

USER GUIDE:

AHRQ HCUP CHRONIC CONDITION INDICATOR REFINED (CCIR) FOR ICD-10-CM DIAGNOSES, v2027.1

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Agency for Healthcare Research and Quality (AHRQ)
Healthcare Cost and Utilization Project (HCUP)
Email: hcup@ahrq.gov
Website: https://hcup-us.ahrq.gov/

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Maine Health Data Organization
Maryland Health Services Cost Review Commission
Massachusetts Center for Health Information and Analysis
Michigan Health & Hospital Association
Minnesota Hospital Association
Mississippi State Department of Health
Missouri Hospital Industry Data Institute
Montana Hospital Association
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Oregon Association of Hospitals and Health Systems
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Rhode Island Department of Health
South Carolina Revenue and Fiscal Affairs Office
South Dakota Association of Healthcare Organizations
Tennessee Hospital Association
Texas Department of State Health Services
Utah Department of Health and Human Services
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WHAT'S NEW IN v2027.1 OF THE AHRQ HCUP CHRONIC CONDITION INDICATOR REFINED (CCIR) FOR ICD-10-CM?

- Added ICD-10-CM diagnosis codes valid starting in fiscal year 2027 so the tool now includes all ICD-10-CM codes valid from October 2015 through September 2027.[1]

Detailed changes for v2027.1 of the CCIR for ICD-10-CM are in the Change Log. A summary of key changes for all release versions of the CCIR for ICD-10-CM is available in Appendix A.

[1] Please note that with the publication of the Final Rule for the inpatient prospective payment system (IPPS) for fiscal year 2022, the Centers for Medicare & Medicaid Services releases ICD-10-CM/PCS code updates twice a year (every April 1 and October 1). ICD-10-CM codes that will become effective on April 1, 2027, are not included in v2027.1.

INTRODUCTION

This report provides technical documentation for the Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) Chronic Condition Indicator Refined (CCIR) for International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) diagnoses. Starting on October 1, 2015, diagnoses for hospital inpatient stays and outpatient encounters in the United States are reported using the ICD-10-CM coding system. ICD-10-CM consists of more than 70,000 diagnosis codes. The CCIR for ICD-10-CM facilitates health services research by allowing the researcher to readily identify a diagnosis as indicating a chronic condition.

The CCIR classifies all ICD-10-CM codes into one of three categories: chronic, not chronic, or no determination.[2]

The definition of a **chronic** condition is consistent with the ICD-9-CM version of the tool and is defined as a condition that lasts ***12 months or longer*** and meets one or both of the following criteria:

- The condition results in the need for ongoing intervention with medical products, treatment, services, and special equipment
- The condition places limitations on self-care, independent living, and social interactions.[3]

Examples of a **chronic** condition include malignant cancer, diabetes, obesity, hypertension, and most mental health conditions. In contrast, influenza, bacterial infection, pregnancy, and most initial encounters for an injury are **not chronic**. There is a third designation for codes in which **no determination** is made on the identification of a chronic condition, such as external cause of morbidity codes (all ICD-10-CM diagnosis codes in the range of V00-Y99), and codes indicating a fracture or complication of a prosthetic, prosthetic device, or other device, implant, or graft.

For each diagnosis listed on a record, the CCIR assigns a value of chronic, not chronic, or no determination. The assignment relies only on the ICD-10-CM code description and ICD-10-CM Coding Guidelines.[4] Not factored into the assignment is the placement of the diagnosis in the array (i.e., principal, or secondary diagnosis), other diagnoses reported on the same record, whether the diagnosis was present on admission, or the diagnosis in the context of a full

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[2] The early ICD-10-CM beta versions of the CCI (v2016.1-v2019.1) identified diagnosis codes as chronic or not chronic. The last ICD-10-CM beta version (v2021.1) identified diagnosis codes as chronic, acute, both, and not applicable.

[3] Perrin EC, Newacheck P, Pless IB, Drotar D, Gortmaker SL, Leventhal J, Perrin JM, Stein RE, Walker DK, Weitzman M. Issues involved in the definition and classification of chronic health conditions. Pediatrics. 1993 Apr;91(4):787-93.

[4] Please see ICD-10-CM Official Guidelines for Coding and Reporting FY 2027 for additional details (https://www.cms.gov/files/document/fy-2027-icd-10-cm-coding-guidelines.pdf).

episode of care across healthcare settings. Background on the development of the CCIR for ICD-10-CM is provided in Appendix A.

The CCIR for ICD-10-CM is updated annually to coincide with fiscal year updates to the ICD-10-CM coding system and retains diagnosis codes valid from the start of ICD-10-CM in October 2015. For this reason, it is advisable to always use the most recent version of the tool.

