AHRQ ICD-10-CM/PCS Conversion Project

Prepared for:

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Overview

This report documents the process and current status of converting Agency for Healthcare Research and Quality (AHRQ) Quality Indicators™ (QIs) from ICD-9-CM to ICD-10-CM/PCS. The initial version of this report (July 15, 2013) was subsequently revised to describe the third review process. As the conversion project progresses, this report will be updated with more information, such as testing and validation of the new code sets.

Roles and Responsibilities

AHRQ is committed to converting the QIs from ICD-9-CM to ICD-10-CM/PCS in an accurate and transparent manner, taking advantage of the additional specificity of ICD-10 code sets to improve the validity and usefulness of the QIs, while temporarily maintaining a "legacy specification" that is as close as possible to the current V4.5 specification. Under contract with the federal AHRQ, and under subcontract with Battelle, University of California (UC) Davis took the lead role in the ICD-10 conversion project for the AHRQ Quality Indicators.

National Quality Forum (NQF) Guidance

Following NQF guidance, AHRQ's process included the following components:

- "Convene Clinical and Coding Experts: …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."
- "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 [that] ICD-10-CM/PCS offers, potentially making the updated measure inherently different… [T]he 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… also will need to be described during the NQF submission process…: (1) The measure steward's goal was to convert this measure to a new code set, fully consistent with the intent of the original measure; (2) 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; (3) 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." We adopted approaches (1) and (2) in the current conversion effort; specifications consistent with (1) are called "legacy specifications" and are offered for AHRQ's use only. Specifications consistent with (2) are called enhanced specifications and are offered for both AHRQ and for the NQF Endorsement Maintenance and Annual Update processes.
- "Use Appropriate Conversion Tool: When converting from ICD-9-CM to ICD-10-CM/PCS, for example, maps such as General Equivalence Maps (GEMs) can be useful for narrowing the choice of target codes…" GEM files were the foundation of our entire mapping effort.
- "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… 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…" This work will be undertaken over the next year as dual coded data becomes available for testing.

- "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." This work will be undertaken over the next several months.
- "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." This will be done when the updated specifications have been tested and are ready for public use, but no later than October 2014.

Basic Foundation

Each current QI technical specification with ICD-9 codes must be converted to ICD-10-CM/PCS codes. In each QI technical specification, there can be one or more clinical concepts of selected ICD-9-CM codes for the numerator, denominator, and exclusion specifications. These clinical concepts are called 'set names,' and they represent the basic foundation or building blocks in the construction of the QIs. Every set name, whether diagnosis or procedure, must be mapped and reviewed for its clinical relationship to the clinical concept used within the current QI technical specification.

Mapping Methods

To facilitate conversion of the set names to ICD-10-CM/PCS codes, Battelle created an automated in-house stand-alone mapping tool called, "MapIT". Using CMS GEMs and its technical specifications, the mapping tool utilizes the following mapping methods: Forward, backward, and reverse.

The forward and backward mapping methods showed the 'normal' direction when looking up the code (i.e. I9 code-to-I10 code; or I10 code-to-I9 code) and these two methods generally provide the best match in code descriptions.

The reverse mapping method showed the 'opposite' direction to find all possible target codes that link to the original source code. Two reverse methods are: reverse forward (look up ICD-10 codes in the ICD9-to-ICD10 map by going in the opposite direction to find all possible ICD-9 equivalents) and reverse backward (look up ICD-9 codes in the ICD10-to-ICD-9 map by going in the opposite direction to find all possible ICD-10 equivalents). See examples of these three mapping methods below:

Forward Map (ICD-9 to ICD-10 GEMs) with the best match in description:

ICD-9-CM	Description	ICD-10-CM	Description
556.9	Ulcerative colitis	K51.90	Ulcerative colitis, without complications

Backward Map (ICD-10 to ICD-9 GEMs) with the best match in description:

ICD-10-CM	Description	ICD-9-CM	Description
K51.90	Ulcerative colitis, without complications	556.9	Ulcerative colitis

Reverse Backward Map (looking up an ICD-9-CM code by going in the opposite direction, using the ICD10-to-ICD-9 GEMs) will provide additional ICD-10 codes that map in reverse to the ICD-9 code in the current QI specification. These codes are "progeny" of the current ICD-9-CM code even though they do not represent the "best" match.

