5th Annual
FOCUS ON EYE HEALTH NATIONAL SUMMIT
VISION TO ACTION: Collaborating Around a National Strategy

Wednesday, July 13, 2016
National Press Club  |  Washington, DC
IRIS® Registry: Supporting Surveillance & Research

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Introduction to IRIS Registry

IRIS Registry (Intelligent Research in Sight) is the nation’s first comprehensive eye disease clinical database

- Enthusiastic participation by the ophthalmic community in just over two years leading to the largest specialty-based clinical data registry in the world

- Supports quality improvement, patient safety, performance benchmarking, custom analytics, new knowledge generation, and future registry-based trials

- Enables ophthalmologists to use clinical data to improve care delivery and patient outcomes

- Uses HIPAA-compliant methods to collect data from patient records directly from electronic health record (EHR) systems

- Helps practices meet requirements of the federal Physician Quality Reporting System (PQRS)
Big Data Insights

- Characterization of patient population
- Disease prevalence
- Practice patterns
- Clinical outcomes and complications
- Possible risk factors and confounders
Applications

- Assess trends over time
- Characterize rare diseases/rare events
- Stimulate and answer clinical questions
- Lead to clinical trials/research
- Inform public policy/public health issues
Practitioners can evaluate their own data

- Benchmark outcomes against their practice colleagues or national averages

Manage their patients at a population level

- Look at a specific group of patients based on conditions, risk factors, demographics or outcomes
- Identify trends and track interventions
- Answer specific clinical questions
<table>
<thead>
<tr>
<th>ID</th>
<th>MEASURE</th>
<th>PERFORMANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRIS 1</td>
<td>Primary Open Angle Glaucoma (POAG): Optic Nerve Evaluation</td>
<td>93.20%</td>
</tr>
<tr>
<td>IRIS 2</td>
<td>Diabetic Retinopathy: Documentation of Presence or Absence of Macular Edema and Level of Severity of Retinopathy</td>
<td>50.46%</td>
</tr>
<tr>
<td>IRIS 3</td>
<td>Diabetic Retinopathy: Communication with the Physician Managing Ongoing Diabetes Care</td>
<td>50.00%</td>
</tr>
<tr>
<td>IRIS 4</td>
<td>Cataracts: 20/40 or Better Visual Acuity within 90 Days Following Cataract Surgery</td>
<td>98.31%</td>
</tr>
<tr>
<td>IRIS 5</td>
<td>Complications within 30 Days Following Cataract Surgery Requiring Additional Surgical Procedures</td>
<td>0.00%</td>
</tr>
<tr>
<td>IRIS 6</td>
<td>Diabetes: Eye Exam</td>
<td>65.74%</td>
</tr>
<tr>
<td>IRIS 14</td>
<td>Preventive Care and Screening Tobacco Use: Screening and Cessation Intervention</td>
<td>98.23%</td>
</tr>
<tr>
<td>IRIS 15-1</td>
<td>Use of High-Risk Medications in the Elderly</td>
<td>27.53%</td>
</tr>
<tr>
<td>IRIS 15-2</td>
<td>Use of High-Risk Medications in the Elderly</td>
<td>0.00%</td>
</tr>
<tr>
<td>IRIS 16</td>
<td>Falls: Screening for Future Fall Risk</td>
<td>0.00%</td>
</tr>
<tr>
<td>IRIS 17</td>
<td>Documentation of Current Medications in the Medical Record</td>
<td>91.00%</td>
</tr>
<tr>
<td>IRIS 18</td>
<td>Controlling High Blood Pressure</td>
<td>0.00%</td>
</tr>
<tr>
<td>IRIS 19</td>
<td>Closing the referral loop: receipt of specialist report</td>
<td>45.45%</td>
</tr>
</tbody>
</table>

(Registry Benchmark)
IRIS 2: Diabetic Retinopathy: Documentation of Presence or Absence of Macular Edema and Level of Severity of Retinopathy

Performance Trend

<table>
<thead>
<tr>
<th>Quarter</th>
<th>ALL</th>
<th>(+)</th>
<th>(-)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015Q2</td>
<td>130</td>
<td>34</td>
<td>96</td>
<td>26.15 %</td>
</tr>
<tr>
<td>2015Q1</td>
<td>124</td>
<td>31</td>
<td>93</td>
<td>25.00 %</td>
</tr>
<tr>
<td>2014Q4</td>
<td>123</td>
<td>29</td>
<td>94</td>
<td>23.58 %</td>
</tr>
<tr>
<td>2014Q3</td>
<td>117</td>
<td>21</td>
<td>96</td>
<td>17.95 %</td>
</tr>
</tbody>
</table>