Files containing the mapping of ICD-10-CM codes to their CCIR assignment can be downloaded from the HCUP User Support (HCUP-US) website.[5]

DESCRIPTION OF THE CHRONIC CONDITION INDICATOR REFINED (CCIR) FOR ICD-10-CM

The AHRQ HCUP CCIR tool assigns all ICD-10-CM diagnosis codes one of the following three values:

- Chronic (value 1)
- Not chronic (value 0)
- No determination (value 9).

Each ICD-10-CM diagnosis was reviewed by a team of clinical experts with a guiding set of rules for the designation of an individual diagnosis code as chronic, not chronic, or no determination. Table 1 shows the distribution of the ICD-10-CM diagnosis codes by CCIR assignment in v2027.1.

Table 1. CCIR Assignment by the Number of ICD-10-CM Diagnosis Codes, v2027.1

CCIR Assignment	Number of ICD-10-CM Codes (N=75,915)	Percent of All ICD-10-CM Codes
Diagnoses indicating a chronic condition (value 1)	12,981	17.1
Diagnoses not indicating a chronic condition (value 0)	52,303	68.9
Diagnoses with no determination (value 9)	10,631	14.0

Abbreviations: ICD-10-CM, International Classification of Diseases, Tenth Revision, Clinical Modification

The following sections describe the criteria to identify an ICD-10-CM diagnosis as chronic or not chronic, as well as examples of codes for which no determination is made. More information on the development of the CCIR for ICD-10-CM is provided in Appendix A, including a complete list of the guiding rules for the CCIR for ICD-10-CM.

[5] The HCUP User Support website can be found at https://hcup-us.ahrq.gov/.

Classifying an ICD-10-CM Diagnosis as a Chronic Condition

The definition of a **chronic** condition is dependent on duration (a condition lasting 12 months or longer) and its effect on the patient based on one or both of the following criteria:

- The condition results in the need for ongoing intervention with medical products, treatment, services, and special equipment
- The condition places limitations on self-care, independent living, and social interactions.[6]

A diagnosis code that describes a condition fitting the above definition is considered **chronic**, even if the code description includes information on an acute exacerbation. For example, the ICD-10-CM diagnosis code D57.1, Sickle-cell disease without crisis, and D57.211, Sickle-cell/Hb-C disease with acute chest syndrome, are both considered chronic.

Consistent with the ICD-9-CM version, any diagnosis that indicates an amputation, a transplant, or a malignant cancer is considered a **chronic** condition. Most congenital codes are also **chronic**. Exceptions such as the congenital ICD-10-CM diagnosis code Q83.2, Absent nipple, may last 12 months or longer, but this condition does not require ongoing medical care.

It should be noted that the inclusion of the word "chronic" in a diagnosis code description does not ensure that it is a chronic condition by the above definition. Consider the ICD-10-CM codes under G89.2, Chronic pain, not elsewhere classified. Section C.6.b.4 of the ICD-10-CM Coding Guidelines states that "There is no time frame defining when pain becomes chronic pain. The provider's documentation should be used to guide use of these codes."[7] In this case the duration of the chronic pain is not clear from the code description. In addition, we know that there is variation in the elapsed time used by physicians to determine if a disease is chronic with many using a rule of a condition lasting 3 months or more.[8]

Classifying an ICD-10-CM Diagnosis as Not a Chronic Condition

A diagnosis code that does not fit the criteria for chronic condition (duration, ongoing medical treatment, and limitations) is considered **not chronic**. Some codes designated as **not chronic** are acute conditions. Other diagnosis codes that indicate a possible chronic condition, but for which the duration of the illness is not specified in the code description (i.e., we do not know the condition has lasted 12 months or longer) also are considered **not chronic**. For example, certain codes indicating visual loss (ICD-10-CM diagnosis codes in the range H53.121-H53.139) are considered **not chronic** as the code description does not indicate the duration for the loss of vision.

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[6] Perrin EC, Newacheck P, Pless IB, Drotar D, Gortmaker SL, Leventhal J, Perrin JM, Stein RE, Walker DK, Weitzman M. Issues involved in the definition and classification of chronic health conditions. Pediatrics. 1993 Apr;91(4):787-93.

[7] Please see ICD-10-CM Official Guidelines for Coding and Reporting FY 2027 for additional details(https://www.cms.gov/files/document/fy-2027-icd-10-cm-coding-guidelines.pdf).

[8] Bernell S, Howard SW. Use Your Words Carefully: What Is a Chronic Disease?. *Front Public Health*. 2016;4:159. Published 2016 Aug 2. doi:10.3389/fpubh.2016.00159

Often diagnosis codes containing "other" or "unspecified" forms of a condition are considered **not chronic**, but there are exceptions. In some cases, the "other" or "unspecified" codes are assigned a value of **chronic** because all other related codes (i.e., same first three to four characters of the ICD-10-CM diagnosis code) are **chronic**.

