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

2014 Version

Documentation and User's Guide

Preface

Purpose and Audience

This document accompanies the 2014 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 Reimbursement Mappings can be found on the CMS ICD-10 website at http://www.cms.gov/ICD10. 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 "ICD-10", and ICD-9-CM Volumes 1 or 3 is abbreviated "ICD-9".

- **Section 1** is a general interest discussion of mapping between ICD-10 and ICD-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 ICD-10 Data for ICD-9 Systems

After the ICD-10 implementation date as specified in the Final Rule, health care claims for services on or after the implementation 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 ICD-10 diagnosis and procedure codes to "MS-DRG reimbursement minimum impact" ICD-9

diagnosis and procedure codes, so that while systems are being converted to process ICD-10 claims directly, the claims may be processed by the legacy systems.

The ICD-10 diagnosis codes submitted on the claim are mapped via the Diagnosis Reimbursement Mapping into ICD-9 diagnosis codes that can then be processed by the ICD-9-based reimbursement system. Similarly the ICD-10 procedure codes submitted on the claim are mapped via the Procedure Reimbursement Mapping into ICD-9 procedure codes that can then be processed by the ICD-9-based reimbursement system. The claim may then be priced using the rules written for ICD-9 codes.

Derivation from General Equivalence Mappings (GEMs)

CMS annually publishes updates of the General Equivalence Mappings (GEMs). The GEMs are mappings between ICD-10-CM and PCS and ICD-9-CM codes. These annual updates can be found on the CMS ICD-10 website at http://www.cms.gov/ICD10 .

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

Clusters. At times it requires multiple ICD-9 codes combined to reproduce the complete meaning of one ICD-10 code. This is the case with ICD-9 principal procedure codes such as coronary angioplasty that require the use of "adjunct" ICD-9 codes to provide additional detail. For example, ICD-10 procedure code 02733ZZ, *Dilation of Coronary Artery, Four or More Sites, Percutaneous Approach*, requires two ICD-9 codes to be fully represented in ICD-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 ICD-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 only in the sense that they choose one ICD-9 translation for each ICD-10 code. The translation may be one ICD-9 code or one ICD-9 cluster. For ICD-10 codes that translate to multiple single ICD-9 codes in the GEMs, one ICD-9 code was selected for reimbursement purposes. For ICD-10 codes that translate to multiple ICD-9 clusters in the GEMs, one ICD-9 cluster was selected for reimbursement purposes. The mapping of one ICD-10 may require as many as six ICD-9 codes to reproduce the meaning of the ICD-10 code. In such cases, where an ICD-10 code maps to an ICD-9 cluster in the Reimbursement Mappings, the ICD-9 codes comprising the cluster are *not* to be treated as alternatives. All of them must be included in the translated ICD-9 claim sent to the ICD-9 legacy reimbursement system in order to reproduce the information in the submitted ICD-10 claim.

Frequency data used to derive ICD-9 mapping

The Reimbursement Mappings are an applied mapping of the ICD-10 to ICD-9 GEMs. 63,983 of the 69,823 ICD-10 diagnosis codes (92%) in the ICD-10 to ICD-9 diagnosis GEM translate to a single ICD-9 alternative. Similarly, 57,543 of the 71,924 ICD-10 procedure codes (80%) in the ICD-10 to ICD-9 procedure GEM translate to a single ICD-9 alternative. 5,767 ICD-10 diagnosis codes and 14,381 ICD-10 procedure codes required rules for choosing among ICD-9 code alternatives.

73 ICD-10-CM diagnosis codes express conditions that are not expressed in ICD-9-CM. All are in the External Cause section and include 62 codes for Anesthesiology devices associated with adverse incidents, 10 codes for Blood alcohol level, and Y95, Nosocomial condition. All are represented in the translation as “NOI9”.

