The Benefits of Vision Screening at All Ages

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Case Study

- KB is a 7 yo who was referred for worsening HA, numerous times a week and poor scholastics.
- She always passed the vision screening with her pediatrician (eye chart).
- Her exam showed 20/30 OD, 20/50 OS
Case Study

• Cycloplegic refraction:
  – Right eye: +6.50-1.00x010
  – Left eye: +6.50-0.75x165

• How did standard vision screening fail?
• How could automated vision screening have caught this earlier?

Why do we bother screening?

• Qualities of a good screening test:
  – High rate in population
  – Available intervention
  – Utility of early diagnosis and treatment
  – Good screening technique
    • Inexpensive
    • Easy
    • Quick
    • Accurate
    • Reproducible
Timeline for Screening Exams

Figure 1
Timeline of Disease Natural History

<table>
<thead>
<tr>
<th>Biological Adverse Onset of Disease</th>
<th>Detectable Using Screening Test</th>
<th>Typical Time of Diagnosis &amp; Treatment of Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Time</td>
<td>Preclinical Phase</td>
<td>Clinical Phase</td>
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</table>

• Good screening technique
  – Inexpensive
  – Easy
  – Quick
  – Accurate
  – Reproducible

• This is where the problem lies...
The Gold Standard: eye chart

- Inexpensive
- **Not easy, quick, accurate, or reproducible**
  - Significant training and experience for nurses and techs
  - Poor cooperation
  - Time-consuming to perform correctly
  - Effort-dependent
  - Cheating
  - Wrong technique
  - Wrong optotype used
  - Age dependent variables (Difficult <3 years of age)

Cheating
The Newcomer: Vision Screening Devices

- Work by simultaneously measuring both eyes for certain risk factors
  - Refraction (myopia, hyperopia, and astigmatism)
  - Pupil size
  - Eye alignment
- Certain values are flagged as “high risk”
- Able to do on children as young as 6 months old
- Does not directly measure vision
  - Risk factors are not pathology
  - Cannot correlate refraction to vision directly
  - Doesn’t pick up intermittent misalignment

The Newcomer: Vision Screening Devices

- “Point and Shoot” camera-style machines
- Child looks at flashing lights or picture from a few feet away
  - Simple
  - Minimal cooperation needed
- Immediate report with “refer” or “pass”
  - Report for your chart
  - Report for consulting ophthalmologist
The Newcomer: Vision Screening Devices

- Easy to perform
  - Nurses and techs quickly learn the technique
- Quick
  - Less than a minute from start to report
- Accurate and reproducible
  - Excellent reliability from 12 months of age
- Inexpensive
  - One time purchase
  - But funding may be available in your community
    - Fraternal organizations

Vision screening for everyone

- New vision screening devices can make vision screening a standard part of your annual exams
  - Low time investment
  - Well tolerated by patients
  - High yield pathology that we can treat
- Vision screening works for all children