Codes listing postprocedural complications are also considered **not chronic**, even if the code description lists a possible chronic condition. For example, ICD-10-CM diagnosis code I97.110, Postprocedural cardiac insufficiency following cardiac surgery, indicates a possible chronic cardiac condition. The reason for the cardiac surgery should be reported on the discharge record. That diagnosis code will identify whether the reason for the surgery is chronic or not. A postprocedural complication may be reported during the same encounter as the procedure or may be reported during a latter encounter. For example, a postoperative seroma can develop several weeks after a surgery.

ICD-10-CM coding rules for reporting diagnosis codes together based on “code first”, “use additional code” and “in diseases classified elsewhere” are considered in the designation of a chronic condition. According to Section A.13 of the ICD-10-CM Coding Guidelines, certain conditions have both an underlying etiology and multiple body system manifestations due to the underlying etiology.[5] A diagnosis code that specifies only the etiology is considered **not chronic** because the record should include the diagnosis for the specific condition; and the specific condition is coded as chronic or not chronic.

It is important to understand that the designation of not chronic is not synonymous with acute. For example, diagnoses indicating pregnancy, or a benign neoplasm are not chronic conditions, but also are not acute conditions requiring immediate short-term treatment.

ICD-10-CM Diagnosis Codes for Which No Determination is Made

For certain ICD-10-CM diagnosis codes, no determination is made in the identification of a chronic condition. This value includes the following types of ICD-10-CM codes:

- External cause of morbidity codes (ICD-10-CM codes starting with letters V-Y)
- Codes for factors influencing health status and contact with health services (ICD-10-CM codes starting with Z)
- National Institutes of Health Stroke Scale (NIHSS) scores (ICD-10-CM codes that start with R29.7)
- Coma and Glasgow coma scale scores (ICD-10-CM codes in the range R40.21-R40.24)
- ICD-10-CM diagnosis codes specifying a fracture or complication of a prosthetic, prosthetic device, or other device, implant, or graft (select ICD-10-CM codes that start with M and T).

Although some factors influencing health status and contact with health services (ICD-10-CM codes starting with Z) may indicate a chronic condition, ICD-10-CM Coding Guideline indicate they must be reported with the diagnosis; and that diagnosis is coded as chronic or not chronic. For example, Section C.21.c.3 of the ICD-10-CM Coding Guidelines states that body mass

index codes should only be assigned when there is an associated reportable diagnosis such as obesity.[9]

For the ICD-10-CM diagnosis codes related to a fracture or complication of a prosthetic, prosthetic device, or other device, implant, or graft, it is unclear from the code description whether such devices are temporary or permanent.

For some codes where no determination on the identification of a chronic condition is made, users may wish to assign a value of chronic or not chronic based on their analytic purpose. This enables users to better identify groups of codes for further evaluation.

Classifying an ICD-10-CM Diagnosis Related to Mental and Behavioral Health as a Chronic Condition

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5™) is used as reference when classifying ICD-10-CM diagnoses related to mental and behavioral health as a chronic condition.[10] In the DSM-5, chronic is defined by 12-month criteria and does not indicate it is a *lifetime* condition. Chronicity is not dependent on the severity of the illness. The designation of an ICD-10-CM diagnosis as chronic in the CCIR considered treatment, prognosis/clinical course, and prevalence of (i.e., the percent of the population with) the condition lasting for 12 months or more. Many DSM-5 diagnoses note a 3-month or 6-month duration.

Drug, alcohol, and tobacco abuse, dependence, and remission codes are considered **chronic.** According to DSM-5, remission codes should be used to report "persistent" conditions. If there is a history and no longer a condition, the diagnosis code indicating personal history of the condition (select ICD-10-CM diagnosis codes starting with the letter Z) should be used.

Drug, alcohol, and tobacco use codes are considered **not chronic** because they are not specific enough to identify a chronic condition. DSM-5 has specific criteria for when a diagnosis cannot be made, or the clinician does not want to provide/assess the specific DSM-5 criteria of a full condition.

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[9] Please see ICD-10-CM Official Guidelines for Coding and Reporting FY 2027 for additional details (https://www.cms.gov/files/document/fy-2027-icd-10-cm-coding-guidelines.pdf).

[10] Please see www.psychiatry.org/psychiatrists/practice/dsm for additional information on the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).

