forms of epilepsy and recurrent seizures, without mention of intractable epilepsy	34580
Migraine with aura, without mention of intractable migraine without mention of status migrainosus	34600
Migraine with aura, with intractable migraine, so stated, without mention of status migrainosus	34601
Migraine without aura, without mention of intractable migraine without mention of status migrainosus	34610
Migraine without aura, with intractable migraine, so stated, without mention of status migrainosus	34611
Variants of migraine, not elsewhere classified, without mention of intractable migraine without mention of status migrainosus	34620
Variants of migraine, not elsewhere classified, with intractable migraine, so stated, without mention of status migrainosus	34621
Chronic migraine without aura, with intractable migraine, so stated, without mention of status migrainosus	34671
Other forms of migraine, without mention of intractable migraine without	34680

mention of status migrainosus	
Migraine, unspecified with intractable migraine, so stated, without mention of status migrainosus	34691
Narcolepsy, without cataplexy	34700
Encephalopathy, unspecified	34830
Metabolic encephalopathy	34831
Other encephalopathy	34839
Toxic encephalopathy	34982
Myasthenia gravis without (acute) exacerbation	35800
Myasthenia gravis with (acute) exacerbation	35801
Myotonic muscular dystrophy	35921
Unspecified retinal vascular occlusion	36230
Central artery occlusion of retina	36231
Arterial branch occlusion of retina	36232
Partial arterial occlusion of retina	36233
Transient arterial occlusion of retina	36234
Central vein occlusion of retina	36235
Sudden visual loss	36811
Transient visual loss	36812
Psychophysical visual disturbances	36816
Impairment level not further specified	36960
Unspecified rheumatic heart disease	39890
Rheumatic heart failure (congestive)	39891
Other and unspecified rheumatic heart diseases	39899
Malignant hypertensive heart disease without heart failure	40200
Malignant hypertensive heart disease with heart failure	40201
Benign hypertensive heart disease without heart failure	40210
Benign hypertensive heart disease with heart failure	40211
Unspecified hypertensive heart disease without heart failure	40290
Hypertensive heart disease, unspecified, with heart failure	40291
Hypertensive heart and chronic kidney disease, malignant, without heart failure and with chronic kidney disease stage I-IV	40400
Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney disease stage I-IV	40401
Hypertensive heart and chronic kidney disease, malignant, without heart failure and with chronic kidney disease stage V	40402
Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney disease stage V	40403
Hypertensive heart and chronic kidney disease, benign, without heart failure and with chronic kidney disease stage I-IV	40410
Hypertensive heart and chronic kidney disease, benign, with heart failure and with chronic kidney disease stage I-IV	40411

Hypertensive heart and chronic kidney disease, benign, without heart failure and with chronic kidney disease stage V	40412
Hypertensive heart and chronic kidney disease, benign, with heart failure and with chronic kidney disease stage V	40413
Hypertensive heart and chronic kidney disease, unspecified, without heart failure and with chronic kidney disease stage I-IV	40490
Hypertensive heart and chronic kidney disease, unspecified, with heart failure and with chronic kidney disease stage I-IV	40491
Hypertensive heart and chronic kidney disease, unspecified, without heart failure and with chronic kidney disease stage V	40492
Hypertensive heart and chronic kidney disease, unspecified, with heart failure and with chronic kidney disease stage V	40493
Secondary renovascular hypertension, malignant	40501
Other secondary hypertension, malignant	40509
Acute myocardial infarction of anterolateral wall, episode of care unspecified	41000
Acute myocardial infarction of anterolateral wall, initial episode of care	41001
Acute myocardial infarction of anterolateral wall, subsequent episode of care	41002
Acute myocardial infarction of other anterior wall, episode of care unspecified	41010
Acute myocardial infarction of other anterior wall, initial episode of care	41011
Acute myocardial infarction of other anterior wall, subsequent episode of care	41012
Acute myocardial infarction of inferolateral wall, episode of care unspecified	41020
Acute myocardial infarction of inferolateral wall, initial episode of care	41021
Acute myocardial infarction of inferolateral wall, subsequent episode of care	41022
Acute myocardial infarction of inferoposterior wall, episode of care unspecified	41030
Acute myocardial infarction of inferoposterior wall, initial episode of care	41031
Acute myocardial infarction of inferoposterior wall, subsequent episode of care	41032
Acute myocardial infarction of other inferior wall, episode of care unspecified	41040
Acute myocardial infarction of other inferior wall, initial episode of care	41041
Acute myocardial infarction of other inferior wall, subsequent episode of care	41042
Acute myocardial infarction of other lateral wall, episode of care unspecified	41050
Acute myocardial infarction of other lateral wall, initial episode of care	41051
Acute myocardial infarction of other lateral wall, subsequent episode of care	41052
Acute myocardial infarction, true posterior wall infarction, episode of care unspecified	41060
Acute myocardial infarction, true posterior wall infarction, initial episode of care	41061
Acute myocardial infarction, true posterior wall infarction, subsequent episode of care	41062
Acute myocardial infarction, subendocardial infarction, episode of care unspecified	41070
Acute myocardial infarction, subendocardial infarction, initial episode of care	41071
Acute myocardial infarction, subendocardial infarction, subsequent episode of care	41072
Acute myocardial infarction of other specified sites, episode of care unspecified	41080

