A **Health Data Consulting** **White Paper**

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ICD-10

DRG Impacts at the Hospital Level

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Overview

The mandated transition of the healthcare industry to the ICD-10 standard on October 1, 2013 represents one of the most significant changes to healthcare information in decades. Among many other uses, these diagnostic and institutional procedure codes are the key building blocks to DRGs which form a critical part of most hospital revenue. There has been a considerable amount written about the impact of ICD-10 on DRG grouping, and CMS's goal of revenue neutrality. At the level of the individual hospital however, there is less certainty that ICD-10 will result in predictable revenue during and after the transition period.

This white paper takes a closer look at the ICD-10 impacts on DRG assignment and how ICD-10 may change revenue. An approach to analysis and planning to limit risk and positioning to assure appropriate revenue for the appropriate services and procedures will be discussed.

The CMS Experience

Beginning in 2008, CMS started the process of analysis that would form the foundation for the development of a MSDRG grouper intended to support ICD-9 and ICD-10 natively. The draft[1] of the MSDRG v26 version was released in September of 2009. A report of the test conversion is available on the CMS site[2]. DRG grouper v27 was completed in 2010 and the most recent v28 was released in March 2011[3].

Goals

The stated goal of the CMS conversion project was to provide a grouper that would operate natively in both an ICD-9 and ICD-10 environment. GEM (General Equivalency Mapping) was used to assist in this conversion while at the same time the conversion process was used to establish the feasibility of GEM to support conversion of other ICD-9 related applications. Additionally the conversion process included estimates of the impact of conversion on payment and revenue with an eye toward assuring revenue neutrality.

Short Term

In the short term the intent of the DRG grouper conversion is to assure "revenue neutrality" so that the sum of any gains or losses in grouping between ICD-9 and ICD-10 for the same cases would not result in unanticipated gains or losses in the aggregate. Initially there has been no significant attempt to leverage the detail of severity and risk offered by ICD-10 since there simply is no historical data to quantify the financial impact of that level of detail.

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[1] http://www.cms.gov/icd10manual/fullcode_cms/p0001.html
[2] http://www.cms.gov/ICD10/Downloads/MsdrgConversion.pdf
[3] https://www.cms.gov/ICD10/17_ICD10_MS_DRG_Conversion_Project.asp

Long Term

There is little doubt that ultimately ICD-10 will form the basis for a much more precise weighting of DRGs based on the increased granularity of ICD-10 and the ability to distinguish severity, risk, comorbidities, sequelae, complications and a variety of other factors that may result in significant variations in cost factors. In the paper on the CMS website entitled *Impact of the Transition to ICD-10 on Medicare Inpatient Hospital Payments*, it is stated that; "It can be anticipated that CMS will begin to optimize MS-DRGs for ICD-10 once ICD-10 coded data becomes available allowing the MS-DRG payment weights to be simultaneously recalibrated".

Given that certain variations in parameters of disease as defined in ICD-10 can result in quantum differences in risk, severity and cost impacts it seems highly likely that payment methodologies will adjust payment based on these parameters as more ICD-10 based data become available for analysis.

Methodology

The methodology of the MSDRG conversion process consisted in translating existing ICD-9 code group logic to a new set of ICD-10 codes that would behave similar in the application logic to historical performance with ICD-9 codes. Data was used to analyze the impact of this conversion logic to assure that revenue impact remained as neutral as possible in the aggregate. Because of many to many nature of the relationship between ICD-9 and ICD-10 a direct one to one mapping proved difficult if not problematic in a number of cases. Additionally exact mapping of the meaning of these codes occurs in only a limited number of cases. GEM mapping was used to identify the new ICD-10 codes through bi-directional mapping as well as an analysis of historical data patterns and business and clinical judgments. Since 2009 inpatient Medicare data was used, the methodology for conversion and analysis was limited and could not be generalized with certainty outside of the Medicare population or to other grouper methodologies.

