Benefits of Early Detection and Treatment of Amblyopia

D.M. Alcorn, MD, FAAP

Financial Disclosure

Consultant: Gobiquity

Amblyopia

Leading Cause of Monocular Visual Loss in Children

- High Cure Rate
  - If detected early and treated
- If not treated, results in lifetime of uni- or bi-lateral visual loss

Leading treatable cause of monocular vision loss in childhood

- Mean prevalence of 2.2% for amblyopia
- Mean prevalence of 2.8% for strabismus

Age of Implementation of Amblyopia Treatment

More successful
- Earlier initiation of treatment

Moderate Amblyopia (20/40—20/100)
- Treatment between 3 and 7 years more effective than 7-13 years of age

Severe Amblyopia
- Treatment between 3-5 years more effective than 5-7 years of age
Amblyopia

- Prevalence of Amblyopia at age 7 years was reduced by 45% in children receiving preschool screening by age 37 months


Significant Refractive Error

- More prevalent than Amblyopia and Strabismus Combined
- Multifactorial
  - Age
  - Ethnicity/Race
  - Magnitude of Refractive Error
  - Disparity Between the Two Eyes

- But not all had significant enough refractive error warranting correction

Treatment of Amblyopia

- Consensus and strong literature support that Amblyopia can be effectively treated in young children
  - Leading to improved visual outcomes
- Treatment of Amblyopia with glasses prior to initiation of occlusion or penalization treatment


Amblyopia

- Early detection may allow prevention of Amblyopia in at risk children with refractive correction
  - May have marked improvement or resolution with glasses alone
    - Anisometropic
    - Strabismic
- Less likely effective in those with deeper Amblyopia


Benefits of Early Detection

- May allow treatment with glasses alone
  - Especially if younger age
- Treatment more cost effective
  - Ideally shorter treatment period
  - Reduced clinical visits

Spectacle Correction of Amblyopic Children in Preschool Years

- Results in significant improvement in letter recognition by kindergarten age

Children with Refractive Error Corrected by 30 Months of Age

- Have higher likelihood of achieving 20/20 vision

Friedburg D, Kloppel KP. Early correction of hyperopia and astigmatism in children lead to better development of visual acuity. Klin Monbl Augenheilkd 1996;209

Children with Amblyopia Identified by Photoscreening

- (most under the age of 3 years)
- 78% success of 20/30 acuity in amblyopic eye
- Amblyopia treatment does not decrease in effectiveness until about 5 years


Photoscreening

- Study of 149 Hypermetropes (Identified by Photoscreening)
  - Lower rate of developing amblyopia or strabismus if treated
- No spectacle treated children developed strabismus that eventually required surgical correction

Colburn JD et al. Longitudinal followup of hypermetropic children identified during preschool vision screening. JAAPOS. 2015 (14)3

Anisometropia

- Amblyopia develops with high magnitude anisometropia in children < 3 years old
  - Prevalence of Amblyopia correlates with Magnitude of Anisometropia
- Children > 3 years old
  - Depth increases with age
  - Prevalence remains constant


Refractive / Glasses Therapy

- Anisometropic children (3-7 years of age)
  - 27% with complete resolution with glasses alone
  - 77% at least 2 lines improvement

Donahue SP, et al. Treatment of Anisometropic Amblyopia in children with refractive correction. JAAPOS. 2008;12(2)

- More effective with bilateral refractive Amblyopia in 3-10 year olds
  - 74% had binocular vision of 20/20
  - 21% after 5 weeks
  - 59% at 6 months


Amblyopia

- In addition to benefits of improved vision in amblyopic eye
  - Treatment of amblyopia during childhood valuable strategy to prevent incapacitating visual loss later in life, if non-amblyopic eye loses vision from disease or trauma
  - Lifetime risk for visual loss in fellow eye at least 1.2%


Amblyopia

- Untreated Amblyopia doubles the lifetime risk of bilateral visual impairment


Consequences of Not Identifying and Treating Amblyopia and Strabismus

- Permanent Visual Impairment
- Adverse Effects
  - school performance
  - fine motor skills
  - social interactions
  - self-image


Amblyopia Treatment is Highly Successful

- Supported by multicenter randomized controlled clinical trials

Repka MX, Kraker RT, Clark MP. The treatment of amblyopia. Strabismus 2006;14

Amblyopia

- Cost Effective To Treat
- Serious Public Health Problem if Untreated


Amblyopia Screening

- Should be continuous process
- Beginning in infancy and repeated throughout early childhood


Goals

- Increased awareness of threat of Amblyopia
- Improve and standardize vision screening in infants and young children
Thank You!