Registry Benchmark: 38.91 %
Current Status
Current Stats (June 1, 2016)

Contracted
- 13,739 physicians from 4,446 practices

Total for EHR Integration (43 different EHR systems)
- 11,374 physicians from 2,888 practices

Number of patient visits
- 88 million, representing 24 million unique patients
Advantages

• Real world
• Big data
  – Estimated 49% of national ophthalmology visit volume – all payer (2013-present)
• Current
  – Data uploaded nightly or weekly
• Clinical data: outcomes, VA, IOP, free text
• Across all payers
Patient Demographics
Age Distribution by Gender

Male:
- 85+: 5.85%
- 75-64: 16.04%
- 65-74: 23.51%
- 45-64: 29.86%
- 19-44: 13.99%
- 0-18: 8.75%
- 0-5: 5.95%

Female:
- 85+: 7.75%
- 75-64: 16.06%
- 65-74: 23.34%
- 45-64: 30.31%
- 19-44: 14.27%
- 0-18: 6.91%
- 0-5: 6.91%
Eye Conditions by Age

The image shows a bar chart titled "Eye Conditions by Age". The chart illustrates the percentage of eye conditions across different age groups. Each age group is color-coded to represent different conditions or categories. The age groups are 0-5, 6-18, 19-44, 45-64, 65-74, 75-84, and 85+. The vertical axis represents the percentage, ranging from 0% to 100%, and the horizontal axis represents the age groups.
Number of Conditions by Age

![Chart showing the number of conditions by age group. The chart illustrates a increase in the mean number of conditions as age increases, with a peak in the 75-84 age group and a slight decline in the 85+ age group.](chart_image)
## Top Ten Conditions

<table>
<thead>
<tr>
<th>ICD9 code</th>
<th>ICD9 description</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>366.16</td>
<td>Senile nuclear sclerosis</td>
<td>1,757,588</td>
<td>25.83</td>
</tr>
<tr>
<td>375.15</td>
<td>Tear film insufficiency, unspecified</td>
<td>1,060,179</td>
<td>15.58</td>
</tr>
<tr>
<td>367.4</td>
<td>Presbyopia</td>
<td>1,040,906</td>
<td>15.30</td>
</tr>
<tr>
<td>367.1</td>
<td>Myopia</td>
<td>960,602</td>
<td>14.12</td>
</tr>
<tr>
<td>379.21</td>
<td>Vitreous degeneration</td>
<td>804,431</td>
<td>11.82</td>
</tr>
<tr>
<td>367.0</td>
<td>Hypermetropia</td>
<td>510,550</td>
<td>7.50</td>
</tr>
<tr>
<td>367.21</td>
<td>Regular astigmatism</td>
<td>498,302</td>
<td>7.32</td>
</tr>
<tr>
<td>366.53</td>
<td>After-cataract, obscuring vision</td>
<td>439,321</td>
<td>6.46</td>
</tr>
<tr>
<td>362.51</td>
<td>Nonexudative senile macular degeneration</td>
<td>410,938</td>
<td>6.04</td>
</tr>
<tr>
<td>365.01</td>
<td>Open angle with borderline findings, low risk</td>
<td>410,691</td>
<td>6.04</td>
</tr>
</tbody>
</table>
Disease Management
Snapshot
Trends over time
• 1.17 million patients 18 or older with POAG (1/13 – 12/15)

• Average age = 72.6 years
• Male = 43%; Female = 57%
• Race: White 63%; Black 13%, Hispanic 6%
Cataract Surgery (2013-2014)

- Jackson Memorial Lecture, Anne Coleman MD
  - 511,182 unique patients
  - 44% had surgery in both eyes
  - Average age = 71.0 years
  - 0.08% had endophthalmitis
  - Postop VA at 7 days for endophthalmitis patients: 0.58 logMAR
Disease Prevalence

- Useful for rare diseases, where clinical studies aren’t representative of US general population
• Limited data on prevalence
  – Many studies are clinic-based
  – Many studies are international


• How to estimate for general US population?
  – National Health Examination and Nutritional Survey (applied to Census data to estimate prevalence of HM among US adults), PLUS
  – Sample of IRIS Registry practices (to assess burden of mCNV in US)
• IRIS Registry Sample
  – 259 practices with 376,057 high myopia cases
    • Pathologic myopia = 29,090
    • Myopic CNV = 2,417
  – Myopic CNV increased with worsening myopia across both sexes, all races, and all age groups
Results

• Applied to NHANES:
  – Prevalence of CNV is 0.017 percent
  – Population burden 41,111 U.S. adults
  – Prevalence of CNV for women is double that of men