CHALLENGES IN AMBLYOPIA

Timothy Hug, OD, FAAO
Children's Mercy Hospitals and Clinics
Kansas City, MO
thug@cmh.edu

- Evaluation
- Treatment
- Recurrence

- Evaluation
- Screening
- Examination

- Evaluation
- Screening
  - American Academy of Pediatrics
  - American Association of Pediatric Ophthalmology and Strabismus
- Examination
  - American Optometric Association
Evaluation

- Screening
  - American Academy of Pediatrics – Age 3 with eye chart
  - American Association of Pediatric Ophthalmology and Strabismus – age 3 with eye chart

- Examination
  - American Optometric Association – at 6 months of age, at 3 years of age
  - Cost
  - Age

Guidelines for automated preschool vision screening: A 10 year, evidence–based update

- Donahue, et al, Journal of AAPOS; vol17, no 1, February 2013, pp 4-8

- Suggests: Screening for different Amblyopia Risk Factors (ARFs) at different ages

State Legislation - Examination

Guidelines for automated preschool vision screening: A 10 year, evidence–based update

- Amblyogenic risk factors
  - Age
  - Refractive Error
  - Strabismus
  - Deprivation
  - Concurrent Pathology
Evaluation

Guidelines for automated preschool vision screening: A 10 year, evidence – based update

- Amblyogenic risk factors
  - Age
  - Refractive Error
  - Strabismus
  - Deprivation
  - Concurrent Pathology

- Amblyogenic risk factors
  - Age 12 – 30 months
    - Screen for refractive errors of:
      - Astigmatism > 2.00 D
      - Hyperopia > 4.50 D
      - Anisometropia > 2.50 D

Guidelines for automated preschool vision screening: A 10 year, evidence – based update Donahue, et al, Journal of AAPOS; vol17, no 1; February 2013, pp 4-8

- Amblyogenic risk factors
  - Age 31-48 months
    - Screen for refractive errors of:
      - Astigmatism > 2.00 D
      - Hyperopia > 4.00 D
      - Anisometropia > 2.00 D

- Amblyogenic risk factors
  - Age 49-72 months
    - Screen for refractive errors of:
      - Astigmatism > 2.0 D
      - Hyperopia > 4.5 D
      - Anisometropia > 2.5 D
      - Myopia > 1.50 D

  - Emphasis shift to detect functional refractive errors...affecting daily living

- Amblyogenic risk factors
  - Strabismus
    - Alternate
    - Unilateral

Evaluation

Strabismus

- Alternate
- Unilateral
Evaluation

- Strabismus
  - Intermittent

- Strabismus
  - Accommodative

- Evaluation
  - Amblyogenic risk factors
    - Age
    - Refractive Error
    - Strabismus
    - Deprivation
    - Concurrent Pathology

- Deprivational – caused by obstruction of the visual axis
  - Corneal scar / opacity
  - Cataract
  - Media Opacity
  - Hemorrhage
Evaluation

- Deprivational – caused by obstruction of the visual axis
  - Ptosis?

- Occlusion via amblyopia treatment
Evaluation

- Amblyogenic risk factors
  - Age
  - Refractive Error
  - Strabismus
  - Deprivation
  - Concurrent Pathology

Evaluation

- Concurrent pathology
  - Cornea
  - Glaucoma
  - Optic Nerve
  - Macula

Challenges in amblyopia

- Treatment
Results: 1 to 20 of 3935

Select item 238573131.
Transcranial Direct Current Stimulation Enhances Recovery of Stereopsis in Adults With Amblyopia.
Spiegel DP, Li J, Hess RF, Byblow WD, Deng D, Yu M, Thompson B.
Neurotherapeutics. 2013 Jul 16. [Epub ahead of print]
PMID: 23857313 [PubMed - as supplied by publisher]
Related citations

Select item 238517532.
Amblyopia risk factors in infants with congenital nasolacrimal duct obstruction.
PMID: 23851753 [PubMed - in process]
Related citations

Select item 238265343.
Laser in situ keratomileusis in adult patients with anisometropic amblyopia.
Agca A, Ozgürhan EB, Baz O, Bozkurt E, Ozkaya A, Yaşa D, Demirok A.
PMID: 23826534 [PubMed - Free PMC Article]
Related citations

Select item 238256954.
Light transmission and preference of eye patches for occlusion treatment.
Heo H, Park JW, Park SW.