USING THE CHRONIC CONDITION INDICATOR REFINED (CCIR) FOR ICD-10-CM FOR RESEARCH

The AHRQ HCUP CCIR can be applied to both inpatient and outpatient data that contain ICD-10-CM diagnosis codes to identify chronic conditions. However, in these settings of care, the encounter record may not capture all chronic conditions for a patient. Section III of the ICD-10-CM Coding Guidelines on reporting additional diagnoses states:

> *Secondary diagnoses are reported if they indicate additional conditions that affect patient care in terms of requiring clinical evaluation, therapeutic treatment, diagnostic procedures, extended length of stay, or increased nursing care and/or monitoring.*[11]

Consider a child who has type I diabetes and is treated in the emergency department for severe diarrhea. The diagnosis of diabetes will only be reported on a hospital record if the care in the emergency department included the evaluation or treatment of diabetes or if diabetes affected the treatment of diarrhea.

After the CCIR for ICD-10-CM is added to the administrative data, it is possible to conduct analyses that identify the number of encounters with:

- A chronic principal/first-listed diagnosis
- At least one chronic secondary diagnosis
- Any chronic diagnosis.

Users can also add a flag to their encounter-level file indicating that the patient had at least one chronic condition reported and use this flag for risk adjustment.

Users should not confuse the intent of the CCIR for ICD-10-CM with that of the Elixhauser Comorbidity Software Refined for ICD-10-CM. The purpose of the comorbidity tool is to identify different pre-existing conditions based on secondary diagnoses (i.e., comorbidities) that coexist at the time of the hospitalization or outpatient encounter, impact resource allocation (e.g., length of stay or charges), and possibly affect healthcare outcomes, such as in-hospital mortality. While over 90 percent of the ICD-10-CM diagnosis codes mapped to at least one of the 38 Elixhauser comorbidity measures are chronic, there are a handful of codes (i.e., drug-induced and drug/alcohol use codes) that are not chronic. Additionally, the Elixhauser Comorbidity Software includes a selection of comorbidities associated with a substantial impact on certain outcomes and not an exhaustive list of comorbid conditions.

Counting the Number of Chronic Conditions on a Hospital Discharge Record

Users should exercise caution when conducting an analysis that counts the number of chronic conditions on a discharge record. It is possible that more than one diagnosis on the hospital

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[11] Please see ICD-10-CM Official Guidelines for Coding and Reporting FY 2027 for additional details (https://www.cms.gov/files/document/fy-2027-icd-10-cm-coding-guidelines.pdf

record indicates the same type of chronic condition. In some cases, the ICD-10-CM Coding Guidelines require that two related diagnosis codes be reported. For example, during pregnancy, childbirth, or the puerperium, a patient admitted to the hospital for an illness related to human immunodeficiency virus (HIV) should have a principal diagnosis code of O98.7-, Human immunodeficiency [HIV] disease complicating pregnancy, childbirth and the puerperium, and a secondary diagnosis code of B20, Human immunodeficiency virus [HIV] disease. The CCIR value for both codes is chronic, but this does not mean that the patient has two distinct chronic conditions.

For users interested in counting chronic conditions on a record, it is possible for the CCIR to be used in combination with the Clinical Classifications Software Refined (CCSR) for ICD-10-CM. The CCSR for ICD-10-CM aggregates individual ICD-10-CM diagnosis codes into over 530 clinical categories. The CCSR categories can be used to help identify when multiple diagnosis codes indicate a similar chronic condition.

Consider two separate examples where two diagnosis codes on the record are assigned a value of chronic. In the first example, one diagnosis is mapped to the CCSR category END003 (Diabetes mellitus with complication) and the second diagnosis is mapped to the CCSR category CIR008 (Hypertension with complications and secondary hypertension). In this case, the patient has two distinct chronic conditions. In the second example, one diagnosis is mapped to the CCSR category END003 and the second diagnosis is mapped to the CCSR category END004 (Diabetes mellitus, Type 1). Although two separate CCSR categories are assigned in this case, there is still only one type of chronic condition present (diabetes).

Unfortunately, one cannot assume that if a diagnosis code is chronic according to the CCIR, then the CCSR category the diagnosis code maps to, is also chronic. For example, the diagnosis code B00.82, Herpes simplex myelitis, indicates a chronic condition and is included in the CCSR category INF008 (Viral Infection). Most of the other diagnosis codes included in this CCSR category are not chronic.

USING THE DOWNLOADABLE FILES FOR THE CHRONIC CONDITION INDICATOR REFINED (CCIR) FOR ICD-10-CM

System Requirements

Using the AHRQ HCUP CCIR for ICD-10-CM requires a program to decompress or "unzip" files.[12] Approximately 3 megabytes of disk space available on one's hard drive also will be needed to accommodate all the CCIR for ICD-10-CM files. Additional space is necessary for saving the CCIR for ICD-10-CM output files.

Downloadable Files

The CCIR for ICD-10-CM zip file contains the following:

1. One translation table in comma separated values (CSV) file format that assigns the CCIR for data sets that contain ICD-10-CM diagnosis codes. The CCIR returns the following values:
    - Chronic condition (value 1)
    - Not a chronic condition (value 0)
    - No determination (value 9)
2. SAS program to apply the tool to the user's data
3. CCIR for ICD-10-CM User Guide (PDF)
4. Change log with specific detail on coding changes between versions (Excel).

