

Coding Maintenance



ICD-10-CM/PCS Coding Maintenance Operational Guidance

A Consensus Report

The mission of the National Quality Forum is to improve the quality of American healthcare by setting national priorities and goals for performance improvement, endorsing national consensus standards for measuring and publicly reporting on performance, and promoting the attainment of national goals through education and outreach programs.

This document includes the foreword, executive summary, and the measure specification appendix from the National Quality Forum report *ICD-10-CM/PCS Coding Maintenance Operational Guidance: A Consensus Report*

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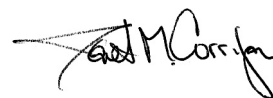
ICD-10-CM/PCS Coding Maintenance Operational Guidance: A Consensus Report

Foreword

IN OCTOBER 2013 one of the code sets the Department of Health and Human Services uses to classify healthcare provided in the United States will be upgraded. This transition from the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes to the International Classification of Diseases, Tenth Revision, Clinical Modification and Procedure Coding System (ICD-10-CM/PCS) for Health Insurance Portability and Accountability Act (HIPAA) transactions has implications not only for the readiness of the healthcare system to employ this code set for administrative purposes, but for quality measurement as well. A majority of the diagnoses used to define the current set of measures endorsed by the National Quality Forum (NQF) were specified using ICD-9-CM codes. The transition will be complex for all entities that use ICD to encode health information, in part due to the increased granularity of the ICD-10-CM/PCS as compared with ICD-9-CM. In preparation for this major transition, NQF is taking steps through the Code Maintenance project described in this report to examine the implications for the organization's measure maintenance procedures and understand the impact of code transitions for the measurement community, particularly measure developers, as we begin to shape our processes to accommodate the necessary measure updates.

NQF's goal is that, by 2013, the specifications of its endorsed measure portfolio will be ready for use, reflecting the necessary ICD-10-CM/PCS codes, as required by the HIPAA transactions regulation. In preparation for that deadline, NQF convened an Expert Panel in August 2009 to offer guidance and insight on the impact of this transition on quality measurement and NQF measure evaluation and maintenance processes. Using the guidance of this Expert Panel, NQF will develop its strategy for approaching this transition going forward and provide the measurement community direction for embarking on this transition as well.

NQF thanks the members of the Expert Panel and NQF Members for their work on this complex and important transition.



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Executive Summary

IN JANUARY 2009, the Department of Health and Human Services (HHS) published its final rule on the conversion of the Health Insurance Portability and Accountability Act (HIPAA) standard medical data code set from International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) to International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) and Procedure Coding System (ICD-10-PCS). This conversion requirement will take effect October 1, 2013. As such, any measures previously endorsed by the National Quality Forum (NQF) containing ICD-9-CM codes in the specifications will need to be updated to incorporate ICD-10-CM/PCS codes. Therefore, the goal of the NQF Code Maintenance Project is to facilitate the transition of NQF-endorsed[®] measures using ICD-9-CM codes to ICD-10-CM/PCS diagnosis and procedure code equivalents prior to the slated October 2013 implementation of the HIPAA standard code set conversion.

The transition to ICD-10-CM/PCS will occur in the middle of a different, yet related transition to “meaningful use” to promote the interoperability of electronic health records (EHRs) and electronic data exchange. As defined by the Health Information Technology for Economic and Clinical Health Act (HITECH) of the American Recovery & Reinvestment Act (ARRA) provisions, the healthcare system, starting with hospitals and physicians, is expected to transition to interoperable exchange of health data using electronic health records beginning in 2011. Reporting would require the use of standardized vocabularies that reflect the consensus of health data standards development organizations. While the Expert Panel acknowledged the need to address as soon as feasible the implications of “meaningful use” for NQF’s portfolio of quality measures, due to time and scope constraints, it restricted the focus of its discussions for this project to the transition to ICD-10-CM/PCS and SNOMED CT.

Beginning with an in-depth examination of the impact of coding transitions on measure development and submission, the Expert Panel was charged to develop guidance to address issues around equivalency of code lists and populations and the impact of code transitions on measure integrity. Likewise, the Panel was asked to provide recommendations on best practices for approaching code conversion tasks for quality

measurement as well as operational guidance for NQF's measure submission and maintenance processes involving multiple code sets. The implications of additional code sets, coding changes, and coding equivalency on measure development and submission were also examined. The Panel's recommendations focused on several central themes that emerged during discussion: the timing of initiating

additional code set requirements into the NQF measure maintenance and submission process, the validation necessary for converted measures, resources needed to facilitate the transition, best practices for approaching the coding conversion process for quality measures, responsibilities of cooperating parties, and other special considerations for this transition process.

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Background

THE DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS) uses various code sets for classifying healthcare provided in the United States. Of these code sets, the International Classification of Diseases (ICD), developed by the World Health Organization (WHO), is used for identifying data on claims records, data collection for use in performance measurement, and reimbursement for Medicare/Medicaid medical claims. ICD is an epidemiological classification used to identify diagnoses (diseases, injuries, and impairments). The U.S. version also includes procedures (surgical, diagnostic, and therapeutic).¹ In January 2009, HHS published its final rule on the transition from International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) to International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) and Procedure Coding System (ICD-10-PCS) for Health Insurance Portability and Accountability Act (HIPAA) transactions.² This conversion requirement will take effect on October 1, 2013.³

Due to the widespread and historical use of ICD-9-CM in the U.S. healthcare system, many of the currently endorsed measures are specified using ICD-9-CM codes. Measures using ICD-9-CM codes are now integral to pay-for-reporting and pay-for-performance schemes of both public and private payers. Also because measures endorsed by the National Quality Forum (NQF) are integral to these initiatives, it is critical that NQF implement processes to ensure the respecification of endorsed measures using ICD-10-CM codes before October 2013 to facilitate a smooth transition and allow time for vendors and providers to revise their coding and information storage/retrieval systems.