Translation Alternatives in ICD-10 to ICD-9 GEMs

ICD-10 codes with …	**ICD-10-CM (Diagnoses)**	**ICD-10-PCS (Procedures)**
Only one ICD-9 code alternative	61,009 (87%)	56,024 (78%)
Only one ICD-9 cluster alternative	2,974	1,519
Multiple ICD-9 code alternatives	4,166	12,136
Multiple ICD-9 cluster alternatives	184	276
Multiple ICD-9 code or cluster alternatives	1,417	1,969
No translations	73	0
Requiring	5,767	14,381
Total ICD-10 codes	69,823	71,924

Two kinds of rules were used for choosing among ICD-9 code alternatives: MS-DRG and frequency. MS-DRG rules were preferred so that, insofar as possible, the version 31 MS-DRG obtained from applying the ICD-9 MS-DRGv31 to a mapped record would obtain the same MS-DRG as would the ICD-10 MS-DRGv31 grouper applied to the original ICD-10 record.

When the GEMs presented multiple ICD-9 alternatives for an ICD-10 code,

1. The ICD-10 code was looked up in the ICD-10 MS-DRGv31 logic tables and its attributes noted.
2. Each ICD-9 code or cluster alternative was looked up in the ICD-9 MS-DRGv31 logic tables. If its attributes exactly matched those of the ICD-10 code, it was so noted.
3. If only one ICD-9 code or cluster had exactly the same grouper logic attributes as the ICD-10 code had, then that ICD-9 code or cluster was selected for the mapping.
4. If none of the alternatives had a matching set of MS-DRG logic attributes then the frequency rule below was applied to all alternatives.
5. If more than one of the alternatives had a matching set of MS-DRG logic attributes, then the frequency rule below was applied to that subset of ICD-9 alternatives with matching attributes.

If, after applying the MS-DRG rule, there was still more than one acceptable alternative for a code, the selection was based on frequency data for both diagnoses and procedures from two *reference data sources*:

Medicare Approximately 46 million MedPAR records, from 10/1/2006 to 9/30/2010

All-payer Approximately 20 million inpatient hospital records available from the California Office of Statewide Health Planning and Development (OSHPD) from 10/1/2005 to 9/30/2010

For obstetrics and newborn codes, the ICD-9 alternative with the highest all-payer frequency was selected. For all other codes, the alternative with the highest Medicare frequency was selected. If the frequencies for all ICD-9 alternatives were the same in the preferred reference data source, then the code with the highest frequency in the other reference data source was selected.

Application of these rules resulted in:

ICD-9 alternative selected using …	**ICD-10-CM (Diagnoses)**	**ICD-10-PCS (Procedures)**
MS-DRG logic	5,589	9,927
Highest frequency	178	4,454

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

This process resulted in the Reimbursement Mapping files documented in Appendix A. Each mapping file has one and only one entry for each valid ICD-10 code. An entry contains one ICD-10 code and from one to six ICD-9 codes. An ICD-9 cluster (more than one ICD-9 code combined to represent one ICD-10 code) is used to ensure that potentially reimbursable components of the meaning of the ICD-10 code are reproduced in the ICD-9 translation.

Section 2 – Using the Reimbursement Mapping

Accommodating system requirements

The two text files that comprise the mappings—one for diagnosis codes, one for procedure codes—are listed in ICD-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 ICD-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 “NOI9” in the ICD-9 code field. ICD-10 codes that have no equivalent in ICD-9 can safely be ignored by an ICD-9 based pricing system, since they represent conditions or external causes which could never have been coded with ICD-9-CM, and which an ICD-9 based pricing system would therefore not have used.

