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Vision Deficits and Occupation

Introduction

Vision is one of many crucial performance skills that occupational therapists address as part of their treatment. The Centers for Disease Control and Prevention (CDC) estimate 12 million Americans are living with ongoing vision concerns, which makes the low vision practice area an important one within our field. OTs are known to help individuals with chronic or acute visual conditions. However, there are other medical concerns that can lead someone to experience secondary visual deficits. The CDC says about 80 million Americans have health conditions that can lead to blindness if they are unmanaged.

Regardless of their etiology, vision problems can impact a person's quality of life and occupational engagement across the lifespan. This is why preventive, rehabilitative, and maintenance services from occupational therapists are so important to this population. Occupational therapists with any amount of experience have the skills needed to assist individuals with visual impairments as they lead fuller, more meaningful lives.

Section 1: Prevalence and Risk of Vision Concerns [1,2,3]

Of the 12 million Americans who have impaired vision, 3 million have concerns after vision correction, 8 million people have concerns secondary to uncorrected vision, and 1 million are blind. An estimated 4.2 million Americans with uncorrected vision impairments are over the age of 40. Due to the growing number of people with chronic conditions that can affect vision, this number is expected to double by 2050. Some chronic conditions that have an impact on the visual system include diabetes, stroke, heart disease, hypertension, and hypercholesterolemia.

Individuals with these chronic conditions have a greater chance of developing vision concerns, but other populations are also at risk. Individuals who are employed in industries such as farming, welding, construction, metal working, and manufacturing are more likely to experience vision concerns stemming from eye injuries. People who use computers and other electronic devices for prolonged periods of time, either for leisure or as part of their job, are at a greater risk of repetitive strain injuries related to the eye.

Other factors that increase someone's chances of developing vision concerns include a family history of vision and eye diseases, severe or unmanaged infections (such as conjunctivitis or cellulitis), and medication usage. Prescription medications such as steroids, antidepressants, and antihistamines can have vision-related side effects. Depending on how long someone is taking the medication, these concerns might persist.

For example, long-term steroid usage is associated with lasting vision problems. Allergic reactions can be another cause of vision concerns. If someone experiences skin sensitivity as a result of lotion and make-up on the face or near the eyes, this can temporarily or permanently damage their vision.

Lifestyle habits, especially excessive smoking and drinking, can contribute to vision problems. Additionally, exposure to sunlight or ultraviolet radiation without eye protection can lead to impaired vision. Many women experience high blood pressure as a result of pregnancy, which is why the gestational period can lead to blurry sight and impaired visual acuity. If the underlying hypertension is not managed, these vision changes might be permanent.

There are also nonmodifiable risk factors, such as race and age. Individuals of Asian or African-American descent are more likely to develop glaucoma and other vision concerns than other racial groups. Individuals over the age of 40 are also at a higher risk of eye-related diseases.

While age is a big determinant of vision changes, children can also experience visual impairments. Around 6.8% of children under the age of 18 are living with confirmed vision concerns. Just under half of these children are blind or still struggle with vision concerns while using corrective lenses. One of the biggest factors causing vision concerns in children is premature birth.

Section 1 Personal Reflection

In what settings should occupational therapists provide education about the risk factors for developing vision concerns?

Section 1 Key Words

Cellulitis - A bacterial infection that causes the skin to become red, swollen, and warm to the touch; people can experience a range of complications from unmanaged cellulitis

Conjunctivitis - Inflammation of the outer layer of the eyeball that might also extend to parts of the eyelid; this acute condition causes redness, swelling, and itching; conjunctivitis might be caused by allergies or an infection, and is also called pink eye

Section 2: Anatomy and Development of the Visual System [4,5,6,7]

In order to understand the full depth of medical concerns that might impact someone's vision, you must understand how the visual system works and how the eyes communicate with the brain to help us see.

The visual system is made up of intricate structures that work together to allow someone to recognize and interpret visual stimuli. This begins when your eyes process variations in light within your surroundings. This light first passes through the cornea, which is the most superficial structure located in the outer eye. From here, light then travels to the pupil. The pupil is the black center of our eyes that changes size based on the amount of light that is present. This response is protective and is intended to shield the eye from taking in too much light. For example, when our environment is dark, our eyes allow more light in to help us acclimate to our surroundings and remain safe. On the other hand, when our environment is too bright and can potentially damage our vision, our eyes filter the amount of light let in.