As a result of the enactment of the American Recovery and Reinvestment Act's (ARRA) Health Information Technology for Economic and Clinical Health Act (HITECH) provisions, attention has focused on vocabularies beyond those that were explicitly recognized in HIPAA (ICD-9-CM, ICD-10-CM/PCS, Current Procedural Terminology [CPT], Healthcare Common Procedure Coding System [HCPCS], National Drug Codes [NDC]). The Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) is one of the standard code sets selected by the Health Information Technology Standards Panel (HITSP) for use in the exchange of electronic clinical health information and messaging standards and also has been adopted for use by the U.S. Federal Government, through the Consolidated Health Informatics Initiative, for several clinical domains.⁴ SNOMED CT is a clinical

vocabulary, that covers a vast range of clinical activities and conditions with a high degree of specificity. Its codes have been developed and continue to evolve to facilitate and promote interoperability of electronic health records (EHR) and electronic data exchange.⁵ With the evolution of the definition of meaningful use and publication of certified EHR technology regulations, it will be necessary to ensure measurement standards and their specifications reflect the growing efforts focused on EHR interoperability. As such, in the future, measures endorsed by NQF will eventually also need to be specified using SNOMED CT codes or newer revisions to the ICD.

Moving from the current paper-based healthcare system to one in which data and information are captured, stored, and shared electronically is complex. In support of this transition, healthcare quality reporting regulations are evolving. The focus in quality measurement is shifting to electronic data collection, the need to prepare for transitions in code sets, and retooling of quality measures currently in use for reporting and payment.

A number of standards development and policy organizations are engaged in the various aspects of the transition. In addition to the organizations responsible for the maintenance and refinement of code sets, other organizations and groups concerned with bridging terminologies and measurement standards are involved, including HITSP, the Health Information Technology Policy Committee, and the Health Information Technology Standards Committee. With so many efforts underway, it is necessary to understand the implications of these changes

to the course of the ongoing NQF measure endorsement-maintenance cycle. It is of particular importance for NQF to develop a plan and guidelines for operationalizing and integrating the work of these and other related efforts into NQF measure maintenance and submission processes.

Purpose of the Project

The principal goal of the Code Maintenance project is to facilitate the timely transition of NQF-endorsed[®] measures currently using ICD-9-CM codes to ICD-10-CM/PCS code equivalents before the slated October 2013 implementation of the HIPAA transaction and code set requirements.

NQF convened an expert advisory panel charged with developing guidance addressing the following:

- the impact of differences between ICD-9-CM, ICD-10-CM/PCS, and SNOMED CT code sets;
- equivalency of code sets and populations;
- impact of code transitions on measure integrity;
- current practices and required resources for conversion;
- methodologies for converting code sets;
- NQF measure submission and maintenance processes involving multiple code sets; and
- the implications of additional code sets, coding changes, and coding equivalency on measure development and submission.

The NQF Process

The NQF measure maintenance process aims to maintain the currency of its endorsed portfolio. This includes updates to the construction of endorsed measures, including the numerator, denominator, exclusions, and logic, while harmonizing, identifying gaps, and ensuring representation of best-in-class measures within the portfolio. Code maintenance will be integrated into the proposed revised measure maintenance and continued endorsement processes. Transition to this new approach will begin in the fall of 2010. These revised processes will utilize a recurring three-year cycle of scheduled topic-specific projects, each with its own expert Steering Committee to review and harmonize currently endorsed measures simultaneously with newly submitted measures. In addition to the maintenance endorsement process, there are two additional mechanisms within the NQF process that allow for review and updates to measures: annual updates and ad hoc review. An ad hoc review may be conducted on an endorsed measure, practice, or event at any time with adequate justification to substantiate the review. Requests for ad hoc reviews are considered by NQF on a case-by-case basis and must be justified by specific criteria. On an annual basis, measure stewards shall be responsible for submitting information to NQF that affirms the detailed measure specifications of the endorsed measure have not changed or, if changes have been made (e.g., coding), the details and underlying reasons for the changes.

Typically, coding changes to measures submitted for maintenance and annual updates have been minor and usually have not resulted

in material changes. Currently, measures with coding changes submitted for maintenance review or initial evaluation are subject to review by the Steering Committee but lack any specific guidelines around code set selection. However, the transition of code sets (to ICD-10-CM/PCS and eventually SNOMED CT) for measure submission requirements and determining coding equivalency present specific challenges, such as validity and consistency of the target population.

NQF code maintenance requirements will be instituted in preparation for the October 2013 HIPAA coding standard transition requirement to ICD-10-CM/PCS. To address the implications of substantial coding changes on the NQF endorsement cycle and measure integrity, a panel of experts in medical coding, terminology, and usage (e.g., ICD-10-CM, SNOMED CT), measure development, methodology, and evaluation, was impaneled to assist NQF in this process.

Impact of Code Conversions on Quality Measurement: Guiding Principles

Given the added richness of the ICD-10-CM/PCS code system, compared to its predecessor ICD-9-CM, it is expected that for some conditions and procedures, measures respecified using ICD-10-CM/PCS would capture the target population more precisely than was possible when the population was initially defined. As a result, the picture of quality measurement could

change significantly. Taking advantage of this additional granularity, however, will require re-evaluating each quality measure's intent as specificity is added. Exploring the impact of this transition on quality measurement, the Expert Panel centered its discussions and recommendations on the following themes:

- inherent differences in code sets,
- continuity of concept meaning and captured populations after migrating between code sets,
- rationale for focusing on ICD code set transitions,
- existing and potential resources available to facilitate this transition, and
- complexity of multiple code set transitions.

Understanding Code Set Differences

Recognizing the high-level differences between code sets laid the foundation for understanding the implications of these differences on mapping and quality measurement (see summary in Table 1, Appendix A). While ICD-9-CM and ICD-10-CM/PCS are both classification systems that group concepts based on epidemiological relationships, they are in fact constructed very differently. ICD-9-CM includes 14,025 diagnosis codes and 3,824 procedure codes,⁶ ICD-10-CM includes more than 69,000 codes⁷ and ICD-10-PCS, nearly 72,000 codes,⁸ enabling greater specificity for certain conditions and procedures, extensions for episodes of care, and increased specificity for ambulatory and managed care encounters.⁹ As previously described, both ICD-9-CM and ICD-10-CM/PCS are based on a classification system with limited formal root definitions linking to their true meaning.

