ICD-10 IMPLEMENTATION: OPPORTUNITIES AND CHALLENGES FOR HEALTH DATA ORGANIZATIONS (USING AHRQ QUALITY INDICATORS)

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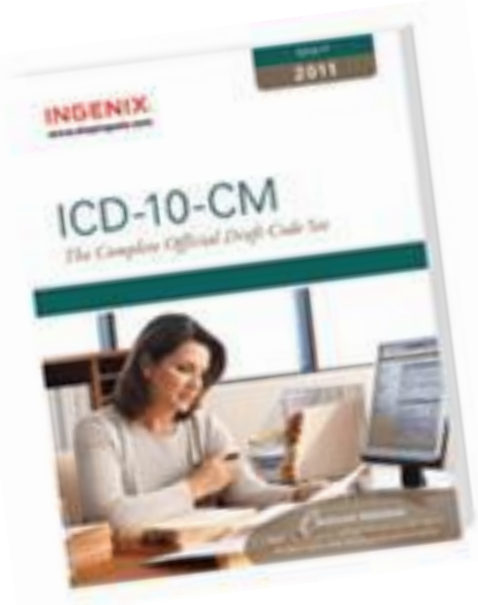
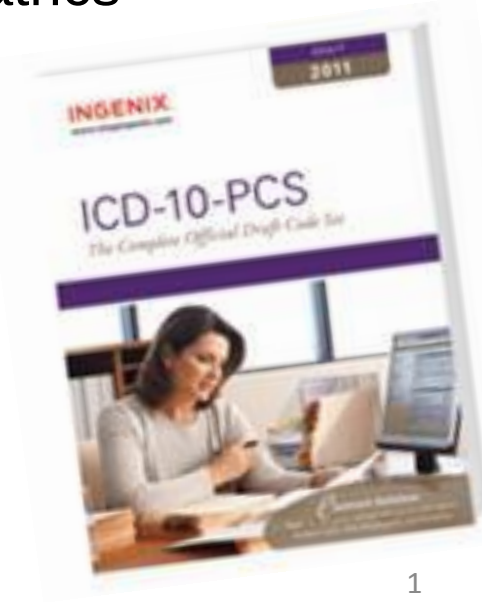




Outline

- Key features of ICD-10-CM and ICD-10-PCS that will affect AHRQ Quality Indicators
- Converting the AHRQ QIs to ICD-10-CM/PCS:
  - General practice and approach
  - Specific mapping challenges
- Examples of opportunities and challenges in ICD-10-CM/PCS specification of AHRQ Qis
- Early findings from dual coded data from Washington State Department of Health