Most people believe the pupil moves on its own (dilation and constriction), but these actions are controlled by a muscle called the iris. The iris is the only part of the eye that varies in color based on a person's genetics. Light does not technically pass through the iris, rather it travels from the pupil to the lens. This lens is a thin sheet that aims to focus and enhance the light so it can be absorbed and processed by the retina. The retina is the deepest structure located at the back of the eye, which converts what we know as rays of light into an electrical nerve signal that can be recognized and used by the optic nerve. The optic nerve then sends this information to the brain, where it is processed, interpreted, and applied for use in our lives.

There are other structures that help with this process. The choroid is a layer of blood vessels that line the back of the eye. The ciliary body is a muscle behind the iris that assists the lens in focusing imagery. The clear fluid that fills the main cavity of the eye is called the vitreous humor. This is similar to synovial fluid within our joint cavities in that it moistens and lubricates the muscles and other structures of the eye. The macula is a light-sensitive area located at the center of the retina and it clears up all details within our visual field. The optic nerve is what allows the brain to recognize the images that the physical structures of the eye take in. After being sent there by the optic nerve, the brain then combines images so we know what they are and can attribute meaning to them.

It takes time for such intricate structures and their corresponding functions to develop. This is why, when babies are born, much of their visual system is still not developed. At birth, newborns have better peripheral vision than they do central vision. Several weeks after this, they begin to note the visual difference between lightness and darkness by paying more attention to bright colors and large shapes that form shadows in front of them. After one month, a baby should be able to focus on objects that are directly in front of them.

Between 2 and 4 months, babies get better at tracking moving objects and focusing on imagery in front of them. This is also the time when babies get better at using both eyes together. Between 5 and 8 months, babies can recognize objects and familiar faces. They also begin to see in color and three dimensions. This improvement in vision leads 9- and 12-month olds to demonstrate better hand-eye coordination as they crawl, reach, and grasp using two fingers.

A child's hand-eye coordination gets much better by the age of 4 due to engagement with activities like puzzles, coloring, and blocks. Between the ages of 4 and 6, a child's visual skills allow them to recognize letters, read, and judge depth in their surroundings.

During childhood, there are several common vision issues that might develop. Many children experience refractive errors, including astigmatism, myopia (also known as nearsightedness), and hyperopia (farsightedness). Farsightedness causes children to have blurred vision when looking at nearby objects, while their sight when looking at distant objects is clear. Nearsightedness leads children to see close-up objects clearly while those farther away are blurry. Astigmatism causes difficulty seeing both near and far objects clearly. Children might even have two different refractive errors. This can lead them to experience a lot of difficulty at school, and this might only worsen if it isn't identified and treated early.

Children might also experience strabismus, which develops when a child's eyes do not line up properly. Another common childhood vision concern is amblyopia, also known as a lazy eye. Amblyopia is just one complication that can result from untreated refractive errors.

As someone ages, it's common for them to experience some of the following visual changes:

- Decreased visual acuity, which causes someone to have trouble reading or writing
- Sensitivity to glare (this causes trouble moving about brightly-lit rooms)

- Difficulty distinguishing between similar colors (such a concern might lead to trouble with medication management)
- Poorer peripheral vision (which leads to difficulty driving and speaking with people sitting beside them)
- Less definition processed by the macula
- Shrinking visual fields
- Weaker eye muscles
- Dry eyes

While the above changes are a normal part of aging, they can be uncomfortable or difficult to deal with. Oftentimes, doctors can provide guidance as to how people can manage these vision changes and reduce the impact they have on their life.

Section 2 Personal Reflection

Which eye structures might be impacted by someone who has chronic high blood pressure?

