The Impact of the ICD-9-CM to ICD-10-CM Conversion to Identify Chronic Conditions in Administrative Claims

Rachel VanGilder1, Ph.D., Kathy Schneider2, Ph.D., Brandon Jeffrey3, Ph.D., Aaron O’Donnell3, B.A., Tena Zingerman4, RHIT, Dan Parks5, M.S., and Michelle Seal6, B.S.
1NewWave Telecom & Technologies, Inc. 2 Schneider Research Associates, LLC. 3 General Dynamics Health Solutions 4 Centers for Medicare & Medicaid Services

INTRODUCTION
On October 1, 2015, the conversion from the ICD-9-CM to the ICD-10-CM occurred. The ICD-10-CM has more than 70,000 unique codes compared to approximately 6,000 codes with ICD-9-CM. The General Equivalence Mappings (GEMs) were created by the Centers for Medicare & Medicaid Services (CMS) and the Centers for Disease Control and Prevention (CDC) to guide the forwardbackward mappings between ICD-9-CM and ICD-10-CM and interpersonally validate linking a ICD-9-CM to an ICD-10-CM diagnosis, however often there are many ICD-10-CM diagnosis codes associated with a single ICD-9-CM diagnosis code. The mappings between ICD-9-CM and ICD-10-CM using the GEMS and validated through the ICD-10-CM codes.

METHODS
Study Design: Under contract with CMS, NewWave Telecom and Technologies – General Dynamics IT joint venture receives Medicare claim data files which are processed by CMS and are loaded to the CCW database. The Health Insurance Portability and Accountability Act (HIPAA) electronic administrative transactions including an Electronic Data Interchange (EDI) and Health Level Seven (HL7) transactions were evaluated.

RESULTS
We found no disruption in the receipt of claims after the implementation to ICD-10-CM (Table 1). The CCW venture receives Medicare claim data files which are processed by CMS and are loaded to the CCW database. The algorithms used to identify these claims were updated to include the new ICD-10-CM codes. Regardless of when a claim was submitted for payment, services that occurred prior to October 2015 are included in the CCW database. The Impact of the ICD-9-CM to ICD-10-CM Conversion to Identify Chronic Conditions in Administrative Claims

<table>
<thead>
<tr>
<th>Year</th>
<th>2013 prevalence</th>
<th>2014 prevalence</th>
<th>2015 prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMI</td>
<td>0.9</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>Asthma</td>
<td>5.2</td>
<td>5.2</td>
<td>6.1</td>
</tr>
<tr>
<td>Asthma/COPD</td>
<td>14.3</td>
<td>14.3</td>
<td>16.7</td>
</tr>
<tr>
<td>Hip/Pelvic Fracture</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
</tr>
</tbody>
</table>

To determine whether the prevalence of these conditions was impacted by the conversion to ICD-10, we calculated the prevalence rates of AMI, asthma, and hip fracture for the Medicare fee-for-service population for the most recent three years using the same level of claim maturity.

The prevalence rates for AMI and hip fracture were stable in 2015 compared to 2013 and 2014 (Table 3). However, an increased prevalence of 17% was noted in asthma between 2014 and 2015. Examination of the ICD-10-CM codes diagnoses used for asthma indicated that a number of Chronic Obstructive Pulmonary Disease (COPD) diagnosis codes were updated to ICD-10-CM. The prevalence rates for AMI and hip fracture were stable in 2015 compared to 2013 and 2014 (Table 3). Results showed that the prevalence rates in 2015 were less than 1% different than the same time period in 2014. By December 2015, the number of claims obtained was less than 1% different than the same time period in 2014.

CONCLUSIONS
No disruption in receiving claims in the CCW database was seen with the conversion from ICD-9-CM to ICD-10-CM. In the first month after implementation of ICD-10-CM, fewer claims were received than the same time period in 2014. These differences were narrowed over time and in most instances, more claims were received in December 2015 than in December 2014.

The ICD-10-CM diagnosis codes provide increased specificity of clinical conditions. The mapping between ICD-9-CM and ICD-10-CM diagnosis codes using the GEMS did not produce a 1:1 linkage for the chronic conditions examined. The number of codes associated with a condition did not necessarily increase the prevalence rates. The condition examined with the largest increase in number of unique diagnosis codes in ICD-10-CM compared to ICD-9-CM was hip fracture, with over 10 times the number of codes associated with ICD-10-CM. The increase in diagnosis codes was associated with the location, type and healing associated with a fracture and did not correspondally alter the definition of the condition.

The prevalence rates for AMI and hip fracture remained stable after the conversion from ICD-9-CM to ICD-10-CM. The prevalence rates for asthma and COPD were impacted by the conversion from ICD-9-CM to ICD-10-CM. We hypothesized that the increase in asthma rates would be attributed to 3 ICD-10-CM codes (J44.0, J44.1, and J44.9), which were also associated with COPD using the GEMS, we found that both asthma and COPD prevalence was higher in 2015 after the ICD-10 conversion.

Researchers using the GEMS to map their ICD-9-CM diagnosis codes to ICD-10-CM diagnosis codes will need to validate their ICD-10-CM codes to identify the disease state of interest. Researchers should use caution when interpreting changes in prevalence rates with the transition to ICD-10.