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Acute Care Back to the Basics:  
Vision Assessment and Management  
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- [Fawn] Today's topic of our five-day virtual conference on acute care is Acute Care Back to the Basics: Vision Assessment and Management. Our presenter today is Leah Munt, Muntges, sorry. She graduated from St. Louis University's Master of Occupational Therapy program. She has worked in a variety of settings, but primarily acute rehabilitation. In 2016, she enrolled in the post-graduate certificate in Low Vision Rehabilitation program at the University of Alabama-Birmingham, and also started working in an outpatient low vision clinic. She enjoys teaching and collaborating with other clinicians, provide holistic care to this vulnerable population. Understanding the visual system and how impairment can impact activities of daily living has transformed her practice. Welcome to Leah, so glad.

- [Leah] All right, thank you, Fawn, nice to be here. So as Fawn said, today we're gonna talk about Acute Care Back to the Basics: Vision Assessment and Management. Our learning outcomes, we're gonna describe three functional observations you may notice from a patient with visual impairment, identify at least three basic components of a visual screen, describe three to five early interventions that can be implemented in the acute care setting to address visual impairment, and describe at least three different, oh, I think that's supposed to say two different professional referral options for the patient with low vision, or vision impairment.

So a little overview. We're gonna start with why we should be doing vision screens in the acute care setting. Some visual considerations for the acute care population. We'll review some basic eye anatomy. We'll go over the vision screening options I'm providing today and we'll touch base on some acute care interventions you can do, as well as referrals. So why should we be completing vision screens in the acute care setting? So first of all, there's many medical conditions that can impact the visual system and some of the obvious ones include stroke, traumatic brain injury and

neurodegenerative diseases, and a lot of these times, these diagnoses will trigger an OT to do a visual screen during the evaluation, but there are also comorbid conditions that occur frequently in combination with vision loss that will impact daily ADL and IADL performance. And some of those I've listed below, like MS, diabetes, hypertension, heart problems, depression. And comorbid and chronic conditions require more coordinated care to manage medically but the patient also needs to have good self-management skills for these conditions. For example, being able to manage their medication regimens and functional optimally within ADLs. So things we're often assessing in the acute care setting. So you just wanna be aware that comorbid conditions can increase the complexity of vision loss as it relates to function. You'll also kind of wanna know about aging and normal visual changes that occur, and we'll talk about that in a little bit, as well as low vision impairment.

So low vision conditions are not always listed prominently in the medical chart. So this is just another layer to consider when you're working with adults in the acute care setting. So vision impairment impacts many activities of daily living and the ones I have listed here are just a few ADLs in the acute care setting that I wanted to address but vision impairment can impact a much wider range than this. So for patients in the hospital, there's actually quite a bit of information that they need to be able to manage. So when I'm talking about reading, I'm not necessarily thinking about leisure reading and books and magazines but functional reading like hospital menus, room phone numbers, hospital documentation and discharge paperwork and recommendations. Writing, while it may not happen as often in the hospital, some people like to take notes about their care, write notes to family to coordinate for discharge and sign documents. Interacting with and gathering information from the environment, safe mobility. It's important that the patient can orient to their environment. So do they know where they are? Can they tell their family how to find them in the hospital? Can they get back to their room if they go for a walk? And can they navigate obstacles safely?

Medication management is another important piece. So patients are often prescribed new medications while they're in the hospital. So while they're not typically in charge of administering their own medications while they're there, they are often making important health decisions in that setting. So can they read the documents that they're being given about these new medications? Do they understand the provider recommendations and medicine adjustments that are being made? And then, you know, things like simple, basic ADLs. Grooming, getting dressed, things like that. So the takeaway here really is if we're not screening properly, visual deficits can be misinterpreted in the OT evaluation, possibly resulting in an invalid assessment, faulty clinical reasoning, and ineffective treatment.

So we might label a patient as having a cognitive impairment when they actually have a visual impairment, and if you're trying to administer a cognitive assessment that requires reading but you don't screen vision first, your results could be pretty inaccurate. Sometimes patients might be mislabeled as having behavioral issues, so we might call them unmotivated or clumsy when that's not really the case, it's just an underlying visual impairment. So though there are plenty of acute care challenges, like resources and time, a quick vision screen really should be part of every OT evaluation. And so finally, we're thinking about these aspects of discharge for the acute care setting. So where are they going? What kind of referral are we making based off of our evaluation? If somebody's gonna go back to the community right away, what specific followup referrals are we making? And then, depending on how long they're in the acute care hospital, early intervention is gonna help maximize the progression of their daily ADLs and safe mobility, so having all of the information we need is gonna be really important.

