Utilizing Structured Reporting to Increase the Number of Reports Correctly Coded in ICD-10

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Hypothesis

The use of structured reports to include all necessary elements for ICD-10 diagnosis coding will result in a decreased number of radiology reports with an unspecified ICD-10 code.

Introduction

The tenth version of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) replaced version 9 (ICD-9) in the United States on October 1, 2015. The transition affected all HIPAA-covered entities [1] which means that every payer and every radiology practice in the United States was affected.

The major challenge of converting a practice to coding via ICD-10 is the massive increase in the number of codes. The ICD-10 coding system utilizes more than 60,000 diagnosis codes compared to only 13,000 for ICD-9 [3]. While there are number of benefits to the increased number of codes, the overarching result is greater specificity in diagnosis and classification of inpatient procedures [1].

With the transition to ICD-10, other specialties have focused on the increased documentation required from healthcare providers [4-7]. The purpose of this quality improvement initiative was to modify our final radiology reports to include the documentation required for the increased specificity and ultimately, accurate ICD-10 coding.

Methods

The specific aim of the project was to decrease the percentage of reports coded with an unspecified ICD-10 code, from our baseline value of 43% to our ICD-9 level of 20%. Because this study was an improvement project, review by the local institutional review board was not required.

This project took place in the radiology department of a large academic hospital, comprised currently of 36 faculty radiologists, 12 fellows, and 3 – 5 radiology residents at any given time (from a pool of 50 residents). The radiology department uses an integrated electronic medical record (EMR) system—radiology information system (RIS) (Radiant; Epic Systems, Verona, WI); a PACS (Halo; Merge Healthcare, Chicago, IL); and a speech recognition system (PowerScribe 360; Nuance Communications, Burlington, Mass). All dictated reports use one of approximately 350 departmental standard structured reports [8]. Once dictated, radiologist reports are coded using computer-assisted coding software (CodeRyte CodeAssist; 3M Health Information Systems, Salt Lake City, UT). Examinations coded with an unspecified code by the automated coding engine are subsequently routed to a human coder. Beginning April 1, 2014, 25% of examinations were dual coded for ICD-9 and ICD-10, and the number of dual coded examinations increased gradually until reaching 100% by July 2015.
Baseline data were collected starting in October 2013 for all radiology examinations dictated by 10 radiologists. The computer-assisted coding software processed the reports and generated ICD-10 codes. We then requested a consultant (Coding Strategies, Inc, Powder Springs, GA) to review the reports in order to identify areas of risk. After the areas of risk were ascertained, a series of interventions were planned and tested. The result of each intervention helped guide further interventions and final implementation.

Results

During the baseline report analysis, the 10 selected radiologists dictated 12,077 reports; 5,151 (43%) of which were assigned an unspecified ICD-10 code. Upon analysis of those reports coded as unspecified, we identified several trends. First, the majority of deficient reports (62% [3197]) were rendered for radiographic examinations; second, many reports contained insufficient information in the provided clinical history; and third, numerous fracture descriptions lacked sufficient detail. We addressed the deficiencies using several methods. We first set out to improve the clinical histories with efforts that we reported previously [9]; namely, a quality improvement project was initiated to teach the technologists to obtain a clinical history directly from the patient. Through this effort, the percentage of studies that contained a complete clinical history improved from 57.8% at baseline to more than 95% by October 2014. Through routine auditing, we confirm that this improvement is sustained.

After the clinical histories were improved, we focused on adjustments to the departmental musculoskeletal radiography reports with a second quality improvement project. For this step, a musculoskeletal radiologist worked together with an orthopedic surgeon to create a standard lexicon of fracture descriptors. After consensus was reached, the remaining radiologists were educated about the current standard definitions via lecture format, through email communication, and with postings on the departmental webpage.

A subset of eight departmental standard structured reports were then modified to 1 of 4 new templates that utilized the new fracture descriptors. The templates included (from least structured to most structured): a narrative report, a narrative report that provided a checklist list of the required elements, a structured report that allowed some narrative, and a completely structured report that included structured language options (Figs. 1-4). Each report was tested concurrently on two body parts, one with more simple anatomy and one with more complex anatomy (group 1: forearm and wrist; group 2: elbow and hand; group 3: leg and ankle; and group 4: knee and foot). Reports rendered for the extremity radiographs before and after initiation of the new lexicon were coded using automated coding software. The percentage of reports that generated an unspecified ICD-10 code before and after the change was calculated and compared. The primary outcome (dependent) variable was the percentage of exams with an unspecified ICD-10 code.

