ICD-10: A Master Data Problem

Table of Contents

ICD-10 is Mandated at the Worst Possible Time

Savvy health care organizations are already starting to conduct their ICD-10 assessments, well ahead of the federal government's new deadline of October 1, 2014, for implementing the new coding system while also meeting new requirements introduced by the Patient Protection and Affordable Care Act (healthcare reform) and meaningful use requirements established by the HITECH Act. That's a lot of business process disruption and IT work to be handled in a short period of time. Many payers and providers don't have the resources or the time to get it all done.

Organizations need to think of efficient, durable approaches that can facilitate cost-effective compliance for the pile of mandates occurring over the next several years. For ICD-10 in particular, adopting a master data management (MDM) approach can resolve several challenges with implementation of this new code set by establishing a single, centralized, controlled point of reference for disease and procedure codes, rules, mappings, and translations that can be applied uniformly to all applications. It can also help organizations position themselves for subsequent revisions of the ICD codes.

The Inherent Complexities of ICD-10 Inhibit Proper Adoption

ICD-10 vastly increases the number and complexity of disease and procedure codes over ICD-9, the previous standard enacted in 1977. ICD-10 contains 141,060 codes, a 712% increase over the 19,817 codes in ICD-9. Given the dramatic increase in codes from ICD-9 to ICD-10, one might expect that there would be a one-to-many relationship between ICD-9 and ICD-10, which would make it fairly straightforward to link across the code sets. However, the relationship is many-to-many, as illustrated by the example of diabetes mellitus.

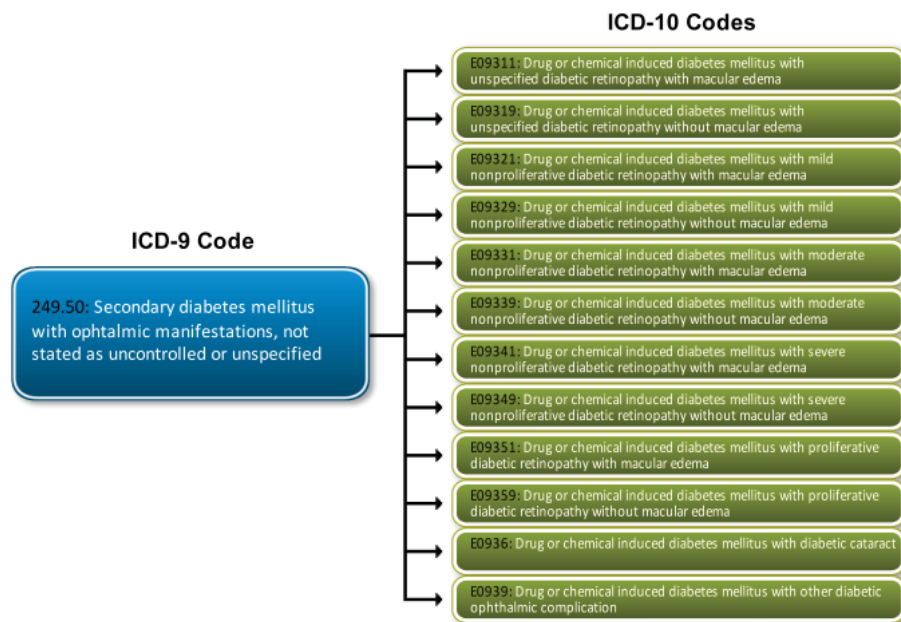As expected, one ICD-9 code can relate to many ICD-10 codes, as displayed in Figure 1.

