PROJECTED IMPACT OF THE ICD-10-CM/PCS CONVERSION ON LONGITUDINAL DATA AND THE JOINT COMMISSION CORE MEASURES

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Tags: CD-10-CM/PCS implementation; longitudinal data reporting, comparability ratios; Joint Commission Core Measures

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Abstract

The transition from ICD-9-CM to ICD-10-CM/PCS is expected to result in longitudinal data discontinuities, as occurred with cause-of-death in 1999. The General Equivalence Maps (GEMs), while useful for suggesting potential maps do not provide guidance regarding the frequency of any matches. Longitudinal data comparisons can only be reliable if they use comparability ratios or factors which have been calculated using records coded in both classification systems. This study utilized 3,969 de-identified dually coded records to examine raw comparability ratios, as well as the comparability ratios between the Joint Commission Core Measures. The raw comparability factor results range from 16.216 for Nicotine dependence, unspecified, uncomplicated to 118.009 for Chronic obstructive pulmonary disease, unspecified. The Joint Commission Core Measure comparability factor results range from 27.15 for Acute Respiratory Failure to 130.16 for Acute Myocardial Infarction. These results indicate significant differences in comparability between ICD-9-CM and ICD-10-CM code assignment, including when the codes are used for external reporting such as the Joint Commission Core Measures. To prevent errors in decision-making and reporting, all stakeholders relying on longitudinal data for measure reporting and other purposes should investigate the impact of the conversion on their data.

Key words: ICD-10-CM/PCS implementation; longitudinal data reporting, comparability ratios; Joint Commission Core Measures

Introduction

The US healthcare system currently uses ICD-9-CM codes for a wide variety of purposes, including disease monitoring and quality measure reporting. Preparations for the implementation of the International Classification of Diseases, Tenth Revision, Clinical Modification, and International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-CM/PCS), now expected to be delayed until October 1, 2015, have been underway for years. Much of the focus has been on preparing coders and physicians to use the new classification system.[1–4] Many providers are also conducting in-depth analyses of the expected financial impact of the conversion.[5–7] Other impacts, such as the comparability of coded data over time, that have not received as much attention may have significant effects on the healthcare industry.

Background

The transition to ICD-10-CM/PCS is expected to result in longitudinal data discontinuities for disease

and procedural reporting. These data discontinuities occurred with cause-of-death statistics when ICD-10 was adopted for mortality reporting in 1999.[8] While the ICD-10-CM/PCS General Equivalence Mappings (GEMs) are useful for suggesting potential equivalent ICD-10-CM or ICD-10-PCS codes for ICD-9-CM codes, the GEMs do not provide comparability ratios, sometimes also called comparability factors. Comparability ratios are needed to be able to track and trend data longitudinally. For example, a healthcare organization tracking heart disease or other conditions would need a comparability ratio to fully understand its patient population and the impact of any clinical interventions following the implementation of ICD-10-CM/PCS. A comparability factor of 100 would indicate that the same number of cases were coded to a given disease or condition in ICD-10-CM as in ICD-9-CM, meaning minimal discontinuity. A comparability factor less than 100 would indicate that fewer cases were coded for a given disease or condition in ICD-10-CM than in ICD-9-CM, whereas a factor greater than 100 would suggest that more cases were identified in ICD-10-CM than in ICD-9-CM. Understanding the impact of the classification system change on longitudinal data will be important for researchers and managers for many reasons, including disease management, population health management, value-based purchasing contract negotiations, and reporting of quality measures, such as the Joint Commission Core Measures, among other purposes.

Methods

Institutional Review Board (IRB) approval was sought and obtained from both the University of Wisconsin Hospital and Clinics and the School of Biomedical Informatics at the University of Texas Health Science Center at Houston. After consultation with internal experts in business planning, decision support, and managed care contracting, the hospital selected two months of records, 2,191 discharges from July 2011 and 1,778 discharges from July 2012, for recoding in ICD-10-CM/PCS. July 2011 and July 2012 were determined to be representative of the facility's typical payer and patient mix.

Four experienced ICD-9-CM coders who were internally trained in ICD-10-CM/PCS were selected to perform the recoding. The facility chose to utilize a "translational" method rather than natively recoding in ICD-10-CM/PCS. This method means that assistive encoding software that suggested the appropriate codes was used to suggest crosswalk values where possible. When this approach was not possible, the coders natively recoded the record. Outsourced or contract coders were used to backfill the ICD-9-CM coding gap, thus providing the in-house coders with the valuable ICD-10-CM/PCS coding experience.

Once the dually coded data set was created, it was de-identified. The de-identified data were provided to the School of Biomedical Informatics at the University of Texas Health Science Center at Houston via secure FTP download. Frequencies were run for all ICD-9-CM and ICD-10-CM codes without respect to position. Codes that appeared more than 80 times in ICD-10-CM were selected for comparison with ICD-9-CM. The 2013 GEMs were used to determine matches between ICD-10-

CM/PCS codes and ICD-9-CM codes. The comparability factor calculation used was taken from the 1999 National Center for Health Statistics cause-of-death report.[9] The formula is $C_i = D_i(\text{ICD10})/D_i(\text{ICD9}) \times 100$. For example, if an ICD-10-CM code occurred 100 times in the data set and the GEM-indicated matching ICD-9-CM code occurred 120 times in the data set, the comparability factor would be 83.3 = (100/120) × 100.