The ICD code sets are also very different, functionally and structurally, from SNOMED CT. SNOMED CT is the most comprehensive clinical vocabulary available in any language. SNOMED CT is concept oriented and has an advanced structure that meets most accepted criteria for a well-formed, machine-readable terminology. In contrast to the current ICD code sets, SNOMED CT is a clinical reference terminology comprising more than 310,000¹⁰ concepts, designed for use within EHR systems, making the hierarchies easily read, interpreted, and transferred by computer systems.¹¹ SNOMED CT's logic-based structure is comprised of concepts, descriptions, attributes, relationships, and hierarchies and uses a system of preferred terms and synonyms.¹² Based on these differences one-to-one translation of clinical concepts between the two current code sets will never be possible.

Code Set Migration and Continuity of Measurement

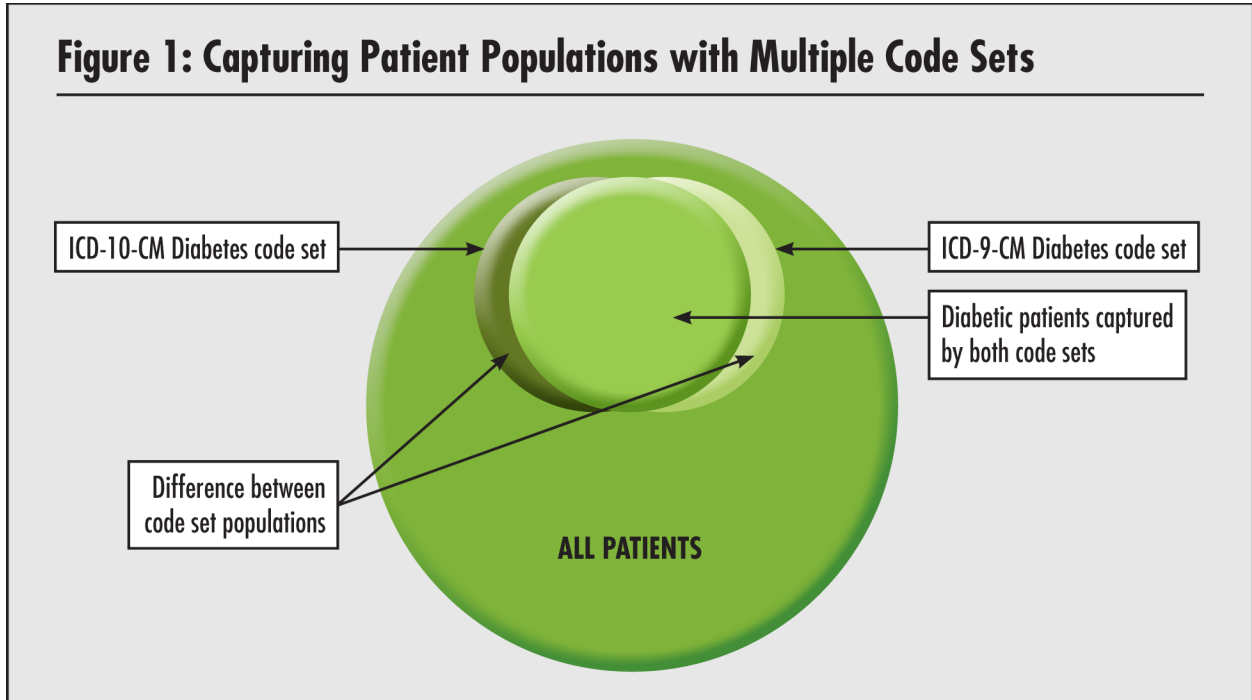
Mapping—linking concepts and terms from one terminology or classification to another—is the most common method for migrating between code sets.¹³ Maps provide an expression of the relationships among the terminologies or classification systems involved and guide the user in deciding how concepts in different terminologies are similar or different.¹⁴ However, mapping between code sets presents some specific challenges. For example, in the migration from ICD-9-CM to ICD-10-CM/PCS, one code can be represented by four or five codes, while some concepts/codes in ICD-9-CM may not exist in ICD-10-CM/PCS or vice versa.

Furthermore, maps often do not provide a direct one-to-one map between codes, but only identify suggestions; the ultimate selection of similar codes is currently left to the user. This discrepancy makes replicating numerator or denominator populations for measures using different code sets difficult. Additionally, the same two code sets could be mapped differently if the purposes, or use cases, are different. Rule-based maps have an underlying use case and require knowledge of rules and definitions of the system being mapped to (target); the same applies for the rules and definitions of the system being mapped from (source). For instance, if the use case is reimbursement as opposed to quality measurement, there are particular rules that may affect the logic of code mapping.

Those using maps should understand the basic mapping project assumptions articulated by the National Library of Medicine (NLM).¹⁵ NLM coordinates, develops, and disseminates mappings from standard clinical terminologies to the HIPAA code sets within the Unified Medical Language System (UMLS) Metathesaurus. The first assumption or principle is that mappings from the specific concepts to the more general are possible; however, it is not possible to use mappings to add specificity when the original information is general.¹⁶ Thus training around the use of maps and automated mapping tools is imperative. Not only is the appropriate use of maps important, but the validation of maps as they are developed is vital. As indicated in the NLM's basic project mapping assumptions, an iterative process involving testing and validation in real-world settings will result in improved functionality.¹⁷

However, associating similar codes is not the only step in the migration process. Validation to determine whether the codes selected match the concepts within the measure is also important. Ideally, there should be equivalence of ICD-9-CM and ICD-10-CM/PCS code sets targeting the same patient population, and the code sets should ultimately measure the same thing. In most cases there should be sufficient overlap; however, there is little guidance available on how to evaluate the difference between the populations identified by different code sets. The ideal mechanism for testing for overlap of populations coded by different code sets would be to run the measure on a single population of patients coded in both the target and source code sets (i.e., dual-coded data set) and analyze the results for discrepancies. At present, due to lack of data, this method of validation is impossible. Furthermore, the appropriate tolerance level for population discrepancies is unknown. Figure 1 on page 6 illustrates this idea showing the overlap of patients captured by a set of ICD-9-CM codes and ICD-10-CM codes. While the goal is for these spheres to overlap completely, it is unlikely this perfect scenario will always be the case. This situation becomes even more complex when multiple types of code sets have been used to define the numerator, denominator, and exclusions (i.e. diagnoses, medications, procedures, labs, etc.).

