Toward Big Data: Integrating Cardiovascular Registry and Claims Data to Create a Clinical Practice-Based Analytical Platform

A Report from the NCDR®

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BACKGROUND
There is great promise in ‘big data’ analytics that leverage multiple data sources including clinical registries and claims data, creating large, broadly distributed and clinically rich analytical platforms to study a range of cardiovascular topics, including practice patterns associated with optimal clinical outcomes.

OBJECTIVE
Describe a newly created integrated analytical platform utilizing U.S. cardiovascular registry records and healthcare claims data from real-world clinical practices.

METHODS
The analytical platform includes records from the American College of Cardiology’s (ACC) National Cardiovascular Data Registry (NCDR) and pharmacy, private practitioner and hospital claims data from Symphony Health Solutions (SHS). The NCDR registries provide in-depth clinical phenotyping, SHS has both Rx and medical claims data that can provide longitudinal assessments of adherence, outcomes and utilization. The analytical platform was developed using a HIPAA and HITECH compliant, certified approach.

RESULTS
Over 8.7 million patients have been successfully linked between the NCDR registries and the SHS claims data. On average, 95% of patients in the registry(s) sample was also observed and matched in the SHS datasets.

CONCLUSION
High match rates were observed between the ACC and SHS data, identifying large populations of patients with cardiovascular disease. Clinical registry data combined with longitudinal claims data will generate a ‘broad’ and ‘deep’ data platform for analytics of quality of care and outcomes.

TABLE 1

<table>
<thead>
<tr>
<th>Registry</th>
<th>Registry Focus</th>
<th>ACC/SHS Matched Patient Counts</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTION-GWTG</td>
<td>Acute Coronary Syndrome</td>
<td>487,812</td>
</tr>
<tr>
<td>PINNACLE</td>
<td>Ambulatory Cardiology</td>
<td>3,059,084</td>
</tr>
<tr>
<td>CathPCI</td>
<td>Diagnostic CATH &amp; PCI</td>
<td>5,712,922</td>
</tr>
<tr>
<td>ICD</td>
<td>Implantable Cardioverter Defibrillator</td>
<td>628,510</td>
</tr>
<tr>
<td>IMPACT</td>
<td>Congenital Heart Disease</td>
<td>9,652</td>
</tr>
</tbody>
</table>

INCLUSION CRITERIA
Patient inclusion criteria:
1. Data within calendar years 2006-2014
2. One or more records in ≥ 1 of 5 NCDR registries
3. One or more claims observed in ≥ 1 of 3 SHS datasets: pharmacy, private practitioner or hospital claims
4. Populated data fields enabling generation of a unique, patient-level, synthetic identifier for matching and longitudinal linkage across the registry(s) and the dataset(s).

FIGURE 1: DATA OVERVIEW

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For more information go to CVQuality.ACC.org/NCDR, or email ncdrresearch@acc.org or Greg.Hess@symphonyhealth.com, lead author.