The Joint Commission Core Measure comparison was created utilizing the July 2, 2013, National Hospital Inpatient Quality Measures, Appendix A for ICD-9-CM codes and Appendix P for the ICD-10-CM/PCS codes. Table 1 is an example of the tables used in the process of calculating the Joint Commission Core Measure comparability factor.

Findings

The comparability factor results of the raw frequencies of ICD-10-CM codes divided by the raw frequencies of ICD-9-CM codes are listed in ascending order in Table 2. The results range from 16.216 for Nicotine dependence, unspecified, uncomplicated to 118.009 for Chronic obstructive pulmonary disease, unspecified. The comparability factor for conditions of interest include those for Peripheral vascular disease, unspecified (79.245); End-stage renal disease (82.803); Type 2 diabetes mellitus without complications (88.679); Unspecified asthma, uncomplicated (91.611); and Anemia, unspecified (93.678).

Table 3 details the comparability factor for selected Joint Commission Core Measures. The results range from 27.15 for Acute Respiratory Failure to 130.16 for Acute Myocardial Infarction in descending order.

Discussion

These findings indicate that the GEMs and encoder assistive tools designed to help with the ICD-10-CM conversion will not ensure longitudinal data continuity between ICD-9-CM and ICD-10-CM. Organizations will use these tools to code the patient encounters; however, additional processing will be required to ensure data continuity after the conversion. Furthermore, while longitudinal data comparability is important, organizations will also have to begin reporting Joint Commission Core Measures and other metrics using ICD-10-CM/PCS. A failure to fully comprehend the impact of the classification system change could put organizations at a disadvantage.

To explore some of the longitudinal comparability factor, the ICD-10-CM codes F17.200 and F17.210, for nicotine dependence, have comparability factor of 16.216 and 65.718, respectively. This represents only 92 percent of the codes assigned to ICD-9-CM code 305.1, Tobacco use disorder. The unspecified nicotine dependence noted in ICD-10-CM should concern organizations attempting to track efforts relating to smoking cessation. Although the researchers did not have access to the

source records, it can be supposed that the unspecified nicotine dependence code resulted from a lack of specific documentation.

Some of the longitudinal differences may simply be due to the vast differences in the classification systems. The comparability factor of 40.762 for Heart failure, unspecified (I50.9) likely reflects the lack of a code for congestive heart failure, unspecified, as is found in ICD-9-CM. The comparability factor of 61.347 for atrial fibrillation is most likely due to the presence of four types of atrial fibrillation in ICD-10-CM. Moving to the findings of comparability factor greater than 100, Chronic obstructive airway disease had a comparability factor of 118.009 because of the inclusion of Asthma with chronic obstructive pulmonary disease, Chronic asthmatic obstructive bronchitis, and Chronic bronchitis with airway obstruction, among other variants—most of which are not included in the ICD-9-CM code for Chronic airway obstruction, not elsewhere classified (496). These findings indicate that changes in the classification system may result in data differences that could affect healthcare organizations in a variety of ways. For example, an organization that had negotiated a payment contract based on its ability to maintain a certain number of chronic obstructive airway disease cases may find that it cannot meet the goals that were set on the basis of ICD-9-CM codes.

The comparability factor for quality measure reporting are expected to be of special interest to organizations. The comparability factor for the Joint Commission Core Measure of Acute Myocardial Infarction is 130.16. As can be seen in Table 4, this Core Measure includes more codes and cases with ICD-10-CM than with ICD-9-CM. A review of the codes reveals that the ICD-10-CM codes include those for acute ischemic heart disease as well as various forms of acute myocardial infarction. Table 5 details the findings for the Respiratory Failure Core Measure, which had a comparability factor of 27.15. This factor is likely due to increased detail found in ICD-10-CM, which separates respiratory failure with hypoxia and hypercapnia from respiratory failure without those conditions. This limited analysis did not include access to the source records or the Core Measure reports from the same time period. These results do indicate that healthcare organizations may want to understand the impact of the classification system change on the various quality measures and other reporting requirements that currently use ICD-9-CM codes.

These findings related to comparability factor between ICD-9-CM and ICD-10-CM codes and the Joint Commission Core Measures indicate that the coming conversion will have an impact on the continuity of longitudinal data, possibly including quality measures, population health management, disease management, and financial negotiations. The main limitation of this study is that it includes only one organization's data over two months, so the findings cannot be generalized to other organizations. For the next steps, the researchers are creating confusion matrices to establish the overlap between the two classification systems for the different Joint Commission Core Measures. It is hoped that these matrices will assist in more fully understanding the differences between the classification systems.

Conclusion

This limited study has revealed significant differences in comparability between ICD-9-CM and ICD-10-CM code assignment, including when the codes are used for external reporting such as the Joint Commission Core Measures. All stakeholders relying on longitudinal data for measure reporting and other purposes should investigate the impact of the conversion on their data. Without understanding the magnitude of the difference that is attributable to the change in classification systems, those using the data may reach erroneous conclusions or make questionable decisions.

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Notes

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