Perspectives on Existing Genetic Variation Resources—Clinician Perspectives

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Characterizing and Displaying Genetic Variants for Clinical Action Workshop

Gaithersburg, MD
December 1, 2011
Disclosures

• Medco Health Solutions: Pharmacogenetics consultation

• Co-editor-in-chief, GeneFacts
Email Survey

• IRB approval: none
• Informed consent: minimal
• Subjects: academic 1\textsuperscript{o} care clinicians
  ♦ Clinician educators
  ♦ Clinician researchers
• Recruitment: 7 hours on 11/30/11
Questions

1. What resource(s) do (or would) you turn to if you want more information about the significance or management of a genetic variation?

2. What would the ideal resource provide?
# Results: What Resource?

<table>
<thead>
<tr>
<th>Resource</th>
<th>Educators N=10</th>
<th>Researchers N=6</th>
<th>All N=16</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>UpToDate</td>
<td>5 [HHH]</td>
<td>3</td>
<td>8</td>
<td>8  Internet (primary care)</td>
</tr>
<tr>
<td>Consultant/Specialist</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>5  Person</td>
</tr>
<tr>
<td>Google</td>
<td>3*</td>
<td>1</td>
<td>4</td>
<td>6  Internet (general)</td>
</tr>
<tr>
<td>Wikipedia</td>
<td>2</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Pubmed/Google Scholar</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>6  1° Lit &amp; Guidelines</td>
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<tr>
<td>Guideline, EGAPP</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
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<tr>
<td>Cochrane</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>NIH</td>
<td>2*</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>OMIM</td>
<td>2 (-1)** [HH]</td>
<td></td>
<td>2 (-1)</td>
<td></td>
</tr>
<tr>
<td>GeneTest/GeneReviews</td>
<td>2**</td>
<td></td>
<td>2</td>
<td>9  Internet (specialty)</td>
</tr>
<tr>
<td>GeneFacts</td>
<td>2**</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Specialty Disease Site</td>
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<td></td>
<td>1</td>
<td></td>
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<tr>
<td>No answer</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
Results: What Resource? (n=16)

- *Google: 1 searches “NIH + {mutation}”
- *NIH: 1 is the above Google search
  1 “NIH polymorphism database”
- **GeneFacts, GeneReviews: the other 2
  GeneFacts co-editors-in-chief
- **OMIM: 1 GeneFacts eic uses;
  1 GeneFacts eic specifically doesn’t use
- HHH: 3 found UpToDate hard to use;
  2 found OMIM hard to use
Clinicians’ Preferred Information Sources

Most Preferred:
- Internet
- CD-ROM
- Textbooks
- Consultant/Specialist
- Seminars/Meetings

Least Preferred:
- Lectures
- Journals
- Guidelines

Metcalf S et al., Genet Med 2002;4:71
Watson EK et al., Fam Pract 1999;16:420
Other Resources I Use

• PharmGKB
  - includes Clinical Pharmacogenetics Implementation Consortium (CPIC) guidelines, and others

• Specialty labs

• Flockhart tables
  http://medicine.iupui.edu/clinpharm/ddis/

• warfarindosing.org (& similar)
Accuracy Of Databases

Gene Reviews
UpToDate
First Consult
OMIM
PIER
Dynamed
Five Minute Clinical Consult
Epocrates
InfoRetriever

Levy HP et al., Genet Med 2008; 10:659
Ideal Resource Provides? N=12

Characteristics:

• Concise, Easy to use: 3
• Fast: 2
• Accurate: 2
• Free: 1
• Educational: 1
• Something like UpToDate: 1
• Links to other resources: 1
Ideal Resource Provides? N=12

Content-1:
- Management, Clin. Significance, Implications: 4
- CDS w/in EHR: 1
- Actionability, Clin. Utility: 3
- Testing: 4
  (clin. validity, who/when, methods, interpretation, cost)
Ideal Resource Provides? N=12

Content-2:

• Clinical manifestations: 3
  (pathophys., phenotype, prognosis, severity, penetrance, pleiotropy)

• Frequency: 2
  (especially indicate most common variants)

• Inheritance and de novo mutation rate: 2

• Evidence-based: 2
Clinicians Most Want:

• Accurate
• Accessible
• Clinically relevant
• Fast (< 2 minutes)

Ely JW et al., BMJ 1999; 319:358
Ely JW et al., J Am Med Inform Assoc 2005;12:217
Gonzalez-Gonzalez AI et al., Ann Fam Med 2007; 5:345
Metcalf S et al., Genet Med 2002;4:71
Watson EK et al., Fam Pract 1999;16:420
Zack P et al., Community Genet 2006;9:260
Evidence-Based?

- Specialties & individuals vary
- Some very high standards (RCTs)
- Some less rigorous
- Many follow specialty society guidelines/recommendations