Face validity is addressed when the measure developer and clinical/coding experts reconsider the code list based on clinical concepts. Of the four NQF measure evaluation criteria (importance, scientific acceptability, usability, feasibility), code conversions could have the

Figure 1: Capturing Patient Populations with Multiple Code Sets

most significant impact on the scientific acceptability, including reliability and validity. Reliability and validity are generally demonstrated through measure testing data that show the measure is repeatable and accurate. Feasibility, the extent to which the required data are readily available—and retrievable without undue burden—will also be affected in the short term, at least until data coded in the code set become widely available.

Why Only ICD Now?

It became evident very early in the Expert Panel’s discussions that it would be well beyond its time and resources to attempt to expand the scope of the project beyond respecification of endorsed measures using ICD-10-CM/PCS to include the broader set of code sets (e.g., SNOMED CT, Logical Observation Identifier

Names and Codes [LOINC], RxNorm) incorporated in the construct of “meaningful use.” The resulting retooling of measures does not fundamentally change either the care processes or the data collection effort. SNOMED CT is a clinical vocabulary and will be implemented through its incorporation in electronic tools. Electronic implementation of the vocabulary would likely require reengineering of both care processes and data collection efforts; particularly for those data that are generated during care processes. It was the magnitude of *this* challenge, the desire to set up processes that would do this right and not just expediently, that led the Panel to quickly reject expanding the scope of the recommendations to include SNOMED CT. Rather than deriving a high-level set of principles that would only address the alternatives at some unrealistically general level of discussion, the

Panel preferred to focus on this one transition fully, through to full implementation.

SNOMED CT has an important role in the future of health information. The process of transitioning to SNOMED CT or a similar system for quality measurement would be best addressed in another project focused specifically on these issues, but building on the work of this Panel. Recommendations for addressing the issues specific to SNOMED CT are discussed later in the “Next Steps” section.

Transition Resources

The primary technical resources to be used during this transition will be the code sets, maps between coding systems, and electronic tools that provide mapping capabilities. Because there is not one standard, agreed-on tool with which diagnosis/procedure-related code conversions can be performed, identifying the available maps and tools to facilitate this process was an important step before making recommendations. This assessment by the Panel yielded Table 2 in Appendix A, which inventories the conversion tools identified by the Panel and their comments on usability of the General Equivalence Mappings (GEMs) tool based on first-hand use during a self-guided conversion exercise.

While no major changes are expected to occur to the current ICD-10-CM/PCS code list, it is still uncertain when the final code list will be made available. Depending on the amount of lead time given between the code list “freeze” date and the October 2013 implementation, timely education, preparation, and measure development could be challenging.

Measure developers may be apprehensive about selecting codes from an evolving code list because newly coded measures could quickly become out of date.

Support resources such as the American Hospital Association’s (AHA) Coding Clinic for ICD-9-CM, which currently provides ICD-9-CM guidance, are expected to transition along with the implementation of ICD-10-CM/PCS.

Complexity of Multiple Code Set Transitions

In the realm of quality measurement, ICD-9-CM codes are most often used to define numerator, denominator, and/or excluded populations. A measure comprised of only ICD-9-CM diagnosis codes is the simplest of the possibilities; however, codes often are used in combinations. Measures often contain not only diagnosis codes in the numerator and denominator definition, but also laboratory tests and results, medication, devices and their routes of administration, interventions, and procedures—each of which alone has multiple code sets that can be used to define it. For example, medications can be defined using HCPCS, NDC, RxNorm, and SNOMED CT codes. In addition to the confusion created by multiple code sets, each of the vocabularies was derived to meet a particular use case and is often used beyond its intended purpose. As such, finding harmony across these terminologies within domains (i.e. medications, labs) creates even more complexity.

While this project focuses on the impact of code conversions on diagnosis and procedure codes, the discussion applies to other potential

languages that can be used to describe a patient's encounter. This complexity brings into question whether each possible combination of code sets to define a measure represents a different version of the measure or if the results are comparable. This type of "noise" in the system has always existed, but its impact, if any, is unclear. HITSP recommendations in the Quality Interoperability Specification (ISO6)¹⁸ for terminology used to facilitate interoperability for healthcare information may soon be the impetus for widespread adoption of standard code sets for each of these categories of codes (e.g., drugs, diagnoses, etc.), thus standardizing more of the information used in quality measurement. Currently, Congress and HHS have driven the transition to ICD-10-CM/PCS under Federal law. Other code sets could follow given the direction of the EHR Meaningful Use policy. Inevitably, these same concerns around equivalence and mapping would arise for other domains of health information (i.e., medications, labs, etc.).

Recommendations

Based on the guiding principles identified by the Panel, the following recommendations were developed to address the process of converting code sets through best practices, the barriers expected to arise during this transition process, and operational guidance for NQF on how best to implement the code maintenance process for NQF-endorsed measures. The goal of these recommendations was not only to address the most immediate conversion of ICD-9-CM to ICD-10-CM/PCS, but also to identify approaches that would be applicable

to other code sets as well. Therefore, while ICD-9-CM to ICD-10-CM/PCS was the focus of the Panel's discussion, the Panel's intent is that these recommendations could be applied to respecify measures in other standard vocabularies, such as SNOMED CT, RxNorm, or LOINC.

Best Practices in Converting Code Sets

The Panel estimated that the majority of codes can be mapped or converted between ICD-9-CM and ICD-10-CM/PCS without difficulty; those that cannot will require additional input and consensus. The following recommendations, therefore, offer structure around the steps of this process for both the common and occasional code conversion cases for measure steward organizations undertaking this process. Recommendations for best practices for converting code sets were developed based on the NLM's Basic Mapping Project assumptions,¹⁹ which center on approaches to enhance reproducibility in code conversion.

1. **Convene Clinical and Coding Experts:**

Converting codes found in a quality measure should use a team approach that involves experts in the code sets and the appropriate clinical domain. The team should be used to identify specific areas where questions of clinical comparability exist, evaluate consistency of clinical concepts, and ensure appropriate conversion.

- Experts are needed in both the source and the target code set (e.g., ICD-9-CM and ICD-10-CM/PCS).
- Clinical expertise should be in the care setting represented by the clinical domain for the measure and may require specialized knowledge in some clinical areas.