ICD-10 Codes

ICD-9 Code

249.50: Secondary diabetes mellitus with ophtalmic manifestations, not stated as uncontrolled or unspecified

- E09311: Drug or chemical induced diabetes mellitus with unspecified diabetic retinopathy with macular edema
- E09319: Drug or chemical induced diabetes mellitus with unspecified diabetic retinopathy without macular edema
- E09321: Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy with macular edema
- E09329: Drug or chemical induced diabetes mellitus with mild nonproliferative diabetic retinopathy without macular edema
- E09331: Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy with macular edema
- E09339: Drug or chemical induced diabetes mellitus with moderate nonproliferative diabetic retinopathy without macular edema
- E09341: Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy with macular edema
- E09349: Drug or chemical induced diabetes mellitus with severe nonproliferative diabetic retinopathy without macular edema
- E09351: Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy with macular edema
- E09359: Drug or chemical induced diabetes mellitus with proliferative diabetic retinopathy without macular edema
- E0936: Drug or chemical induced diabetes mellitus with diabetic cataract
- E0939: Drug or chemical induced diabetes mellitus with other diabetic ophthalmic complication

Figure 1

But, unexpectedly, one ICD-10 code can also relate to many ICD-9 codes, as displayed in Figure 2.

ICD-10 Code

E10311: Type 1 diabetes mellitus with unspecified diabetic retinopathy with macular edema

ICD-9 Codes

250.51: Diabetes with ophthalmic manifestations, type 1 [juvenile type], not stated as controlled

36201: Background diabetic retinopathy
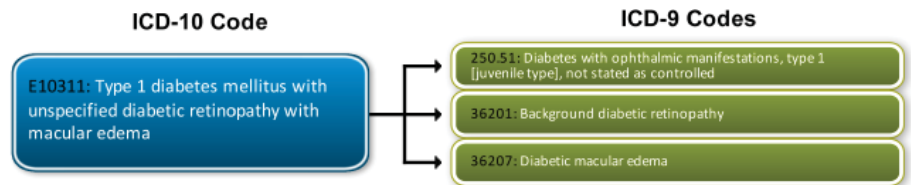
36207: Diabetic macular edema

Figure 2

GEMS and Reimbursement Mappings

To help facilitate care and commerce, the government has invested in providing mappings between ICD-9 and ICD-10. There are two such mappings endorsed by CMS: the GEMS maps (for both ICD-9 to ICD-10 and ICD-10 to ICD-9) and the Reimbursement maps (for ICD-10 to ICD-9 only). GEMS, which stands for General Equivalency Maps, establishes links amongst codes that are generally equivalent in each code set. The Reimbursement maps were created after the GEMS maps and are more specific, identifying the top candidate mappings from within GEMS.

Some statistics may illuminate the challenges inherent in linking across the code sets.

In the GEMS maps for procedures from ICD-9 to ICD-10:

- There are 445 instances where a single ICD-9 code can map to more than 50 ICD-10 codes.

- There are 210 instances where a single ICD-9 can map to more than 100 ICD-10 codes.

In the GEMS maps from ICD-10 to ICD-9:

- There are 6,821 instances in the mappings for diseases where a single ICD-10 code can map to more than one ICD-9 code.

- There are 6,740 instances in the mappings for procedures where a single ICD-10 code can map to more than one ICD-9 code.

In the Reimbursement maps from ICD-10 to ICD-9:

- There are 3,334 instances in the mappings for diseases where a single ICD-10 code can map to more than one ICD-9 code.

- There are 2,300 instances in the mappings for procedures where a single ICD-10 code can map to more than one ICD-9 code.

The depth and breadth of ICD-10 and the increased specificity of diseases and procedures create many opportunities for payers and providers to promote better health while constraining costs. Yet, the many-to-many nature of the relationships creates challenges for healthcare payers and providers in processing transactions, analyzing their businesses, and maintaining compliance with regulatory requirements.

Implementation Challenges

Different Rules for Different Purposes

While CMS has tried to create clarity with GEMS and Reimbursement mappings, the results aren't encouraging: GEMS ICD-10 to ICD-9 mappings have 5.47% exact matches for diseases and only .10% exact matches for procedures; GEMS ICD-9 to ICD-10 mappings have 23.76% exact matches for diseases and no exact matches for procedures. With so few exact matches, organizations will need to define their own business rules for specific trading partners and business functions that add value to or override the government mappings.

