To BV or Not to BV: VT in the Primary Care Office

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BV Dx & Tx in the News!!

Non-strabismic BV disorders

Prevalence
• Convergence Insufficiency: 1.3% to 37% of the population; most report 3-5%
• Convergence Excess: ~6%
• Accommodative disorders: 3-5%

Subjective Complaints of Patients with BV Disorders
• Blur
• Headache
• Aesthenopia
• Diplopia
• These complaints are usually associated with near work

Visual Efficiency Examination: Basic Tests
• History
• Visual Acuity
• Refractive Evaluation (Objective/Subjective)
• Oculomotor
• Vergence
• Accommodation
• Stereopsis

Common BV Syndromes
• Convergence Insufficiency
  – Most common syndrome
  – Symptoms: aesthenopia, headaches, blur, diplopia, loss of concentration
  – Associated with near work
  – Often occur near the end of the day

Convergence Insufficiency
• Signs:
  – An exodeviation at near
  – Can even be intermittent exotropia at near
  – Receded NPC value
  – NPC larger than 10 cm
  – Reduced BO vergences at near
  – Often fail to meet Sheard’s criterion

Convergence Excess
• Symptoms: Diplopia, headaches, aesthenopia
  – Almost always near related
• Signs:
  – Esophoria at near
  – Use detailed accommodative target or you may miss the esophoria
  – Vergences
  – BO vergences at near may not compensate

Convergence Excess
• Signs
  – Dynamic Retinoscopy
  – May be the most significant test
  – Typically a high lag of accommodation
  – Lag may be +1.00 to +2.00 DS at 40 cm
  – Lags greater than +2.50 D at 40 cm should suggest uncorrected hyperopia
Fusional Vergence Dysfunction
- Symptoms: aesthenopia, headaches, blurred vision (Binocular Vision/Visual Discomfort Dx)
  - Associated with reading or near work
- Signs:
  - Phorias: Normal at distance and near
  - Reduced BI and BO vergences at distance and/or near

Accommodative Disorders
- Symptoms: blur, headache, aesthenopia, fatigue when reading, difficulty changing focus from one distance to another

Accommodative Disorders
- Signs:
  - Accommodative Insufficiency:
    - Reduced amplitude of accommodation
    - Minimum Accommodation: 15 - (0.25) (age)
  - Accommodative Infacility
    - Failure of monocular facility testing
    - Expected value: 11 cpm

Other BV Disorders
- Divergence Excess
  - Prevalence of ~0.5 to 4%
  - Exophoria greater at distance than near
  - Frequently first discovered in grade school
- Divergence Insufficiency
  - Very rare!
  - Esophoria greater at distance than near
  - Be careful to rule out lateral rectus palsy!

Strabismus & Amblyopia
3-5% of the population
- Tx appropriate at all ages
- May do out of office VT and achieve success!

Amblyopia
- Pathological until proven otherwise
- Infants/Toddlers
  - Anisometropia
- Young Children
  - Bilateral Refractive Error
- Busy Adults
  - Strabismus (Constant)

Treatment for BV Disorders
Evidence Based Medicine

<table>
<thead>
<tr>
<th>Refractive Error</th>
<th>Amblyopia Concern</th>
<th>Binocularity Concern</th>
<th>Outcome with Learning</th>
<th>Rx if...</th>
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</thead>
<tbody>
<tr>
<td>Myopia &gt;5.00D</td>
<td>Under corrected not enough</td>
<td>Depends on child’s age</td>
<td>-5.00D or -4.00D or -3.00D</td>
<td></td>
</tr>
<tr>
<td>Hyperopia &gt;2.00D</td>
<td>Under corrected not enough</td>
<td>-2.50D or -2.00D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Astigmatism &gt;1.25D</td>
<td>Under corrected fully corrected</td>
<td>Depends on N/S</td>
<td>-1.25D or -1.00D</td>
<td></td>
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<tr>
<td>Anisometropia &gt;1.00D</td>
<td>Under corrected</td>
<td>-1.00D or -1.00D</td>
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<td></td>
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</tbody>
</table>

Bifocal Seg Height
- Infants/Toddlers
- Pre-schoolers
- Bi-sect pupil

Lenses as Treatment
Best Rx (clarity, comfort, function)

Bifocals for Kids
- Infants/Toddlers
- Pre-schoolers
- Bi-sect pupil
Bifocals for Myopia Progression

Accommodation and related risk factors associated with myopia progression and their interaction with treatment in COMET children.

