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

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Case Study

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

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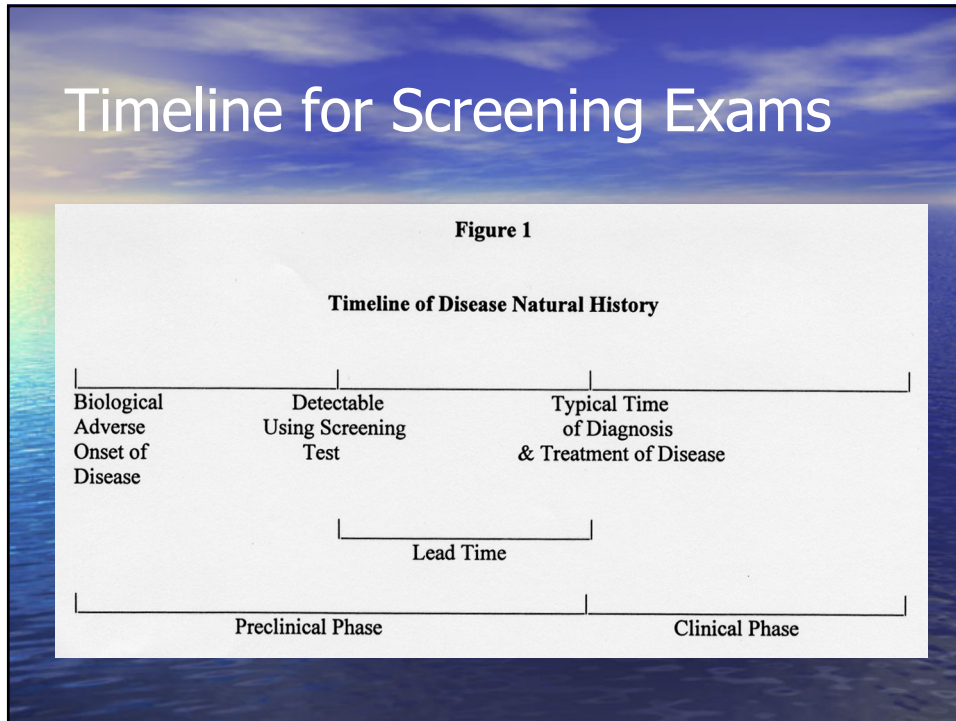- How could automated vision screening have caught this earlier?

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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

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Timeline for Screening Exams

Figure 1

Timeline of Disease Natural History

Biological Adverse Onset of Disease	Detectable Using Screening Test	Typical Time of Diagnosis & Treatment of Disease	

Lead Time

Preclinical Phase | Clinical Phase

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- Good screening technique
  - Inexpensive
  - Easy
  - Quick
  - Accurate
  - Reproducible

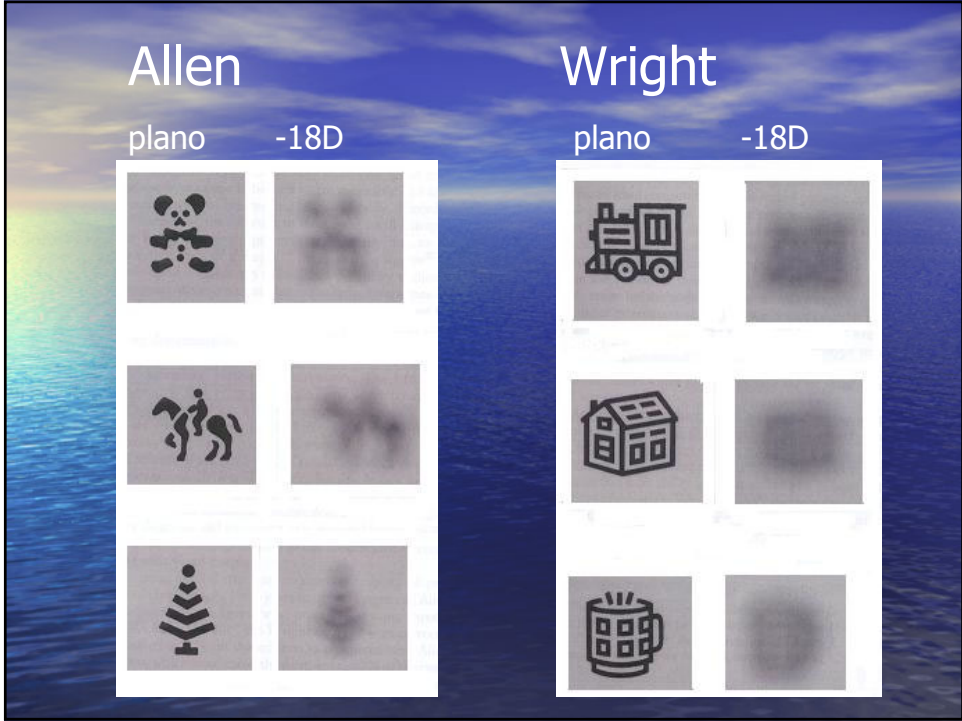- This is where the problem lies...

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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
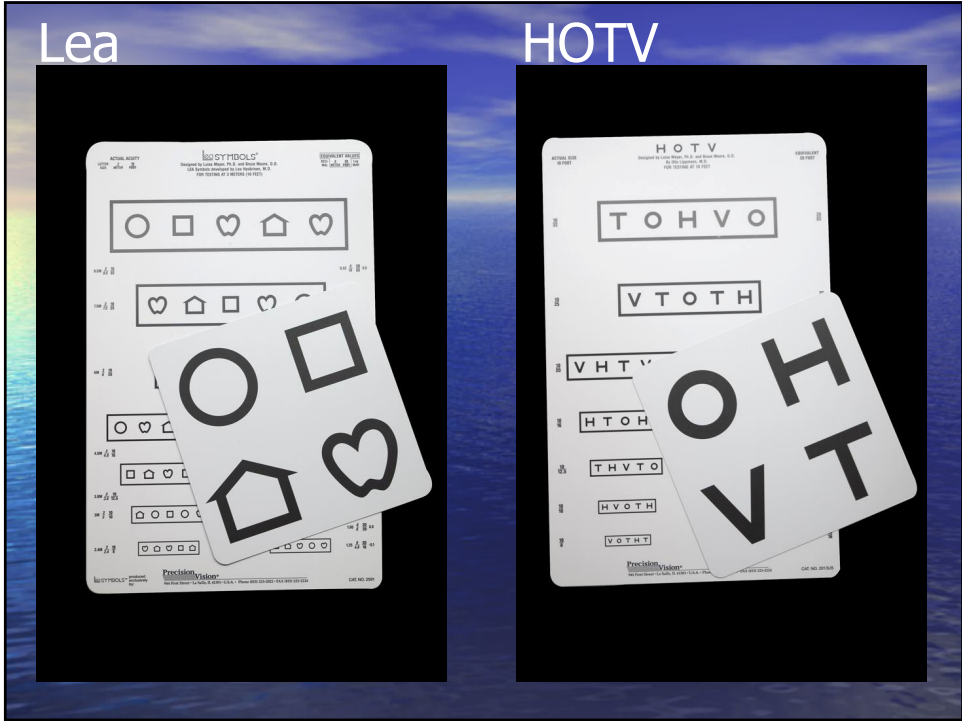 - Age dependent variables (Difficult <3 years of age)

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Cheating

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Allen   Wright

plano   -18D   plano   -18D

9

Lea   HOTV

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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

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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

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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

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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

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