- Multiple individuals or subteams are required to permit triangulation of code conversions, with adjudication of differences.
2. **Determine Intent:** When converting a quality measure from ICD-9-CM to ICD-10-CM/PCS, rather than doing a code-to-code conversion, a measure developer may choose to take advantage of the added granularity and specificity ICD-10-CM/PCS offers, potentially making the updated measure inherently different. However, the most ideal way to convert code sets for quality measures would be to examine the original intent of the measure and select codes directly from the target code set to define the concepts rather than relying on mapping alone. The intent of the codes selected for the updated measure also will need to be described during the NQF submission process as described later in “Measure Submissions” (see p. 20). Three possible reasons are:
- The measure steward’s goal was to convert this measure to a new code set, fully consistent with the intent of the original measure.
 - The measure steward’s goal was to take advantage of the more specific code set to form a new version of the measure, but fully consistent with the original intent.
 - The measure steward has changed the intent of the measure. This measure would be considered “new,” and the original measure should be considered for retirement.
3. **Use Appropriate Conversion Tool:** When converting from ICD-9-CM to ICD-10-CM/PCS, for example, maps such as GEMs can be useful for narrowing the choice of target codes. See Appendix A, Table 2 for information on available conversion tools.
4. **Assess for Material Change:** Measure developers should determine during the process whether the measure has materially changed based on the intent of the updated measure and any testing that has been performed. NQF has previously defined a material change as a change in relative ranking. (For example, in using the updated measure, will the results for Hospital X result in an upward or downward movement in ranking relative to other hospitals using the prior measure?) This step is intended to address the comparability of the converted measure (using ICD-10-CM/PCS) to its predecessor (using ICD-9-CM). Measure information should indicate which specifications in the measure have changed (i.e., exclusions, code changes) and explain the expected impact of these changes on the previous trend line for the measure. For existing measures undergoing coding updates and maintenance, the extent to which the population identified with the new code set overlaps with that identified in the old code set should be assessed, if possible. Measure sponsors also should assess, if possible, whether the conversion results in rates that are similar within defined tolerances. The type of data available for testing will determine the specific validation approach to be used:
- **Testing code set conversions using dual-coded data:** Ideally, the measure steward will have access to data that are coded in both the original (source) code set and the new (target) code set. If the measure results using both the source and target code sets are the same, then the measure would be considered to be unchanged. If the measure results are *not* the same, then an explanation should be provided as to why the measure is yielding different results (e.g., change in performance versus change in measure definition).

- **Face validity:** Direct testing and validation, of the type described above, may not be possible if a test data set in both the source and target code sets is not available. In this situation, the developer/steward should rely principally on face validity, based on following the recommended code conversion process previously described, which includes the use of experts in the code sets and the appropriate clinical domain. In this case, testing may be deferred until the next endorsement maintenance cycle for the measure.

- **Alternative approaches:** Two additional recommended approaches to validation of code set conversions, when a dual-coded data set is not available, include:
 - validating the category of information used in the measure (e.g., diagnosis, procedure, medication) as it is coded with the new code set, using original data source review as a gold (criterion) standard. In other words, the accuracy of the conversion is established by showing that the post-conversion data are highly accurate, relative to a gold (criterion) standard; or
 - demonstrating consistency over time through longitudinal analysis of results based on old and new code sets, to identify expected or unexpected changes. This approach also can be used to demonstrate consistency across geographic areas of payers, where one data set is coded using the old code set and a contemporaneous data set from a different area or payer is coded using the new code set.

5. **Solicit Stakeholder Comments:** Conversion to new code sets requires involvement of many stakeholders; measure developers should solicit comments from a wide audience for additions and deletions, and with specific attention to new codes.

6. **Version the Updated Measure:** Measures with coding updates should be identified by version. Different versions of measures may be used longitudinally for various purposes but may not be exactly comparable.

Addressing Transition Period Barriers

In addition to the concerns around processes during this transition period, the Panel also addressed concerns with the environment and external factors that will influence the course of the transition. In addition to those within the quality measurement realm, there are many stakeholders affected by the requirement to convert to ICD-10-CM/PCS by October 2013. The following recommendations are aimed at the field of those affected, including coding professionals and healthcare providers, and recognize the need for education, transparency, multistakeholder engagement, and the potential impact of EHR implementation on this process.

Recommended Engagement of Centers for Medicare & Medicaid Services (CMS), and National Center for Health Statistics (NCHS)

- In acknowledging the external factors that affect the ability of measure developers to define a new measure using the ICD-10-CM/PCS code set, the Panel suggested that both ICD-9-CM and ICD-10-CM/PCS code sets should be “frozen” no later than October 2011. This step would allow measure developers to specify measures with stable code sets. In addition to measure-developing organizations, vendors also will need to prepare for the transition and embed the code sets into the software. This process generally takes at least six months, and one year for most.

- Policy makers should exercise caution when using untested measures for accountability purposes. Due to a lack of testing data, measure validity will be based solely on face validity.
- A dual-coded data set in ICD-9-CM and ICD-10-CM/PCS (or any other code set to be adopted) should be created and made available to measure developers for testing the validity of code conversions. The availability of such a data set would enhance the scientific acceptability of measures that have undergone code updates. CMS sponsored a similar effort for nursing homes during its transition from Minimum Data Set (MDS) 2.0 to 3.0.²⁰ In defining this task, it will be necessary to consider the following:
 - the purpose of the data;
 - timing of the availability of the database;
 - what other organizations should be involved in this effort based on their resources (e.g., access to data, access to coders);
 - training and availability of coders and code validators; and
 - funding.
- The Panel suggested the attributes of this data set include:
 - matching of claims data encompassing both paper and electronic data with externally coded data in ICD-9-CM and ICD-10-CM/PCS;
 - data representing at least two years to permit longitudinal tracking of patients and application of criteria based on prior utilization;
 - representation of multiple settings of care, not just hospitals;
 - diverse data sets that would cover all payers and age groups (Medicare, Medicaid, and commercial populations); and

- availability at no charge to all measure developers and implementers for testing purposes.

The Panel recognized that this would be a challenging undertaking for any one entity and recommends it be accomplished through a collaboration of organizations with access to the necessary resources. Other federal and state agencies and payers should consider contributing to such an effort, as appropriate, to have data available related to children, obstetrics, Medicaid and Children’s Health Insurance Program (CHIP) populations, and psychiatry/mental health.

Cooperating Parties

The Cooperating Parties comprise representatives of the NCHS, CMS, American Health Information Management Association (AHIMA), and American Hospital Association (AHA). The Cooperating Parties are responsible for the development of the ICD-9-CM and ICD-10-CM/PCS Official Guidelines for Coding and Reporting as well as the AHA Coding Clinic for ICD-9-CM.