Table 2 includes detail on the names and purposes of each file contained in the CCIR for ICD-10-CM zip file.

Table 2. Contents of the Chronic Condition Indicator Refined for ICD-10-CM Zip File

File Name	Purpose
CCIR_v*yyyy-r*.csv where *yyyy* represents the fiscal year and *r* represents a release number within the fiscal year[a]	The CSV mapping file lists all ICD-10-CM diagnosis codes along with a description for each code and the CCIR assignment (value 1, 0, or 9). This file can be converted to Excel, where a filter can be applied to examine individual ICD-10-CM codes and CCIR assignment.
CCIR_Mapping_Program_v*yyyy-r*.sas where *yyyy* represents fiscal year and *r* represents a release number within fiscal year[a]	SAS mapping program applies the CCIR for ICD-10-CM to the user's data.

[12] Third-party zip utilities are available from the following reputable vendors on their official websites: ZIP Reader (Windows) (free download offered by PKWARE, Inc.), SecureZIP® for Mac or Windows (free evaluation and licensed/fee software offered by PKWARE, Inc.), WinZip (Windows) (evaluation and fee versions offered by the Corel Corporation), Stuffit Expander® (Mac) (free evaluation and licensed/fee software offered by Smith Micro Software Inc.).

File Name	Purpose
CCIR-User-Guide-v*yyyy-r*.pdf where *yyyy* represents fiscal year and *r* represents a release number within fiscal year[a]	This document (i.e., User Guide for the Chronic Condition Indicator Refined for ICD-10-CM in PDF format).
CCIR_ChangeLog_v*yyyy*-v*yyyy-r*.xlsx	A log (Microsoft® Excel) comparing two versions of the Chronic Condition Indicator Refined for ICD-10-CM tool including a list of changes and assignment of ICD-10-CM codes to a CCIR assignment.

Abbreviations: CSV, comma separated values

[a]For example, the first mapping file release to include codes valid through fiscal year 2027 is named CCIR_v2027-1.csv.

Data Elements Required for the Input Dataset to the SAS Mapping Program to Identify Chronic Conditions

The input dataset **must** contain an array of ICD-10-CM diagnoses without decimals. This data element is required for assignment of the CCIR for ICD-10-CM (Table 3).

Table 3. Required Input Data Elements

Data Element Name in Program	Purpose	How to Modify the Data Element Name Used in the Program	Data Element Name in HCUP Databases
DX1-DXn where n is the dimension of the diagnosis array.	Array of ICD-10-CM diagnoses (without decimals) used to identify chronic conditions	Specify prefix for DX array using macro statement %LET DXPREFIX=	I10_DX1-I10DXn in all HCUP databases starting in data year 2016

Representation of ICD-10-CM Diagnosis Codes

ICD-10-CM diagnoses often are represented by 4- to 7-digit alphanumeric codes with explicit decimals. In the format program, the ICD-10-CM diagnosis codes are enclosed in quotation marks and do not contain decimals. Table 4 provides examples for how the ICD-10-CM diagnosis codes are represented in the format program.

Table 4. Example of Representation of ICD-10-CM Diagnosis Codes in the CCIR for ICD-10-CM

Condition	ICD-10-CM Diagnosis Code	Alphanumeric Code (With Implicit Decimals) in the Format Program
Single liveborn infant, delivered vaginally	Z38.00	‘Z3800 ’
Sepsis, unspecified organism	A41.9	‘A419 ’
Pneumonia, unspecified organism	J18.9	‘J189 ’

Abbreviations: ICD-10-CM, International Classification of Diseases, Tenth Revision, Clinical Modification

For the accurate identification of chronic conditions, the ICD-10-CM diagnosis codes in the input files must be reported as follows:

- Alphanumeric diagnosis codes must be left-justified, allowing trailing blanks to fill up the full length of 7 characters.
    - Example: Diagnosis J18.9 should be retained as ‘J189 ’ in the input file.
- Trailing blanks should never be zero-padded.
    - Example: Diagnosis ‘J189 ’ should *not* be represented as ‘J189000’.
- Only fully specified ICD-10-CM codes should be included. The CCIR mapping program does not account for substrings or parent codes, such as three-digit code blocks
    - Example: Diagnosis E11 (Type 2 diabetes mellitus) or E11x cannot be used to capture all codes that begin with the characters E11.

Running the SAS Program to Add the Chronic Condition Indicators to Data

To download, modify, and run the software to apply the CCIR for ICD-10-CM to an input dataset, follow these steps:

1. Users should download and extract the contents of the zip file containing the CCIR for ICD-10-CM tool to a saved location on their computer. Files included in the zip file are described in Table 2 and referenced below.