A health care claim will typically contain a list of ICD-10 diagnosis codes, one of which is designated as principal diagnosis. The Reimbursement Mapping can be adapted to a claims system using the following:

- Reserve space in the system for the maximum number of ICD-9 codes possible in a mapping entry. Since one ICD-10 code may map to a cluster of multiple ICD-9 codes, the mapped output ICD-9 entry may be longer than the input ICD-10 entry. 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 ICD-9 output is to reserve space for four ICD-9 diagnosis codes and six ICD-9 procedure codes.
- Map the ICD-10 principal diagnosis first, by looking up the ICD-10 code designated as principal diagnosis. If the ICD-10 code maps to one ICD-9 code, then this becomes the ICD-9 principal diagnosis. If the ICD-10 code maps to an ICD-9 code cluster, then take the first ICD-9 diagnosis code in the cluster as the principal diagnosis, and use the remaining diagnosis codes in the cluster as ICD-9 secondary diagnosis codes on the translated record. All of the ICD-9-CM diagnosis code clusters are arranged so that the first listed ICD-9 code in a cluster is the recommended principal diagnosis when the combination ICD-10 code it translates from is the principal diagnosis.
- For each additional diagnosis, look up the ICD-10 code in the mapping. If the ICD-9 mapping is “NOI9,” then do not place anything in the ICD-9 code list for this input ICD-10 code and move on to the next ICD-10 input code. Because a mapping entry may contain more than one ICD-9 code, the placement of the secondary codes in the output ICD-9 space must be tracked independently from the input ICD-10 codes if a correlation between input and output codes is desired.

- For procedures, the process for translating ICD-10 codes on the record is straightforward. Map the codes in the order in which they were received. If the mapping supplies an ICD-9 code cluster, all of the codes in the cluster must be included in the mapping to equal the detail contained in the ICD-10 procedure code.

Testing the mapping

The Reimbursement Mapping contains an entry for every ICD-10 code. However, not every ICD-9 code is used in the mapping. Because the mapping was developed using the MS-DRG grouper logic and hospital inpatient frequency data to choose among ICD-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 ICD-10 code is mapped to the best ICD-9 code for obtaining a consistent MS-DRG, or the most frequent ICD-9 code in the recorded data. Naturally, a process that chooses a single ICD-9 code among alternatives must leave the other ICD-9 alternatives unused.

Users of the Reimbursement Mapping may want to sort the mapping entries by ICD-9 code to determine if any particular ICD-9 codes used by their legacy systems (for example, those qualifying for carve-outs or other special treatment) are not mapped. Such codes will not be used when ICD-10 codes are mapped to their legacy systems via the Reimbursement Mapping.

If ICD-9 codes not used in the Reimbursement Mapping are essential to a legacy system, then the Reimbursement Mapping can be modified for that system’s needs by doing the following:

- Consult the relevant ICD-9 to ICD-10 GEM, or one of the commercial tools built from it. This will enumerate the valid ICD-10 translations of the unused ICD-9 code.
- Find the valid ICD-10 codes enumerated above in the first column of the Reimbursement Mapping.
- Substitute the unused ICD-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_2014.txt contains the Reimbursement Mapping from ICD-10-CM diagnosis codes to ICD-9-CM diagnosis codes or diagnosis clusters.

reimb_map_pr_2014.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 ICD-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	ICD-10 code (3 to 7 characters) left justified in 8-character field. Last character in field is blank.
9	1	Number of ICD-9 codes this ICD-10 code maps to. Values 1 through 6.
10	6	First ICD-9 code (2 to 5 characters) left justified in a 6-character field. Last character in field is blank.
16	6	Second ICD-9 code (2 to 5 characters) left justified in a 6-character field if ICD-10 code mapped to two or more ICD-9 codes. Last character in field is blank.
22	6	Third ICD-9 code (2 to 5 characters) left justified in a 6-character field if ICD-10 code mapped to three or more ICD-9 codes. Last character in field is blank.
28	6	Fourth ICD-9 code (2 to 5 characters) left justified in a 6-character field if ICD-10 code mapped to four or more ICD-9 codes. Last character in field is blank.
34	6	Fifth ICD-9 code (2 to 5 characters) left justified in a 6-character field if ICD-10 code mapped to five ICD-9 codes. Last character in field is blank.
40	6	Sixth ICD-9 code (2 to 5 characters) left justified in a 6-character field if ICD-10 code mapped to six ICD-9 codes. Last character in field is blank.