Acute myocardial infarction of other specified sites, initial episode of care	41081
Acute myocardial infarction of other specified sites, subsequent episode of care	41082
Acute myocardial infarction, unspecified site, episode of care unspecified	41090
Acute myocardial infarction, unspecified site, initial episode of care	41091
Acute myocardial infarction, unspecified site, subsequent episode of care	41092
Acute coronary occlusion without myocardial infarction	41181
Other acute and subacute form of ischemic heart disease	41189
Coronary atherosclerosis of unspecified type of vessel, native or graft	41400
Coronary atherosclerosis of native coronary artery	41401
Coronary atherosclerosis of autologous vein bypass graft	41402
Coronary atherosclerosis of nonautologous biological bypass graft	41403
Coronary atherosclerosis of artery bypass graft	41404
Coronary atherosclerosis of unspecified type of bypass graft	41405
Coronary atherosclerosis, of native coronary artery of transplanted heart	41406
Coronary atherosclerosis, of bypass graft (artery) (vein) of transplanted heart	41407
Aneurysm of heart	41410
Aneurysm of coronary vessels	41411
Dissection of coronary artery	41412
Other aneurysm of heart	41419
Iatrogenic pulmonary embolism and infarction	41511
Septic pulmonary embolism	41512
Other pulmonary embolism and infarction	41519
Unspecified acute pericarditis	42090
Acute idiopathic pericarditis	42091
Other acute pericarditis	42099
Unspecified acute myocarditis	42290
Idiopathic myocarditis	42291
Endocarditis, valve unspecified, unspecified cause	42490
Endocarditis in diseases classified elsewhere	42491
Other endocarditis, valve unspecified	42499
Hypertrophic obstructive cardiomyopathy	42511
Other hypertrophic cardiomyopathy	42518
Unspecified atrioventricular block	42610
First degree atrioventricular block	42611
Mobitz (type) II atrioventricular block	42612
Other second degree atrioventricular block	42613
Unspecified bundle branch block	42650
Right bundle branch block and left posterior fascicular block	42651
Right bundle branch block and left anterior fascicular block	42652
Other bilateral bundle branch block	42653
Trifascicular block	42654

Lown-Ganong-Levine syndrome	42681
Long QT syndrome	42682
Other specified conduction disorder	42689
Atrial fibrillation	42731
Atrial flutter	42732
Ventricular fibrillation	42741
Ventricular flutter	42742
Unspecified premature beats	42760
Supraventricular premature beats	42761
Other premature beats	42769
Sinoatrial node dysfunction	42781
Other specified cardiac dysrhythmias	42789
Unspecified systolic heart failure	42820
Acute systolic heart failure	42821
Chronic systolic heart failure	42822
Acute on chronic systolic heart failure	42823
Unspecified diastolic heart failure	42830
Acute diastolic heart failure	42831
Chronic diastolic heart failure	42832
Acute on chronic diastolic heart failure	42833
Unspecified combined systolic and diastolic heart failure	42840
Acute combined systolic and diastolic heart failure	42841
Chronic combined systolic and diastolic heart failure	42842
Acute on chronic combined systolic and diastolic heart failure	42843
Acquired cardiac septal defect	42971
Other certain sequelae of myocardial infarction, not elsewhere classified	42979
Other disorders of papillary muscle	42981
Hyperkinetic heart disease	42982
Takotsubo syndrome	42983
Other ill-defined heart disease	42989
Occlusion and stenosis of basilar artery without mention of cerebral infarction	43300
Occlusion and stenosis of basilar artery with cerebral infarction	43301
Occlusion and stenosis of carotid artery without mention of cerebral infarction	43310
Occlusion and stenosis of carotid artery with cerebral infarction	43311
Occlusion and stenosis of vertebral artery without mention of cerebral infarction	43320
Occlusion and stenosis of vertebral artery with cerebral infarction	43321
Occlusion and stenosis of multiple and bilateral precerebral arteries without mention of c	43330
Occlusion and stenosis of multiple and bilateral precerebral arteries with cerebral infarc	43331
Occlusion and stenosis of other specified precerebral artery without mention of cerebral i	43380

