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<th>Rev</th>
<th>Author</th>
<th>Description</th>
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</thead>
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</tbody>
</table>

**Revision History**

ICD-9 and ICD-10 Clinical Concept Examples

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December 11, 2011
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1. Background

ICD-10 offers a significant improvement in the ability to define complexity, risk, severity, comorbidities, complications and a number of other key factors related to patient health conditions. Leveraging the advantages of ICD-10 requires an understanding of some of these key clinical concepts and how the codes are used in ICD-10 codes in different clinical subject areas. Understanding the difference in how these concepts are handled in ICD-10 vs. ICD-9 is important to understand challenges in the transition process and educate business analysts with best practices around managing information migration.

2. Purpose

The purpose of the artifact is to provide examples of concepts of ICD-10 that help to identify risk and severity that are not in ICD-9 today.

3. Clinical Concepts

The following examples demonstrate the type of analysis that will be important during this transition period as well as the opportunities to leverage the advantages of ICD-10. These examples demonstrate significant new parameters available in ICD-10 that offer the ability to identify key factors: risk, severity, complications, etc.

3.1. Diabetes Example

The diabetes example contains an analysis of ICD-9 and ICD-10 codes that include the concept of ‘Diabetes’ within the code definitions. The analysis generated the following statistics:\footnote{This analysis includes only codes that specifically reference Diabetes. There are additional ICD-9 codes that can be added to supplement missing concepts in some cases, however the rules of use are variable and they are left out for purposes of this analysis.}

- The number of codes that include the concept of ‘Diabetes’ in ICD-10 = 276
- The number of codes that include the concept of ‘Diabetes’ in ICD-9 = 83
- The number of unique concepts in ‘Diabetes’ related ICD-10 codes = 62

Table 1 illustrates the analysis of ICD-10 and ICD-9 including the following:

- Clinical Concepts included only in the ICD-10 codes
- Clinical Concepts which exist in both ICD-9 and ICD-10
- Clinical Concepts which exist only in ICD-9

<table>
<thead>
<tr>
<th>Diabetes Code Concepts</th>
<th>Only ICD-10</th>
<th>Both ICD-9 and 10</th>
<th>Only ICD-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underlying condition</td>
<td>Type 1 diabetes</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>Drug or chemical induced</td>
<td>Type 2 diabetes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes Code Concepts</td>
<td>Only ICD-10</td>
<td>Both ICD-9 and 10</td>
<td>Only ICD-9</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------</td>
<td>------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Pre-existing</td>
<td>Poisoning by insulin and oral hypoglycemic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gestational</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underdosing of insulin and oral hypoglycemic</td>
<td>Adverse effect of insulin and oral hypoglycemic</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pregnancy</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>First trimester</td>
<td>Antepartum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second trimester</td>
<td>Postpartum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third trimester</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Childbirth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puerperium</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Neurologic complications</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neuropathy</td>
<td>Neurological complication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mononeuropathy</td>
<td>Polyneuropathy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autonomic (poly)neuropathy</td>
<td>Coma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amyotrophy</td>
<td></td>
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</tr>
<tr>
<td><strong>Lab Findings</strong></td>
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<tr>
<td>Hypoglycemia</td>
<td>Ketoacidosis</td>
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<tr>
<td>Hyperglycemia</td>
<td>Hyperosmolarity</td>
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<tr>
<td><strong>Renal complications</strong></td>
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</tr>
<tr>
<td>Nephropathy</td>
<td>Kidney complication</td>
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<tr>
<td>Chronic kidney disease</td>
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<tr>
<td><strong>Ophthalmologic Complications</strong></td>
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<tr>
<td>Retinopathy</td>
<td>Background retinopathy</td>
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<td></td>
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<tr>
<td>Macular edema</td>
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<tr>
<td>Cataract</td>
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<tr>
<td>Ophthalmic complication</td>
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<tr>
<td>Mild nonproliferative retinopathy</td>
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</tr>
<tr>
<td>Severe nonproliferative retinopathy</td>
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<tr>
<td>Proliferative retinopathy</td>
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</table>
### 3.2. Fracture of the Radius Example

The facture of the radius example analyzes all ICD-9 and ICD-10 codes that include the concept of ‘Fracture’ and ‘Radius’ within the code definitions. The analysis generated the following statistics:

- The number of codes that include the concept of ‘Fracture + Radius’ in ICD-10 = 1734
• The number of codes that include the concept of ‘Fracture + Radius’ in ICD-9 = 27
• The number of unique concepts in ICD-10 codes that include the concepts of ‘Fracture + Radius’ = 52

Table 2 illustrates the analysis of ICD-10 and ICD-9 including the following:
• Clinical Concepts included only in the ICD-10 codes
• Clinical Concepts which exist in both ICD-9 and ICD-10
• Clinical Concepts which exist only in ICD-9

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<th>Both ICD-9 and 10</th>
<th>Only ICD-9</th>
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<tr>
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<td>Colles’</td>
<td></td>
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<tr>
<td>Smith’s</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Barton’s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radial Styloid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fracture Type</td>
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<tr>
<td>Physeal fracture</td>
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<td></td>
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<tr>
<td>Neoplastic disease</td>
<td>Closed</td>
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<td>Greenstick</td>
<td>Pathological</td>
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<td>Stress</td>
<td>Torus</td>
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<tr>
<td>Bent Bone</td>
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<tr>
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<td>Localization</td>
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<td>Shaft</td>
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<td>Upper end</td>
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<tr>
<td>--------------------</td>
<td>-------------</td>
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<tr>
<td>Classification</td>
<td>Salter Harris II</td>
<td>Salter Harris III</td>
<td>Salter Harris IV</td>
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<tr>
<td></td>
<td>Gustillo type I or II</td>
<td>Gustillo type IIIA, IIIB, or IIC</td>
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<td>Bilateral</td>
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</tbody>
</table>

2 The Salter Harris classification identifies different patterns of fractures involving the growth plates in children. A Type I is very low risk and requires minimal treatment; a Type IV has a high risk and requires extensive treatment.

3 The Gustillo classification identifies increasing risk for different patterns of fractures that are exposed to the air.