ICD-10-CM	Description	ICD-9-CM	Description
K51.90	Ulcerative colitis, without complications	556.9	Ulcerative colitis
K51.911	Ulcerative colitis, with rectal bleeding		
K51.912	Ulcerative colitis, with intestinal obstruction		
K51.913	Ulcerative colitis, with fistula		
K51.914	Ulcerative colitis, with abscess		

| K51.918 | Ulcerative colitis, with other complications | |
| K51.919 | Ulcerative colitis, with unspecified complication | |

First Review

Because the GEM files are more complex than a simple translation from ICD-9 to ICD-10, this conversion process requires review for all valid alternative codes and their descriptions. With the use of the automated mapping tool, we focused our time to navigate more quickly in reviewing the translation of meaning from the old code set to the new code set. This is particularly important given (1) changes in diagnosis specificity, such as encounter information and laterality; (2) the complete revision of procedure codes with root objectives, approaches, and body parts that no longer allow diagnosis or eponyms; (3) some coding guideline changes, and (4) variances in combination codes that will not be described here.

To review the automated mapping results for several hundred set names, UC Davis solicited experts such as physicians, coding professionals, nursing quality improvement experts, and data users who are familiar with AHRQ Quality Indicators and/or ICD-10 code sets. Ten workgroups with over 80 experts were convened, based on groupings of similar QI technical specifications: Cancer, Cardiac, Critical Care/Pulmonary, Infection, Internal Medicine, Neonatal/Pediatric, Neurology, Obstetrics and Gynecology, Orthopedic, General and Trauma Surgery. In August 2012, the experts received training on the ICD-10 code sets from the task leader qualified as American Health Information Management Association (AHIMA)-Approved ICD-10-CM/PCS Trainer, the mapping methods employed including use of the mapping tool, and a walk-through on how to review the automated mapping results and document any disagreements with comments. Every work group had at least one AHIMA-Approved ICD-10-CM/PCS Trainer expert (in addition to the task leader from UC Davis), who served as a resource to discuss coding guidelines, coding nuances, and provide explanations as needed. A list of the experts in the work group panels, along with their credentials, can be found in Appendix A.

Over a period of 3-4 weeks between September and October 2012, the work groups evaluated the mapping results and participated in follow-up conference calls to discuss all disagreements and to provide specific recommendations. UC Davis staff explained the rationale for each set name and how they are used in the Quality Indicators. Some experts suggested additional codes that were not generated from the automated mapping based on GEM files. Some experts provided recommendations on how the Quality Indicators should be re-specified. Care was taken to remain faithful to the current clinical intent of each indicator. It is important to remember that the clinical concept in ICD-10 may not overlap completely with the clinical concept in ICD-9, which may cause the ICD-10 specification to capture patients who are not captured by the current ICD-9 specification. This problem could affect QI users who trend performance across time.

Second Review

After merging all comments and recommendations to all maps, two physician team members and one professional coder at UC Davis reviewed every code and description, and then categorized the comments and recommendations into three levels.

For Legacy specifications (for AHRQ use only):

Level 1: "Inappropriate codes" involve clinical concepts that were never intended to be part of the indicator specifications. ICD-10 provides the opportunity to remove these codes and thereby to improve the face validity of the indicator specifications.

Examples of inappropriate codes are:

Mapped code is specific to the incorrect gender.
Mapped code is specific to an incorrect age group (e.g., adult condition for a pediatric indicator).
Mapped code is an unnecessary component of a cluster that is better captured by other code(s).
Mapped code is listed for a different set name (redundant).

Mapped code is a newly coded clinical concept that does not fit with the intent of this set name.
Mapped code is specific to incorrect anatomic site.
Mapped code pertains to a specific duration whereas the original code is expressly non-specific.

For Enhanced specifications (submitted to NQF Annual Update process):

Level 2: "Clinical Intent" involves clinical concepts that were not included in the ICD-9 version of the indicator specifications, but that are now desirable to include in the ICD-10 version either because of limitations of ICD-9 or enhanced capabilities of ICD-10.

The mapped codes offered many plausible translations for one ICD-9-CM code and this situation required clinicians' input. For example, in the new ICD-10-PCS structure, some root operations require surgeons' input on whether to include or exclude procedures for the intended set name. The clinicians simplified the work groups' recommendations for Level 2 and took advantage of the more specific codes that will meet the intent of the set name. These concepts are consistent with the spirit or original clinical intent of the ICD-9 version of the specifications. Adding or deleting these codes from the results of automated mapping may lead to some discontinuity in indicator rates over time (before and after October 1, 2014), but are expected to enhance the performance of the indicators while remaining faithful to their original clinical intent.

Note that the specifications submitted to the NQF Annual Update process include both Level 1 and Level 2 adjustments to automated code mapping, based on the principle that "(2) 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" (from NQF technical documents).