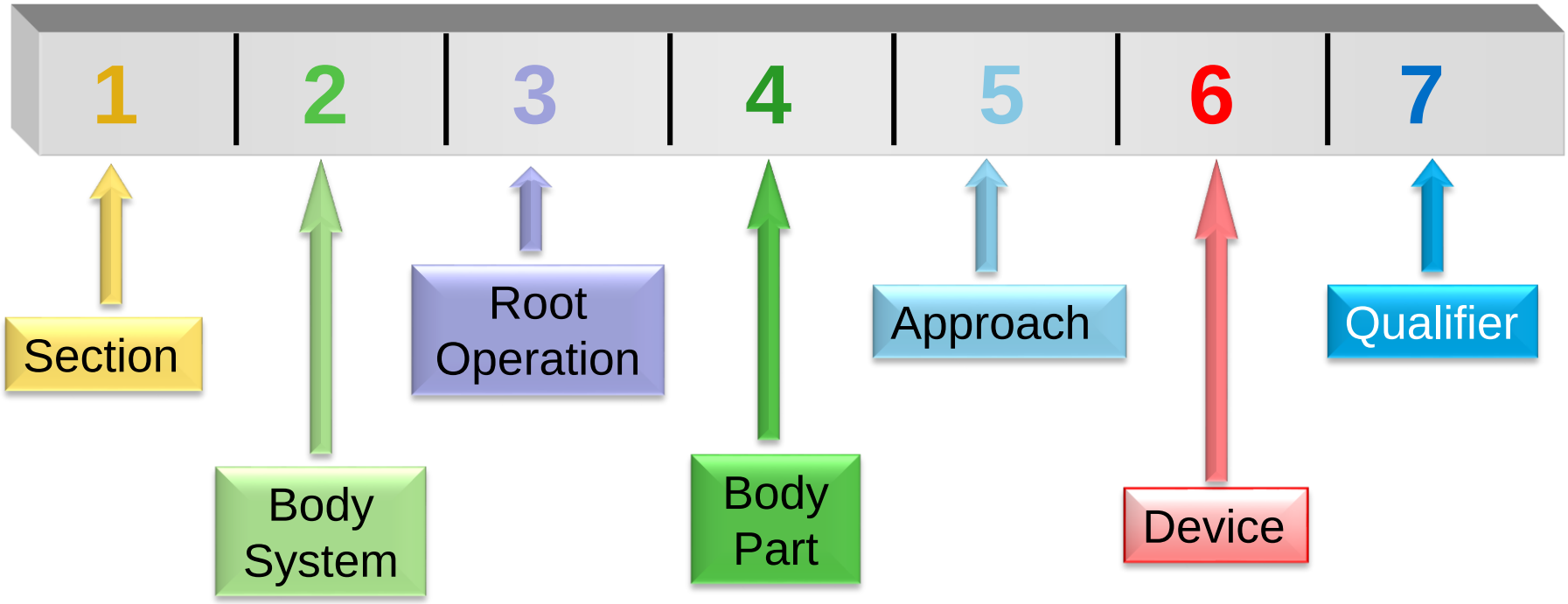
Diagnoses and External Causes

ICD-9-CM	ICD-10-CM
3-5 characters	3-7 characters
1st Character = numeric or alpha (V or E)	1st character = alpha (every letter, except U)
About 14,025 codes	About 69,823 codes
Lack laterality, fracture displacement	Include laterality, fracture displacement
External causes of injury	External causes of morbidity
No encounter info	Initial vs. subsequent encounter vs. sequela

ICD-10-PCS

(International Classification of Diseases, 10th Revision, Procedure Coding System)

Inpatient Procedure



Inpatient Procedures ONLY

ICD-9-CM (volume 3)	ICD-10-PCS
3-4 characters	7 characters (min/max)
All characters = numeric	Alphanumeric
About 3,824 codes	About 71,924 codes
Generic body parts	Detailed body parts
Lack laterality	Specify laterality
Variable procedural approach	Complete procedural approach
May include diagnosis	Never links to diagnosis
Eponyms and combination procedures allowed	Eponyms and combination procedures not allowed
Not standardized/expandable	Standardized, expandable

ICD-10-PCS Sections and Approaches

#	Codes	Descriptions
1	0	Medical & Surgical
2	1	Obstetrics
3	2	Placement
4	3	Administration
5	4	Measure & Monitor
6	5	Extracorporeal Assist.
7	6	Extracorporeal Therapy
8	7	Osteopathic

#	Codes	Descriptions
9	8	Other Procedures
10	9	Chiropractic
11	B	Imaging
12	C	Nuclear Medicine
13	D	Radiation Oncology
14	F	Physical Rehab & Audiology
15	G	Mental Health
16	H	Substance Abuse

0	Open
3	Percutaneous
4	Percutaneous endoscopic
7	Via natural or artificial opening
8	Via natural or artificial opening endoscopic
F	Via natural or artificial opening endoscopic with percutaneous endoscopic assistance
X	External

ICD-10-PCS Root Operations

ICD-9-CM Procedure Term	ICD-10-PCS Procedure Term
Amputation	Detachment
Amniocentesis	Drainage
Cystoscopy	Inspection
Closed Reduction	Reposition
Debridement	Excision, Irrigation, Extirpation
Total Mastectomy	Resection
Subtotal Mastectomy	Excision
Tracheostomy	Bypass
Cesarean Section	Extraction of Products of Conception
Incision	No ICD-10-PCS term

NQF's Recommended Coding Conversion Best Practices

1. Convene Clinical and Coding Experts
2. Determine Intent of Code Transition
   - Maintain intent (legacy specification)
   - Maintain intent, with more specificity (enhanced specification)
   - Change measure intent ("parking lot")
3. Use Appropriate Conversion Tool
4. Assess for Material Change
5. Solicit Stakeholder Comments
6. Version the Updated Measure

Two General Approaches

(1) Start fresh, ignore the ICD-9-CM codes used in current QI specifications, and look up the clinical concepts *de novo* in the ICD-10-CM and ICD-10-PCS codebooks.