So we'll talk about some visual considerations for this acute care population, so we'll go over some normal age-related visual changes, post-stroke visual impairment, and

low vision. Oops. Too far. Okay. So we are gonna start to see some of these visual changes in adults around the ages of 41 to 60 but not all people will experience the same changes. So loss of accommodation. Accommodation is the mechanism by which the eye changes focus from distance to near images and this occurs because the lens of our eye changes shape. So as we age, we actually lose flexibility in the lens and it makes it more difficult to focus at near distances and this is called presbyopia. So patients often need reading glasses. We have slower dark adaptation, so our rod cell sensitivity decreases as we age and we often need more light for daily activities. There can be light scatter in the eye and increased difficulty with glare as we get older. Dry eyes. The tear glands will produce fewer tears, which can make eyes dry and itchy. You can get decreased contrast sensitivity and changes in color perception. The lens of the eye may start to discolor, making it difficult to distinguish between certain color shades. So these are just some typical changes that can occur.

And post-stroke visual impairments. So this list was taken from a recent systematic literature review cited at the end of this presentation. So while each category of visual impairment varied in prevalence based on the various studies included, the overall average of post-acute visual impairment was 65%, which is pretty high. And this can include things like ocular motility problems, visual field impairment, both peripheral and central, and visual inattention. So the point of this slide is really just to emphasize how important visual screening is for this commonly treated population. And then low vision. So low vision is vision impairment that cannot be corrected for by glasses, contact lenses, medical or surgical intervention, and common diagnoses that cause low vision can include glaucoma, age-related macular degeneration, diabetic retinopathy, cataracts, and demyelinating diseases like multiple sclerosis. So while this low vision diagnoses are not often a primary diagnosis for a hospital admission, they may greatly impact your functional evaluation with a patient. If you know a patient has low vision impairment, this can alter the way you treat them or how you interpret their

functional ADL performance, especially if that patient already has compensatory strategies to maximize the use of their vision.

Okay, some impairments you may see when you come across a patient with low vision. Reduced acuity, reduced visual field, both centrally and peripherally, contrast sensitivity impairment, and glare sensitivity. So the Journal of American Medical Association Ophthalmology did a recent study, also cited at the end of this presentation, that indicates that the prevalence and incidence of low vision and legal blindness is actually expected to double over the next three decades in people ages 45 and older. Again, another thing to think about when you are working with this population in the hospital. And then I've included the World Health Organization Classification of Visual Impairment, and so this is based on when the vision in the better eye with best possible glasses correction is. So as you can see, up to 20/60 is near normal vision and then it sort of breaks down into subcategories beyond that, going down towards total blindness, which is no light perception. In the U.S., legal blindness is defined as corrected vision of 20/200 in the better seeing eye. This is somewhat misleading language because the patient may still have usable vision and not be completely blind. So low vision is often misunderstood because the impairment can be so variable and there are many ways in which a patient with low vision can use their vision functionally. So in the hospital setting, if a patient has low vision, you just wanna make sure that they have all of the necessary devices that they use for reading or distance, 'cause that will make a huge difference in how they operate functionally.

All right. So let's go over some basic eye anatomy, I'm gonna get my little pointer here. Okay, so there are, there we go, three outer layers to the eye. So the outermost layer is called the sclera, it is the white part of the eye, and it has an extension, the cornea. And the cornea allows light to enter the eye and it directs that light back towards the retina. There is a middle layer, called the uvea, and it is a vascular layer that provides nutrients to the retina. So it contains the ciliary body, the iris, and the choroid. Zoom up

back up there. And the ciliary body is an extension of the iris and it secretes a transparent fluid called the aqueous humor into the eye, and the ciliary body also contains a muscle that controls the shape of the lens during accommodation. And then if you go to the innermost layer of the eye, that's the retina. Boop. And it contains several layers, including one with photoreceptors, which have cone and rod cells. So rod cells provide peripheral vision and night vision. They are more abundant than cone cells, and cone cells provide detailed vision and color vision. The center of the retina is called the macula, and its center point is called the fovea. So the fovea has the highest concentration of cone cells and visual acuity declines steeply as you move outward towards the retinal periphery. So internal to these layers, anteriorly, and directly behind the iris of the lens of the eyes. Oh, behind the iris is the lens of the eye, sorry, there you go, and that is what focuses incoming light rays onto the fovea. And then at the very back of the eye you have the optic nerve and it carries the impulses formed by the retina to the vision centers of the brain via electrical impulses. So interestingly, our visual blind spot is called by the absence of photoreceptors on the part of the retina where the optic nerve exits the eye. So that's about as far as we're gonna go with the eye anatomy today. All right, let me take my little arrow off, okay.

So visual screening. So you wanna consider these things, the typical age-related changes we just talked about, the patient's report of baseline visual ability versus their current visual complaints, and then any functional observations you make during the OT evaluation and then during each portion of the visual screen. So it's important to triangulate your data. So you're gonna combine what you're observing within the ADLs or very basic mobility with observations in the visual screen. For example, if you notice certain behaviors when you're helping a patient move around the room, like they bump into furniture edges on the right side, you wanna keep that in mind as you start the visual screen because you may notice similar difficulties as you dive a little deeper. So one observation doesn't give you a full picture, you wanna continue assessing and combining information to kind of create that functional picture of the patient. Okay, and

this is what I'm including today. So ocular history and interview, eye alignment, ocular motility, including fixations, saccades, and pursuits, convergence, visual field, both central and peripheral, visual acuity, both near and distance, and then contrast sensitivity.