Assumptions

The study used GEM files to attempt to reconstruct an ICD-10 database by mapping existing ICD-9 data to ICD-10. While this approach is really the only viable way to assess impacts and does make statistical sense in the aggregate, there is no historical data that shows how coders will code today's conditions in an ICD-10 environment. This make it difficult to predict the impact on payment of claims coded natively in ICD-10 and either processed natively or mapped backward to ICD-9 for processing in systems that have not been converted.

Findings and Lessons Learned

Based on the ICD-10 MSDRG impact study the following key findings and lessons learned were noted:

- "Any attempt to use the GEMs to map ICD-9-CM data to ICD-10 data as opposed to convert an application to a native ICD-10 version of the application is extremely problematic"
- "Except in these very narrow circumstances, it is not possible to reliably convert an ICD-9-CM database to an ICD-10 database that corresponds to the full specificity of ICD-10 because the necessary information is simply not available in ICD-9-CM."

- "Thus, a universal map is not feasible without a potential loss of accuracy for some applications. The results obtained in this study for MS-DRGs using the Reimbursement Map are best case results."
- "If payers do not convert their core payment and claims adjudication systems to native ICD-10 versions and instead use an ICD-10 to ICD-9-CM mapping in order to continue to use their existing ICD-9-CM based systems, there are potential biases and unintended results of such an approach. This is especially true if a payer attempts to use a single uniform mapping across all systems."
- "Although the transition from the ICD-9-CM version of the MS-DRGs to the ICD-10 version of the MS-DRGs resulted in 1.23 percent of the patients being assigned to different MS-DRGs, payment increases and decreases due to a change in DRG assignment essentially netted out."

Hospital Impacts in an ICD-10 Environment

Attempts to generalize data analysis of current data to assess DRG financial impacts in a real world ICD-10 environment is difficult because of a number of factors that are discussed below.

Documentation

ICD-10 requires a new level of documentation that substantially exceeds that required for ICD-9. Many new concepts are will now be coded in over 69,000 diagnosis code and 72,000 institutional procedure codes. Clinical documentation improvement programs will need to be completely re-designed to focus on those new ICD-10 concepts that may not be required today. Many of these new concepts are conditionally driven. For example in the clinical area of fracture related diagnosis and care:

- For any given specific bone fracture, there is a new set of specific anatomical locations within that bone that are relevant.
- For fractures that are open (wound exposing the fracture to the exterior), there is additionally a need to document which "Gustilo" classification of open fractures applies.
- For fractures that involve the growth plate in children, there is an additional need to document the "Salter-Harris" classification that defines the risk of growth complication with these types of fractures

In theory clinicians should be documenting this type of information today as part of good practice, but the reality is that documentation frequently does not include the medical concepts that are critical for good coding. Lack of proper documentation will have direct financial impacts as well as impacts to the reliability of healthcare information used for a variety of purposes. This information assumes that codes represent the reality of the patient's condition and the institutional procedures that are performed to maintain or improve the patient's condition. If information does not represent reality, then the foundation by which we make a host of key decisions is in jeopardy.

Training

The substantial changes in the number of codes, structure of codes and guidelines for code use will require significant training for coding professionals in addition to the training needed for clinicians related to clinical documentation need to support coding in the ICD-10 environment. For institutional procedure codes (ICD-10-PCS) there have been dramatic changes in the level of anatomical detail as well as the definition of the specifics of a number of procedures that will require coding professionals to have a much greater understanding of anatomy and pathophysiology. They will need to be able interpret current clinical terminology in way that is compatible with very different terminology defined in ICD-10-PCS. For example:

- If the thoracic surgeon dictates that he removed the right upper lobe of the lung, the coding professional must be able to translate this to a "resection" of the right upper lobe of the lung since a lobe of the lung under PCS is consider a complete body part and a "resection" in PCS means the removal of a complete body part.
- If the physician records that he did a "tracheostomy", the coding profession must translate to a "bypass"
- If the obstetrician documents that he performed a "cesarean delivery" the coding professional must translate this to "extraction of products of conception".

