

Real World Stereoacuity Outcomes of Luminopia Therapy for Amblyopia: Results from the PUPiL Registry

Noreen Shaikh¹, Magdalena Stec¹, Shelley Hancock², Brenda Bohnsack¹

1. Ann & Robert H. Lurie Children's Hospital of Chicago | 225 East Chicago Avenue, Chicago, IL 60611

2. Luminopia, Inc. Cambridge, MA

Purpose

Evaluate stereoacuity and best-corrected visual acuity (BCVA) outcomes of children prescribe Luminopia via the real-world PUPiL Registry

Methods

Luminopia: Digital, Binocular treatment for amblyopia associated with anisometropia / mild strabismus in 4 to <13 year olds¹

Dichoptic masking complimentary across both eyes to encourage binocular vision

Contrast reduction to the fellow eye to reduce amblyopic eye suppression



PUPiL Registry: Real-World Treatment Outcomes

Patients Using Prescription Luminopia

- Retrospective
- IRB-Approved at 14 US sites
- All aspects of treatment and follow-up at doctor discretion
- Patients with amblyopia, 12+ weeks of treatment (NCT06429280)

PUPiL COHORT EVALUATED²

- Children (<18 years)
- Anisometropic and/or strabismic amblyopia, any severity
- Completed treatment
- Documented stereoacuity at first and last treatment visit

ANALYSIS

- Patients categorized as either fine, gross, or none at baseline (date Luminopia prescribed) and most recent treatment visit
- Change in BCVA, Change in Stereoacuity, and Change in Stereoacuity category
- Patients with gross / no stereoacuity were evaluated for change across duration of treatment

Subgroup: Gross + No Stereoacuity

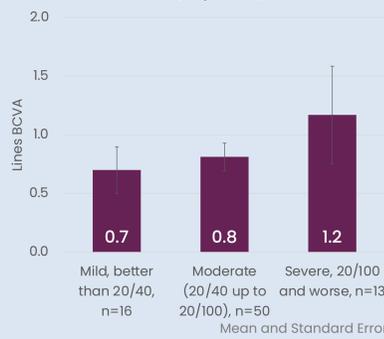


All Cohort
Icon of two children
109 children

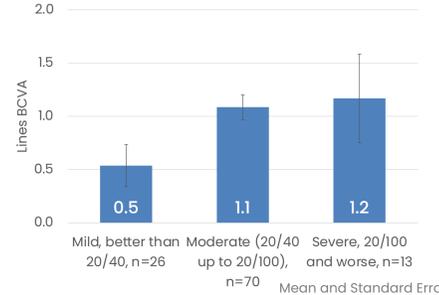
Change in BCVA

Baseline to Most Recent Visit

Statistically significant improvement in BCVA across all baseline severity levels (all p < 0.01)



Statistically significant improvement in BCVA across all baseline severity levels (all p < 0.01)

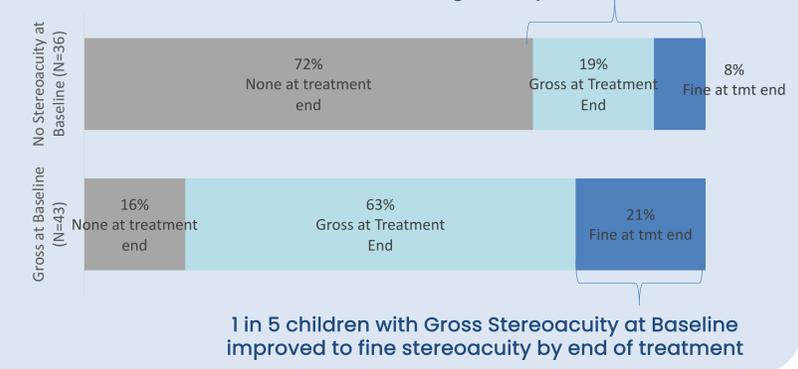


Results

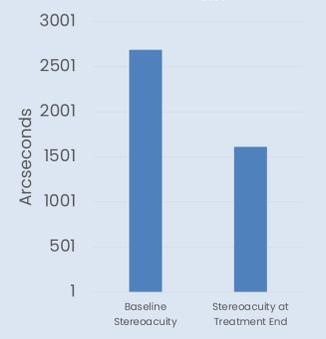
Change in Stereoacuity

Baseline to Treatment End

24% of children improved classification categories by end of treatment



Significant stereoacuity improvement P=0.01



Conclusions

In the PUPiL Registry,

- Patients experienced a significant improvement in BCVA
- In patients with stereoacuity deficiency, over the course of Luminopia treatment:
 - Significant improvement in BCVA
 - Significant improvement in stereoacuity
 - 24% of children improved stereoacuity categories by end of treatment
 - 1 in 5 kids with gross stereoacuity improved to fine stereoacuity by end of treatment.

Considerations & Limitations

- No Control group
- No standardized Method for BCVA and/or stereoacuity collection
- Limited stereoacuity data available for a majority of Registry patients

FINANCIAL DISCLOSURES

BB: Consultant, Luminopia; SH: Employee, Luminopia

Stereoacuity Classifications

Used for first and most recent visit. Values converted to log(arcseconds) for analysis

None

- Did not pass any stereoacuity test (e.g.) Fail Fly Test
- 9999 arcseconds used for analysis

Gross

- 141 to 9998 arcseconds
- 3/9 to 2/9 circles or 1/3 animals

Fine

- 0 to 140 arcseconds
- 9/9 to 4/9 circles

Characteristic	All Cohort N=109	Subgroup: Gross + No Stereoacuity N=79
Stereoacuity Category		
None	36 (33.0%)	36 (45.6%)
Gross	43 (39.4%)	43 (54.4%)
Fine	30 (27.5%)	-
Amblyopia Severity		
Severe 20/100 and worse	13 (11.9%)	13 (16.5%)
Moderate 20/40 up to 20/100	70 (64.2%)	50 (63.3%)
Mild Better than 20/40	26 (23.9%)	16 (20.3%)
Demographics		
Mean Age Years, mean ±SD	7.5 ± 2.5	7.5 ± 2.6
Females, n (%)	46 (42.2%)	31 (39.2%)
Medicaid, n (%)	18 (16.5%)	12 (15.2%)
Treatment Usage		
Treatment Duration Months, mean ±SD	8.2 ± 4.3	8.4 ± 4.6
Treatment Hours Hours, mean ±SD	108.2 ± 88.2	110.5 ± 91.1

Table 1. Demographics, amblyopia and treatment usage characteristics of all cohort and subgroup of patients with gross + no stereoacuity

1. Luminopia Directions for Use, 2025, Rev. E
2. Registry Data submitted up to 3/4/25