Occlusion and stenosis of other specified precerebral artery with cerebral infarction	43381
Occlusion and stenosis of unspecified precerebral artery without mention of cerebral infar	43390
Occlusion and stenosis of unspecified precerebral artery with cerebral infarction	43391
Cerebral thrombosis without mention of cerebral infarction	43400
Cerebral thrombosis with cerebral infarction	43401
Cerebral embolism without mention of cerebral infarction	43410
Cerebral embolism with cerebral infarction	43411
Unspecified cerebral artery occlusion without mention of cerebral infarction	43490
Unspecified cerebral artery occlusion with cerebral infarction	43491
Hemiplegia affecting unspecified side due to cerebrovascular disease	43820
Atherosclerosis of native arteries of the extremities, unspecified	44020
Atherosclerosis of native arteries of the extremities with intermittent claudication	44021
Atherosclerosis of native arteries of the extremities with rest pain	44022
Atherosclerosis of native arteries of the extremities with ulceration	44023
Atherosclerosis of native arteries of the extremities with gangrene	44024
Other atherosclerosis of native arteries of the extremities	44029
Atherosclerosis of unspecified bypass graft of extremities	44030
Atherosclerosis of autologous vein bypass graft of extremities	44031
Dissecting aortic aneurysm (any part), unspecified site	44100
Dissecting aortic aneurysm (any part), thoracic	44101
Dissecting aortic aneurysm (any part), abdominal	44102
Dissecting aortic aneurysm (any part), thoracoabdominal	44103
Aneurysm of artery of neck	44281
Aneurysm of splenic artery	44283
Aneurysm of other visceral artery	44284
Aneurysm of other specified artery	44289
Dissection of carotid artery	44321
Dissection of other artery	44329
Peripheral angiopathy in diseases classified elsewhere	44381
Embolism and thrombosis of arteries of upper extremity	44421
Embolism and thrombosis of arteries of lower extremity	44422
Embolism and thrombosis of iliac artery	44481
Embolism and thrombosis of other specified artery	44489
Atheroembolism of lower extremity	44502
Venous embolism and thrombosis of unspecified deep vessels of lower extremity	45340
Venous embolism and thrombosis of deep vessels of proximal lower extremity	45341
Venous embolism and thrombosis of deep vessels of distal lower extremity	45342
Chronic venous embolism and thrombosis of unspecified deep vessels of lower extremity	45350
Chronic venous embolism and thrombosis of deep vessels of proximal lower	45351