All right, the visual history and interview. So of course, everything starts with a chart review. You're gonna take a note of current and past medical history, that's pertinent to your patient. And then you're gonna ask them a bunch of questions about things like when was your last eye exam? Have they had any previous eye surgeries or significant ocular history? At this point, they may tell you they have a low vision diagnosis. You wanna ask about any eyewear or magnifiers that they may use. So if they do have those things, what do they use them for? Are they for reading or seeing far away? Do they have those devices in the hospital? And then you wanna ask if the patient has noticed any visual changes since this new medical status change that brought them into the hospital. So if they have a specific visual diagnosis, you can ask them about that and if they understand what that means and sort of go through those pieces of education. Or you can ask if they've noticed any ADL-related impacts of the visual change. Some people have difficulty describing visual changes specifically and they may associate vision change with certain activities like difficulty reading or they might say they're having trouble with eye-hand coordination tasks, like reaching for items on their bedside table or things like that. If family is present, I would ask them about any observed behaviors they've noticed. Sometimes they can have a wealth of knowledge that maybe the patient is talking about. And then you can also use these questions, kind of gauge a patient's level of awareness by asking these questions before you screen. So do they know that they have visual changes and how is that sort of impacting them?

Okay, eye alignment. So normal alignment of the eyes is required for coordinated function, general visual processing, and then perception of a single image. Eye

misalignment is called a strabismus and there are six muscles attached to each eye that help them move. And injury to any of these muscles or nerves can cause a misalignment. So if a patient does have a misalignment, you may notice the patient closing one eye or turning the head to reduce those visual symptoms. So to test for this, we're gonna use the Hirschberg Technique and we're gonna have the patient fixate on a target at eye level. You can hold a penlight directly in front of the patient at about 12 inches, and you're gonna observe the reflection of the light on the corneas of both of their eyes. So if the eyes are aligned, the corneal reflection should match in location.

Visual fixation. So poor visual fixation may give the impression that the patient is inattentive or impulsive. The function of visual fixation is to hold the image of a stationary object on the fovea by minimizing ocular drifts. So if you recall, the fovea is the center of the macula and it has the highest concentration of cone cells for detailed vision. So to screen for this, you're gonna hold a target at a patient's midline and then to the left and the right of midline, at approximately 16 to 20 inches from the patient, the patient should be able to maintain fixation for 10 seconds at each location without any observable movement of the eyes or the head. So a commonly observed disorder of fixation is nystagmus, which is an involuntary rhythmic oscillation of one or both eyes.

Okay, saccades. Saccades are eye movements that enable us to redirect our line of sight so that the point of interest stimulates the fovea. Ideally, the saccade will take one eye movement to reach and stop directly on the target of interest. So we use saccadic eye movements for things like reading. So to screen for this, we're gonna hold two pencils vertically, about 14 to 16 inches from the patient's eyes and eight inches apart from each other. You can have colorful eraser tips on the end of the pencils for something more interesting to look at, but you're gonna use an uneven rhythm asking the client to look at one target and then the other for a total of five sets.

So we would expect that the patient will have quick, accurate eye movements to each target for the five full sets without any under or overshooting of the target and minimal movement of the head. Undershooting is a commonly observed inaccuracy, whereas overshooting is much less common.

Okay. And then smooth pursuit eye movements. So smooth pursuits are movements that allow us to keep a smoothly moving target steady on the retina. They are the motor expression of attention and they require voluntary involvement. So in this particular case, we'll have the patient track in pattern of a letter H, and this is gonna test all six of the eye muscles that move the eyes. So the four rectus and the two oblique. You're gonna have them follow a target at about 12 to 14 inches from their face and you're gonna instruct them to look left and then up and down while looking in that direction and then shift over to the right and look up and down in that direction. You wanna observe the patient's eyes as you screen. The eyes should move an equal distance in each direction. The corneal reflection should match and that's probably gonna be a little more obvious if you're using a penlight to test or you're facing a window or have a good light in the room. And the eyes should also stay on target with minimal jerking. Typically you'll see deficits in pursuits and saccades that are similar. And then the scoring for this is non-standardized, so you can call it intact if 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 of the directions requested and you can document which direction that is, and then/or you can say unable to perform. So here are some symptoms. If a patient does have ocular motility problems, you may notice excessive head movement, frequent loss of place, skipping lines while reading, poor attention span, and then difficulties with ADLs that require a frequent change in fixation and accurate eye movements, so driving, reading, writing. I realize we're not doing driving in the acute care but just to give another example of difficulty.

