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**Familial, Associational, & Incidental Relationships (FAIR)**

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*Et al.*

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Background

- Familial history may increase risk for certain disorders and diagnosis in patients
- Identification of these risks is the first step of action to keeping patients healthy
- Linking patients could serve as a surveillance tool that helps to identify outbreaks
- Clinical Data Warehouse (CDW) which utilizes the i2b2 (Informatics for integrating biology to bedside)

Methods

- Using a test set of 500 children, we measured the sensitivity and specificity of several linkage algorithms (e.g., insurance id and phone numbers) and validated this tool/algorithm through a manual chart audit.

Phone or Insurance Algorithm

<table>
<thead>
<tr>
<th></th>
<th>True+</th>
<th>True-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test+</td>
<td>289</td>
<td>8</td>
</tr>
<tr>
<td>Test-</td>
<td>110</td>
<td>93</td>
</tr>
<tr>
<td>PPV:</td>
<td>97%</td>
<td></td>
</tr>
<tr>
<td>NPV:</td>
<td>46%</td>
<td></td>
</tr>
<tr>
<td>Sensitivity:</td>
<td>72%</td>
<td></td>
</tr>
<tr>
<td>Specificity:</td>
<td>92%</td>
<td></td>
</tr>
</tbody>
</table>

Algorithm to find Mothers

- Find patients with matching phone number or insurance number as a patient in the initial cohort.
- Eliminate all Male matches
- System select the oldest matching female that is 15-50 years older than the member of the initial cohort.

Demographics

- Average Age: 8
- Male: 52%
- White: 52%

Applications

- The identification of family and/or caregivers who smoke cigarettes in a pediatric study of asthma.
- Occurrence of Autism has been linked to demographics of parents as well as genetic characteristics of parents
- Epidemiological surveillance; utilizing patients’ zip codes or region could assist in the identification of outbreaks

FAIR-Concept TracerOutput in Excel