2. Users must set up the SAS program (CCIR_Mapping_Program_vyyyy-r.sas) to run on their data. They must specify or modify where appropriate:
    a. Change the paths in the SAS program to point to the computer location(s) of
        i. The CSV mapping file (CCIR_v*yyyy-r*.csv)
        ii. The input dataset
        iii. The output dataset
    b. Set the macro variables in the SAS program to match the data element names and file structure of the input dataset (Table 5).

Table 5. Modifiable Macro Variables and Directory Paths

Description of Macro Variables and Directory Paths	SAS Program Syntax
File Locations	
Specify the location of the CSV mapping file	FILENAME INRAW1
Specify the location of the input dataset	LIBNAME IN1
Specify the location of the output dataset	LIBNAME OUT1
Input File Characteristics	
Specify the prefix used to name the ICD-10-CM diagnosis data element array in the input dataset. In this example the diagnosis data elements would be named I10_DX1, I10_DX2, etc., similar to the naming of ICD-10-CM data elements in HCUP databases.	%LET DXPREFIX=I10_DX;
Specify the maximum number of diagnosis codes on any record in the input file. In this example the maximum number of diagnosis codes on any record is 30. The value of NUMDX must be numeric and greater than or equal to 1; otherwise, the program will not read in any diagnosis codes for CCIR assignment.	%LET NUMDX=30;
Specify the data element that identifies the number of diagnoses reported on the record. This is optional and can be left blank if no such data element exists. (In the HCUP databases, this is the variable I10_NDX).	%LET NDXVAR=I10_NDX;
Specify the number of observations to use from the input dataset. Use MAX to use all observations and use a smaller value for testing the program.	%LET OBS = MAX;
Input and Output File Names	
Specify the file member name of the input dataset	%LET CORE = INPUT_SAS_FILE;
Specify the file member name for the output file	%LET OUT = OUTPUT_SAS_FILE;

Abbreviation: CSV, comma-separate values

Chronic Condition Indicator Data Elements in the Output File

This SAS program assumes the input file includes one or more ICD-10-CM diagnosis codes in an array. The output file includes all data elements from the input file, in addition to an array of CCIR data elements (CCIRn) with a one-to-one correspondence to the array of ICD-10-CM codes. For example, CCIR1 includes the CCIR assignment for the ICD-10-CM code in the first position of the ICD-10-CM diagnosis code array (I10_DX1 in the HCUP databases). The values of the data elements CCIRn indicate whether the corresponding ICD-10-CM code is one of the following:

- Chronic (value 1)
- Not chronic (value 0)
- No determination (value 9).

In v2027.1, codes that are not valid ICD-10-CM diagnosis codes from October 1, 2015 through September 30, 2027[13] are assigned a missing value (SAS value ".") for the CCIR.

[13] Please note that with the publication of the Final Rule for the inpatient prospective payment system (IPPS) for fiscal year 2022, the Centers for Medicare & Medicaid Services releases ICD-10-CM/PCS code updates twice a year (every April 1 and October 1). ICD-10-CM codes that will become effective on April 1, 2027, are not included in v2027.1.

APPENDIX A: BACKGROUND ON THE DEVELOPMENT OF THE CHRONIC CONDITION INDICATOR REFINED (CCIR) FOR ICD-10-CM

Refining the Chronic Condition Indicator for ICD-10-CM Diagnoses

The Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) Chronic Condition Indicator (CCI) for ICD-9-CM was used as the starting point for the AHRQ HCUP CCIR for ICD-10-CM. In preparation for the October 2015 implementation of ICD-10-CM/PCS, the Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) tools were converted to the new coding system. The initial mapping was completed in 2014 (prior to ICD-10-CM-coded data being available) by linking the CCI assignment of ICD-9-CM codes to ICD-10-CM codes via the General Equivalence Mappings (GEMs) available from the Centers for Medicare & Medicaid Services (CMS) website.[14] This first iteration of the ICD-10-CM CCI classification was considered a beta version.

The early beta versions of the tool were consistent with the definition of a **chronic condition** used for the ICD-9-CM version. That is, a condition that lasts ***12 months or longer*** and meets one or both of the following criteria:

- The condition results in the need for ongoing intervention with medical products, treatment, services, and special equipment
- The condition places limitations on self-care, independent living, and social interactions.15

In beta version v2021.1, AHRQ attempted to distinguish acute from chronic conditions. Further analyses revealed that this distinction is a difficult to make. First, ICD-10-CM includes combination codes that can indicate both chronic and acute conditions, such as the ICD-10-CM diagnosis code J44.0, Chronic obstructive pulmonary disease with acute lower respiratory infection. Second, the placement of a diagnosis within the diagnosis array can provide additional information. For example, if a chronic condition is listed as a principal/first-listed diagnosis, it would indicate an acute episode that required treatment.