And then we're gonna move on to convergence. The vergence system aligns the eyes to maintain binocular fixation and binocular vision. So it's a simultaneous movement of both eyes in opposite directions and this consists of convergence, so eye rotation towards each other to look at a close object, and then divergence, when the eyes rotate away from each other to look at a distant object. So to screen for this, we are going to start with a fixation target 20 inches from the patient's face. You're gonna slowly move that target towards the patient's nose and you're gonna ask them to report when they see double and you're gonna record that distance. So you definitely wanna watch the patient's eyes while you're doing this screening. After the patient reports a doubling of the target, you're gonna slowly bring it back away and then record when that target becomes single again. And you wanna repeat this several times to note fatigue. The patient should be able to converge and recover within six inches of the bridge of the nose and you're gonna refer if it is outside of this range. So limitations in convergence are not typically functionally significant unless the patient is unable to converge the eyes and maintain convergence at the five to six inch range for several seconds. The inability to do this will make near tasks, like reading, very difficult. And the patient may have already made a complaint about difficulty with reading before you even got started but that is one activity that it will definitely come up. And then convergence insufficiency is a commonly observed problem following CVA or TBI, and in this condition, the eyes have a tendency to drift outward when being used for near work like reading, but they work well together for viewing distantly.

Okay, so confrontation field screenings. This is a screen for gross, peripheral visual field only. This screen may not be sensitive with some patients and it is entirely possible to miss a very big visual field loss using this procedure. So if that happens and your screening results are negative but the patient is displaying behavior that is indicative of field loss, you should definitely still refer them. And the patient should have good fixation ability, concentration and attention when you're screening this. So just as a little review, your grossly normal monocular field division is 50 degrees

superiorly, 50 degrees nasally, 60 degrees inferiorly and 90 degrees temporally. Okay so when we're testing this, you're gonna use a target, it might be the same pencil with the colorful eraser cap, it could be a totally different one, a dowel with the little sphere on the end, but you're gonna sit directly opposite from the patient about 20 inches away and you're gonna make sure that they are looking directly at your nose as you move the target a mark down from the 12 o'clock position. And they should report when they first see that target. And from there, you're gonna move clockwise to the two, four, six, eight, and 10 o'clock positions and do the same testing. And you're gonna compare your visual field to the patient's field, as you screened. So if they can't see the target as soon as you can, that indicates there may be a problem. And this description may seem a little vague and I've kind of left it that way intentionally because as I was preparing for this talk, I read conflicting information about screening monocularly versus binocularly, and there was an argument made that OTs focus on function and since most people operate binocularly, that we should test binocularly. I've never done that myself but I definitely wanted to leave the option open, especially when you're considering the acute care setting and time constraints for OT evaluations anyway, but if you do decide to test monocularly, when you cover the patient's right eye, you'll also cover your left eye so that you can compare visual fields, and then you're gonna do the opposite, to test the other eye.

All right, and then moving on the face fields macular scotoma screen. So I included this screening option because central visual field deficits are common in low vision impairment and post-stroke visual impairment. Central vision impairment can impact contrast sensitivity, the patient's ability to read, their ability to use eye-hand coordination effectively, and to see facial expression. So for these reasons, I wanted to include this piece. So to screen for this, for Central Visual Field Impairment, you're gonna start at approximately 60 centimeters and at a patient's eye level, and this like between 23 and 24 inches away. You're gonna test each eye separately and then together, and so the target in this case is the OT space and so while the patient is

fixating on the OTs nose, and you can watch them do this, so you make sure they're not shifting their gaze around. You've asked them to kind of identify parts of your face that are blurry, missing or distorted, and you can definitely describe this, their report, by quadrant to make it easier. If the impairment is pretty significant, like half of your face is missing and not just blurry. You'll notice the impact of this once you screen acuity. So that patient may miss half of the letters on the text acuity chart, or they may miss right-sided letters on a distance acuity chart. But it gives you a better idea of maybe what's going with their visual fields, if you do the central screening as well.

Okay. So some functional symptoms of visual field deficits. Walking, definitely. So trouble seeing steps or curves. They may have a shortened or uncertain stride, poor balance, they may tend to walk next to the wall and hold onto it with their hands. They won't turn their head as frequently if they have a peripheral field loss. So they'll bump into objects. They may leave food on have of their plate. Reading will be very difficult, they may misread words, read very slowly, inaccurately, have trouble navigating a page or staying on the line. And then with ADLs, they can have difficulty locating items amongst many other difficulties with ADLs, but you'll definitely notice that they'll have decreased visual scanning, especially if the patient isn't aware of the field loss initially. So you might cue a patient to grab an item from the counter and they may only scan to one side or they'll assume they can see the whole counter and tell you that item isn't there. So screening vision first may actually help you interpret some of these functional observations that you're making when you get them up and try to engage them in ADLs.