For example, consider the ICD-10 code E10311: Type 1 diabetes mellitus with unspecified diabetic retinopathy with macular edema.
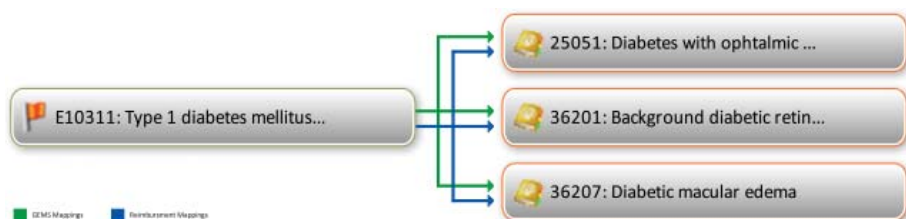

Figure 3

According to GEMS mappings and Reimbursement mappings, this ICD-10 code can map to:

- ICD-9 250.51: Diabetes with ophthalmic manifestations, type I [juvenile type], not stated as uncontrolled

- ICD-9 362.01: Background diabetic retinopathy

- ICD-9 362.07: Diabetic macular edema

Consider a situation where a few trading partners are dominant in a given market and may be strong enough to dictate policy. For example, Hospital A might dictate to Payer A that the proper mapping for them is to 362.01 and Hospital B might dictate to Payer A that the proper mapping for them is 362.07. In this situation, an organization needs to be able to override the government mappings.
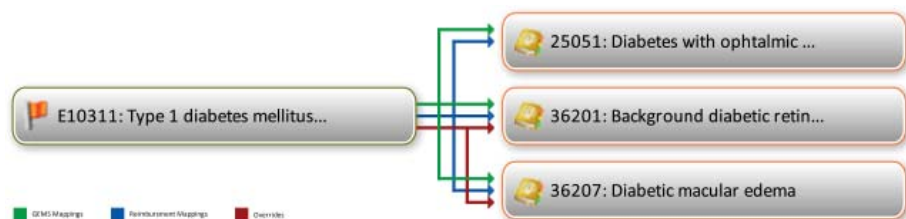

Figure 4

Additionally, the mappings might be overriden differently by business process or function. To understand this point, consider the ICD-9 code 88.71: Diagnostic ultrasound of head and neck.
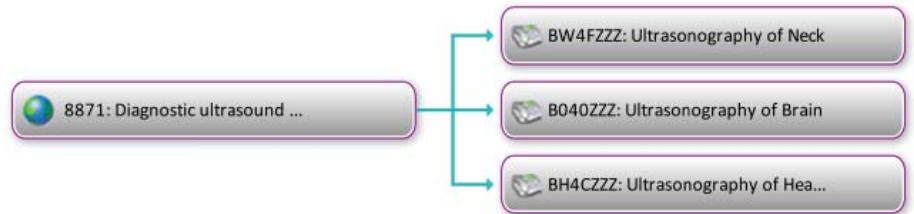

Figure 5

According to GEMS, this ICD-9 code can map to:

- ICD-10 BW4FZZZ: Ultrasonography of Neck

- ICD-10 B040ZZZ: Ultrasonography of Brain

- ICD-10 BH4CZZZ: Ultrasonography of Head and Neck

For financial purposes, assuming that there is significant differentiation in cost and reimbursement between an ultrasound of the brain and an ultrasound of the neck, the default mapping would likely be to ICD-10 B040ZZZ. However, for clinical purposes, the default mapping might be to the more inclusive ICD-10 BH4CZZZ. Other business or analytic purposes might map differently as well.

Software Vendor Crosswalk Variations

Independent packaged software vendors (ISVs) will have different offerings and divergent approaches to cross-walking; some may support sophisticated rules and others won't. Either way, if medical systems, claims systems, and financial systems house divergent rules, things will get messy in a hurry.