In v2023.1, the tool moved out of beta status as the Chronic Condition Indicator Refined (CCIR) for ICD-10-CM with the same intent as the ICD-9-CM version to identify diagnoses indicative of a chronic condition. Each ICD-10-CM diagnosis was reviewed by a team of clinical experts with a guiding set of rules for the designation of an individual diagnosis code as chronic, not chronic, or no determination, which are presented in Table A.1.

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[14] Information on the GEMS is available at https://www.cms.gov/medicare/coding-billing/icd-10-codes/icd-10-cm-icd-10-pcs-gem-archive.

[15] Perrin EC, Newacheck P, Pless IB, Drotar D, Gortmaker SL, Leventhal J, Perrin JM, Stein RE, Walker DK, Weitzman M. Issues involved in the definition and classification of chronic health conditions. Pediatrics. 1993 Apr;91(4):787-93.

Table A.1. CCIR Assignment Rules

Rule
Identifying ICD-10-CM Diagnoses as Chronic Conditions
All cancers are considered **chronic** except basal cell carcinomas, squamous cell carcinomas, benign neoplasms (except benign neoplasms of the brain, cranial nerves, and cerebral/spinal meninges), skin and cervix carcinomas *in situ,* and neoplasms of uncertain behavior (except benign neoplasms of the brain, cranial nerves, and cerebral/spinal meninges as well as neurofibromatosis).
All codes indicating a traumatic amputation are considered as indicating a **chronic** condition. This includes partial amputations and codes indicating a loss of teeth.
All codes indicating an organ transplant are considered as indicating a **chronic** condition. Excluded are factors influencing health status and contact with health services that indicate organ transplant status (select ICD-10-CM codes starting with Z).
Most congenital anomalies are designated as **chronic** conditions. Exceptions such as the congenital code Q83.2, Absent nipple, may last 12 months or longer, but the condition does not require ongoing medical care.
A diagnosis code that describes a chronic condition is considered **chronic**, even if the code description includes information on an acute exacerbation. For example, the ICD-10-CM diagnosis code D57.1, Sickle-cell disease without crisis, and D57.211, Sickle-cell/Hb-C disease with acute chest syndrome, are both considered chronic.
For diagnoses related to mental and behavioral health, the assignment of **chronic** considered the treatment, prognosis/clinical course, and prevalence of (i.e., the percent of the population with) the condition lasting for 12 months or more as indicated in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5).[16]
Drug, alcohol, and tobacco abuse, dependence, and remission codes are considered **chronic.**
Diagnosis codes indicating acute myocardial infarction (AMI) or stroke continue to be classified as chronic conditions. Although the AMI or stroke itself occurs as an acute event, each is typically preceded and/or followed by a chronic disease process. AMI is most often the acute manifestation of atherosclerosis, a chronic, progressive disease characterized by the long-term buildup of fatty plaques within the arteries. Similarly, a stroke is typically preceded by chronic, progressive cerebrovascular disease and is frequently followed by long-term residual effects, such as disability.[17]
Identifying Diagnoses as Not Chronic Conditions
Diagnosis codes that indicate a possible chronic condition, but for which the duration of the illness is not specified (i.e., we do not know the condition has lasted 12 months or longer) in the code description are considered **not chronic**. For example, certain codes indicating visual loss (ICD-10-CM diagnosis codes in the range H53.121-H53.139) are considered **not chronic** as the code description does not indicate the duration of the loss of vision.

[16] Please see www.psychiatry.org/psychiatrists/practice/dsm for additional information on the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).

[17] O'Neill D, Horgan F, Hickey A, McGee H. Long term outcome of stroke: Stroke is a chronic disease with acute events. *BMJ*. 2008 Mar 1;336(7642):461. doi: 10.1136/bmj.39500.434086.1F. PMID: 18309967; PMCID: PMC2258352.