All right, acuity. So both near and distance acuity. So it is defined as the resolution power of the eye, the measurement of the detail that the fovea, which is, again, the center of the macula, can decipher, or the level of detail of which a person can see objects. So near acuity is typically distance within an arm's length. So deficits will affect reading, writing and other activities requiring close work. And then distance

acuity is typically greater than an arm's length, around 20 feet, and deficits with distance acuity can affect the patient's depth perception, spatial judgment, and facial recognition. All right, so when we're screening distance visual acuity, the most commonly used chart is the Snellen chart. And before I go any further, I just wanna clarify that the figures and letters on acuity charts are called optotypes, and so I'm gonna use this word moving forward. Now, the Snellen chart, though it is very popular, actually only has one optotype at the 2200 line. So it is really not a sensitive chart for the low vision patient, and low vision charts can go up to 21,000. So don't assume just because the patient cannot see that 2200 optotype, that they are unable to do other functional things. Their inability to read a letter at that size doesn't indicate the level of functional vision they may have. So when I say functional vision, that describes how the person functions in vision-related activities. So this tells us about the patient's quality of vision and gives the OT a better understanding of how the patient is able to use their vision for activities like reading and mobility and ADLs. Visual function actually describes how the eye functions, so it tells us the patient's quantity of vision, so based on their acuities and field findings. So just a side note about the Snellen chart. I did wanna use that just because everyone's very familiar with it, but the low vision therapist in me just needed to caution everyone about not being able to read that top line does not mean they can't see anything. So if we are using a Snellen chart, you're gonna post it on a wall and have that patient stand 20 feet away and you're gonna test each eye separately and then both together. So the recorded acuity is either the lowest line that the patient can read, more than half the letters but not all of them, or all of the letters on the line are read, plus a few, usually less than half, on the next line. So if the patient can read to the 20/40 line but only three of the five letters, you would chart 20/40 minus two. If they can read the full 20/40 line and then two optotypes on the next line, you would chart 20/40 plus two. Cue with the line. Okay, so it is recorded as a fraction, and so the numerator is the testing distance in feet from the chart, and then the denominator is the distance at which the letter being viewed could be identified by a patient with normal visual acuity. So for example, the 20/40 line indicates that the line

the patient read correctly, at 20 feet away, can be read by a person with normal vision from 40 feet away. When you're screening distance acuity, you wanna make sure that the patient's able to read without squinting or turning their head and you're gonna refer them if their acuity is 20/40 or worse.

So screening near visual acuity. So near vision acuity cards actually have more precise measurements compared to functional screening options, but the reason I'm gonna discuss a functional screen is because I wanna consider the constraints of the acute care setting. I realize that time and limited resources may impact what an OT carries around with them throughout a day, so a functional option may actually be a reasonable option, though I will also speak generally about near acuity cards in a moment. So if you're gonna screen functionally, you can use a newspaper or a magazine, held at about 14 to 16 inches from the patient's eyes. You're gonna point to six individual letters and ask the patient to identify them. So you can test each eye separately and then both together, and your expected results would be that they can read a minimum of five out of six letters correctly without squinting or turning their heads. All right, heads, one head. It's important to document the distance that the patient's holding the card or the newspaper ad, especially if it's different than maybe that standard 16-inch working distance. So for example, if the patient has to hold the chart or a newspaper about eight inches from their face to read, that's a significant thing, so you definitely wanna indicate that in your documentation. If you are using a near acuity chart, with more precise measurements, you may notice that the measurements along each line may be listed in M units, and that is based on a meter system. So often times these metric visual acuity charts have a Snellen equivalent listed. So a 1M unit has a Snellen equivalent to 20/50. This equivalent score is only valid, though, if the appropriate testing distance is used. But for reference purposes, a 1M size letter is equivalent in size to newspaper print. 2M letters are equivalent in size to like large print books, so about 16-point font, and so that's why the functional

assessment of near acuity is done with newspaper print 'cause that's typically the size we want patients to be able to read.

And then some reminders of visual acuity since those, I didn't go precisely through all the different steps of a particular chart. You wanna use appropriate correction for whatever testing distance or chart you are using. So if the patient wears reading glasses, you wanna make sure they have those glasses on when you're testing near acuity. The same for distance acuity, if they have a distance prescription. If the patient is getting their prescription brought to them later in the day because they didn't plan to come to the hospital, I would recommend holding on the visual screen because this evaluation is only gonna tell you what they can see without a prescription. But if the prescription is broken or lost due to whatever accident brought them to the hospital, it may still be beneficial to complete the visual acuity screen so you know how to modify print material for them or apply compensatory strategies until they can see the appropriate provider and get a new prescription. Basic procedures that you wanna use regardless of the chart you use, always make sure you're testing them at the appropriate distance for the specific chart. You're gonna make sure you have adequate chart illumination so that the light is evenly displayed across the chart, and then you wanna make sure that that patient can provide a reliable answer, 'cause that will certainly mess up your results if you're not quite sure that they understand what you're asking them to do.

There are, however, some modifiable screening options that you can do. So for example, you can modify the number of optotypes that you show during a screen. If a patient's having a really hard time tracking across a line or staying, you're pointing into the line and they just can't figure out where you are, you can block the lines above and below that so that they can be directed more accurately. You can change the method of the patient response, so using forced choice or matching. Sometimes I'll photocopy part of the chart and use the really large images as a way for the patient to use a

matching option. And then the length of the screening. You can definitely modify that, especially if the patient fatigues easily or has other medical issues that interfere with their ability to participate in one sitting.