- Education that addresses the importance of detail in documentation for clinicians and communication with coding professionals is needed for all stakeholders along the quality measurement supply chain and should be included in the education of all categories of clinicians.

Resources

- Code conversion maps, training, and a publicly available testing database should be made accessible to the measure developer community to help facilitate the transition process.

- Recognizing the work that AHIMA has done to date to prepare for this transition, AHIMA, AHA, and others should offer training in any terminologies/code sets being converted, recognizing that vendors and measure developers work on different timetables than coding professionals and others involved in implementation. While some medical coders may begin training only six months before the implementation, measure developers will require training much sooner to facilitate development of measures that will be ready for the transition.
- Mappings used for code conversion should be easily available at no cost and in the public domain (such as GEMs). Vendors can add value through commercial tools by making the process user friendly and efficient, but the underlying maps should be in the public domain.
- The existing ICD-9-CM to ICD-10-CM/PCS GEMs should be strengthened to be more user friendly.
- Advisory resources, such as the AHA's Coding Clinic Editorial Advisory Board, also should be made available to provide advice for ICD-10-CM/PCS coding issues during the conversion process and after. While the AHA's Central Office current function and efforts are focused on addressing ICD-9-CM inquiries, they should consider establishing a process to address ICD-10-CM/PCS coding conversion issues, both pre- and post-transition.
- The process of converting quality measures from ICD-9-CM to ICD-10-CM/PCS codes is resource intensive both financially and in terms of human capital. As such, the allocation of such resources dedicated to this effort should be examined by measure developers, owners, and stewards before beginning the process. Measure development organizations with the resources to convert code sets for a small subset of measures should do so to pre-determine organization-specific capacity, challenges, and resources required for this process. Such an exercise could offer an organization insights about how to implement conversion processes, including: 1) timeline development, 2) staff resource allocation and formal training, 3) time commitment of coding/clinical experts, 4) clinical expert panel requirements (e.g., to review new codes based on measure intent), 5) getting measure-user buy-in via public comment period, 6) trending issues and the presentation of data between transition years, and 7) incorporating the codes into publications.
- Funders of measure development and NQF should consider the balance of resources that will be required to manage the timely respecification of existing measures and ongoing development activities for new measures. CMS/HHS should consider defraying the cost of conversion for measures used in public reporting and payment processes.
- Measure developers and vendors should prepare for modernization and replacement of legacy systems as needed to facilitate the transition, as legacy systems will impose constraints during the transition.

NQF Operational Guidance

One of the pressing issues around the code maintenance of NQF-endorsed measures is how to operationalize the requirements and receipt of updated measures. Discussion and recommendations have centered around when and how to initiate code maintenance requirements given the resources available to the measure development community, as well as external factors such as the availability of testing data, the ICD-10-CM/PCS code freeze date, and how to categorize incoming measures.

Measure Submission

- NQF should consider accepting new or maintained measures with ICD-10-CM/PCS (in addition to ICD-9-CM as appropriate) definitions in 2010 but should not require such definitions (for new submissions) until October 2011. Codes submitted in the earlier phase of the transition will need to be revisited in an annual measure maintenance review/update to ensure accuracy based on any changes to the ICD-10-CM/PCS codes. Submission of SNOMED CT codes will be optional until further guidance on this process can be developed.
- Due to the lack of testing data available, NQF should consider adjustments to the submission requirements for measures designed with new code sets. The reliability and validity of a measure specified with a new code set cannot be tested if data coded in that new code set are not yet available. Similarly, a measure specified with a new code set is technically not feasible if the new code set has not yet been implemented. Therefore, the testing requirement for demonstrating scientific acceptability would need to be relaxed temporarily until data coded in the new code set become available to the measure steward. Once the data are available to the steward for testing, the measure should be subject to re-evaluation through the maintenance process.
- Recognizing that there is a spectrum of complexity in code conversion that would make developer timelines variable, new measures submitted after October 2011 should not be accepted without a set of ICD-10-CM/PCS codes in addition to ICD-9-CM codes, if applicable. Submission of SNOMED CT codes should be optional until more specific guidance around that transition can be provided to measure stewards. The Panel recognized that this was an ambitious timeline; however, given the external

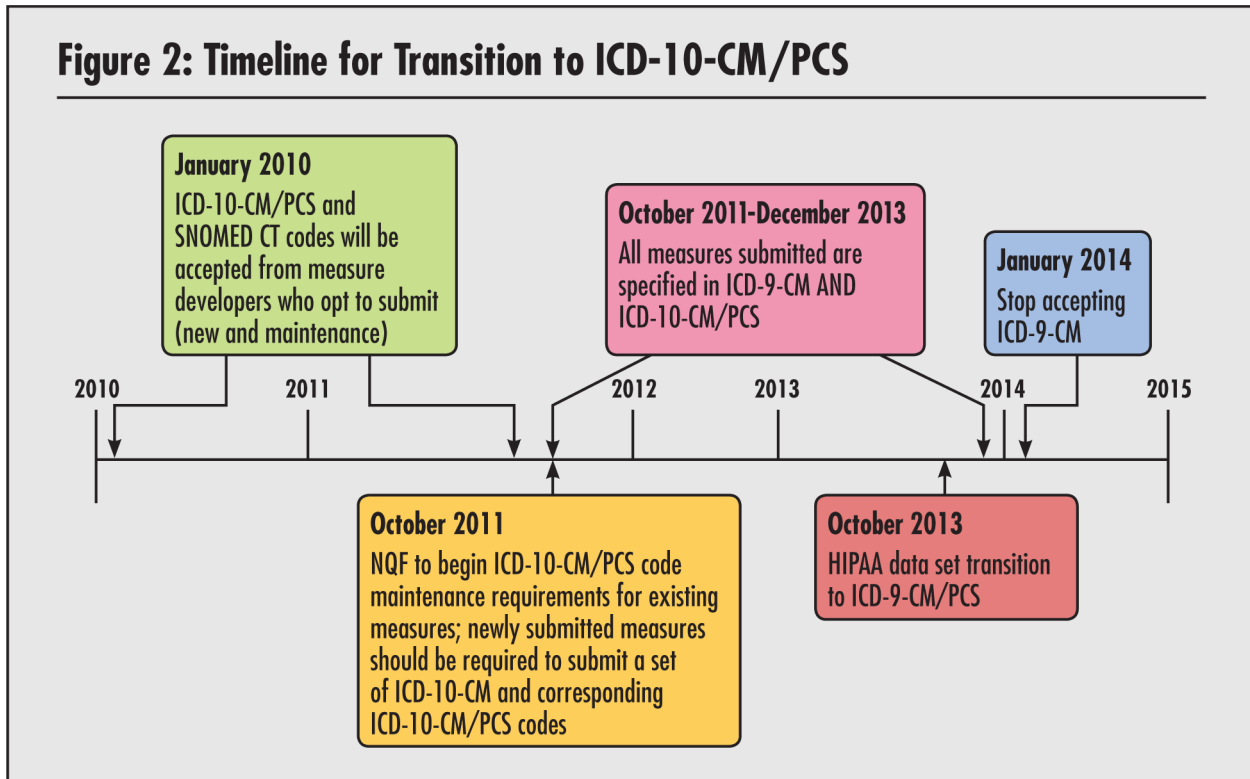
transition timelines guiding this transition (e.g., CMS's October 2013 deadline), it is difficult to relax the proposed timeline.

