

ICD-10-CM/PCS to ICD-9-CM Reimbursement Mappings

2009 Version

Documentation and User's Guide

Preface

Purpose and Audience

This document accompanies the 2009 update of the Centers for Medicare and Medicaid Studies (CMS) public domain one-to-one applied reimbursement mappings of the ICD-10-CM (diagnosis) and ICD-10-PCS (procedure) code systems to the ICD-9-CM Volume 1 (diagnosis) and ICD-9-CM Volume 3 (procedure) code systems respectively. The purpose of this document is to give readers the information they need to understand the intent and structure of the mappings so they can use the information correctly. The intended audience includes but is not limited to professionals working with health services reimbursement systems. General readers may find section 1 useful. Software engineers and IT professionals interested in the details of the file formats will find this information in Appendix A.

Document Overview

For readability, when no distinction is necessary between diagnosis codes and procedure codes, ICD-10-CM or ICD-10-PCS is abbreviated "I-10", and ICD-9-CM Volumes 1 or 3 is abbreviated "I-9".

- **Section 1** is a general interest discussion of mapping between I-10 and I-9 and the rationale for the development of the Reimbursement Mappings. The meaning of "one-to-one" in the context of an applied mapping is discussed.
- **Section 2** contains detailed information on how to use the Reimbursement Mappings, for users who will be working directly with mapping applications.
- **Appendix A** describes the technical details of the file formats. One mapping file is provided for diagnoses and one for procedures, both in the same format.

Section 1 – Reimbursement Mapping Rationale

Converting I-10 Data for I-9 Systems

After the I-10 implementation date as specified in the Final Rule, health care claims for services on or after that date will be submitted to payers with diagnoses coded in ICD-10-CM for all provider types, and procedures coded in ICD-10-PCS for hospital inpatient services only. The Reimbursement Mappings were created to provide a temporary but reliable mechanism for mapping records containing I-10 diagnoses and procedures to "reimbursement equivalent" I-9 diagnoses and procedures, so that while systems are being converted to process I-10 claims directly, the claims may be processed by the legacy systems.

The I-10 diagnoses submitted on the claim are mapped, via application of the Diagnosis Reimbursement Mapping, into I-9 diagnoses used by the I-9-based reimbursement system. Similarly the I-10 procedures submitted on the claim are mapped, via application of the Procedure Reimbursement Mapping, into I-9 procedures used by the I-9-based reimbursement system. The claim may then be priced using the rules written for I-9 codes.

Derivation from General Equivalence Mappings (GEMs)

The National Center for Health Statistics (NCHS) annually publishes on its website (<http://www.cdc.gov/nchs/about/otheract/icd9/icd10cm.htm>), a translation dictionary between I-10 and I-9 for diagnoses. Similarly CMS annually publishes on its website (http://www.cms.hhs.gov/ICD10/Downloads/pcs_gemguide_2008.pdf) a translation dictionary for procedures. Collectively these are called the General Equivalence Mappings (GEMs).

The reader is advised to see the User's Guides provided with the GEM translation files. Each contains a general discussion of the challenges inherent in translating between code sets, and the strategies that may be adopted to customize the GEMs for specific applications. Those discussions are not repeated here. The GEM User's Guides also provide comprehensive Glossaries, which may be of use to readers not familiar with the terminology of code set translation.

The Reimbursement Mappings were constructed from the GEMs using the techniques discussed below.

One-to-one and one-to-many mappings

The ICD-10 to ICD-9 General Equivalence Mappings are one-to-many mappings in two different senses:

Alternatives. More than one I-9 code may be a possible translation of a given I-10 code. Which I-9 code is the best translation cannot be determined without access to an individual medical record. For example, I-10 procedure 0LQ70ZZ, *Repair Right Hand Tendon, Open Approach*, could be translated into I-9 procedure 83.61, *Suture of tendon sheath*, or to procedure 83.64, *Other suture of tendon*. Without reference to a patient's medical record, it is not possible to determine which of the two I-9 codes is the single best translation of 0LQ70ZZ.

Clusters. It may require more than one I-9 code to convey the complete meaning of a given I-10 code. Moreover, reimbursement systems may depend for correct pricing on the additional meaning provided by adjunct I-9 codes. For example, I-10 procedure code 02733ZZ, *Dilation of Coronary Artery, Four or More Sites, Percutaneous Approach*, requires two I-9 codes on the claim to be correctly represented in I-9: 00.66, *PTCA or coronary atherectomy*, and 00.43, *Procedure on four or more vessels*. A reimbursement system which pays more for a procedure performed on four or more vessels would pay incorrectly if the 02733ZZ were translated into 00.66 only .

The Reimbursement Mappings are one-to-one mappings in the sense that they choose a single I-9 translation among alternatives. For I-10 codes that translate to multiple I-9

alternative codes in the GEMs, a single I-9 code was selected as the most representative I-9 code for reimbursement purposes. For every valid I-10 code, only one alternative I-9 code (or cluster of I-9 codes) appears in the mapping. However, the Reimbursement Mappings are one-to-many mappings in the second sense. They may offer up to five I-9 codes as jointly equivalent to one I-10 code. In such cases, where the I-10 code maps to more than one I-9 code, the I-9 codes are *not* alternatives. All of them must be included in the translated I-9 claim that is sent to the I-9 legacy reimbursement system to be processed, in order to produce the equivalent meaning (and thus the same reimbursement value) as the submitted I-10 claim.