Consider a typical payer organization, Payer A, with two claims systems (a legacy system from Vendor A and a modern system from Vendor B), a care management system from Vendor C, a clinical editing/fraud waste & abuse system from Vendor D and an EDI gateway from Vendor E. Each vendor will provide some proprietary mechanism to cross-walk ICD-9 to ICD-10 and vice versa (for dual periods, migrations, analytics, etc.) as depicted in Figure 6.
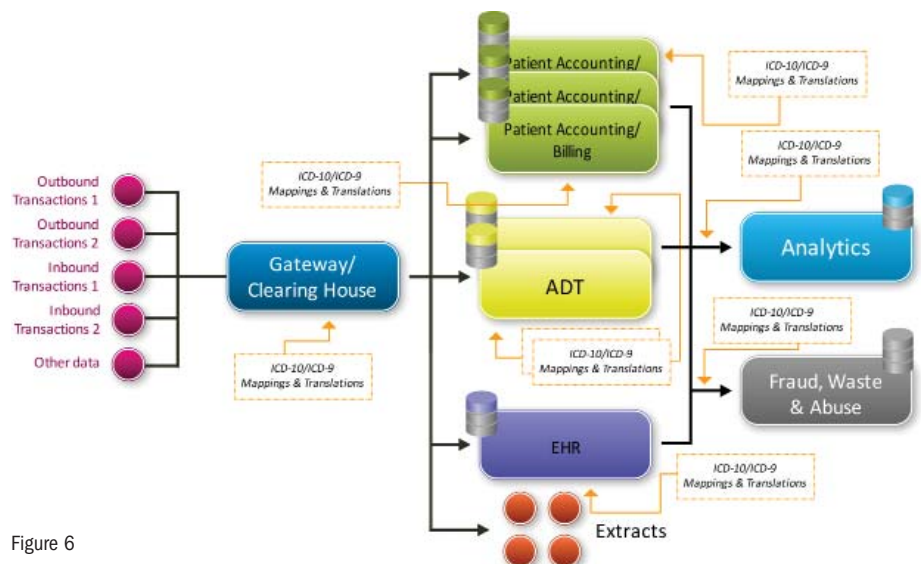

Figure 6

Any business rules for mappings would need to be entered and stored in at least five systems as well as in any analytics systems that source data from the applications. With 19,695 GEMS mappings that have two or more potential codes, an organization would need to maintain 118,170 crosswalk entries in addition to the GEMS and Reimbursement maps. The potential for errors and rework is huge.

Trending and Analytics with Historical Data

Most payers and providers require at least three years of historical data for trending and analysis purposes. On September 30, 2013, all of this history will be encoded in ICD-9 nomenclature. On the following day and going forward, the neo history will start to be encoded in ICD-10. Any type of trending will either require a migration of all of the history to ICD-10 or some mechanism for stepping up ICD-9 codes to ICD-10 or stepping back ICD-10 codes to ICD-9 for analysis (and maybe both). Migrating or stepping up from ICD-9 to 10 is non-trivial and will require a standard, business rule-driven approach to avoid skewed analytics.

Time and Cost will be a Formidable Adversary to Any Well-Intentioned Plan to Remediate Everything

It's unlikely that any organization, regardless of size, will have all of the financial, human, and technical resources to remediate everything that touches ICD codes in time to meet the mandates, given the expenditures and efforts required for the HIPAA 5010 and reform and/or HITECH mandates.

The Solution: Master Data Management

A master data management approach will resolve many of the aforementioned challenges, both conceptually and practically. Master data management, as defined by the MDM Institute, is an "authoritative, reliable foundation for data used across many applications and constituencies with the goal to provide a single view of the truth no matter where it lies."