Section 2 Key Words

Constriction - An action of the pupil that involves shrinking to prevent light from entering the eye; this serves to protect the eye and is controlled by the iris

Dilation - An action of the pupil that involves expanding to let light into the eye; this is controlled by the iris and is meant to help us better acclimate to our surroundings, especially if they are dark

Farsightedness - A condition that involves seeing objects more clearly at a distance and having poor, blurry vision of images up close; also known as hyperopia

Nearsightedness - A condition that involves seeing objects more clearly when they are up close and having blurred vision of anything that is far away; also known as myopia

Peripheral vision - Visual fields including what someone sees beside them when looking straight ahead

Visual acuity - The sharpness, clarity, and definition of how someone sees; this is typically the first test done to measure how someone's eyes function; perfect vision is rated as 20/20

Section 3: Low Vision Treatment [8,9,10,11,12,13,14,15,16,17,18]

As with many other health concerns, treatment for low vision is most effective when it's provided using an interdisciplinary approach. This being said, it's important to differentiate between vision rehabilitation and low vision treatment from other disciplines. While occupational therapists can provide low vision treatment, what we offer patients is not considered vision rehabilitation.

Vision rehabilitation is a term used to describe the continuum of care that someone receives for vision concerns. This care is managed by physicians who specialize in the eye and eye-related health conditions, including optometrists and ophthalmologists. These providers might be medical doctors (MDs) or osteopathic doctors (ODs). Some of the following treatments are included in the scope of vision rehabilitation:

- Counseling
- Coordination of care
- Prescription of electronic, medical, or surgical treatments

Occupational therapists are just one profession within the vision rehabilitation treatment team. Other providers who assist in this continuum of care include physical therapists (and other orientation and mobility specialists, in some cases), vocational rehabilitation counselors, social workers, teachers of the visually-impaired, retinal specialists, rehabilitation psychologists, and certified low vision therapists. Retinal specialists are doctors who provide surgical intervention for some cases of low vision that require such treatment. Certified low vision therapists have a similar role to occupational therapists, but are more specialized. They provide training to individuals regarding the use of adaptive equipment and other low vision devices to assist with daily tasks and symptom management. Teachers of the visually-impaired (TVIs) are teaching professionals who instruct students with vision impairments at a range of educational institutions. These teachers have special certifications that allow them to cater academic instruction to students who are legally blind or have low vision. These providers might work exclusively at schools for visually-impaired students or they might be itinerant

professionals who travel within a certain district or geographic area to treat students at various public schools.

The overall focus of vision rehabilitation is to reduce, stabilize, or prevent disability due to low vision. This is similar to the broad approach that occupational therapists use to treat patients: remediating, compensating for, or preventing health concerns from developing. Vision rehabilitation also addresses instrumental activities of daily living (IADLs) by improving an individual's function in learning, reading, safely walking, and pursuing other activities that allow them improved health.

An occupational therapist's person-centered treatment for low vision should have a strong focus on the patient's engagement within physical contexts such as work, school, home and the community. Intervention should also address their participation in valued ADLs and IADLs along with their social and leisure roles. Low vision can have a major impact on someone, so therapists should pay special attention to the patient's sensory, motor, and cognitive function. Other important client factors include the patient's occupational performance (both actual abilities and the person's perceived competence in each area), the part that spirituality plays in their life, and psychological adjustment to their health status and limitations. One of the main focuses of an OT's low vision work is activity modification, since therapists complete task analysis to break down steps and enable their patients' success in a range of occupations.

Occupational therapists can work with individuals who are living with visual impairments of any kind and level of severity. However, OTs often address low vision concerns in older adults, individuals who have a history of traumatic brain injury or stroke, and children with congenital vision deficits. Depending on the location of the vision concern, children with congenital vision deficits might experience a cortical visual impairment or an ocular visual impairment. A cortical visual impairment, or CVI, results from dysfunction in the part of the brain that deals with visual processing. An ocular visual impairment (OVI), on the other hand, stems from visual concerns related directly to the eye(s).

Therapists might encounter patients with these concerns in schools, early intervention programs within the home, skilled nursing facilities, acute rehabilitation programs, long-term care facilities, outpatient therapy clinics, community programs, and home health settings. However, patients with visual concerns might be seen in any practice setting. In addition to addressing visual skills with the above populations, occupational therapists also heavily focus on visual-processing within specialties such as driving rehabilitation.

Section 3 Personal Reflection

How might the restrictions associated with different practice settings (e.g. productivity standards, funding, treatment space) affect the type of low vision treatment an occupational therapist can provide?