It will take quite a bit of training time and effort to assure that the coding professional has the knowledge and skills necessary to code properly in this new environment.

Coding Quality

It is highly likely that there will be substantial challenges to coding quality considering these significant changes to a very new coding and documentation paradigm. Coding quality is an unknown factor at this time since there is no real historical experience with these codes. Lack of predictability in coding will translate into an unpredictable financial environment even given the same case mix of conditions and procedures that hospitals see today.

Productivity

Given the complexity of coding and the level of training required, it is likely that there will be a substantial decrease in productivity. The Canadian experience in this transition showed that there was a 50% drop in productivity initially, and that a year post implementation that was still less than a full return to pre-implementation levels[4]. In addition, Canada did not implement the ICD-10-PCS codes that may pose a significant additional coding challenge in the United States. Productivity and increased level of physician queries are likely to impact outbound side of the revenue cycle.

[4] Implementation of ICD-10: Experiences and lessons learned from a Canadian Hospital, AHIMA, http://library.ahima.org/xpedio/groups/public/documents/ahima/bok3_005558.hcsp?dDocName=bok3

Payer Challenges

Payers have arguably a bigger challenge to operations in an ICD-10 environment. The primary role of insurers is to assure that the cost of delivery of healthcare services is maintained with the confines of premium dollars or other funds available for care. Understanding and managing risk, and identifying reasonable payment for the right procedures based on the patient condition is key to what payers are chartered to do. ICD-10 redefines patient's conditions and the institutional procedures done to improve or maintain these conditions in a way that is completely different than how we define health conditions and procedures today. Payers will have to re-define policies that drive payment decisions as well as the system logic based on these codes to implement these policies from an operational perspective. Analytic categories, contracting scopes, coverage and benefit definitions, mandates and a variety of other key payer requirements will need to be remediated to support ICD-10. It is likely given the extent and complexity of the work that needs to be done, that there will be errors in redefining rules and categories with consequences to payer side processing and therefore provider payments.

Predicting Cost

ICD-10 redefines the nature of the burden of illness in the population. We have no ICD-10 history and we have not had any experience coding or billing in this new ICD-10 world so predicting how costs will be distribute in an environment defined by ICD-10 poses significant challenges for budgeting, contracting monitoring utilization and a host of other important activities that require experience what services are delivered and why. Just as providers have considerable concern about how they will get paid in this new environment for the same conditions and procedures, payers are concern about what types of codes they will see from providers given the same conditions and how those codes will be processed in their own systems.

Translation

Because of the nature of these codes, translation becomes challenging and at times problematic. Crosswalking in either direction between ICD-9 and ICD-10 will result in accurate translation in only about 5% of the mappings. In almost all other mappings, some medical concept will be either lost or assumed in translation. Inaccurate mapping will have implications for payment as well as the reliability of healthcare data for analytics such as quality metrics or any other reporting or business intelligence. Mapping will have a variety of unpredictable consequences for DRG groupings as will be illustrated in the examples below. Since every payer may have their own mapping and may deploy crosswalks in different ways, there could be considerable confusion for the provider who is dealing with multiple payers and getting different translation for the same cases.

DRG Analysis

As might be inferred from the discussion to this point, there is a significant chance that DRG assignment may be quite different than today at a hospital level.

Key Questions

From the hospital perspective there are a few key questions that need to be addressed in an attempt to understand the potential impacts to DRG assignment.

1. Given the same procedure and/or conditions will documentation support accurate coding in ICD-10?
2. Given the same procedures and/or conditions will coding professionals assign consistent and correct codes in ICD-10?
3. Given the same procedures and/or conditions, will payment be the same when coded properly in ICD-10 as compared to ICD-9?
4. Given the same procedures and/or conditions, and assuming proper coding in ICD-10, will the payer crosswalk the code back to ICD-9 for processing, and will that impact payment?