All right, and then contrast sensitivity. So by definition, this is the ability to detect or distinguish objects as they decrease in contrast from their backgrounds. Contrast impairment can exist despite normal performance on a traditional acuity test. Those acuity charts are high contrast, black and white, so they don't always pick up on contrast impairment. And so, the ADL impact of contrast sensitivity impairment can be pretty significant. So difficulty reading poorly contrasted materials like newspaper, or food labels, maybe some of the materials in the hospital that are on multicolored papers can be difficult. Mobility-wise, you're gonna see difficulty with curb edges and the last step of carpeted stairs. You will have, well they may have difficulty recognizing facial expressions. Sometimes patients will complain of dim or foggy vision if they have contrast sensitivity impairment. So they may be really light sensitive or be very particular about lighting conditions. In contrast, sensitivity impairment usually occurs secondary to a variety of eye conditions and eye diseases, so there isn't a classification of contrast sensitivity disorders. So I do recommend using a chart to measure contrast sensitivity, like the LEA NUMBERS Low Contrast Screener. You can certainly do things in the room to assess whether or not they're able to see contrast well, like having them pour water into a clear glass within an inch of the rim or other things that you can assess for but I would say it's typically hard to tease out, especially if they're having a bunch of other visual issues. So a chart's probably the easiest way to go, if you have that option. So that kinda brings us to the end of our vision screens.

So we can talk about some acute care intervention options. So we're gonna go over lighting and contrast strategies, clutter reduction and organization, sensory substitution, visual scanning and mobility, written communication and education. And because this is a back-to-the-basics talk, these are generalist intervention

recommendations. So we're not gonna get too far down the rabbit holes of different treatment options. So lighting. So earlier we talked about normal age-related changes of light scatter in the eye and to glare sensitivity, but there are many other visual conditions that can be positively impacted by illumination adjustments. One example would be macular degeneration. So if a patient has a central scotoma that isn't very dense, additional light, when they're reading, can make a very big difference functionally for them. So reading lights versus overhead lights, it'll depend on your hospital setting but sometimes there are specific reading light options available. So task lighting is usually within an arm's length and it benefits any activity within arm's length. So reading, writing, eating. So whatever you can do in the room to manipulate light, to make it a lot easier for the patient to do those basic daily activities. Fluorescent light can cause glare which can increase a patient's distractibility or cause headache. So if you can manage lighting conditions for the patient by adjusting the room shades or the curtains to either limit or increase light as needed, that can go a long way as well. If a patient is uncertain about the benefit of light, you can demonstrate how their reading ability changes with and without a light. So if you have a chart that you are using, you can always have them practice reading with just the overhead light on and then add a closer light to kind of show them objectively how their vision can improve, especially within your acuity chart, this can work. But one additional point that I've used as a sort of trick in the room is that if a patient has a smartphone with them, sometimes that phone flashlight can help when the patient isn't within reach of a reading light or they aren't in the direct line of lighting for any in-room option. So, you know, just as a quick cheat, you can show them how to turn on their phone light.

Contrast strategies. Contrast tape on the edges of adaptive equipment can help increase visibility, and when I say contrast tape, it can be electrical tape. If it's blue or red or purple, it's not really special tape, it's just anything that can provide contrast to whatever you're trying to adapt. So you can tape the edge of the sock aid so they can find that end more easily when they're trying to apply the sock. You can throw a solid

color towel on the floor to offset and increase some contrast against the sock aid as they put it on the floor. Contrast tape works well on call lights or remote controls. So you only wanna mark important buttons, you don't wanna mark everything 'cause that's not terribly helpful. And you also wanna make sure that the patient is helping you or helping decide with you what buttons to mark since they are the ones that are gonna use it. So you may have a grand idea about which buttons are important, but if the patient's in there with you doing it, it might not be that helpful. And then you can use contrast for various braces, this is kind of a generic statement about braces but often times there's almost no contrasts, it's either a solid black with black straps or solid white with white straps, or at least in my experience. So you can adhere the opposite color felt to the end of a strap so it stands out for the patient of contrasting loops to the ends of the strap so the patient can locate those ends more easily, especially if they're Velcro and sticking to everything. And then bold lined paper and bold black felt tip pens can be helpful if you're gonna jot down notes for the patient or show them how to maximize the use of their handwriting. This is compared to like pencils or colored pens that you might use. So you wanna stick to high contrast black and white.

Clutter reduction and organization. So you can use the clock method for meals. So having someone describe to the patient the location of their food on the plate in terms of a clock, to help them stay organized while they're eating. Keeping the bedside table clutter-free and organized with only necessary items for the patient. The bedside table sometimes becomes a dumping ground for everything in the room. So as much as you can keep it organized will help the patient be a little more visually efficient when they're searching for things that they need. And similarly you could do a treatment session where you're helping 'em organize supplies at the sink so they can, of course with the patient's input, so they can kinda find whatever they need and get their routines done in the mornings. And then of course, removing any unnecessary supplies that tend to linger.