extremity	
Chronic venous embolism and thrombosis of deep vessels of distal lower extremity	45352
Acute venous embolism and thrombosis of superficial veins of upper extremity	45381
Acute venous embolism and thrombosis of deep veins of upper extremity	45382
Acute venous embolism and thrombosis of upper extremity, unspecified	45383
Acute venous embolism and thrombosis of subclavian veins	45385
Acute venous embolism and thrombosis of internal jugular veins	45386
Hypotension of hemodialysis	45821
Other iatrogenic hypotension	45829
Acute tracheitis without mention of obstruction	46410
Acute bronchiolitis due to respiratory syncytial virus (RSV)	46611
Acute bronchiolitis due to other infectious organisms	46619
Obstructive chronic bronchitis, with (acute) exacerbation	49121
Obstructive chronic bronchitis with acute bronchitis	49122
Extrinsic asthma, unspecified	49300
Extrinsic asthma with status asthmaticus	49301
Extrinsic asthma, with (acute) exacerbation	49302
Intrinsic asthma, unspecified	49310
Intrinsic asthma with status asthmaticus	49311
Intrinsic asthma, with (acute) exacerbation	49312
Chronic obstructive asthma with status asthmaticus	49321
Chronic obstructive asthma, with (acute) exacerbation	49322
Cough variant asthma	49382
Asthma, unspecified, unspecified status	49390
Asthma, unspecified with status asthmaticus	49391
Asthma, unspecified, with (acute) exacerbation	49392
Malignant pleural effusion	51181
Other specified forms of effusion, except tuberculous	51189
Other pneumothorax	51289
Acute respiratory failure following trauma and surgery	51851
Acute respiratory failure	51881
Other pulmonary insufficiency, not elsewhere classified	51882
Chronic respiratory failure	51883
Acute and chronic respiratory failure	51884
Other diseases of lung, not elsewhere classified	51889
Unspecified tracheostomy complication	51900
Mechanical complication of tracheostomy	51902
Other tracheostomy complications	51909
Acute bronchospasm	51911
Other diseases of trachea and bronchus	51919

Mucositis (ulcerative) due to antineoplastic therapy	52801
Unspecified esophagitis	53010
Reflux esophagitis	53011
Acute esophagitis	53012
Other esophagitis	53019
Ulcer of esophagus with bleeding	53021
Esophageal hemorrhage	53082
Acute gastric ulcer with hemorrhage, without mention of obstruction	53100
Acute gastric ulcer with perforation, without mention of obstruction	53110
Chronic or unspecified gastric ulcer with hemorrhage, without mention of obstruction	53140
Chronic or unspecified gastric ulcer with hemorrhage and obstruction	53141
Chronic or unspecified gastric ulcer with perforation, without mention of obstruction	53150
Chronic or unspecified gastric ulcer with hemorrhage and perforation, without mention of obstruction	53160
Gastric ulcer, unspecified as acute or chronic, without mention of hemorrhage, perforation	53190
Acute duodenal ulcer with hemorrhage, without mention of obstruction	53200
Acute duodenal ulcer with hemorrhage and perforation, without mention of obstruction	53220
Duodenal ulcer, chronic or unspecified, with hemorrhage, without mention of obstruction	53240
Chronic or unspecified duodenal ulcer with hemorrhage and obstruction	53241
Chronic or unspecified duodenal ulcer with perforation, without mention of obstruction	53250
Chronic or unspecified duodenal ulcer with hemorrhage and perforation, without mention of obstruction	53260
Acute peptic ulcer, unspecified site, with hemorrhage, without mention of obstruction	53300
Chronic or unspecified peptic ulcer, unspecified site, with hemorrhage, without mention of obstruction	53340
Chronic or unspecified gastrojejunal ulcer with hemorrhage, without mention of obstruction	53440
Acute gastritis with hemorrhage	53501
Atrophic gastritis with hemorrhage	53511
Alcoholic gastritis without mention of hemorrhage	53530
Alcoholic gastritis with hemorrhage	53531
Other specified gastritis with hemorrhage	53541
Unspecified gastritis and gastroduodenitis with hemorrhage	53551
Duodenitis with hemorrhage	53561
Angiodysplasia of stomach and duodenum with hemorrhage	53783
Dieulafoy lesion (hemorrhagic) of stomach and duodenum	53784