Section 3 Key Words

Congenital vision deficits - Vision deficits that are present at birth or shortly after birth; these deficits can be inherited or they might develop as a result of an infection, medical concern, or traumatic event

Cortical visual impairment - A visual deficit that evolves due to a problem with the part of the brain that is responsible for visual processing and perception; also known as CVI and sometimes referred to as a cerebral visual impairment; this is most common in infants and children, but CVI-related concerns can extend into adulthood

Driving rehabilitation - A program run by an occupational therapist who helps individuals with cognitive or physical impairments that might impact their ability to drive; some patients are simply assessed for their ability to drive and will not receive treatment if they are safely able to do so; other people will receive treatment focused on remediation of skills and the provision of modifications and adaptive equipment to improve their safety and independence in driving

Itinerant professional - Allied health (therapists, doctors, etc.) or social service (teachers, social workers, etc.) providers who travel between various locations or geographic areas to offer services to patients or students with disabilities

Ocular visual impairment - A visual deficit that develops due to a problem with one or both eyes; also known as OVI or ocular-related blindness; this type of vision concern can occur in infants, children, or adults and might be the result of genetics, a traumatic event/injury, or another medical condition

Section 4: Vision and Eye-Related Disorders

19,20,21,22,23.24,25,26,27,28,29,30,33

As adults age, there are several common vision disorders they might experience. These concerns will not resolve on their own and require medical, surgical, or rehabilitative

treatment. Older adults might begin to see floaters, or small particles that appear as spots in the visual field. A few floaters are normal and should not impact a person's vision. However, if a large number of them come on suddenly, they should be treated immediately since this can be associated with a stroke or another serious neurological condition. In some cases, floaters will go away after several weeks or months. If someone has a number of floaters that disturb their vision but doctors determine they are not connected to any other condition, surgery will likely be recommended. Since floaters can develop from an excess of vitreous fluid in the eye, doctors may perform a vitrectomy to remove this fluid and replace it with another solution to lower the amount of floaters. Instead of this surgery, doctors might also use a non-invasive laser treatment to break up the floaters and help them disperse. Floaters are not preventable, but therapists can provide education on how patients can minimize the impact they have on vision.

Older adults might also develop cataracts, which causes the clear lens outside the eye to become clouded. This results in blurred vision and must be corrected through a surgery that replaces the existing lens with an artificial one. Surgery is currently the only treatment for cataracts. Cataracts can be avoided, so therapists should provide education when possible to help people prevent this condition. This should include stressing the importance of regular eye exams, eye protection, managing conditions that impact the vascular system (such as diabetes), smoking and alcohol cessation, and avoiding use of corticosteroids.

Glaucoma is another eye disorder that might develop in older adults. This condition causes an increase of pressure within the eye and is treated with medications (such as beta blockers), laser therapy, or surgery to relieve intraocular pressure. This condition is also preventable, so therapists should educate individuals to get regular eye exams. Therapists should also concentrate prevention efforts toward individuals who have hypertension (or are predisposed to get hypertension), since they are at the highest risk for glaucoma. Prevention education should also emphasize the importance of a balanced diet, exercise, and blood pressure management to avoid glaucoma as a complication.

Retinopathy is a serious vision disorder that causes damage to blood vessels in the retina. Retinopathy can develop as a complication of severe or unmanaged diabetes, hypertension, and hypercholesterolemia. Women who are pregnant are also at risk, since they might experience an unnatural spike in blood pressure without knowing it. Prevention is especially crucial here, so therapists should assist individuals with diabetes and hypertension in lowering their risk and better managing those conditions to prevent

them from impacting their vision. Regular eye exams, smoking and alcohol cessation, and annual physicals (with blood work and full exams) will all help individuals stay on top of any health changes that can lead to retinopathy. Some minor cases of retinopathy respond well to management of blood glucose levels, but this condition can also be treated by a vitrectomy, laser surgery, steroids, or medication that prevents abnormal blood vessels from growing.

Macular degeneration is a progressive visual condition that causes central vision loss. This is due to the breakdown of a structure called the macula. This condition is treated by laser therapy and medications injected directly into the eye. Doctors also often recommend supplements – zinc, copper, beta-carotene, Vitamin C, and Vitamin E – as a preventive measure for those at an especially high risk of this condition. Other prevention efforts for macular degeneration are similar to those for other vision conditions: annual eye exams, eye protection, eating a balanced diet, and smoking and alcohol cessation. Individuals with macular degeneration often have scotomas, which are areas of partial vision loss within otherwise normal visual fields. If someone presents with this diagnosis, therapists should be sure to test for scotomas by presenting a clock face and asking what numbers the patient can see.

