Acute Care Back to the Basics Virtual Conference

Guest Editor: Lyndsay Laxton, OTR/L; Meghan Morrow, OTR/L

Mon 2/17  Acute Care Back to the Basics: Vision Assessment and Management
Leah Muntges, MOTR/L

Tues 2/18  Acute Care Back to the Basics: OT’s Role in Critical Care
Lyndsay Laxton, OTR/L
Meghan Morrow, OTR/L

Wed 2/19  Acute Care Back to the Basics: Burn Care
Julia Smith, MS, OTR/L

Thurs 2/20  Acute Care Back To The Basics: OT’s Role In The Emergency Department
Lyndsay Laxton, OTR/L
Katie Freeman, MSOT, OTR/L

Fri 2/21  Acute Care Back to the Basics: Gerontology
Marianna Marie Andrews, MS, OTR/L, BCG, MSW
Acute Care Back to the Basics: Vision Assessment and Management
Leah Muntges, MOTR/L

Learning Outcomes

- Describe 3 functional observations you may notice from a patient with visual impairment.
- Identify at least 3 basic components of a visual screen.
- Describe 3-5 early interventions that can be implemented in the acute care setting to address visual impairment.
- Describe at least 2 different professional referral options for the patient with vision impairment.
Why complete vision screens in the acute care setting?

- Many medical conditions can impact visual system
  - E.g. Stroke, traumatic brain injury, neurodegenerative diseases
- Comorbid conditions occur frequently in combination with vision loss that impact daily ADL/IADL performance
  - E.g. MS, diabetes, HTN, heart problems, stroke, hearing loss, depression, joint symptoms
- Aging and normal visual changes
- Low vision impairment
Why complete vision screens in the acute care setting?

- Vision impairment impacts many daily activities of living
  - Reading
  - Writing
  - Interacting with and gathering information from the environment
  - Safe mobility
  - Medication management
  - Grooming

- If not screened properly, visual deficits can be misinterpreted in OT evaluation, possibly resulting in an invalid assessment, faulty clinical reasoning and ineffective treatment.

Why complete vision screens in the acute care setting?

- Preparing the patient for discharge to next level of care

- Specific follow-up referrals

- Early intervention in hospital setting to maximize patient progression of daily activities and safe mobility
Visual Considerations for the Acute Care Population

- Normal Age-Related Changes
- Post-Stroke Visual Impairment
- Low Vision

Normal Age-Related Changes

- Loss of accommodation
- Slower dark adaptation
- Light scatter in eye and increased difficulty with glare
- Dry eyes
- Decreased contrast sensitivity
- Changes in color perception

(*Q1)
**Post-Stroke Visual Impairments**

- Ocular motility problems
  - strabismus
  - cranial nerve palsies
  - gaze palsies
  - vergence abnormalities
  - nystagmus
- Visual field impairment (peripheral or central)
- Visual inattention

**Prevalence** of acute post-stroke visual impairment averages 65%

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**Low Vision**

- Vision impairment that cannot be corrected by glasses, contact lenses, medical or surgical intervention
- Common diagnoses causing low vision:
  - Glaucoma
  - Age-related macular degeneration
  - Diabetic retinopathy
  - Cataracts
  - Demyelinating disease (multiple sclerosis)
Low Vision Impairments

- Reduced acuity
- Reduced visual field
- Contrast sensitivity impairment
- Glare sensitivity
- Prevalence and incidence of low vision and legal blindness expected double over the next three decades in people ages 45 and older

World Health Organization Classification of Visual Impairment

When vision in the better eye with best possible glasses correction is:

<table>
<thead>
<tr>
<th>Vision</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>20/30 to 20/60</td>
<td>Near-normal vision</td>
</tr>
<tr>
<td>20/70 to 20/160</td>
<td>Moderate low vision</td>
</tr>
<tr>
<td>20/200 or worse</td>
<td>Severe low vision</td>
</tr>
<tr>
<td>20/500 to 20/1000</td>
<td>Profound low vision</td>
</tr>
<tr>
<td>Less than 20/1000</td>
<td>Total low vision</td>
</tr>
<tr>
<td>No light perception</td>
<td>Total blindness</td>
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Basic Eye Anatomy

Visual Screening
Visual Screening Considerations

- Typical age-related changes
- Patient report of baseline visual ability vs. current visual complaints
- Functional observations during OT evaluation and during each portion of visual screen

Vision Screening

- Ocular history and interview
- Eye alignment
- Ocular motility (fixations, saccades, pursuits)
- Convergence
- Visual Field (central and peripheral)
- Visual acuity (near, distance)
- Contrast sensitivity