Sensory substitution. So if the visual impairment is significant enough, it is actually helpful to teach the patient how to use other sensations to gather information and navigate during ADLs, and a lot of the ones I listed here are tactile-based, but you can certainly dive a little deeper than the ones I have listed. So an example would be showing them how to use their finger as a guide when applying toothpaste to the brush. So like aligning their finger to the bristles and touching the edge of the toothpaste container to it as they apply it, or more simply, just put the toothpaste directly into their mouth. Have them practice feeling for the tags of clothing so they can orient a little better. Using the rubber band or ponytail holders around grooming supplies but you'll use a number system. So for example, if the patient has shampoo and conditioner and they can't read the bottle at all and they're not even wearing glasses when they take a shower, you can have a single rubber band around the bottle for shampoo and two bands on the conditioner so that they can just use touch while they're in the shower and not have to worry so much about what product they're using. You can do something similar to the contrast tape, but use Velcro, to the remote controls of the room, call lights, or bed controls. So instead of it standing out color-wise, they can feel for that material on, again, important controls that the patient wants to be able to access. And then one other tactile technique would be if the patient orders a coffee carafe for breakfast and wants to pour coffee for themselves all day, teaching them how to touch the spout to the cup of the edge before pouring can go along way, especially if they're not very good at it and it might require a lot of cleanup throughout the day, so that could be something to offset stressors for the patient.

Visual scanning and mobility. So I always start with education on the results of the visual field screen because that can certainly normalize a patient's functional difficulties. So they may not be able to verbalize to you what exactly has changed but they know that they are knocking things over or they can't find things, and so just kind of explaining to them what you're noticing when you do the screen can go a long way

to sort of normalize that experience and just provide good education. Training 'em on how to use an organized search pattern, especially when they're locating items for an ADL routine. So an organized scan pattern can increase their efficiency when they're searching visually. Our peripheral field actually acts as a warning system, so we're not always accustomed to scanning to search specifically for items, especially when it's intact. We tend to take it for granted because we are but without realizing we're actually gathering quite a bit of information when our fields are intact. So when you have an impairment, it's not an automatic thing to scan into the periphery, so that's a good place to start. I'm including the lighthouse technique, it is a visual imagery technique to address visual inattention and visual scanning. So I included it as a resource at the end of this presentation but I've used this even without the patient having a visual and attention problem just as a technique for scanning fully to the periphery. And then mobility and visual scanning. So sort of grading the progression from static location of objects, static objects to more complex environments for the patient to practice the timing of their movement and interaction within dynamic environments. So an example of scanning for static objects that I've used is putting Post-It notes with letters, large letters, highly contrasted of course, on the wall and then having the patient spell out words by locating each letter card. So they're getting feedback on their accuracy and then finding the boundaries of their visual fields. For dynamic training, that's just gonna increase the overall complexity of the task and so they can do a pathfinding task in the main area of the hospital and practice maneuvering in a more complicated environment.

Written communication. So if you're gonna type anything for the patient, you wanna go with a sans serif font. Though the serifs are beautiful and look nice, they are really difficult to read if you have a visual impairment. So the simpler, the better. You wanna use larger text for any printed discharge recommendations. So if you're using an acuity chart, you can certainly look at the M size, if it's a metric card and times that M number by eight to figure out what point font size you can use. If you don't wanna be that

specific, that's fine, just make it really big and make sure the patient can read it when you print it off, but there is a way to be a little more precise, if that is something you are interested in. And then if you are writing quite a bit of information out or typing out information for them, you wanna have good spacing between the lines so it's easy for them to read, and you do not wanna use columns because that's gonna make navigation a whole lot more difficult for the patient. And then, of course, if you're handwriting anything, black marker or gel pen is gonna be best. And do not use cursive, cursive like the serifs are actually a lot harder to read, so it's best to use print or block letters when you're writing out any information for the patient.

And then, of course, education. I did this visual screen with you, here are the things that I found that were maybe a little different than baseline and these are my recommendations. So talking with the patient, talking with the family members or caregivers, giving them specific followup recommendations and then what of these general intervention strategies can they take home with them and how can they apply them so that they're successful until they get to the next level of care or whatever recommendation you're making.

And referrals. Where are we sending these folks? So we'll just touch on ophthalmology and optometry. So an ophthalmologist is a medical doctor who focuses on medically managing the eye 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. So they do a lot of the rehab and those techniques can include use of prisms, lenses, low vision devices and vision therapy. So typically, unless there's a major medical issue that needs to be addressed or diagnosed, most patients are gonna see an optometrist and there's different specialties in both areas of ophthalmology and optometry. So an optometrist will still assess the patient's ocular health, and if there's a major concern, they will also refer to an ophthalmologist. So it's not always a linear

referral, sometimes it's going to both ophthalmology and optometry. Here I've included more of the national organizations of optometry and ophthalmology, so the American Academy of ophthalmology and the American Optometric Association. On those websites, they do have Find a Provider links, and I've just included here some of the subspecialty areas for more information about services that they can provide. This is where I would start, especially if you maybe are less familiar with the options you have where you practice, but it is good to find local resources. So for example, my state has a specific optometric organization for low vision providers, which I realize is not a typical thing but it definitely makes referrals a lot easier to know who the providers are and what areas of the state they live in. If you have less community resources, it might be a good idea to call optometry providers in your area and ask about what types of patients they serve, what services they offer and determine if they'll be a good fit or resource for your patient population. And then I didn't list but it should be a pretty common thing is to find your outpatient rehabilitation resources. So for driving programs, low vision rehabilitation and other neuro-based clinics that you can refer your patients to for continuing care. So it's just important to know what options you have as a clinician. So this would be my starting point.