Polycarbonate/Trivex Lenses

Prism as Treatment

• Can be used with CI, CE, DI, DE, Vertical Deviations
• Prescribe the least amount of prism needed
  – Determine the associated phoria with a Wesson Card or Bernell Box
• Fresnel Prism trial, then Rx

Vision Therapy as Treatment

• The approach of choice for CI, Fusional Vergence Dysfunctions, accommodative disorders, and Amblyopia
  – High chance of success with these disorders
  – Results are typically long lasting
  – Often can treat these disorders using primarily home VT with in-office check-ups

Period of Sensitivity vs Period of Plasticity

Atropine


Occlusion Therapy

<table>
<thead>
<tr>
<th>Age (yrs)</th>
<th>Per Day</th>
<th>Schedule</th>
<th>Minimum Exam Frequency</th>
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<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>60 min periods</td>
<td>Weekly</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>30 min periods</td>
<td>Every 2 wks</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>30 min periods</td>
<td>Every 3 wks</td>
</tr>
<tr>
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<td>30 min periods</td>
<td>Every 4 wks</td>
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<td>6</td>
<td>60 min periods</td>
<td>Every 5 wks</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>60 min periods</td>
<td>Every 6 wks</td>
</tr>
</tbody>
</table>

Active Vision Therapy

Hand-eye
Oculomotor
Accommodation

Have child “Do Stuff”
Interact with environment

Vision Therapy as Treatment

Phases of Therapy

• Monocular (HE, OM, ACC)
• Biocular (HE, OM, ACC, Anti-suppression)
• Binocular (Vergence, Acc)
• Integration/Stabilization
Do it all at the same time!
Traditional Therapy Procedures
- Hand-Eye Procedures
  - mazes
  - dot to dot
  - cutting
  - coloring
  - filling in O’s

Computer Vision Therapy
- Can attack vergence, accommodative, and oculomotor problems
- Most programs are set up to record patient’s performance each session
- Removes the problem of compliance!
- Different products on the market
  - Home Therapy System
  - Computer Aided Vision Therapy
  - Psychological Software Services

Why use Computer Aided VT?
- “I’d like to do VT in my practice, but...”
- Patients who cannot afford office VT
- Patients who cannot make a time commitment for office VT
- Patient compliance problems
- Insurance or Third Party Problems

How do you incorporate Computer Aided Vision Therapy in your practice?
- Diagnose the patient!!!
- Assign a therapy protocol
- Computer aided VT in the office
- Schedule follow-up appointments
- Evaluate the patient’s progress/Follow-up

Conclusions
- Easy way to incorporate VT for BV disorders into your practice
- Monitor the output to check for compliance and tricks!
- Remember that the key is in diagnosing patients and follow-up

VT Equipment
- Use the tools discussed
- You do not need a whole room of VT “stuff”

BV Organizations
- COVD http://www.covd.org/
- OEP http://www.oep.org/
- 949-250-8076
- AAO BV Section
  http://www.aaopt.org/sections/bvppo/aaobvp.html

Patient WWW Sites
- 3D Pictures
  http://www.vision3d.com/optical/index.shtml/stereogram
- How Does Binocular Vision Work?
  http://www.vision3d.com/stereo.html

BV Organizations
- PAVE/Parents Active for Vision Education
  http://www.pave-eye.com/
- Neuro-Optometric Rehabilitation Association
  http://www.norave.com/
Patient WWW Sites

- http://www.children-special-needs.org/vision_therapy/what_is_vision_therapy.html

Position Statement on VT

AOA, AAO, COVD many others:

Position Statement on Optometric Vision Therapy

“The American Optometric Association affirms its long standing position that optometric vision therapy is effective in the treatment of physiological, neuromuscular and perceptual dysfunctions of the vision system……..”

Practice Management

Myths

VT is Too Expensive!
You Can’t Make Money Doing VT!

Which is it? Can’t have it both ways!

Practice Management

First Comprehensive Examination
Then
Visual Efficiency
Strab/Amblyopia
Follow-up

Practice Management

All BV Disorders are a Medical Condition

CI, CE, DI, DE, Pursuit/Saccade Dysfunction

Practice Management

Accommodative disorders tend to be refractive

Accommodative insufficiency, excess, infacility, instability, etc

Practice Management

Visual Discomfort is a medical diagnosis

Questions? Contact:

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