Retinal detachment is a serious eye disorder that is considered a medical emergency. This condition causes the tissue of the retina to pull away from the eye, resulting in symptoms such as flashes of light, visual field cuts, and a sudden and drastic increase in floaters. Retinal detachment can be treated with laser therapy or surgery, and time is of the essence because this condition can lead to permanent vision loss. Individuals with diabetic retinopathy, extreme nearsightedness, disorders of the vitreous, and a family history of retinal detachment are at the greatest risk for this condition. Therapists should educate individuals in the importance of regular eye exams to monitor and prevent any signs or symptoms of retinal detachment.

Amblyopia, also known as a lazy eye, can cause blurred or double vision. This condition is treated conservatively by corrective lenses, bifocals, or occlusion therapy. Doctors might also recommend that individuals take medications to strengthen the nervous system and prevent muscle laxity that might cause a wandering eye. Surgery is often the best option for severe cases that significantly impact someone's vision. There is no way to prevent amblyopia, but regular eye exams can help someone get diagnosed and treated before they experience major vision changes.

Diplopia, also known as double vision, might be the result of acute health concerns such as mild brain injuries (concussions), sinus conditions, or migraines, but it can also result

from chronic conditions like strokes, thyroid disorders, cancer, or diabetes. Since diplopia is a symptom, treatment depends on what condition is causing it. In many cases, diplopia will resolve once the primary diagnosis is treated. However, if diplopia does not resolve, doctors might recommend an eyepatch or prism added to glasses to occlude vision in one eye. Other treatments include surgery to address muscular issues related to the eyes and Botox injections to help relax the muscles in the stronger eye. Minor, resolvable cases of diplopia might result from dry eyes, so these instances can be prevented by keeping eyes lubricated with eye drops.

Homonymous hemianopsia is a vision concern that develops after conditions (such as brain injuries, strokes, or seizures) that impact the brain lobes responsible for visual processing. The most notable symptom of homonymous hemianopsia is the inability to see half of the visual field in each eye. The vision loss is even in both eyes, meaning both right or left sides of the field are absent. In cases where stroke is the primary diagnosis, this visual field loss often corresponds with the hemiparetic side of the body. Homonymous hemianopsia is not preventable and cannot be cured, but doctors might recommend prism glasses to help correct vision problems. One of the most effective ways to manage homonymous hemianopsia is by participating in low vision rehabilitation. This helps patients learn compensatory strategies that reduce the negative impact low vision has on their life.

Strabismus is a condition that causes muscular misalignment of the eyes, which is more commonly known as being cross-eyed. Strabismus can often be treated with a variety of lenses based on the severity of someone's condition. Strabismus might be treated with an eyepatch, bifocals, or specialized contact lenses/glasses. Surgery might be indicated for severe cases that significantly impact a person's vision. This surgery focuses on adjusting the muscles (loosening or tightening them) so they assume a more even position. Strabismus surgery is a simple procedure done in an outpatient center. Strabismus cannot be prevented, but mild cases that are treated quickly can be fixed without complications. Signs and symptoms of strabismus are usually apparent at regular vision screenings, which is why these preventive visits are so important.

Retinoblastoma is a form of cancer that affects the eye. This cancer is treated in the same way that most cancers are treated: chemotherapy, cryotherapy, laser treatment, radiation, or surgery. Individuals with a retinoblastoma typically experience pain in the eyes, white pupils when exposed to bright light, eye swelling, tearing of the eyes, and crossed eyes. This cancer typically affects children under the age of 5, since it involves a mutation that manifests as the eyes are still developing. This is a rare cancer to begin

with, but it's even more rare when this condition arises in adulthood. Since there are not many specific cancer prevention strategies, individuals wanting to prevent retinoblastomas should eat a balanced diet, exercise regularly, and avoid exposure to chemicals, radiation, and other hazardous materials.

