

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

## 2010 Version

### Documentation and User's Guide

#### Preface

#### **Purpose and Audience**

This document accompanies the 2010 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 between applications.
- **Appendix A** describes the technical details of the file formats. One mapping file is provided for diagnosis codes 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 October 1, 2013 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 diagnosis and procedure codes to "reimbursement equivalent" I-9 diagnosis and procedure codes, 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 diagnosis codes submitted on the claim are mapped, via the Diagnosis Reimbursement Mapping, into I-9 diagnosis codes that can then be processed by the I-9-based reimbursement system. Similarly the I-10 procedure codes submitted on the claim are mapped, via the Procedure Reimbursement Mapping, into I-9 procedure codes that can then be processed 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 a translation reference between I-10 and I-9 for diagnosis codes. Similarly CMS annually publishes on its website a translation reference for procedure codes. Collectively these are called the General Equivalence Mappings (GEMs).

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

The Reimbursement Mappings were derived 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 valid translation of a given I-10 code.

Which one of those I-9 codes is the most correct translation cannot be determined based on the meaning of the codes themselves. For example, I-10 procedure 0LQ70ZZ, *Repair Right Hand Tendon, Open Approach*, translates to I-9 procedure 83.61, *Suture of tendon sheath*, or to procedure 83.64, *Other suture of tendon*. Both are valid translations of the I-10 procedure code.

Clusters. At times it requires multiple I-9 codes combined to reproduce the complete meaning of one I-10 code. This is the case with I-9 principal procedure codes such as coronary angioplasty that require the use of "adjunct" I-9 codes to provide additional detail. For example, I-10 procedure code 02733ZZ, *Dilation of Coronary Artery, Four or More Sites, Percutaneous Approach*, requires two I-9 codes to be fully represented in I-9: 00.66, *PTCA or coronary atherectomy*, and 00.43, *Procedure on four or more vessels*. Reimbursement systems may depend for correct pricing on the additional meaning provided by adjunct I-9 codes. 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 one I-9 translation for each I-10 code. This may be one I-9 code or one I-9 cluster. For I-10 codes that translate to multiple single I-9 codes in the GEMs, one I-9 code was selected

for reimbursement purposes. For I-10 codes that translate to multiple I-9 clusters in the GEMs, one I-9 cluster was selected for reimbursement purposes. The mapping of one I-10 may require as many as six I-9 codes to reproduce the meaning of the I-10 code. In such cases, where an I-10 code maps to an I-9 cluster in the Reimbursement Mappings, the I-9 codes comprising the cluster are *not* to be treated as alternatives. All of them must be included in the translated I-9 claim sent to the I-9 legacy reimbursement system in order to reproduce the information in the submitted I-10 claim.

## **Frequency data used to derive I-9 mapping**

The Reimbursement Mappings are an applied mapping of the ICD-10 to ICD-9 GEMs. More than 65,000 of the 69,000 I-10 diagnosis codes (95%) in the ICD-10 to ICD-9 diagnosis GEM translate to a single I-9 code. Similarly, more than 69,000 of the 72,000 I-10 procedure codes (97%) in the ICD-10 to ICD-9 procedure GEM translate to a single I-9 code. Approximately 3,500 I-10 diagnosis codes and 2,500 I-10 procedure codes required rules for choosing among I-9 code alternatives. The rules for choosing among I-9 code alternatives operated on frequency data from I-9 based records.

Selection of a single I-9 code for both diagnosis and procedure codes made use of two *reference data sources*:

Medicare Approximately 25,000,000 MedPAR records, from 10/1/2005 to 9/30/2006 and from 10/1/2007 to 9/30/2008

All-payer Approximately 8,000,000 inpatient hospital records available from the California Office of Statewide Health Planning and Development (OSHPD) from 10/1/2006 to 9/30/2007 and from 10/1/2007 to 9/30/2008

Because both data sets come from hospital inpatient data, the resultant mapping reflects frequencies characteristic of inpatient rather 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 I-10 to I-9 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 I-10 to I-9 GEM	MedPAR records	MedPAR %	Calif. Records	Calif. %	Reimbursement Mapping
<b>J45.22</b> Mild intermittent asthma with status asthmaticus	<b>493.01</b> Extrinsic asthma with status asthmaticus	459	85%	3,702	99%	X
	<b>493.11</b> Intrinsic asthma with status asthmaticus	69	15%	41	1%	

The dominant I-9 alternative was chosen as the I-9 code for the Reimbursement Mapping. Where an I-10 code translated to multiple I-9 clusters, the first I-9 code in the cluster as determined by the GEM “choice list” order was used to determine the dominant alternative.