Method used to select alternatives

The construction of the Reimbursement Mapping started with the ICD-10 to ICD-9 GEMs. More than 65,000 of the 68,000+ I-10 diagnoses (95%) are translated to a single I-9 code in the diagnosis GEM. Rules for choosing among I-9 diagnosis code alternatives were therefore necessary for approximately 3,000 I-10 diagnosis codes. Similarly, nearly 69,000 of the 72,500+ I-10 procedures (also 95%) are translated in the procedure GEM to a single I-9 code, so approximately 3,500 I-10 procedure codes required rules for choosing among I-9 code alternatives.

Selection of a single I-9 code for both diagnoses and procedures made use of two *reference data sources*:

Medicare. Approximately 11,000,000 MedPAR records.

All-payer. Approximately 4,000,000 inpatient hospital records available from the California Office of Statewide Health Planning and Development (OSHPD).

Because both data sets come from hospital admission data, choosing between I-9 alternatives may reflect frequencies more characteristic of inpatient than outpatient data when the two differ. A clear example of this can be found in the obstetrics codes specifying complications of pregnancy. Because I-10 does not specify encounter information, i.e., whether the patient delivered during the encounter, the reimbursement mapping must choose between two I-9 alternatives, one that specifies antepartum encounter, the other a delivery. For inpatient hospital data, the I-9 codes specifying delivery are far more frequent, while in outpatient and physician data, one would expect the I-9 codes specifying antepartum encounter to dominate.

When the GEM offered more than one translation for an I-10 code, these reference data sources were queried to find the most frequently coded of the alternative I-9 codes. For all but about 300 diagnosis codes and 120 procedure codes, one of the I-9 alternatives was clearly dominant—often more than twice as frequent as any of the other alternatives.

Reimbursement Mapping of dominant I-9 code alternative

I-10 code	I-9 code alternatives in the GEM	MedPAR records	MedPAR %	Calif. Records	Calif. %	Reimbursement Mapping
J45.22 Mild intermittent asthma with status asthmaticus	493.01 Extrinsic asthma with status asthmaticus	384	88%	3,604	99%	X
	493.11 Intrinsic asthma with status asthmaticus	49	11%	32	0%	

The dominant I-9 alternative was then chosen as the I-9 code (or code cluster) for the Reimbursement Mapping. When the Medicare reference data set and the all-payer reference data set disagreed, the code with the highest Medicare frequency was chosen for non-obstetric, non-newborn diagnoses and procedures. For obstetric and newborn diagnoses and procedure, the all-payer data set was given precedence. When there were too few cases in either reference data set alone, the two were combined to achieve a higher frequency. Finally, clinical judgment was used to select a mapping for the approximately 300 diagnosis and 120 procedure codes which were so rarely recorded that the reference data sets were unable to identify a clearly best alternative.

Reimbursement Mapping of I-9 code alternative based on clinical judgment

I-10 code	I-9 code alternatives in the GEM	MedPAR records	MedPAR %	Calif. Records	Calif. %	Reimbursement Mapping
3E0B7KZ Introduction of Other Diagnostic Substance into Ear, Via Natural or Artificial Opening	20.72 Injection Into Inner Ear	1	25%	0	0%	X
	20.94 Injection Of Tympanum	3	75%	1	100%	

This process resulted in the Reimbursement Mapping files documented in Appendix A. Each mapping file has one and only one entry for each valid I-10 code. An I-10 entry contains from one to five I-9 codes. When substituted for the I-10 code on a patient record, the resulting I-9 code or codes should create reimbursement results equivalent to those obtained if the record had been originally coded in I-9.

I-9 clusters (more than one I-9 code to represent one I-10 code) are used when necessary to ensure that potentially reimbursable components of the meaning of the I-10 code are transferred to the I-9 translation.

Frequency of I-9 code clusters in ICD-10 Reimbursement Mapping

Code set	Mapped to single I-9 code	Mapped to two-code cluster	Mapped to three-code cluster	Mapped to four-code cluster	Mapped to five-code cluster	Total I-10 codes
ICD-10-CM (diagnosis)	63,500	4,574	27	5	0	68,105
ICD-10-PCS (procedure)	70,749	844	514	458	24	72,589

Section 2 – Using the Reimbursement Mapping

The mapping process

The two text files accompanying this document—one for diagnoses, one for procedures—are listed in I-10 code order. Users are advised to download the files and load them into a database or table structure that allows efficient lookup based on the I-10 code at the beginning of each mapping entry.

Certain ICD-10-CM diagnosis codes specify conditions or external causes which are not represented in ICD-9-CM. For those codes, the mapping entry contains the text “NODX” in the I-9 code field. I-10 codes that have no equivalent in I-9 can safely be ignored by an I-9 pricing system, since they represent conditions or external causes which could never have been coded with ICD-9-CM, and which an I-9 pricing system would never have used.

