Characterizing and Displaying Genetic Variants for Clinical Action

An Integrated Healthcare System Perspective

Bruce Blumberg, MD
Kaiser Permanente Northern California
December 2, 2011
Integrated

“combining or coordinating separate elements so as to provide a harmonious, interrelated whole”
Dimensions of Integration

*Payer : Provider
*Preventative : Primary : Specialty : Subspecialty Care
- Inpatient : Outpatient : Community
*Prenatal : Pediatric : Adult : End-of-Life
- Acute : Routine : Chronic Care
- Prescription : Medication Furnishing
*Test Ordering : Performance : Interpretation
*Individual Patient : Population
*Clinical Care : Research : Education
Foundational Elements of Integration

- Scale
- Electronic Medical Record
- Group (or virtual group) Practice
- Internalization
# Scandinavian Populations

<table>
<thead>
<tr>
<th>Country</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>9,045,389</td>
</tr>
<tr>
<td>Kaiser Permanente</td>
<td>8,721,609</td>
</tr>
<tr>
<td>Denmark</td>
<td>5,484,723</td>
</tr>
<tr>
<td>Finland</td>
<td>5,244,749</td>
</tr>
<tr>
<td>Norway</td>
<td>4,644,457</td>
</tr>
<tr>
<td>KP Northern California</td>
<td>3,285,068</td>
</tr>
<tr>
<td>Iceland</td>
<td>304,367</td>
</tr>
</tbody>
</table>
Unanswered Questions

- Do these principles apply differently in less integrated systems?

- Will Accountable Care Organizations function as integrated systems?

- How will the evolution from genetic to genomic testing foster or hinder integration?