Vendor Offerings

There are many vendors who are offering quick and easy solutions to analysis and "neutralizing mapping solutions" for DRG impacts. Even though there is no quick, easy or foolproof mapping solution, the "magic" offered by vendors can be very appealing particularly when there are some well scripted demonstrations. Evaluating vendor offerings in this area requires a carefully analysis:

- Assess the degree to which the vendor can help you answer the key questions noted above.
- Create scenarios that reflect you environment and ask the vendor to demonstrate how their product will help you answer these questions.

Identifying Focus

Analysis of diagnosis, procedure and DRG codes shows a significant skewing of the concentration of dollars and volume to a relatively small set of codes. An analysis of 3 years of payer data for inpatient claims reveals that 3% of ICD-9 codes historically account for 80% of the billed charges[5]. Similarly 10% of DRGs account for 60% of billed charges. With 69,000 ICD-10-CM codes and 72,000 ICD-10-PCS codes, it makes sense to focus efforts on those areas that have the highest potential impact. Besides focus on high dollar and high volume impacts, it is important to look at recurring patterns within these code sets. For example, 30% of the codes do nothing but define the difference between 'right' and 'left'. Numerous other concepts like 'initial' and 'subsequent' encounters and other concepts recur thousands of times within these codes. Understanding and leveraging these recurring concepts will improve focus and efficiency in analysis in these areas by understanding the impact of the recurring concepts rather than individual codes.

[5] Based on Health Data Consulting analysis of 3years of data from a commercial payer covering approximately 1 million lives.

Potential Risk Areas

Preliminary analysis of DRG migration from ICD-9 to ICD-10 based on the experience with MSDRG redefinition, suggest that with proper documentation and correct coding, DRG grouping should remain reasonably revenue neutral initially by design. There are however potential risks for the following reasons:

- Documentation to support coding may be inadequate
- Coding may not be accurate initially
- Payers may crosswalk natively coded claims resulting in an unanticipated DRG assignment
- DRG weighting is likely to change dramatically as there is more experience with ICD-10 and its ability to differentiate risk and severity definition.
- There are a few clinical areas where there is a substantial difference in DRG payment even assuming accurate coding, with appropriate documentation and native processing by payers.

Actionable Information

As noted above, there are a number of vendors who are offering very sophisticated analytic models that appear to demonstrate large potential variations in DRG assignment between ICD-10 and ICD-9. When carefully looking at the output of these reports however, in most instances the potential variations in assignment don't really translate to real conditions and procedures as they might be coded and grouped in reality. Looking at information about DRG variation requires an understanding of how this information will be actionable.

- Does the information provided in the output of analysis represent real risk in a real hospital environment with real patient cases?
- Assuming the risk is real, is there a reasonable action that can be taken that is likely to reduce that risks?

A hard look at the answer to these questions will help establish the value of analytic models.

Scenarios

The following examples based on clinical scenarios demonstrate an analysis of coding and DRG grouping that illustrates potential risks.