A health care claim will typically contain a list of I-10 diagnoses, one principal, the others secondary. The Reimbursement Mapping should be adapted to a claims system using the following recommendations:

- Reserve space for the resulting I-9 diagnoses. Since one I-10 code may translate to more than one I-9 diagnosis, the translated I-9 result may be longer. Though the use of clusters in the mapping is rare as shown in the table above, the recommended way to ensure that there is enough space for the output is to reserve space for four I-9 diagnosis codes and five I-9 procedure codes.
 - If the legacy I-9 system has limited space for input codes, use the available space and stop the process below if its input space fills up.
- Map the I-10 principal diagnosis first, by looking up the I-10 code in the mapping. If the mapping entry contains one I-9 code, then this becomes the I-9 principal diagnosis. If the mapping supplies an I-9 code cluster, then take the first I-9 diagnosis in the cluster as the principal diagnosis, and use the remaining diagnoses in the cluster as I-9 secondary diagnoses on the translated record. All of the diagnosis code clusters have been arranged so that the first listed diagnosis in the cluster is the recommended principal diagnosis when the I-10 code is the principal diagnosis.

- For each secondary diagnosis, look up the I-10 code in the mapping. If the I-9 mapping is “NODX” then do not place anything in the I-9 code list for this input I-10 code and move on to the next I-10 input code. Because a mapping may contain more than one I-9 code, the placement of the secondary codes in the output I-9 space must be tracked independently from the input I-10 codes.
- For procedures, the process for translating I-10 codes on the record is straightforward. There are no I-10 procedures without a corresponding I-9 code. Further, procedures are rarely distinguished as “principal” and “secondary”, so there is no special rule for mapping a “principal” procedure.

Customizing the mapping

The Reimbursement Mapping contains an entry for every I-10 code. However, not every I-9 code is used in the mapping. Certain I-9 codes use outmoded terminology or an axis of classification replaced by something more clinically relevant in the I-10 code set. As a result, an I-10 code is mapped to the closest clinically relevant alternative I-9 code, or the most frequently used I-9 code, in the process outlined in Section 1. A process that chooses a single I-9 code among alternatives must of course leave the other I-9 alternatives unused.

Users of the Reimbursement Mapping may want to sort the mapping entries by I-9 code and determine if any particular I-9 codes used by their legacy systems (for example, those qualifying for carve-outs or other special treatment) are not mapped to. Such codes would no longer be used when input is coming to their legacy systems through the Reimbursement Mapping.

If there are I-9 codes not used by the Reimbursement Mapping that are essential to the legacy system, then the Reimbursement Mapping can be customized for that system by doing the following:

- Consult the diagnosis or procedure ICD-9 to ICD-10 GEM, or one of the commercial tools built from it. This will enumerate the possible I-10 translations of the unused I-9 code. All of these I-10 codes are already mapped to other I-9 codes in the Reimbursement Mapping. At least one code will have to be re-mapped to the unused I-9 code.
- Look up the candidate I-10 translation in the Reimbursement Mapping and determine which I-9 code or code cluster it is currently mapped to.
- Substitute the unused I-9 code into the Reimbursement Mapping entry chosen.

Appendix A – Format of the Reimbursement Mapping Files

reimb_map_dx_2009.txt contains the Reimbursement Mapping from ICD-10-CM diagnoses to ICD-9-CM diagnoses or diagnosis clusters.

reimb_map_pr_2009.txt contains the Reimbursement Mapping from ICD-10-PCS procedures to ICD-9-CM (Volume 3) procedures or procedure clusters.

Both files are formatted the same way. “Code” below means either “diagnosis code” or “procedure code” depending on which file is being used. Decimal points have all been removed. F10.151, for example, is F10151 in the file. Codes may contain both alphabetic and numeric characters. All alphabetic characters are upper case.

There is one entry in the file for each valid I-10 code. Each entry is from 16 to 40 characters long. The files may be made fixed-length by padding each record less than 40 characters out to 40 characters with blanks.

Each Reimbursement Mapping record is formatted as follows:

Position	Length	Contents
1	8	I-10 code (3 to 7 characters) left justified in 8-character field. Last character in field is blank.
9	1	Number of I-9 codes this I-10 code maps to. Values 1 through 5.
10	6	First I-9 code (2 to 5 characters) left justified in a 6-character field. Last character in field is blank.
16	6	Second I-9 code (2 to 5 characters) left justified in a 6-character field if I-10 code mapped to two or more I-9 codes. Last character in field is blank.
22	6	Third I-9 code (2 to 5 characters) left justified in a 6-character field if I-10 code mapped to three or more I-9 codes. Last character in field is blank.
28	6	Fourth I-9 code (2 to 5 characters) left justified in a 6-character field if I-10 code mapped to four or more I-9 codes. Last character in field is blank.
34	6	Fifth I-9 code (2 to 5 characters) left justified in a 6-character field if I-10 code mapped to five I-9 codes. Last character in field is blank.