Retinopathy of prematurity (RoP) is a serious eye disorder that affects infants who were born before 31 weeks gestation. This is one of the most common eye disorders that can potentially lead to blindness in children. Symptoms of RoP include white pupils, vision loss in both eyes, and irregular eye movements. The severity of these symptoms is dependent on how premature the child is born. Mild cases (stage I) often do not need treatment and might cause minor vision changes. Moderate to severe cases (stages II through IV) are treated with cryotherapy, laser therapy, and eye injections that prevent blood vessel growth in the retina. These injections might seem counterproductive, but they are meant to target the peripheral edges of the retina, where there are no blood vessels. Early intervention is the best way to prevent permanent retinal detachment due to RoP, as stage III infants who are treated promptly have good outcomes. There are not many confirmed ways to prevent RoP, as this condition is not the same as other eye disorders. However, there is some preliminary evidence supporting a course of steroids given to mothers at high risk of giving birth prematurely. This aims to prevent RoP along with other complications of premature birth.

While these conditions range from mild to serious and life-threatening, each of them has the potential to significantly impact a person's vision and related quality-of-life. Many of these eye disorders have high success rates after treatment. The good news is that many of these conditions are preventable by taking basic steps such as eating a balanced diet, exercising consistently, getting regular eye exams, and wearing eye protection in the sun. Outside of low vision treatment, education regarding prevention is an area where OTs can have a major impact on someone's visual health.

Section 4 Personal Reflection

What residual deficits might an adolescent be left with if they underwent strabismus surgery as an infant?

Section 4 Key Words

Floaters - small particles that appear as spots in the visual field; these can be age-related, but they are a cause for concern if many appear suddenly

Hemiparesis - Muscle weakness or complete paralysis on one side of the body; this usually occurs as a result of a stroke, but can also happen after other neurological conditions

Occlusion - A treatment that involves blocking one eye (usually with an eye patch) to strengthen the vision in a weaker eye

Retinoblastoma - A rare form of eye cancer that mainly occurs in children under the age of 5; treatment is similar to that of other forms of cancer

Retinopathy - This is an umbrella term that refers to diseases of the small retinal blood vessels; diabetic retinopathy occurs from unmanaged diabetes mellitus that has progressed to impact the circulatory system; retinopathy of prematurity occurs in infants and causes abnormal blood vessel growth that can lead to blindness if not addressed

Scotoma - Areas of partial vision loss within otherwise normal visual fields; these are often present with individuals who have macular degeneration

Section 5: Low Vision Evaluation and Goal-Setting

31,32,33,34,35,36

In order for patients with low vision concerns to get the most effective care, they must first participate in a comprehensive, client-centered evaluation. An important aspect of this evaluation is an accurate primary diagnosis, since this is the patient's best-corrected visual acuity. This will often come in the form of an ICD-10 code. This not only helps therapists create an appropriate treatment plan, but it also assists with insurance coverage since Medicare will only reimburse when the visual acuity in the patient's better-functioning eye is 20/60 or worse. Visual impairment ranges are rated as follows:

20/12 - 20/25 = normal vision

20/30 - 20/60 = near-normal vision

20/80 - 20/160 = moderate low vision

20/200 - 20/400 = severe low vision

20/500 - 20/1000 = profound low vision

20/1250 - 20/2500 = near-blindness

no light perception/NLP = total blindness

A patient's referral should also come with a secondary diagnosis. This indicates the condition that is causing the visual impairment, such as diabetic retinopathy or glaucoma. Therapists should also take a medical and surgical history from their patients, which should include treatments and respective results, current assistive devices (glasses, lenses, etc.), reading abilities, recent vision changes, and neurological conditions such as stroke or TIA.

In order to make the evaluation client-centered, therapists should focus on the patient's goals for treatment. This is usually a good time for OTs to clarify their role based on a patient's response. For example, if a patient reports they want a new prescription for their glasses, the therapist would tell them to discuss that with their optometrist or ophthalmologist followed by educating them on how occupational therapy can help low vision. Once therapists talk about what they can address, they should ask patients what activities their vision causes the most problems with.