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 diagnosis and procedure codes. For obstetric and newborn diagnosis and procedure codes, the all-payer data set was given precedence. When there were too few records (defined as <30 records) 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 dominant 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
<b>3E0B7KZ</b> Introduction of Other Diagnostic Substance into Ear, Via Natural or Artificial Opening	<b>20.72</b> Injection into inner ear	1	12%	0	0%	X
	<b>20.94</b> Injection of tympanum	8	88%	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 entry contains one I-10 code and from one to six I-9 codes. An I-9 cluster (more than one I-9 code combined to represent one I-10 code) is used to ensure that potentially reimbursable components of the meaning of the I-10 code are reproduced in the I-9 translation. The

distribution of mappings from one I-10 code to one I-9 code, and from one I-10 code to one I-9 cluster, are shown in the following table.

### ICD-10 Reimbursement Mapping

#### Distribution of mappings to single I9 codes and I-9 code clusters

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	Mapped to six-code cluster	Total I-10 codes
ICD-10-CM (diagnosis)	65,767	3302	26	6	0	0	69,101
ICD-10-PCS (procedure)	69,657	1211	583	458	36	12	71,957

## **Section 2 – Using the Reimbursement Mapping**

### **Accommodating system requirements**

The two text files accompanying this document—one for diagnosis codes, one for procedure codes—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 based pricing system, since they represent conditions or external causes which could never have been coded with ICD-9-CM, and which an I-9 based pricing system would therefore never have used.

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

- Reserve space in the system for the maximum number of I-9 codes possible in a mapping entry. Since one I-10 code may map to a cluster of multiple I-9 codes, the translated I-9 entry may be longer. Though the use of clusters in the mapping is uncommon, as shown in the table above, the way to ensure that there is enough space for the mapped I-9 output is to reserve space for four I-9 diagnosis codes and six 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 code in the cluster as the principal diagnosis, and use the remaining diagnosis codes in the cluster as I-9 secondary diagnosis codes on the translated record. All of the diagnosis code clusters have been arranged so that the first listed code 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 entry 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 procedure codes 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.

## Testing the mapping

The Reimbursement Mapping contains an entry for every I-10 code. However, not every I-9 code is used in the mapping. Because the mapping was developed using hospital inpatient frequency data to choose among I-9 mapping alternatives in the GEMs, the resultant mapping reflects the coding patterns characteristic of inpatient rather than outpatient records when the two differ. An I-10 code is mapped to the clearly dominant I-9 code in the recorded data, or the closest clinically relevant alternative I-9 code when a clearly dominant alternative is not possible, in the process outlined in Section 1. Naturally, a process that chooses a single I-9 code among alternatives must leave the other I-9 alternatives unused.

Users of the Reimbursement Mapping may want to sort the mapping entries by I-9 code to 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. 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 modified for that system’s needs by doing the following:

- Consult the relevant I-9 to I-10 GEM, or one of the commercial tools built from it. This will enumerate the valid I-10 translations of the unused I-9 code.
- Find the valid I-10 codes enumerated above in the first column of the Reimbursement Mapping.
- Substitute the unused I-9 code into the Reimbursement Mapping entry or entries found, and document the change as appropriate.

## **Appendix A – Format of the Reimbursement Mapping Files**

*reimb\_map\_dx\_2010.txt* contains the Reimbursement Mapping from ICD-10-CM diagnosis codes to ICD-9-CM diagnosis codes or diagnosis clusters.

*reimb\_map\_pr\_2010.txt* contains the Reimbursement Mapping from ICD-10-PCS procedure codes to ICD-9-CM (Volume 3) procedure codes 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.