(2) Make use of General Equivalence Mappings (GEMs) provided by CMS and NCHS to facilitate code conversion; then discuss the appropriateness of these mapped codes with clinical and coding experts. (GEMs are reference maps that identify relationships, not crosswalks.)

Mappings may not work for a specific QI-related application

ICD-9-CM	Description	ICD-10-CM	Description
070.42	Hepatitis delta with hepatic **coma**	B17.0	Acute delta(super) infection of hepatitis B carrier
070.43	Hepatitis E with hepatic **coma**	B17.2	Acute Hepatitis E
070.44	Chronic hepatitis C with hepatic **coma**	B17.8	Chronic viral hepatitis C

Solution:	Look up in the ICD-10-CM for hepatic coma
K72.00	Acute and subacute hepatic failure with coma
K72.11	Chronic hepatic failure with coma

Complete mapping must be bidirectional

KEY	Name of Map	GEM Files	Method
F	Forward Map	**9**-to-10	**Normal Lookup**: We look up an ICD-9-CM code and get the closest ICD-10-CM/PCS equivalents.
RB	Reverse Backward Map	10-to-**9**	Reverse Lookup: We look up an ICD-9-CM code and get additional ICD-10-CM/PCS equivalents that map backward to the same ICD-9-CM code.
B	Backward Map	**10**-to-9	**Normal Lookup**: We look up an ICD-10-CM/PCS code and get the closest ICD-9-CM equivalents.
RF	Reverse Forward Map	9-to-**10**	Reverse Lookup: We look up an ICD-10-CM/PCS code and get additional ICD-9 equivalents that map forward to the same ICD-10-CM/PCS code.

UCDAVIS and Battelle

Forward vs. Reverse Backward Map

9-to-10

ICD9	Description	Map	ICD10	Description
556.9	Ulcerative colitis	F Map	K51.90	Ulcerative colitis, without complications

10-to-9

ICD10	Description	Map	ICD9	Description
K51.911	Ulcerative colitis, with rectal bleeding	RB Map	556.9	Ulcerative colitis
K51.912	Ulcerative colitis, with intestinal obstruction	RB Map		
K51.913	Ulcerative colitis, with fistula	RB Map		
K51.914	Ulcerative colitis, with abscess	RB Map		
K51.918	Ulcerative colitis, with other complication	RB Map		
K51.919	Ulcerative colitis, with unspecified complications	RB Map		

Expert Work Groups

- Recruited work group members through Federal Register, AHRQ QI Listserve, national professional societies
- Constructed 10 expert work groups with 84 participants:
  - Cancer, Cardiac, Critical Care/Pulmonary, Infection, Internal Medicine, Neonatal/Pediatric, Neurology, Obstetrics and gynecology, Orthopedics, General and trauma surgery
- Stated roles:
  - Evaluate the results of automated code mapping from ICD-9-CM to ICD-10-CM/PCS
  - Provide input and advice regarding mapped codes
  - Offer specific recommendations how QIs should re-specified using ICD-10-CM/PCS codes

Work Group Characteristics

Experts	Number	Cross-cut of U.S.
Physicians	27	6=Pacific, 2=Mountain, 5=Central, 14=East
Nurses	22	0=Pacific, 1=Mountain, 5=Central, 16=East
Coding Professionals	26	4=Pacific, 1=Mountain, 7=Central, 14=East
QI Data Users	9	2=Pacific, 0=Mountain, 0=Central, 6 =East

Clinical and nursing expertise:

Are both ICD-9-CM and ICD-10-CM/PCS codes possible clinical equivalents? Or do any contradict the intent of the set name?

Coding expertise:

Are there coding guidelines that should be considered because they may affect the appropriateness of code mappings?

Are there missing codes that were not captured?

Quality measurement expertise:

Are any changes to the logic of the indicators warranted?