All right, here are some references. Does anyone have any questions? Oops.

Where can I find these screening in written form and where can I find the charts? So a lot of the screening options that I've listed, I've got from multiple resources and all of them are listed in my references at the end of the PowerPoint. Should testing be done in a private room or can this be done in a therapy gym with distractions to stimulate or simulate a more realistic setting? I think it probably depends on the patient's diagnosis, and patient privacy. I typically just do that testing in a patient's room with the TV off and the least distracting environment. I mean, certainly you can test or figure out later if the patient is that distractable, how that's gonna impact their function, but I would

probably do this in a quiet setting to start. Oh goodness, let's see. With per se, oh goodness, it keeps moving. Okay, hold on, one second, I gotta read these.

Do you grade it by starting off with per se... Oh okay, so when placing a pitcher's spout to the cup edge for pouring activity, do you grade it by starting off with, per se, room temperature water. Also what other safety precautions should be taken and what environment do you find this works best in? Yes to all of that. Certainly, you don't want piping hot fluids pouring down the patient's hands, and you certainly would want to practice it with them a couple of times before you set them free to pour that. That was just a really basic example, it could be cold milk into a cup. Maybe I should've done that instead of the pitcher, but where I work they have pitchers sometimes. So I would definitely grade it up and just make sure they're safe and they are consistent and that they have good sensation in their hands. So I'm just speaking to the visual piece, not necessarily any other sensory or other deficits outside of that. Oh goodness. Things are moving quite a bit, okay.

Oh, the lowest age you would use these screens on. One of the books in my references actually speaks a lot to the pediatric population. And there is a great saccades and pursuits test that was normal or standardized on children that I really wanted to talk about but given that it was standardized on kiddos, I didn't wanna include it, and that would be, which one is it? Let's see. It's one of the books. Number 10 is where you can go for more of the pediatric guided assessments.

Let's see, vision recommendations. Oh man, okay, so vision and cognition. It's really hard to get a consistent visual screen. So honestly, that's the time when I would modify what I'm doing and how I'm doing it. So I wouldn't do everything in one sitting with somebody who had a cognitive impairment, whether that's maybe a really significant stroke or dementia, there are ways to modify things and maybe tie it more into function versus getting hard numbers on a chart. So the cognitive piece, you may just have to

keep reassessing. I know sometimes in acute rehab, I'll try to get it with somebody in the first few days but I may have to come back to it repeatedly over the course of the week, especially if they're kind of emerging out of maybe PTA or if they're just becoming a little more cognizant. So sometimes it's something you just have to keep re-screening and then addressing functionally in your sessions.

So when documenting on field cuts, how do you word? Do you state that there is one present or appears to be present? So for me, I divide the eyes into quadrants and then I will speak to whichever eye I'm testing. So I spoke to doing a binocular screen, I really prefer testing monocularly, and then re-testing, depending on the diagnosis, like if the patient's not totally consistent or they're not fixating well enough for me to get a great idea of how their fields are. So I'll document by quadrant. So maybe I'll say the right eye appears to have a lower left quadrant and field impairment, and then I always tie that into function, or I'll say something like patient has inconsistent reporting, need to keep reassessing, something like that. So remember, we don't have to diagnose as OTs, thankfully, so we're really just commenting on our observations and what we're seeing and how that's tying into function and tying it back into where do we want these patients to go? What kind of therapy followup or medical followup do they need?

Oh, someone carried a laminated screener with them that was easy to clean. I think that's a wonderful idea, especially in the acute care setting and if you have a contact room. Goodness, let's see.

What colors do you recommend for visual modifications? I use modified stove controls for cooking. I would say it's just whatever color the stove is, then pick something bright to offset. So if it's a black stove top, I'd go yellow, I'd go white, and as you do with marking things, you're gonna get the patient's input. So I wouldn't mark anything unless you know that the patient can see that, and a lot of the strategies I talked about, you really do need to combine, so doing one thing in contrast isn't necessarily gonna

help for everything, you're probably gonna have to add task lighting, you're probably gonna have to make it a little bit tactile, so definitely combining those strategies to kind of maximize the patient's function.

Sorry, still reading. Okay. Should probably, I think we talked about that, and that. Okay. Well thank you, everybody. I think that's it for today.

- [Fawn] Thank you so much, Leah, for a great talk today. Again, we have our upcoming virtual conference this week, each day, so hopefully you guys will come back and check that out. But thanks for all your great questions that came in and I hope everyone has a great rest of the day and you join us again on [occupationaltherapy.com](http://occupationaltherapy.com). Thanks.