Different procedures and conditions

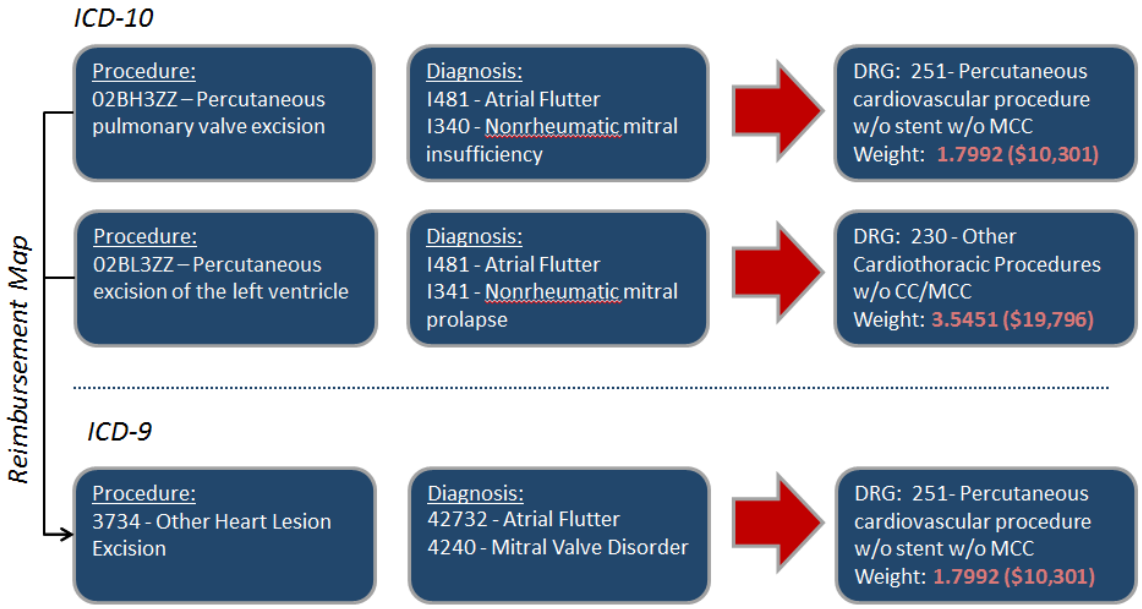

Fig 1

In the example illustrated in Fig 1, different procedures with different diagnosis result in significantly different payments based on native ICD-10 coding and DRG grouping. If these conditions and procedures are mapped back to ICD-9 using a standard reimbursement map, the payment will revert to a substantially lower payment for those cases that would have been weighted higher in ICD-10 natively.

Same condition different DRGs

A 30 year old male has a repair of the abdominal aorta due to a laceration with damage to surrounding soft tissues of the abdomen from an assault with a knife.

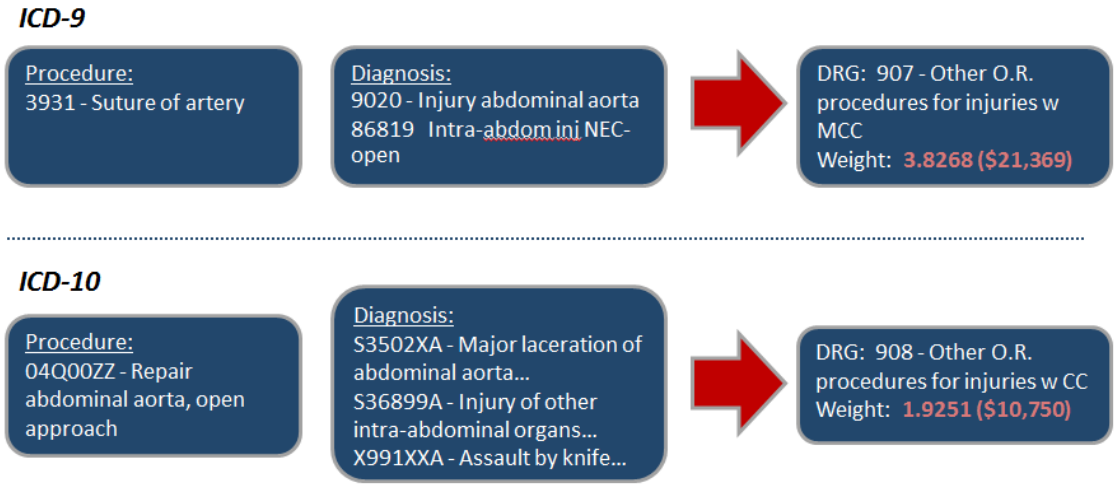

Fig 2

In the example illustrated in Fig 2, the same patient condition coded properly in ICD-9 and ICD-10 will group to a substantially lower DRG in ICD-10. While this represents a shift downward in payment, in a number of other cases the shift is upward.