(Q3)
Visual History and Interview

- Complete chart review for current and past medical history
- Questions:
  - When was your last eye exam? Ask about previous eye surgeries or significant ocular history
  - Do you wear eyeglasses or use magnifiers?
    - What do you use them for?
    - Are they here in the hospital?
  - Ask if patient has noticed any visual changes since medical status change
    - If there is a specific visual diagnosis, ask if they understand the diagnosis.
    - ADL related impacts of vision change

Eye Alignment

- Hirschberg Technique
  - The patient fixates on a target at eye level.
  - Hold a penlight directly in front of the patient at about 12 inches.
  - Observe the reflection of the light on the corneas of both eyes.
    - If the eyes are aligned, the corneal reflections should match in location.
Visual Fixation

- Screen procedure
  - Hold a target at patient’s midline and then to the left and right of midline at approximately 16-20 inches from patient
  - Patient should be able to maintain fixation for 10 seconds at each location without observable movement of the eyes or head

Saccades

- Screening procedure:
  - Hold two pencils vertically 14-16” from eyes and 8” apart from each other. Using an uneven rhythm, ask the client to look at one target and then the other for a total of 5 sets.

- Expected findings: Quick, accurate eye movements to target for five sets. No under- or overshooting of target. No movement of head
Smooth Pursuit Eye Movements

- Tests all 6 eye muscles that move the eye (four rectus muscles: superior, inferior, lateral and medial; two oblique muscles: inferior and superior) by having the patient track in the pattern of the letter H

- Screen procedure:
  - While following a target at 12-14” from the face, patient is instructed to:
    - “look to the left,” then instruct patient to look up and down while looking in that direction
    - “look to the right,” then instruct the patient to look up and down while looking in that direction

Smooth Pursuit Eye Movements

- Scoring – non standardized

  - Intact: The patient is able to direct her gaze in all directions as requested.

  - Impaired: The patient will be unable to direct her gaze in one or more directions requested. Specify which movements are impaired.

  - Unable to perform
## Symptoms of Ocular Motility Problems

- Excessive head movement
- Frequent loss of place
- Skips lines while reading
- Poor attention span
- Difficulty with activities of daily living that require frequent change in fixation and accurate eye movements (driving, reading, writing)

(*Q4)

## Convergence

### Screen Procedure

- Start with fixation target 20 inches from patient’s face
- Move target towards patient’s nose, ask them to report when the target doubles, and record this distance
  - Observe the patient’s eye movements while screening
- After the patient reports doubling of target, slowly bring target away from patient’s face and record when target becomes single
  - Repeat several times to note fatigue
- Patient should be able to converge and recover within 6 inches of bridge of nose. Refer if outside this range.
Confrontation Field Screen

- This screen is only for gross, peripheral vision field loss
- This screening may not be sensitive with some patients and it is possible to miss a significant visual field loss with this procedure
- If the results of this screen are negative, but that patient displays behavior indicative of field loss, referral is still recommended.
- Note: the patient should have good fixation ability, concentration and attention for screening.

Confrontation Field Screen

- Equipment: A target (white sphere mounted on a small dowel rod/wand)
- Sit directly opposite the patient, about 20 inches away.
- Make sure client is looking directly at your nose as you move the target from the 12 o’clock position. They should report when they first see the target. Move clockwise to the 2, 4, 6, 8, and 10 o’clock positions.
- Compare your visual field to the patient’s visual field as you screen. If they can’t see the target as soon a you can, it indicates a problem.
Face Fields Macular Scotoma Screen

- Screening for central visual field impairment
- Test distance: approximately 60 cm and at patient’s eye level
- Each eye tested separately and then together
- Patient should fixate on OT’s nose and identify parts of the target (OT’s face) that are blurry, missing or distorted.
  - Can describe the reported impairment by quadrant

Functional Symptoms of Visual Field Deficits

- Walking: trouble seeing steps or curbs, shortened or uncertain stride, poor balance, tendency to walk next to the wall and hold on with hands, patient does not turn head as frequently, bumps into objects
- Leaves food on half of plate
- Reading: very difficult, misreads words, reads slowly, reads inaccurately, difficulty with page navigation, cannot stay on line
- ADL: Difficulty locating items
Near and Distance Acuity

- **Visual acuity defined:**
  - The resolution power of the eye
  - A measurement of the detail that the fovea (center of the macula) can decipher
  - The level of detail with which a person can see objects

- **Near acuity:** distance within arm’s length
  - Deficits will affect reading, writing, and other activities requiring “close work”

- **Distance acuity:** > arm’s length, typically 20’
  - Deficits can affect the patient’s depth perception, spatial judgement, and facial recognition

(*Q5)

**Screening Distance Visual Acuity**

- Commonly measured with a Snellen chart
- **Procedure:**
  - Post chart on wall and have patient stand 20’ away
  - Test each eye separately and then both eyes together
- **Recorded acuity is either:**
  - The lowest line that the patient can read more than half of the letters, but not all of them
  - All the letters on a line, plus a few letters (less than half) on the next line
Screening Distance Visual Acuity

Score recorded as a fraction:

- Numerator: patient testing distance (in feet) from the chart
- Denominator: distance at which the letter being viewed could be identified by a patient with normal visual acuity

- Expected results: Patient able to read without squinting or turning head. Refer if 20/40 or worse.