Three level review

- **Level 1: Inappropriate Codes (“legacy”)**
  - Wrong gender, age group, anatomic site
  - Wrong component of cluster
  - Newly codable clinical concept does not fit with the intent
- **Level 2: Clinical Intent (“enhanced”)**
  - Clinicians’ input required due to uncertainty about the clinical intent of the setname
- **Level 3: New opportunities**
  - Revisit the original clinical intent
  - Deferred until ICD-10 data become available

Findings

- No off-the-shelf software provided the functionality that we needed to use the GEM files for batch processing of thousands of code mappings (developed Map-It tool and Conversion Check tools now available to HCUP partners and users)
- Some procedures have proven very hard to identify in PCS because of abnormal body parts or intent that does not match root operations (cf. PDI 6, 7)
- Some procedure codes represent procedures that are not currently possible, illogical, etc.
- Some QIs required rethinking

Webinars
Presentations
Publications
Toolkits

TOOLKITS

AHRQ Hospital QI Toolkit

The AHRQ Hospital QI toolkit is designed to help your hospital understand the Quality Indicators (QI) from the Agency for Healthcare Research and Quality (AHRQ), and support your use of them to successfully improve quality and patient safety in your hospital. The toolkit is a general guide to using improvement methods, with a particular focus on the QI. It focuses on the 17 Patient Safety Indicators (PSI) and the 28 Inpatient Quality Indicators (IQI). Tools are organized in seven sections following a complete improvement process that includes setting priorities and plan for performance improvements on the QI, implementing improvement strategies, and sustaining improvements achieved. The toolkit has undergone a field test, evaluation, and revisions in response to feedback from six hospitals.

The toolkit can be found here.

MapIT Automated In-house Stand-alone Mapping Tool

The AHRQ MapIT toolkit takes a selected set of ICD-9 codes, applies the CMS General Equivalence Mapping in various ways, then outputs the set of related ICD-9 and ICD-10 codes. The tool applies the GEM in a two-stage process using both the forward and backward maps in conjunction with a novel reverse mapping.

Download and install the MapIT tool to facilitate conversion of set names to ICD-10-CM/PCS codes. Using CMS GEMs and technical specifications, the mapping tool utilizes forward, backward, and reverse mapping methods.

MapIT Users Guide FY2015 (PDF file, 863KB) (Posted: 2/23/2015) *New!*
MapIT Tool (ZIP file, 75.2 MB) (Posted: 2/23/2015) *New!*
MapIT Tool documentation: Conversion of ICD9 to ICD10 (PDF file, 99KB)
AHRQ MapIT FY2015 Installation Instructions (PDF file, 352 KB) (Posted: 2/23/2015) *New!*

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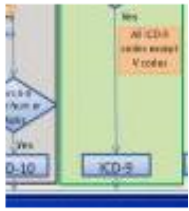
ICD–9/ICD–10 Transition Tools

Conversion Tool for the ICD-9 CM to ICD-10 CM Transition



- Easily flags invalid codes and incorrect records
- Runs quickly on very large data sets with multiple dx per record
- Shared codes between ICD-9 and ICD-10 are allocated according to other codes on the same record and E coding rules

For a free download of the Conversion Tool, please complete a download request and return to info@nahdo.org.

- Click HERE to view slides: A SAS Macro to Differentiate ICD-9-CM & ICD-10-CM Records
- Click HERE to view the User Guide
- For a webinar about the tool, click HERE

Conversion Tool to the ICD-9 CM to ICD-10 CM Transition is made possible through funding from the Center for Surveillance, Epidemiology and Laboratory Services (CSELS) within the Office of Public Health Scientific Services (OPHSS) at the Centers for Disease Control and Prevention (CDC).

Trainings:

- **Training Day 1: ICD-10 Overview**

Example: root operation codes are sometimes incomplete or misleading

ICD9	Description	Map	ICD10	Description
35.41	Enlargement of existing atrial septal defect	F Map	02QA0ZZ	Repair Heart, Open Approach
			02QA3ZZ	Repair Heart, Percutaneous Approach
			02QA4ZZ	Repair Heart, Percutaneous Endoscopic Approach
35.42	Creation of septal defect in heart	F Map	02B50ZZ	Excision of Atrial Septum, **Open** Approach
			02B53ZZ	Excision of Atrial Septum, **Percutaneous** Approach
			02B54ZZ	Excision of Atrial Septum, **Percutaneous Endoscopic** Approach

ICD-9	Desc	ICD10	Description	Approx
37.91	Open chest cardiac massage	02QA0ZZ	Repair heart, open approach	**1**