- Measure developers/stewards should be required to submit information detailing the process they used for selecting codes in the new code set.

Figure 2 on page 14 illustrates the recommended timeline for implanting coding maintenance into the NQF process:

- **January 2010-September 2011:** Measure developers/stewards who have begun the conversion process on endorsed or newly submitted measures and have both ICD-9-CM and ICD-10-CM/PCS codes to submit to NQF for review can do so anytime within this timeframe; submissions will be received via the annual update process or the appropriate endorsement-maintenance project.
- **October 2011-December 2013:** Measure developers/stewards will be *required* to submit *both* ICD-9-CM and ICD-10-CM/PCS codes for review for all endorsement-maintenance projects.
- **January 2014:** ICD-9-CM codes will no longer be accepted for measure specifications after December 31, 2013.

Conversions between code sets should require distinction based on the intent of the updated measure. For example, a measure developer or steward, when converting a quality measure from ICD-9-CM to ICD-10-CM/PCS, may want to take advantage of the added granularity and specificity the latter offers, potentially making the updated measure inherently different. Rather than doing a code-to-code conversion, the developer may choose to re-examine the intent of the measure, or the original concept, and directly select codes from the target code set to respecify the measure. In an effort to enable the flexibility of the measure developer to improve the specificity of the

Figure 2: Timeline for Transition to ICD-10-CM/PCS

measure, as previously described, the intent of the coding conversion should be indicated by the developer/steward. Each option would be associated with the identified NQF processes:

- The measure steward's goal was to convert this measure to a new code set, fully consistent with the intent of the original measure.
 - Updated coding for measures with this option selected would be submitted via the annual updates process or via the appropriate endorsement-maintenance project if it occurs prior to October 2013.
- The measure steward's goal was to take advantage of the more specific code set to form a new version of the measure, but fully consistent with the original intent.
 - It is anticipated that measures submitted under this option would either be reviewed through the appropriate endorsement-

maintenance project if it occurs prior to October 2013 or via an ad hoc review process if it does not.

- The measure steward has changed the intent of the measure.
- Measures submitted with this option selected would be considered "new" and would be included in an upcoming project for evaluation by an expert committee or via ad hoc review. At that time, the measure steward should retire the original measure specified in ICD-9-CM.

Additionally, measure stewards/developers should be required to submit code sets grouped by the corresponding concepts/definitions to facilitate evaluation by steering committees and staff. These groupings of codes by concept also will facilitate the transfer of measure data in the quality data set database.

Measure Evaluation, Public Comment, and Transparency

- All measures transitioning to ICD-10-CM/PCS codes may not warrant a public/member comment period. In the current annual maintenance process, intra-code set changes that are consistent with the original intent of the measure are not subject to an NQF Member and public comment period. Measure developers/stewards should be required to indicate on the submission and maintenance forms whether their organization had a comment period prior to NQF's. While a Member and public comment period conducted by NQF generally reaches a wide audience, a comment period issued by the developer organization also offers an opportunity for external input.
- Coding changes should be highlighted for converted measures submitted for endorsement maintenance that are posted for public comment. Specifically, measure developers/stewards should be required to identify code set changes and which codes were removed or added and provide an explanation why.
- NQF should consider dedicating a space on its website to house information on submission and evaluation requirements and guidance during this coding transition process.
- NQF is encouraged to maintain transparency with measure stewards regarding accountability and expectations throughout the process through timely communication.

Next Steps

The product of this Expert Panel will be the foundation for subsequent work to operationalize recommendations as well as collaborate with overlapping efforts within and outside of NQF.

And while the scope of this project did not allow for in-depth examination of clinical or other administrative code sets (e.g., medications, labs, etc.) or the implications of transitioning to SNOMED CT or a similar system specifically, it is recommended these issues be addressed by the appropriate experts in a future effort.

1. *Integration with Concurrent NQF Retooling Efforts.* When appropriate, the work developed by this Panel may be used in collaboration with other NQF projects that contain components dependent on the successful implementation of converted code sets in quality measures. An ongoing project by the NQF Health Information Technology (HIT) team focused on retooling endorsed measures for EHR use includes the conversion of code sets in addition to the other e-measure specifications. Projects such as these may benefit from the work of this effort. Likewise the experience gained from retooling may inform the refinement of this Panel's recommendations in the future.
2. *Future NQF Activities Related to Coding Maintenance.* The convening of this Panel and the production of this document only address one of the many goals of NQF's code maintenance effort. In addition to the activities of this Expert Panel, under the guidance of the principles and recommendations in this document, this project will aim to further engage the measure developer community in the implementation of new NQF coding maintenance requirements via a series of informational and feedback webinars. This work aims ultimately to maintain the integrity of the portfolio of NQF-endorsed measures over time. In collaboration with the NQF measure maintenance team, operationalizing these recommendations and integrating them into the overall maintenance process will be a primary focus of the project this year.