Inguinal hernia with gangrene, unilateral or unspecified, (not specified as recurrent)	55000
Femoral hernia with gangrene, unilateral or unspecified (not specified as recurrent)	55100
Gallstone ileus	56031
Fecal impaction	56032
Intestinal or peritoneal adhesions with obstruction (postoperative) (postinfection)	56081
Other specified intestinal obstruction	56089
Diverticulosis of small intestine with hemorrhage	56202
Diverticulosis of colon with hemorrhage	56212
Diverticulitis of colon with hemorrhage	56213
Spontaneous bacterial peritonitis	56723
Perforation of intestine	56983
Angiodysplasia of intestine with hemorrhage	56985
Dieulafoy lesion (hemorrhagic) of intestine	56986
Calculus of gallbladder with acute cholecystitis, without mention of obstruction	57400
Calculus of gallbladder with acute cholecystitis and obstruction	57401
Calculus of gallbladder with other cholecystitis, without mention of obstruction	57410
Calculus of gallbladder with other cholecystitis and obstruction	57411
Calculus of bile duct with acute cholecystitis without mention of obstruction	57430
Calculus of bile duct with acute cholecystitis and obstruction	57431
Calculus of gallbladder and bile duct with acute cholecystitis, with obstruction	57461
Calculus of gallbladder and bile duct with other cholecystitis, with obstruction	57471
Calculus of gallbladder and bile duct with acute and chronic cholecystitis, without mention of obstruction	57480
Calculus of gallbladder and bile duct with acute and chronic cholecystitis, with obstruction	57481
Cholecystitis, unspecified	57510
Chronic cholecystitis	57511
Acute and chronic cholecystitis	57512
Gross hematuria	59971
Peyronie's disease	60785
Mastodynia	61171
Pyogenic arthritis, lower leg	71106
Rheumatoid lung	71481
Pain in joint, shoulder region	71941
Necrotizing fasciitis	72886
Rhabdomyolysis	72888
Panniculitis of other sites	72939
Swelling of limb	72981
Acute osteomyelitis, site unspecified	73000
Acute osteomyelitis, lower leg	73006

Acute osteomyelitis, ankle and foot	73007
Acute osteomyelitis, other specified site	73008
Chronic osteomyelitis, pelvic region and thigh	73015
Chronic osteomyelitis, lower leg	73016
Chronic osteomyelitis, ankle and foot	73017
Chronic osteomyelitis, other specified sites	73018
Unspecified osteomyelitis, site unspecified	73020
Unspecified osteomyelitis, hand	73024
Unspecified osteomyelitis, pelvic region and thigh	73025
Unspecified osteomyelitis, other specified sites	73028
Pathologic fracture of humerus	73311
Pathologic fracture of neck of femur	73314
Pathologic fracture of other specified part of femur	73315
Pathologic fracture of other specified site	73319
Aseptic necrosis of bone, site unspecified	73340
Aseptic necrosis of head of humerus	73341
Aseptic necrosis of head and neck of femur	73342
Aseptic necrosis of other bone site	73349
Stress fracture of femoral neck	73396
Complete transposition of great vessels	74510
Transposition of great vessels, double outlet right ventricle	74511
Corrected transposition of great vessels	74512
Unspecified type congenital endocardial cushion defect	74560
Ostium primum defect	74561
Other congenital endocardial cushion defect	74569
Unspecified congenital pulmonary valve anomaly	74600
Congenital atresia of pulmonary valve	74601
Congenital stenosis of pulmonary valve	74602
Other congenital anomalies of pulmonary valve	74609
Congenital subaortic stenosis	74681
Congenital coronary artery anomaly	74685
Congenital heart block	74686
Congenital malposition of heart and cardiac apex	74687
Other specified congenital anomaly of heart	74689
Coarctation of aorta (preductal) (postductal)	74710
Unspecified congenital anomaly of aorta	74720
Congenital atresia and stenosis of aorta	74722
Other congenital anomaly of aorta	74729
Congenital anomaly of the peripheral vascular system, unspecified site	74760
Congenital anomaly of cerebrovascular system	74781
Marfan's syndrome	75982

Other specified multiple congenital anomalies, so described	75989
Coma	78001
Transient alteration of awareness	78002
Other alteration of consciousness	78009
Hypothermia not associated with low environmental temperature	78065
Memory loss	78093
Generalized pain	78096
Altered mental status	78097
Failure to thrive	78341
Jaw pain	78492
Unspecified shock	78550
Cardiogenic shock	78551
Septic shock	78552
Other shock without mention of trauma	78559
Unspecified respiratory abnormality	78600
Orthopnea	78602
Apnea	78603
Cheyne-Stokes respiration	78604
Shortness of breath	78605
Tachypnea	78606
Wheezing	78607
Other dyspnea and respiratory abnormalities	78609
Hemoptysis unspecified	78630
Other hemoptysis	78639
Precordial pain	78651
Painful respiration	78652
Chest pain, other	78659
Abdominal pain, unspecified site	78900
Abdominal pain, right upper quadrant	78901
Abdominal pain, left upper quadrant	78902
Abdominal pain, right lower quadrant	78903
Abdominal pain, left lower quadrant	78904
Abdominal pain, periumbilic	78905
Abdominal pain, epigastric	78906
Abdominal pain, generalized	78907
Abdominal pain, other specified site	78909
Malignant ascites	78951
Abdominal tenderness, unspecified site	78960
Abdominal tenderness, right upper quadrant	78961
Abdominal tenderness, right lower quadrant	78963
Abdominal tenderness, left lower quadrant	78964