More complex mapping problems were categorized as Level 3 and deferred at this time. Level 3 involves clinical concepts that were included (or not included) in the current ICD-9 version of the specifications, but that warrant consideration for removal (or addition) in refining the function of the indicators for future use. Because Level 3 changes would involve re-examining choices that were made when the existing ICD-9 specifications were developed, these proposals were not considered as part of the current conversion process.

Third Review

In following the NQF guidance, two physician team members and one professional coder at UC Davis conducted a third clinical review to carefully determine if the mapped ICD-10-CM/PCS codes are consistent with the original intent for each AHRQ QI. The primary aims of this review were to ensure consistency across the work of the 10 work groups and 80 experts that were involved in the first phase of the process, to address complex clinical issues that had been deferred for more in-depth evaluation, and to identify critical issues that will need to be addressed with the ICD-10 Coordination and Maintenance Committee, *Coding Clinic for ICD-10-CM and ICD-10-PCS*, and the Centers for Medicare & Medicaid Services. Over the span of five months (July-November 2013), the clinical review resulted in:
- consideration of a small number of differences between the mapped codes based on FY 2012 and FY 2013 GEM files;
- revision of level assignment, specifically Level 2 and 3, to ensure consistent treatment across set names;
- reconsideration of ICD-9-CM code changes for version 4.6 of the AHRQ QI software, in order to maintain the clinical equivalence to the ICD-10-CM/PCS specification;
- questionable GEM mappings that need to be addressed further with the federal agencies involved in the annual updates of GEM maps;
- possible need for additional ICD-10-CM/PCS codes to be developed, and/or clarification from the federal agencies involved with code set maintenance;
- further consultation with colleagues in the surgical community over whether some of the ICD-10-PCS procedures can actually be performed;

- evaluation of clusters of codes that must be used together to describe a condition or procedure (with determination of whether the set name logic requires multiple codes from the cluster, or whether one code from the cluster is sufficient to capture the clinical concept);
- merging of clinically related set names used in the construction of the same QI to prevent duplication of ICD-10-CM or ICD-10-PCS codes across set names;
- deletion of set names where there are no ICD-10-CM/PCS equivalences or where none of the ICD-10-CM/PCS codes apply to the clinical intent (with determination of appropriate substitutes, when appropriate); and
- suggestion of diagnosis logic to be added to several procedure set names in order to meet the intent of the ICD-9-CM diagnosis-driven procedures (where the current set name concept requires both a diagnosis of interest and a procedure of interest).

Appendix A. Panel of Experts

AHRQ would like to thank the following experts who participated in our ICD-10-CM/PCS conversion project.
This work would not be possible without their support.

Name	Affiliations
Physicians	
Amit Jay Shanker, MD, FACC, FHRS	Center for Advanced Arrhythmia Medicine; Columbia Univ. College of Physicians and Surgeons, New York
Andrew Helfgott, MD, MHA, CPE	All Children's Perinatology Specialists, Florida
Ann Borzecki, MD, MPH	Dept. of Health Policy and Management, Boston University School of Public Health, and Section of General Internal Medicine, Boston University School of Medicine and Center for Health Quality, Outcomes and Economic Research Bedford VAMC
B. Ashleigh Guadagnolo, MD, MPH	The University of Texas MD Anderson Cancer Center
Bradley Chipps, MD	Capital Allergy and Respiratory Disease Center, Sacramento, California
Brian A. Cason, MD	Department of Anesthesia and Perioperative Care, University of California, San Francisco and Veterans Affairs Medical Center, San Francisco, CA
Danil Victor Makarov, MD	Dept of Urology, New York University School of Medicine
Edward Dunn, MD, Scd	College of Public Health, University of Kentucky
Fadi Bsat, MD	Associate Professor, Tufts University School of Medicine; Assistant Chief, Maternal-Fetal Medicine; Director, Perinatal Diagnostic Center, Baystate Medical Center, Springfield, MA
Gail Grant, MD, MPH, MBA	Cedars-Sinai Health System, Resource & Outcomes Management, California
Haytham Kaafarani, MD, MPH	Massachusetts General Hospital, Division of Trauma, Emergency Surgery and Surgical Critical Care
Jeffrey Fred Linzer, Sr., MD, MICP, FAAP, FACEP	Children's Healthcare of Atlanta at Egleston, Georgia
Joel V. Brill, MD, AGAF	AGA Digestive Health Outcomes Registry, Bethesda MD; Fair Health, Inc., New York
John Maa, MD	UCSF Dept of Surgery, California
Joseph Nichols, MD	Health Data Consulting
Kay Schwebki, MD, MA, MPH	OptumInsight
Pushpa Narayanaswami, MD, FAAN	Assistant Professor of Neurology, Harvard Medical School /Beth Israel Deaconess Medical Center, Boston, MA
Richard Dutton, MD, MBA	Anesthesia Quality Institute, Illinois
Robert S. Gold, MD	CEO DCBA, Inc
Robert M. Orfaly MD, FRCS (C)	Oregon Health and Science University, Dept of Orthopaedics and Rehabilitation
Shannon Connor Phillips, MD, MPH, FAAP	Quality and Patient Safety Institute, Cleveland Clinic, Ohio