Abnormal body parts

ICD-10

- Common atrioventricular valve
- Truncus arteriosus/truncal valve
- What if a surgeon “creates” a valve?
  - Creation: Making a new genital structure that does not take over the function of a body part.
  - Proposed: Putting in or on biological or synthetic material to form a new body part that to the extent possible replicates the anatomic structure or function of an absent body part.
- What if a surgeon ligates or “takes down” a shunt?
  - Occlusion: Completely closing an orifice or the lumen of a tubular body part (see also “restriction”)

Complexity of combination coding

35.81 Total Repair of Tetralogy of Fallot (source)

ICD10 Target	Desc	Approx	No Map	Comb	Scenario	Choice
02RM0JZ	Replacement of ventricular septum with synthetic substitute, open approach	1	0	1	1	1
02RP0JZ	Replacement of pulmonary trunk with synthetic substitute, open approach	1	0	1	1	2
02BK0ZZ	Excision of right ventricle, open approach	1	0	1	1	3
02NH0ZZ	Release pulmonary valve, open approach	1	0	1	1	4

Combination procedures, such as repair of Tetralogy of Fallot, are coded separately for each objective and site.
All four choices must be used.

Other QIs with mapping challenges

- PSI 14, Postoperative wound dehiscence
  - No PCS procedure code equivalent to 54.61, Reclosure of postoperative disruption of abdominal wall
- PSI 10, Postoperative acute kidney injury requiring dialysis
  - Intent of catheter insertion not specified in PCS
- PSI 15, Accidental puncture or laceration
  - Restriction to abdominal or pelvic operations
- Neonatal Quality Indicators
  - No dx code for “other conditions originating in perinatal period” with birth weight >2500g

Washington State dual coded data

HCUP was given 2,665 records with dual coded (ICD-9-CM and ICD-10) diagnoses and procedures

Indicator	No. selected by both code sets	Comparability ratio
IQI #12 Coronary Artery Bypass Graft (CABG) Mortality Rate	16	1.000
IQI #13 Craniotomy Mortality Rate	33	1.030
IQI #14 Hip Replacement Mortality Rate	16	1.000
IQI #15 Acute Myocardial Infarction (AMI) Mortality Rate	39	1.000
IQI #16 Heart Failure Mortality Rate	43	1.000
IQI #18 Gastrointestinal Hemorrhage Mortality Rate	29	0.935
IQI #20 Pneumonia Mortality Rate	26	1.038
IQI #21 Cesarean Delivery Rate, Uncomplicated	104	1.180
IQI #22 Vaginal Birth After Cesarean (VBAC) Delivery Rate, Uncomp.	15	2.833
IQI #23 Laparoscopic Cholecystectomy Rate	27	1.043
IQI #24 Incidental Appendectomy in the Elderly Rate	33	1.088
IQI #25 Bilateral Cardiac Catheterization Rate	43	1.023

Comparability ratio = Rate based on ICD-10 codes/Rate based on ICD-9 codes

Washington State dual coded data

HCUP was given 2,665 records with dual coded (ICD-9-CM and ICD-10) diagnoses and procedures

Indicator	No. selected by both code sets	Comparability ratio
IQI #26 Coronary Artery Bypass Graft (CABG) Rate	16	1.000
IQI #27 Percutaneous Coronary Intervention (PCI) Rate	25	1.000
IQI #29 Laminectomy or Spinal Fusion Rate	48	0.787
IQI #33 Primary Cesarean Delivery Rate, Uncomplicated	24	1.269
PQI 08 Heart Failure Admission Rate (Numerator)	27	1.000
PQI 10 Dehydration Admission Rate (Numerator)	12	1.417
PQI 11 Bacterial Pneumonia Admission Rate (Numerator)	23	1.000
PQI 12 Urinary Tract Infection Admission Rate (Numerator)	19	1.000
PQI 90 Prevention Quality Overall Composite (Numerator)	110	1.043
PQI 91 Prevention Quality Acute Composite (Numerator)	54	1.093
PQI 92 Prevention Quality Chronic Composite (Numerator)	56	1.000

Comparability ratio = Rate based on ICD-10 codes/Rate based on ICD-9 codes

Acknowledgments and questions

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- Comments and suggestions to AHRQ
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