Screening Near Visual Acuity

- Near vision acuity cards have more precise measurements compared to functional screening options
- Functionally, use newspaper or magazine held at 14-16 inches from eyes. Point to 6 individual letters and ask patient to identify them.
- Test each eye then both together
- Expected results: minimum 5/6 letters correct, no squinting or turning head.
Visual Acuity Reminders

- Use appropriate correction for testing distance
- Basic procedures regardless of chart used:
  - Must test at the appropriate distance for the specific chart used
  - Adequate chart illumination required
  - Patient must be able to provide a reliable answer
- Modifiable screening options:
  - Number of optotypes shown during screen
  - Method of patient response e.g. forced choice, matching
  - Length of screening

Contrast Sensitivity

- Definition: the ability to detect or distinguish objects as they decrease in contrast from their backgrounds
- Contrast impairment can exist despite normal performance on traditional acuity tests
- ADL impact:
  - Difficulty reading poorly contrasted print like newspaper
  - Mobility: difficulty seeing curb edges and the last step of carpeted stairs
  - Difficulty recognizing facial expressions
- Recommend using a chart to measure, such as the LEA NUMBERS® Low Contrast Screener
Acute Care Interventions

- Lighting
- Contrast Strategies
- Clutter reduction/Organization
- Sensory Substitution
- Visual Scanning and Mobility
- Written Communication
- Education

(*Q6)

Lighting

- Reading light vs overhead light
  - Task lighting needed for reading, writing, or eating
- Fluorescent light can cause glare which can increase patient distractibility or cause headache
- Manage room shades or curtains to limit light or increase light as needed for the patient
Contrast Strategies

- Contrast tape on the edges of adaptive equipment to increase visibility
  - If teaching a patient how to use a sock aid, place a solid color towel on the floor to increase visual contrast.
- Contrast tape on call light or remote control
- Contrast for various braces
  - Adhere dark colored felt to the end of the strap or contrasting loops to the end of the straps so patient can locate the ends more easily.
- Bold lined paper and bold black felt tip pen

Clutter Reduction/Organization

- Clock method for meals; have someone describe the location of the food in terms of a clock
- Keep bedside table clutter free and organized with only necessary items for patient
- Organize grooming supplies at sink with patient input and remove unnecessary hospital supplies
Sensory Substitution

- Use finger as guide when applying toothpaste to brush or directly put toothpaste into mouth
- Feeling for tag of clothing
- Rubber band or ponytail holders around grooming supplies – number system
- Velcro taped to remote control, room call light or bed controls
- Place the pitcher spout to the cup edge before pouring

Visual Scanning and Mobility

- Education on visual field screening result
- Train patient to use an organized search pattern, especially when locating items for ADL routine
- Lighthouse technique
- Mobility + visual scanning
  - Have patient locate static objects within impaired visual field
  - Progress to complex environments for patient to practice timing their movement and interaction within dynamic environments

("Q8)
Written Communication

- Use sans serif fonts if typing instructions to patient
- Larger text for written discharge recommendations
  - Refer to text acuity results for approximate print size
    (1M X 8= 8-point font; 2M X 8 = 16 point font)
- Increase spacing between lines
- Do not use columns as this makes navigation more difficult
- Use black marker or gel pen when writing for patient

Education

- Results of visual screening to patient and family member/caregivers
- Recommended follow-up care
- General intervention strategies and how to apply them at home
Ophthalmology and Optometry

- An ophthalmologist is a medical doctor who focuses on medically managing eye health through surgery, pharmaceuticals or optical devices.

- An optometrist is a primary health care provider who specializes in examination, diagnosis, treatment and management of diseases of the visual system, the eye, and associated structures. Rehabilitation techniques can include use of lenses, prism, low vision devices, and vision therapy.
Finding A Provider

- **Optometry**
  - **Neuro optometry**
    - [https://www.aoa.org/optometrists/tools-and-resources/vision-rehabilitation/neuro](https://www.aoa.org/optometrists/tools-and-resources/vision-rehabilitation/neuro)
    - Neuro-Optometric Rehabilitation Association
      - [https://noravisionrehab.org/](https://noravisionrehab.org/)
  - **Low vision services**
    - [https://www.aoa.org/optometrists/tools-and-resources/vision-rehabilitation/low-vision-services](https://www.aoa.org/optometrists/tools-and-resources/vision-rehabilitation/low-vision-services)

- **Ophthalmology**
  - [https://www.aao.org/](https://www.aao.org/)

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