Name	Affiliations
Coding Professionals	
Bobbi Moore, MBA, RHIT, AHIMA-Approved ICD-10-CM/PCS Trainer	Spectrum Health, Quality & Safety Department, Michigan
Carol Garsi, RHIT, CCS, AHIMA-Approved ICD-10-CM/PCS Trainer	University of Washington Medicine
Cheryl A. Robbins, RHIT, CCS, AHIMA-Approved ICD-10-CM/PCS Trainer	Precyse, LLC, Wayne, Pennsylvania
Colleen Stalvey, RHIT, AHIMA-Approved ICD-10-CM/PCS Trainer	Cedars-Sinai Medical Center, HIM Department, California
Gloryanne Bryant, BS, RHIA, RHIT, CCS, CDIP, CCDS,AHIMA-Approved ICD-10-CM/PCS Trainer	Kaiser NCAL Revenue Cycle - HIM, Kaiser Foundation Health Plan, Inc., California
Jennifer Hornung Garvin, PhD, MBA, RHIA, CPHQ, CCS, CTR, FAHIMA, AHIMA-Approved ICD-10-CM/PCS Trainer	IDEAS Research Center, VA Salt Lake Health Care System and University of Utah Dept of Biomedical Informatics
Julie Swim, RHIT, CCS, CCS-P, CDIP, AHIMA-Approved ICD-10-CM/PCS Trainer	Baptist Health Kentucky, Clinical Documentation and Coding
Kathy Lindstrom, RHIT	Wolters Kluwer Health – Clinical Solutions
Leola Burke, MHSA, CCS, AHIMA-Approved ICD-10-CM/PCS Trainer	Independent ICD-10-CM/PCS Consultant
Lisa Hart, MPA, RHIA, CPHQ, AHIMA-Approved ICD-10-CM/PCS Trainer	Cleveland Clinic, Ohio
Lisa Knowles-Ward, RHIT, CCS	Cleveland Clinic, Ohio
Lisa Roat, RHIT, CCS, CCDS, AHIMA-Approved ICD-10-CM/PCS Trainer	Healthcare, Nuance Communications, Inc.
Lizabeth J. Fisher, RHIA	NCHS Classification and Public Health Data Standards, CDC
Lou Ann Schraffenberger, MBA, RHIA, CCS, CCS-P, FAHIMA, AHIMA-Approved ICD-10-CM/PCS Trainer	Advocate Health Care
Margaret Foley, PhD, RHIA, CCS, AHIMA-Approved ICD-10-CM/PCS Trainer	Temple University, Health information Management Department, Pennsylvania
Mary Johnson, RHIT, CCS-P	Dept of Veteran Affairs
Molly DeMink, BA, CCS, CDIP, CCDS	OmniClaim
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Name	Affiliations
Nurses	
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Denise Remus, PhD, RN	DR Consulting, LLC
Dianne Kelly, RN	Cleveland Clinic, Ohio
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Irene Lopez, BSN, RN,CSTR	Trauma Services Administration, University Medical Center Brackenridge, Texas
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Julie Chicoine, Esq., RN, CPC, CPCO	Ohio State University Wexner Medical Center
Karen Snyder, BSN, RN	Cleveland Clinic, Ohio
Kathleen Hartman, RN, MSN	Cleveland Clinic, Ohio
Kathryn Fiandt, PhD, RN, FNP-BC, FAANP, FAAN	University of Texas Medical Branch School of Nursing
Marybeth Farquhar, PhD, MSN, RN	URAC
Michelle Horvath, MSN, RN, CPHQ	Hospital for Special Surgery, New York
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Theresa Smiley, RN, CPHQ	Novant Health, Clinical Quality Performance, Pennsylvania
Vicky A. Mahn-DiNicola RN,MS,CPHQ	Healthcare Provider Solutions Group; Midas+ Solutions, A Xerox Company
Other Professionals	
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James Notaro, PhD	Clinical Support Services, Inc, New York
Moshe Fridman, PhD	AMF Consulting, Inc.
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Sarah Cho, BS, MPH	Scripps Health Quality/Performance Improvement, California
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