High Specificity of the Pediatric Vision Scanner in a Private Pediatric Primary Care Setting

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Introduction:
- Prevalence of strabismus and/or amblyopia in children < 6 y = 45%1,2
- Autorefractors, such as the SureSight™(SS), miss many affected children and over-refer many normal children.
- The Pediatric Vision Scanner (PVS) directly detects strabismus and amblyopia by analyzing binocular scans for the presence or absence of birefringence, which is characteristic of steady, bifoveal fixation.

- Our prior study3 of children (2-6y, n=188) screened in a pediatric ophthalmology office reported high sensitivity of the PVS for strabismus and amblyopia (targeted conditions): PVS Sensitivity: 97% (CI95%: 94-100%); SS Sensitivity: 74% (CI95%: 66-83%).
- The purpose of this study was to evaluate specificity of the PVS in its intended setting, a pediatric primary care office.

Methods:
Participants:
- n = 103, ages 2 - 6y (mean =3.6) attending a well-child visit
- No prior eye care professional visit
Procedure:
- Tested in private pediatric primary care office setting in random order:
  1. Pediatric Vision Scanner
  2. Welch Allyn SureSight™ Autorefractor
- Each test yielded a recommendation of PASS(-) or REFER(+).
- Comprehensive ophthalmic exam served as the gold standard (102 with no strabismus or amblyopia, 1 with anisometric amblyopia).

Discussion:
- In a private pediatric office with little amblyopia and strabismus, the PVS had high specificity (91%) indicating few over-referrals of normal children.
- Combined with results from a study4 with high prevalence of strabismus and amblyopia, the PVS proved to be a highly sensitive and highly specific screener for the detection of strabismus and amblyopia.

Results:
- Combined Results with prior study3
  - Positive likelihood ratio (LR+) – how much more likely a child with strabismus/amblyopia will get a REFER(+) result than an unaffected child
  - Negative likelihood ratio (LR-) – how much less likely a child with strabismus/amblyopia will get a PASS(-) result than an unaffected child

<table>
<thead>
<tr>
<th>Test</th>
<th>Total (n=103)</th>
<th>PVS Sensitivity: 97% (CI95%: 94-100%)</th>
<th>SureSight: 85% (CI95%: 76-94%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>9</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>-</td>
<td>86</td>
<td>0</td>
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</table>

Conclusion:
- Preschool vision screening may be more efficient with a device that directly detects strabismus and/or amblyopia, not just the risk factors.

Results:
- The Pediatric Vision Scanner (PVS) and SureSight directly detected strabismus and/or amblyopia, not just the risk factors.
- The PVS is on loan for use from REBIScan, Inc. and Children's Hospital Boston.
- The authors have no financial interest in any screening devices.

References:
3. SureSight: Sensitivity: 74% (CI95%: 66-83%); Specificity: 91% (CI95%: 83-98%)
4. SS passed 80 of 94 children with strabismus or amblyopia.