Rule
Codes listing postprocedural complications are also considered **not chronic**, even if the code description lists a possible chronic condition. For example, the diagnosis for *Postprocedural cardiac insufficiency following cardiac surgery* indicates a possible chronic cardiac condition. The reason for the cardiac surgery should be reported on the discharge record. That diagnosis code will identify whether the reason for the surgery is chronic or not.
Certain conditions have both an underlying etiology and multiple body system manifestations due to the underlying etiology.[18] A diagnosis code that specifies only the etiology is considered **not chronic** because the record should include the diagnosis for the specific condition, which may or may not be chronic.
Drug, alcohol, and tobacco use codes are considered **not chronic** because they are not specific enough to identify a chronic condition. DSM-5 has specific criteria for when a diagnosis cannot be made, or the clinician does not want to provide/assess the specific DSM-5 criteria of a full condition.
Codes indicating any injury encounter (all ICD-10-CM codes starting with S or T) are considered **not chronic** with a few exceptions. Any codes indicating a diffuse traumatic brain injury and injuries to the cervical, thoracic, and lumbar spinal cord are **chronic**. Any codes including mention of a prosthesis or prosthetic device have **no determination**.
Codes indicating any fracture encounter are considered **not chronic** with a few exceptions. Codes indicating pathological fractures with osteoporosis or neoplastic disease are **chronic**. Any codes including mention of a prosthesis or prosthetic device have **no determination**.
Codes indicating any encounter for the underdosing of a drug (select ICD-10-CM codes starting with T) are considered **not chronic**.
Codes indicating pregnancy (all ICD-10-CM codes starting with O) are considered **not chronic** with a few exceptions. Codes indicating a pre-existing chronic condition (e.g., hypertension, diabetes mellitus, malignant neoplasm) complicating pregnancy, childbirth, or the puerperium are **chronic**.
Codes used to report abnormal findings without diagnosis (ICD-10-CM codes in the range of R70-R97) are considered **not chronic** with three exceptions. Three diagnosis codes (R85.614, R87.614, and R87.24) that indicate cytologic evidence of malignancy on a smear are marked as **chronic**, consistent with the rule that malignant cancers are considered chronic.
Codes indicating a drug-induced condition are considered **not chronic** except when the drug-induced condition is a permanent disease such as polyneuropathy, chronic gout, and osteonecrosis.
Diagnoses for Which No Determination is Made
Codes for external causes of morbidity (all ICD-10-CM codes in the range of V00-Y99) have **no determination**.
Codes for factors influencing health status and contact with health services (ICD-10-CM codes starting with Z) have **no determination**.
Codes used for scoring the level of a condition (select ICD-10-CM symptoms and signs codes in the range of R00-R69) have **no determination**. Examples include codes indicating the National Institute of Health Stroke Scale (NIHSS) or Glasgow coma scale.
Codes related to the fracture or complication of a prosthetic, prosthetic device, or other device, implant, or graft (certain ICD-10-CM codes that start with M and T) have **no determination**.
Any CCIR Value Assignment

[18] Please see ICD-10-CM Official Guidelines for Coding and Reporting FY 2027 for additional details.

Rule
Certain ICD-10-CM diagnosis codes include a seventh character to distinguish the type of encounter and whether there was a late effect or sequela resulting from a previous event, such as an injury. In most of these cases, the seventh character indicates an initial encounter, subsequent encounter, or sequela. For these codes, the subsequent encounter and sequela has the same CCIR value as the initial encounter.

Abbreviations: ICD-10-CM, International Classification of Diseases, Tenth Revision, Clinical Modification

Summary of Key Changes in the Versions of the CCIR for ICD-10-CM

The following is a summary of key changes between released versions of the CCIR for ICD-10-CM:

- v2027.1 (Released October 2026)
  - Added ICD-10-CM diagnosis codes valid starting in fiscal year 2027 so the tool now includes all ICD-10-CM codes valid from October 2015 through September 2027.[19]

- v2026.1 (Released October 2025)
  - Added ICD-10-CM diagnosis codes valid starting in fiscal year 2026 so the tool now includes all ICD-10-CM codes valid from October 2015 through September 2026.

- v2025.1 (Released November 2024)
  - Added ICD-10-CM diagnosis codes valid starting in fiscal year 2025 so the tool now includes all ICD-10-CM codes valid from October 2015 through September 2025.

- v2024.1 (Released March 2024)
  - Added ICD-10-CM diagnosis codes valid starting in fiscal year 2024 so the tool now includes all ICD-10-CM codes valid from October 2015 through September 2024.
  - Changed the following 4 codes from chronic to not chronic:
    - D89.832 Cytokine release syndrome, grade 2
    - D89.833 Cytokine release syndrome, grade 3
    - D89.834 Cytokine release syndrome, grade 4
    - D89.835 Cytokine release syndrome, grade 5

- v2023.1 (released December 2022)
  - Returned to a concept consistent with the ICD-9-CM version of the tool, which identifies diagnosis codes indicative of a chronic condition (value 1).
  - Identified the other diagnosis codes as one of the following two categories:
    - Not a chronic condition (value 0)
    - Codes where no determination is made on the identification of a chronic condition (value 9).

[19] Please note that with the publication of the Final Rule for the inpatient prospective payment system (IPPS) for fiscal year 2022, the Centers for Medicare & Medicaid Services releases ICD-10-CM/PCS code updates twice a year (every April 1 and October 1). ICD-10-CM codes that will become effective on April 1, 2027, are not included in v2027.1.

- Added ICD-10-CM diagnosis codes valid starting in fiscal years 2022 and 2023 so the tool now includes any code valid from October 2015 through September 2023