Abdominal tenderness, epigastric	78966
Abdominal tenderness, generalized	78967
Abdominal tenderness, other specified site	78969
Other abnormal glucose	79029
Abnormal arterial blood gases	79091
Other nonspecific findings on examination of blood	79099
Abnormal findings lung field other	79319
Nonspecific abnormal electroencephalogram (EEG)	79402
Nonspecific abnormal unspecified cardiovascular function study	79430
Nonspecific abnormal electrocardiogram (ECG) (EKG)	79431
Other nonspecific abnormal cardiovascular system function study	79439
Hypoxemia	79902
Closed fracture of base of skull without mention of intracranial injury, unspecified state	80100
Closed fracture of base of skull without mention of intracranial injury, no loss of consciousness	80101
Closed fracture of base of skull without mention of intracranial injury, loss of consciousness	80106
Closed fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, unspecified state of consciousness	80120
Closed fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, with no loss of consciousness	80121
Closed fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, with brief [less than one hour] loss of consciousness)	80122
Closed fracture of base of skull with subarachnoid, subdural, and extradural hemorrhage, with loss of consciousness of unspecified duration	80126
Closed fracture of third cervical vertebra without mention of spinal cord injury	80503
Closed fracture of fourth cervical vertebra without mention of spinal cord injury	80504
Closed fracture of fifth cervical vertebra without mention of spinal cord injury	80505
Closed fracture of seventh cervical vertebra without mention of spinal cord injury	80507
Closed fracture of multiple cervical vertebrae without mention of spinal cord injury	80508
Closed fracture of C1-C4 level with unspecified spinal cord injury	80600
Closed fracture of C5-C7 level with unspecified spinal cord injury	80605
Closed fracture of T7-T12 level with unspecified spinal cord injury	80625
Closed fracture of rib(s), unspecified	80700
Closed fracture of one rib	80701
Closed fracture of two ribs	80702
Closed fracture of three ribs	80703
Closed fracture of four ribs	80704
Closed fracture of five ribs	80705
Closed fracture of six ribs	80706
Closed fracture of seven ribs	80707

Closed fracture of eight or more ribs	80708
Closed fracture of multiple ribs, unspecified	80709
Closed fracture of ilium	80841
Closed fracture of ischium	80842
Multiple closed pelvic fractures with disruption of pelvic circle	80843
Unspecified part of closed fracture of clavicle	81000
Closed fracture of shaft of clavicle	81002
Closed fracture of acromial end of clavicle	81003
Closed fracture of unspecified part of scapula	81100
Closed fracture of glenoid cavity and neck of scapula	81103
Closed fracture of unspecified part of upper end of humerus	81200
Closed fracture of surgical neck of humerus	81201
Closed fracture of anatomical neck of humerus	81202
Closed fracture of greater tuberosity of humerus	81203
Other closed fractures of upper end of humerus	81209
Closed fracture of unspecified part of humerus	81220
Closed fracture of shaft of humerus	81221
Closed fracture of unspecified part of lower end of humerus	81240
Closed fracture of supracondylar humerus	81241
Closed fracture of unspecified condyle(s) of humerus	81244
Other closed fracture of lower end of humerus	81249
Closed fracture of unspecified intracapsular section of neck of femur	82000
Closed fracture of epiphysis (separation) (upper) of neck of femur	82001
Closed fracture of midcervical section of femur	82002
Closed fracture of base of neck of femur	82003
Other closed transcervical fracture of femur	82009
Closed fracture of unspecified trochanteric section of femur	82020
Closed fracture of intertrochanteric section of femur	82021
Closed fracture of subtrochanteric section of femur	82022
Open fracture of intertrochanteric section of femur	82031
Closed fracture of unspecified part of femur	82100
Closed fracture of shaft of femur	82101
Closed fracture of unspecified part of lower end of femur	82120
Closed fracture of femoral condyle	82121
Closed supracondylar fracture of femur	82123
Other closed fracture of lower end of femur	82129
Open fracture of unspecified part of lower end of femur	82130
Open supracondylar fracture of femur	82133
Closed anterior dislocation of humerus	83101
Concussion, with loss of consciousness of 30 minutes or less	85011
Cerebellar or brain stem contusion without mention of open intracranial wound,	85141