CHALLENGES IN AMBLYOPIA

Treatment

- ATT
  - Occlusion
  - Atropine
  - Spectacle correction

Clinical Translations of Recommendations from Randomized Clinical Trials on Patching Regimen for Amblyopia

Ya-Ping, et al
Ophthalmology , vol 120, No 4, April 2013, 657 – 662
Investigated “knowledge to practice”
Retrospective chart review

Clinical Translations of Recommendations from Randomized Clinical Trials on Patching Regimen for Amblyopia

Ya-Ping, et al
Ophthalmology , vol 120, No 4, April 2013, 657 – 662
Investigated “knowledge to practice”
Retrospective chart review

- 72 patients with moderate amblyopia prescribed 3.2 hours of occlusion (mean)
Clinical Translations of Recommendations from Randomized Clinical Trials on Patching Regimen for Amblyopia

Yu-Ping, et al

Ophthalmology, vol 120, No 4, April 2013, 657 – 662

Investigated ‘knowledge to practice’

Retrospective chart review

- 72 patients with moderate amblyopia prescribed 3.2 hours of occlusion (mean)
- 52 patients with severe amblyopia prescribed 3.9 hours of occlusion (mean)

Treatment

- Compliance


Treatment

- Monitoring

- Discontinuation of Treatment
The Minimum Occlusion Trial for the Treatment of Amblyopia; 
Keech, et al; Ophthalmology, 109, no 12, December 2002, pp 2261-2264

Treatment
  • Total Time of Treatment

CHALLENGES IN AMBLYOPIA

Recurrence

• Risk of Amblyopia Recurrence After Cessation of Treatment. 

• Factors Associated with Recurrence of Amblyopia on Cessation of 
  Patching, Holmes, et al, Ophthalmology, vol 114, no 8; August 
  2007, pp 1427 - 1432

Strabismus might be a risk factor for amblyopia recurrence,

THEORETICAL PATIENT WITH AMBLYOPIA

Theoretical Patient with Amblyopia
Theoretical Patient with Amblyopia
- Icee Poorlee

4 year old, anisometropic amblyopia
- OD: +4.50 20/80
- OS: +0.50 20/20

Glasses prescribed, wear full time...recheck vision 1 month

1 month follow up...
- OD 20/60
- OS: 20/20

Begin PTO 2 hr / day...

Follow up 1 month

Now:
- OD 20/40
- OS 20/20
C H A L L E N G E S   I N   A M B L Y O P I A

- Theoretical Patient with Amblyopia
- Icee Poorlee

Begin PTO 2 hr / day...
Follow up 1 month

Now:
- OD 20/40 OS 20/20
- Continue 2 hr / day patching
- Follow up 1 month

Now:
- OD 20/30 OS 20/20
- Continue 2 hour / day patching
- Follow up 1 month

One more round of occlusion...three rounds of vision at same level may indicate best possible VA.

Now:
- OD 20/20 OS 20/20
- Continue 2 hour / day patching

Now must monitor for regression
Follow up 3 months
CHALLENGES IN AMBLYOPIA

- Theoretical Patient with Amblyopia
- Icee Poorlee

New
- OD 20/20  OS 20/20

Since initial exam...
- 9 months has passed
- 8 clinic visits
- 8 co-pays (if covered by insurance)
- Still need exam and refraction and second follow up for regression

Challenges
- Identification
- Treatment
- Compliance
- Recurrence
- Follow up

- May involve 18-24 months
- Keep positive
- Keep patient and parent positive