Visual Acuity Outcomes and Anti-VEGF Intensity in Macular Edema due to RVO: A “Real World” Analysis in 12,214 Eyes

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Retina Society 2020
Financial Disclosure

• Clearside Bio: Employment, Equity
• This project was unsponsored/unfunded, and conducted in my role as Volunteer Clinical Professor at Indiana University.
1. "Real world" RVO patients experience a modest gain in VA
2. Injection frequency plays a large role in VA outcomes.
3. Better baseline VA increases risk of VA loss
   • Inverse relationship between outcomes and baseline VA
   • Reflects a ceiling effect
4. VA gain at 1 year worse than RCTs
   • For BRVO, ~8 vs ~18 letters in ranibizumab and aflibercept registration trials
   • For CRVO, ~7 vs ~16 letters in ranibizumab and aflibercept registration trials
5. “Real world” RVO patients experience greater 1-year gain than “real world” AMD and DME patients
   • However, there is a larger gap in visual gain when compared to respective RCTs
"Real World” Experience with Anti-VEGF for RVO-ME in the US

Vestrum Health Retina Database

• EMR from 100s of US retina MDs
• Demographically & geographically diverse
• >800,000 patients, >4.5M encounters
How Does Treatment intensity affect outcomes?

<table>
<thead>
<tr>
<th>Eligibility Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment naïve RVO-related macular edema</td>
</tr>
<tr>
<td>2013 to 2019</td>
</tr>
<tr>
<td>Must have received at least 1 injection</td>
</tr>
<tr>
<td>Follow up data through 1 year</td>
</tr>
<tr>
<td>Other retinal diagnoses excluded</td>
</tr>
</tbody>
</table>
## Baseline Features
### BRVO and CRVO

<table>
<thead>
<tr>
<th></th>
<th>BRVO</th>
<th>CRVO</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Patient Eyes</td>
<td>6,914</td>
<td>5,300</td>
</tr>
<tr>
<td>Female</td>
<td>56%</td>
<td>51%</td>
</tr>
<tr>
<td>Mean Age (years)</td>
<td>72.3</td>
<td>72.9</td>
</tr>
<tr>
<td>Mean Baseline VA (letters, Snellen equiv)</td>
<td>56.6, 20/80</td>
<td>39.5, 20/160</td>
</tr>
</tbody>
</table>

# Mean Baseline VA (letters, Snellen equiv)
# Top line results – 1 year
**BRVO and CRVO**

<table>
<thead>
<tr>
<th></th>
<th>BRVO</th>
<th>CRVO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean # Anti-VEGF Injections</strong></td>
<td>7.4</td>
<td>7.6</td>
</tr>
<tr>
<td><strong>Additional therapies, %</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IVT corticosteroids</td>
<td>9%</td>
<td>9%</td>
</tr>
<tr>
<td>Focal laser</td>
<td>12%</td>
<td>2%</td>
</tr>
<tr>
<td>Panretinal laser</td>
<td>3%</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Mean Change VA (letters)</strong></td>
<td>+8.1</td>
<td>+7.1</td>
</tr>
<tr>
<td><strong>P-Value</strong></td>
<td>$&lt; 0.001$</td>
<td>$&lt; 0.001$</td>
</tr>
<tr>
<td><strong>95% Confidence Interval</strong></td>
<td>+7.6 to +8.6</td>
<td>+6.3 to +8.0</td>
</tr>
</tbody>
</table>
Change in VA (letters) vs Injections Over 1 Year
BRVO and CRVO

Mean gain at 1 year with 95% confidence interval

# Injections in First Year

BRVO

Mean VA Change (Letters)

CRVO

# Injections in First Year
Patients receive similar # injections regardless of baseline VA, but those with worse baseline VA gain more VA

BRVO and CRVO
Anti-VEGF for RVO-Related Macular Edema
1-Year VA Change: Real World Analysis vs RCTs

**BRVO**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Real World Analysis</th>
<th>Bravo</th>
<th>Vibrant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bevacizumab</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ranibizumab</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aflibercept</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CRVO**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Real World Analysis</th>
<th>Cruise</th>
<th>Copemicus</th>
<th>Galileo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bevacizumab</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ranibizumab</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Aflibercept</td>
<td></td>
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</tr>
</tbody>
</table>
Anti-VEGF for BRVO-ME, CRVO-ME, DME, nAMD 1-Year VA Change: Real World Analysis vs RCTs

**BRVO**
- Real World Analysis: 8
- Bravo: 18
- Vibrant: 16

**CRVO**
- Real World Analysis: 6
- Cruise: 14
- Copernicus: 18
- Galileo: 18

**DME**
- Real World Analysis: 4
- DCR Protocol T: 12
- Vista: 10
- Vivid: 10
- Rise: 10
- Ride: 10

**nAMD**
- Real World Analysis: 2
- CATT: 6
- View 1: 8
- View 2: 8
- Anchor: 8
- Marina: 8

Legend:
- Bevacizumab
- Ranibizumab
- Aflibercept
1. ”Real world” RVO patients experience a modest gain in VA

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