no loss of consciousness	
Other and unspecified cerebral laceration and contusion, without mention of open intracranial wound, unspecified state of consciousness	85180
Other and unspecified cerebral laceration and contusion, without mention of open intracranial wound, with no loss of consciousness	85181
Subarachnoid hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness	85200
Subarachnoid hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness	85201
Subarachnoid hemorrhage following injury, without mention of open intracranial wound, brief loss of consciousness	85202
Subarachnoid hemorrhage following injury, without mention of open intracranial wound, loss of consciousness	85206
Subdural hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness	85220
Subdural hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness	85221
Subdural hemorrhage following injury, without mention of open intracranial wound, brief loss of consciousness	85222
Subdural hemorrhage following injury, without mention of open intracranial wound, without mention of open intracranial wound, with prolonged [more than 24 hours] loss of consciousness without return to pre-existing conscious level	85225
Subdural hemorrhage following injury, without mention of open intracranial wound, loss of consciousness	85226
Subdural hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness	85229
Extradural hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness	85240
Extradural hemorrhage following injury, without mention of open intracranial wound, no loss of consciousness	85241
Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, unspecified state of consciousness	85300
Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, with no loss of consciousness	85301
Other and unspecified intracranial hemorrhage following injury, without mention of open intracranial wound, with brief [less than one hour] loss of consciousness	85302
Other and unspecified intracranial hemorrhage following injury without mention of open intracranial wound, with prolonged [more than 24 hours] loss of consciousness without return to pre-existing conscious level	85305
Intracranial injury of other and unspecified nature, without mention of open intracranial wound, unspecified state of consciousness	85400
Intracranial injury of other and unspecified nature, without mention of open intracranial wound, with no loss of consciousness	85401
Intracranial injury of other and unspecified nature, without mention of open intracranial wound, with brief [less than one hour] loss of consciousness	85402

Intracranial injury of other and unspecified nature, without mention of open intracranial wound, with loss of consciousness of unspecified duration	85406
Unspecified injury to heart without mention of open wound into thorax	86100
Heart contusion without mention of open wound into thorax	86101
Lung contusion without mention of open wound into thorax	86121
Injury to other specified intrathoracic organs without mention of open wound into cavity	86229
Massive parenchymal disruption of spleen without mention of open wound into cavity	86504
Contusion of shoulder region	92300
C1-C4 level with central cord syndrome	95203
Other injury of chest wall	95911
Poisoning by opium (alkaloids), unspecified	96500
Poisoning by heroin	96501
Poisoning by methadone	96502
Poisoning by opiates and related narcotics, other	96509
Poisoning by propionic acid derivatives	96561
Poisoning antidepressants unspec	96900
Poisoning SSRI	96903
Poisoning tricyclic antidepress	96905
Poisoning antidepressants other	96909
Poisoning by amphetamines	96972
Poisoning by cocaine	97081
Toxic effect of tobacco	98984
Toxic effect of other substances	98989
Unspecified adverse effect of unspecified drug, medicinal and biological substance	99520
Unspecified adverse effect of insulin	99523
Unspecified adverse effect of other drug, medicinal and biological substance	99529
Sepsis	99591
Severe sepsis	99592
Mechanical complication of unspecified cardiac device, implant, and graft	99600
Mechanical complication due to cardiac pacemaker (electrode)	99601
Mechanical complication due to heart valve prosthesis	99602
Mechanical complication due to coronary bypass graft	99603
Mechanical complication due to automatic implantable cardiac defibrillator	99604
Mechanical complication of cardiac device, implant, and graft, other	99609
Mechanical complication due to other tissue graft, not elsewhere classified	99652
Mechanical complication due to other implant and internal device, not elsewhere classified	99659
Infection and inflammatory reaction due to unspecified device, implant, and graft	99660
Infection and inflammatory reaction due to cardiac device, implant, and graft	99661