3. *Preparation for SNOMED CT Conversion.* The integration of SNOMED CT codes within quality measures will require a different approach, given the importance of electronic data collection to its implementation. More health information technology vendor involvement will be required given the broader issues raised by SNOMED CT, such as EHR applications and documentation. Just as legacy systems may impose constraints during the transition to ICD-10-CM/PCS, it is important for measure developers and vendors to prepare to modernize and replace software systems to facilitate a future transition to SNOMED CT. Due to the complexity of this process, NQF's efforts to add SNOMED CT codes to the specifications of endorsed measures will need to be addressed in greater detail under a separate effort.

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ICD-10-CM/PCS Coding Maintenance Operational Guidance: A Consensus Report

Appendix A

Code Set Resources

Appendix A–Table 1: Code Set Differences

	ICD-9-CM	ICD-10-CM/PCS	SNOMED CT
Type of Code Set ^a	Classification System	Classification System	Clinical Terminology
Purposes ^b	<ul style="list-style-type: none"> • Epidemiological classification used for secondary data uses: quality measurement, public health reporting, reimbursement • Supports non-clinical (administrative) functions (strategic and operational planning) • Output coding system 	<ul style="list-style-type: none"> • Epidemiological classification used for secondary data uses: quality measurement, public health reporting, reimbursement • Supports non-clinical (administrative) functions (strategic and operational planning) • Output coding system • Provides more granularity than ICD-9-CM 	<ul style="list-style-type: none"> • Electronic data collection of clinical data (via EHRs) • Input coding system • Semantic classifications • Decision support • Quality metrics • Public health reporting
Number of Codes/ Concepts ^{c,d,e,f}	~14,025 diagnosis; ~3,824 procedure	~69,101(CM); ~71,957 (PCS)	~311,000

more

^a Bowman, S., Perspectives in Health Information Management. *Coordination of SNOMED CT and ICD-10: Getting the Most Out of Electronic Health Record Systems*. Available at: http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_027179.html. Last Accessed January 2010.

^b Ibid.

^c International Health Terminology Standards Development Organisation (IHTSDO), *About SNOMED CT*; 2009. Available at www.ihtsdo.org/snomed-ct/snomed-ct0/. Last accessed January 2010.

^d Centers for Medicare & Medicaid Services. ICD-10-CM 2010 Summary of Changes. Available at: www.cms.gov/ICD10/Downloads/1_2010_Whats_New.pdf. Last Accessed July 2010.

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^f General Equivalence Mappings: ICD-9-CM to and from ICD-10-CM and ICD-10-PCS. Frequently Asked Questions. Available at: www1.cms.gov/ICD10/Downloads/GEMs-CrosswalksBasicFAQ.pdf. Last Accessed July 2010.

Appendix A–Table 1: Code Set Differences

	ICD-9-CM	ICD-10-CM/PCS	SNOMED CT
Types of codes^g	<ul style="list-style-type: none"> • Diagnoses • Procedures 	<ul style="list-style-type: none"> • Diagnoses • Procedures 	<ul style="list-style-type: none"> • Clinical finding/disorder • Procedure • Observable entity • Body structure • Organism • Substance • Pharmaceutical/biologic product • Specimen • Physical object • Physical force • Event • Environments and geographic locations • Social context • Staging and scales • Linkage concept • Qualifier value
Structure^h	Hierarchy of codes lacking definitions	Hierarchy of codes lacking definitions	Concepts, descriptions, attributes, relationships, and hierarchies or organizations of concepts

^g Bowman.

^h Ibid.

Appendix A–Table 2: Code Set Mapping Inventory*

SOURCE CODE SET	TARGET CODE SET	STATUS OF MAP	OWNER(S)	AVAILABLE PUBLICLY	PANEL COMMENTS
ICD-9-CM	ICD-10-CM/PCS	Complete	CMS and NCHS	Yes	<ul style="list-style-type: none"> • General Equivalence Mappings (GEMs) • TXT format may cause compatibility issues • Not user-friendly • Does not contain definitions • Requires the download of multiple GEM files • Helpful for pointing users in the direction of similar codes
ICD-10-CM/PCS	ICD-9-CM	Complete	CMS and NCHS	Yes	
LOINC	CPT	Initial versions from 2006 and 2007 available for download	NLM	Yes User required to be a licensee of the UMLS Metathesaurus to have access to the map	Discussions underway to create production-quality map that could be used for official reimbursement purposes
SNOMED CT	ICD-10	Work to begin in 2010	International Health Terminology Standards Development Organization (IHTSDO) and WHO	No	When completed, IHTSDO members will be able to freely access the map. Within the U.S., the map will be freely available (users will be required to be a licensee of the UMLS Metathesaurus, since the map will be released with SNOMED CT).
SNOMED CT	CPT (I & III)	In progress	AMA	No	The map will be directly available from the AMA and through the UMLS. (UMLS users will be required to be a licensee of the UMLS Metathesaurus.)

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Appendix A–Table 2: Code Set Mapping Inventory*

SOURCE CODE SET	TARGET CODE SET	STATUS OF MAP	OWNER(S)	AVAILABLE PUBLICLY	PANEL COMMENTS
SNOMED CT	ICD-9-CM	Complete for diagnosis portion of ICD-9-CM only. Updated April (if needed) and October annually.	IHTSDO	Yes User must be a licensee of the UMLS Metathesaurus to have access to the map (which is released with SNOMED CT)	Epidemiological/statistical mapping. Also called an “equivalence” or “concept” map. This provides a general mapping between the two code sets. Designed for general purpose use rather than such specific use cases as reimbursement.
SNOMED CT	ICD-9-CM	Test Map, intended to ultimately inform development of map that could be officially used for reimbursement purposes. Draft version of map tested from December 1, 2009–March 31, 2010	NLM. The map was developed by SNOMED Terminology Solutions™ (STS), a division of the College of American Pathologists (CAP), on behalf of NLM.	Yes (Access at: www.nlm.nih.gov/research/umls/mapping_projects/snomedct_to_icd9cm_reimburse.html) User must be a licensee of the UMLS Metathesaurus to have access to the map	Rule-base mapping to support reimbursement. The draft map consists of approximately 5,000 mappings representing the SNOMED CT terms most commonly used by Kaiser Permanente and the University of Nebraska.

*NOTE: Table 2 represents publicly available code set mappings. Table does not reflect any vendor-developed maps that have been created for internal or proprietary use to translate terminologies.

ICD-10-CM/PCS Coding Maintenance Operational Guidance: A Consensus Report

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