Unintended consequences

A 50 year with rheumatoid arthritis is admitted for a right total hip replacement. The patient is noted to have respiratory failure as a secondary diagnosis at the time of discharge, but this was not the primary reason for the patients hospitalization.

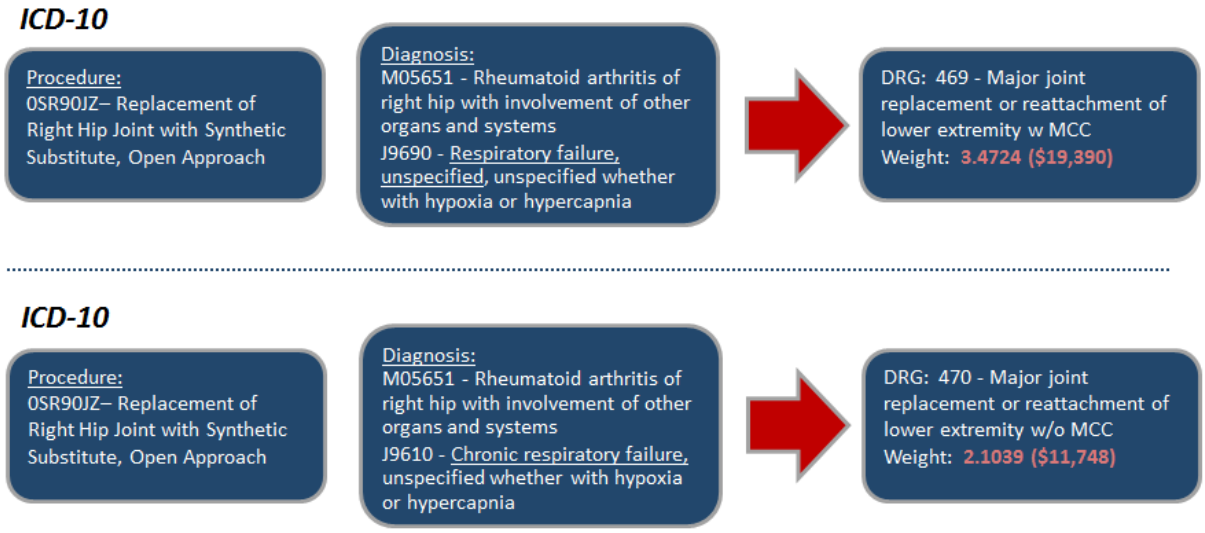

Fig 3

In the scenario illustrated in Fig 3, the patient with the same condition and procedure groups to two different DRGs because of an anomaly in the definition of respiratory failure between ICD-10 and ICD-9. Using an 'unspecified' code in this case actually results in a higher payment than using a definitive code for 'chronic respiratory failure'. This is not a common finding and clearly it will be favorable in nearly all instances to code to the more specific level, occasional scenarios come up with some unanticipated concepts.

While none of the above examples suggests that there is any one strategic approach to ICD-10 it is clear that a deeper look is needed at how DRG groupings may vary in unexpected ways during the transition. Most of the unintended shifts and anomalies in DRG grouping will more than likely be addressed in upcoming releases of DRG groupers as we gain historical experience with these codes, none the less there will be areas of risk and unintended consequences during the transition that will need to be understood.

Summary

The transition to ICD-10 will result in significant challenges in many areas. The impact on DRG assignment will create significant uncertainty for hospital revenue cycles. As noted above assurance of revenue neutrality may not prove true in a real world hospital environment for a

number of reasons. It is critical to look at how real cases in today's environment might be handled in an ICD-10 environment and how translation of codes backwards by payers may result in changes in payment. The information presented by many vendor's out-of-the-box reporting models isn't really actionable on closer scrutiny. There is no substitute for examining real life scenarios that represent high dollar, or high volumes cases in the organization to determine real potential impacts that can guide strategic approaches to minimizing risk and identifying future opportunities in an ICD-10 world.