Infection and inflammatory reaction due to other vascular device, implant, and graft	99662
Infection and inflammatory reaction due to peritoneal dialysis catheter	99668
Other complications due to heart valve prosthesis	99671
Other complications due to other cardiac device, implant, and graft	99672
Other complications due to renal dialysis device, implant, and graft	99673
Other complications due to other vascular device, implant, and graft	99674
Complications of transplanted kidney	99681
Complications of transplanted liver	99682
Complications of transplanted heart	99683
Complications of transplanted lung	99684
Central nervous system complication	99701
Iatrogenic cerebrovascular infarction or hemorrhage	99702
Other respiratory complications	99739
Infection (chronic) of amputation stump	99762
Other late amputation stump complication	99769
Vascular complications of other vessels	99779
Hemorrhage complicating a procedure	99811
Cataract fragments in eye following surgery	99882
Complications of medical care, NEC, infection due to central venous catheter	99931
Bloodstream infection central line	99932
Fall from other slipping, tripping, or stumbling	E8859
Unspecified fall	E8889
Antineoplastic and immunosuppressive drugs causing adverse effect in therapeutic use	E9331
Cardiac rhythm regulators causing adverse effect in therapeutic use	E9420
Asymptomatic human immunodeficiency virus (HIV) infection status	V08
Personal history of malignant neoplasm of large intestine	V1005
Personal history of malignant neoplasm of rectum, rectosigmoid junction, and anus	V1006
Personal history of malignant neoplasm of bronchus and lung	V1011
Personal history of malignant neoplasm of breast	V103
Personal history of malignant neoplasm of ovary	V1043
Personal history of malignant neoplasm of prostate	V1046
Personal history of malignant neoplasm of bladder	V1051
Personal history of sudden cardiac arrest	V1253
Personal history of transient ischemic attack [TIA], and cerebral infarction without resid	V1254
Personal history of other diseases of circulatory system	V1259
Personal history of surgery to heart and great vessels, presenting hazards to health	V151
Personal history of fall	V1588

Other mental problems	V402
Kidney replaced by transplant	V420
Heart replaced by transplant	V421
Heart valve replaced by transplant	V422
Lung replaced by transplant	V426
Liver replaced by transplant	V427
Bone marrow replaced by transplant	V4281
Organ or tissue replaced by other means, Heart assist device	V4321
Heart valve replaced by other means	V433
Blood vessel replaced by other means	V434
Unspecified cardiac device in situ	V4500
Cardiac pacemaker in situ	V4501
Automatic implantable cardiac defibrillator in situ	V4502
Other specified cardiac device in situ	V4509
Renal dialysis status	V451
Renal dialysis status	V4511
Postprocedural aortocoronary bypass status	V4581
Postprocedural percutaneous transluminal coronary angioplasty status	V4582
Other cardiorespiratory problems	V472
Fitting and adjustment of cardiac pacemaker	V5331
Fitting and adjustment of automatic implantable cardiac defibrillator	V5332
Fitting and adjustment of other cardiac device	V5339
Attention to tracheostomy	V550
Encounter for extracorporeal dialysis	V560
Fitting and adjustment of extracorporeal dialysis catheter	V561
Fitting and adjustment of peritoneal dialysis catheter	V562
Radiotherapy	V580
Encounter for antineoplastic chemotherapy	V5811
Encounter for antineoplastic immunotherapy	V5812
Aftercare following surgery for neoplasm	V5842
Aftercare following organ transplant	V5844
Encounter for long-term (current) use of other medications	V5869
Fitting and adjustment of vascular catheter	V5881
Encounter for therapeutic drug monitoring	V5883
Kidney donor	V594
Suicidal ideation	V6284
Chemotherapy follow-up examination	V672
Follow-up examination following completed treatment with high-risk medications, not elsewhere classified	V6751
Issue of repeat prescriptions	V681
Other and unspecified general psychiatric examination	V702

Examination of participant in clinical trial	V707
Observation of other suspected mental condition	V7109
Observation for suspected malignant neoplasm	V711
Observation for suspected cardiovascular disease	V717