Figure 1

Figure 2
Use of the new standardized test reports was implemented for the eight different radiographic studies on May 26, 2015. Data were collected during the subsequent month. In order to ensure that the results were independent of the body part groups, the report formats were switched on August 6, 2015. At baseline, each body part group utilized the narrative report. The percentage of reports in each group that contained an unspecified code was 77.8%, 64.9%, 73.1%, and 43.3% respectively. After the reports were changed to one of the four new report styles (body group 1: narrative; body group 2: checklist; body group 3: moderate structure; and body group 4: completely structured), the percentage of reports that contained an unspecified code changed to 78.6%, 60.2%, 80.1%, and 47.7% respectively. In the second test, the body group and report styles were switched so that body group 1 was associated with the completely structured report, body group 2 was associated with the moderate structured report, body group 3 was associated with the checklist, and body group 4 was associated with the narrative report. In this test, the percentage of reports that contained an unspecified code was 80.4%, 46.2%, 32.2%, and 42.1% respectively.

Because we were unable to determine whether body part had an effect on the percentage of unspecified reports, we turned to survey data to help make a more informed decision regarding the best report. By email, we requested that all staff radiologists complete a survey to determine their reporting preferences. The respondents were asked to assess each of the four templates: (A) narrative report; (B) narrative report that provided a checklist list of the required elements; (C) structured report that allowed some narrative; and (D) a completely structured report that included structured language options (Figs. 1-4). Fourteen radiologists responded to the initial survey (Figs. 5-7). The preference for the templates, in order from greatest to least, was B, A, C, D (weighted averages; B 3.21, A 3.00, C 2.21, D 1.57). The perceived impact on efficiency, in order of most to least, ranged from B, A, C, D (weighted averages; B 2.29, A 1.93C, 1.79, D 1.71). The perceived ability of the template to include all information necessary for ICD-10, in order of best to worst, was D, C, B, A (weighted averages: D 3.93, C 3.79, B 3.64, A 2.43).
**Q1** Rate each template (see images above). Select 1 for your first choice and 4 for your last choice.

*Answered: 14  Skipped: 0*

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<th>1 - First choice</th>
<th>2</th>
<th>3</th>
<th>4 - Last choice</th>
<th>Total</th>
<th>Weighted Average</th>
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<tr>
<td>A - Narrative</td>
<td>35.71%</td>
<td>42.86%</td>
<td>7.14%</td>
<td>14.29%</td>
<td>14</td>
<td>3.00</td>
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<tr>
<td>B - Checklist</td>
<td>50.00%</td>
<td>35.71%</td>
<td>0.00%</td>
<td>14.29%</td>
<td>14</td>
<td>3.21</td>
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<tr>
<td>C - Medium structure</td>
<td>7.14%</td>
<td>21.43%</td>
<td>57.14%</td>
<td>14.29%</td>
<td>14</td>
<td>2.21</td>
</tr>
<tr>
<td>D - Most structured</td>
<td>7.14%</td>
<td>0.00%</td>
<td>35.71%</td>
<td>57.14%</td>
<td>14</td>
<td>1.57</td>
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**Q4 How does each template impact your efficiency?**

Answered: 14  Skipped: 0

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<th>Small negative impact</th>
<th>No significant impact</th>
<th>Small positive impact</th>
<th>Substantial positive impact</th>
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<tbody>
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<tr>
<td>D - Most Structure</td>
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<td>14.29%</td>
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Based on survey results (particularly with respect to the ability of the template to include the needed information), feedback from the human coders and the paid consultant, and the comparative testing of the two types of reports (narrative vs. more structured), we decided to implement a more structured report. A second survey asked the radiologists to state their preference between the two more structured reports (C and D). Twenty-four radiologists responded to the second survey; 14 radiologists (58.33%) preferred report format C and 10 (41.67%) preferred D.

The reports were changed to fit format C in mid-September, prior to the conversion to ICD-10 coding on October 1st. In October and November, the percentage of reports that contained an unspecified code was 59.3%, 57.9% 37.86%, and 24.17% for body groups 1 through 4 respectively. Overall, the total number of reports that contained an unspecified code for all departmental studies was 26%. This is similar to the 20% of reports with an unspecified code in the ICD-9 baseline, and is improved from the 43% of baseline studies with an unspecified ICD-10 code.
Discussion

With the transition from ICD-9 to ICD-10, the number of codes has expanded greatly and requires increased specificity in documentation from medical providers. With the use of structured reporting, we have shown that the transition to ICD-10 can be relatively seamless. Our project indicates that structured reports can help ensure that the specificity needed for ICD-10 coding can be achieved through a series of quality improvement steps. While we focused our efforts on reports for musculoskeletal radiographic examinations, a similar approach can be used for other aspects of radiology.

Conclusion

The number of radiology studies with a proper ICD-10 code can be improved through quality improvement methodology and by the use of structured reporting.

References


Keywords

ICD-10, Structured Reporting, Quality Improvement