Applied to ICD-10, a master data management approach would provide a central, managed storage and access point for processes and systems that need to consume ICD-9 or ICD-10 codes, mappings, and translations (GEMS, Reimbursement, overrides, and any other desired mappings or hierarchies). Figure 7 illustrates how the fictional, but realistic, Payer A ecosystem could look with an MDM solution providing a centralized storage point for disease and procedure codes and mappings, accessible via a business process management layer. In this context, a single set of business rules, mappings, and translations can be applied uniformly to all processes and supporting applications.
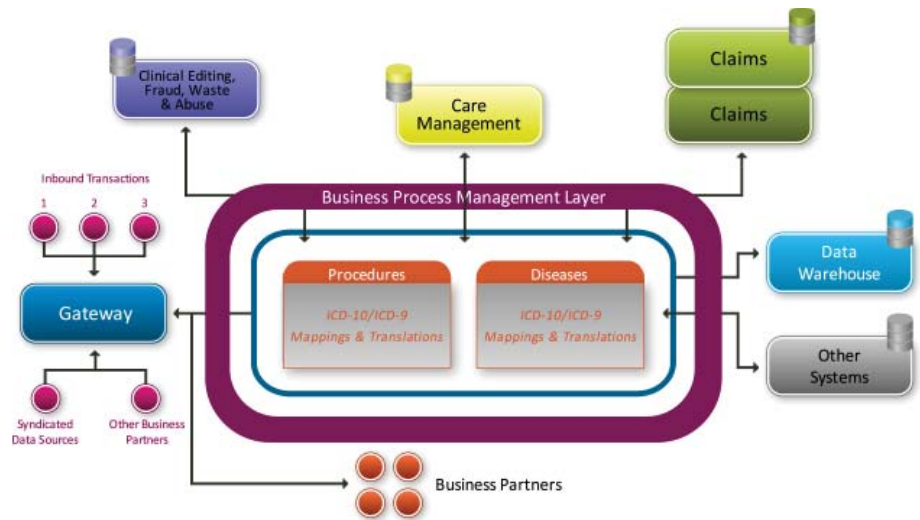
Figure 7

The benefits of implementing a master data management approach are widespread:

- Allows you to apply consistent business rules uniformly to all processes and supporting applications without having to maintain the rules in multiple places with redundant maintenance processes.

- Facilitates consistency in approach and rules when major applications are sourced from multiple software vendors and integrated with homegrown applications.

- Lets firms select which systems to remediate without sacrificing compliance or analytic excellence.

- Supports standard CMS mappings (GEMS and Reimbursement), but permits the organization to override or extend the standard mappings based upon customer/trading partner, business process, or function.

- Makes it easy to update systems with future changes in mappings (ICD-11 or other future code sets) or additional value-added mappings (diseases to procedures or DRG mappings).

- Promotes analytic excellence by ensuring consistent results when transactions across multiple systems are aggregated for analysis.

Conclusion

Healthcare organizations burdened with meaningful use, healthcare reform, and HIPAA lack the time, resources, and budget to remediate all of their systems to ICD-10 by the October 1, 2014 deadline. The common approach to implementation - allowing vendors to remediate core systems while using crosswalks for in-house, legacy systems - is rife with challenges. These problems include divergent approaches to crosswalking, difficulties in obtaining meaningful analytics with data in ICD-9 and/or ICD-10 codes, and the inability to deal with overrides and exceptions to the standard government mappings.

A master data management approach solves these challenges by utilizing a single business process management layer with centralized rules, mappings, and translations that can be applied uniformly to all applications. This facilitates a consistent approach, enables selective remediation without sacrificing best practices, allows for overrides, and can be easily updated with future mapping changes.

With diagnosis and procedure codes used in virtually every aspect of business operations, healthcare organizations must evaluate every approach - including the master data management solution - before beginning the ICD-10 transformation. The decisions made in the planning phases will impact clinical and business processes and systems for years to come.

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