Vision testing is also within a therapist's scope of practice, so OTs should test for:

- Visual acuity
    - This is done by seeing how small letters someone can read on a Snellen chart from 20 feet away.
- Visual fields/confrontation
    - The most common way to measure this is through the confrontation test. This is performed with the tester standing 3-4 feet away while holding both arms straight out to the side. The patient is instructed to look straight ahead while the tester slowly moves one of their hands inward. The patient should verbalize when they see the hand moving to indicate where their visual field begins.
    - The most common formal test that assesses confrontation related to visual fields is the American Academy of Ophthalmology Red Dot Confrontation Test, which is completed while the patient is not wearing glasses or lenses. The Red Dot test involves placing object(s) in five different fields: superior field A (one object held at shoulder width and forehead height), inferior field B (one object held at shoulder width and adam's apple height), superior field C (one object held next to the face at forehead height), inferior field D (one object held next to the jaw at adam's apple height),

and superior/inferior field E (one object held horizontal to the brow and another object horizontal to the chin). Another similar test is the Kinetic Two Person Confrontation Test, which involves two testers holding separate objects at different distances within the room.

- Eye dominance
    - Eye dominance might be informally determined through functional tasks. For example, a therapist might ask someone to hold a camera up to their face as if they were to take a picture and take note of what eye they use. Formally, eye dominance is tested by asking someone to close one eye while looking at a still object. They should repeat the same process with the other eye. If the object "jumps," the open eye is non-dominant.
- Contrast sensitivity
    - This is usually tested at the same time as visual acuity. Therapists should shine a bright light in the direction of a patient's eye while they are reading letters on the Snellen chart. If their accuracy is not impacted by the glare, their contrast sensitivity is normal.
- Convergence
    - This testing affirms someone's ability to use both eyes to view images. A therapist should hold an object directly in front of the patient and slowly move it closer to them. The test will stop when the therapist sees one eye drifting to the side or the patient reports double vision. Convergence is recorded as a measurement, so the therapist should note the distance of the object from the patient's face when these concerns were observed.
- Pursuits
    - Pursuits (tracking) are tested by having a patient visually follow a moving object. This can be done by holding an object at arm's length in front of the patient and moving it from one end of the patient's visual field to the other.
- Saccades
    - Saccades, also known as scanning, can be tested by having a patient move their gaze between two stationary items. Therapists can do this by holding

one object in each hand and placing each arm out to the side. Patients are then instructed to keep their head still while quickly looking between the two objects.

The results of these tests are equally as important as a therapist's observations. For example, a patient might successfully complete one or more of these tests, but a therapist might observe them squinting, turning their head unnecessarily, and paying less attention to letters or objects on one side as compared to the other side. This indicates the patient is experiencing some degree of difficulty that should be addressed. If the patient's functional performance in these areas is normal, it's possible these areas won't be a major part of treatment but they should still be addressed in some way.

Other functional areas should be assessed. Therapists should measure a patient's ability to independently toilet, groom, feed, dress, transfer, and bathe themselves. Therapists should also look at the quality of task completion, since this can be impacted by an inability to identify colors when dressing, read menus, and recognize foods. Low vision can also impact basic IADL function, including a patient's ability to manage medications, prepare meals, and do laundry. This evaluation should assess glucose management and accuracy of self-administered injections for individuals who have diabetes. Kitchen safety is another concern related to cooking, since an inability to pour liquids, correctly measure items, operate the stove and oven, and read food labels can lead to improper nutrition, fire hazards, and spills that lead to falls. Other IADL and leisure areas that should be assessed include:

- Operating the thermostat
- Cleaning the home
- Using a phone, clock, and computer (either for correspondence or in the event of an emergency)
- Keeping up with home repairs
- Sewing
- Safe ambulation within the home or community (reading signs, gauging distances, avoiding obstacles such as stairs, doorways, furniture, and other people, walking across uneven terrain in your yard or in public, adjusting to changes in natural light when outdoors, using public transportation, avoiding others when walking in public, and using assistive devices - mobility or otherwise)

- Reading (for leisure, work, or the mail)
- Watching TV
- Managing finances (writing checks and identifying coins/bills)
- Shopping (reading prices and labels)
- Recognizing friends at social gatherings

As you can see, a big part of IADL function involves how a person navigates their own home. This is why a home assessment is a big part of addressing vision concerns. Therapists should look for any hazards, including the presence of throw rugs, exposed wires, clutter, stairs (for entry or within the home), lighting (natural and artificial), existing adaptive equipment, pets, and housemates.

Standardized assessments might also be a helpful inclusion in a low vision evaluation. There are a range of formal tests that an occupational therapist can use, depending on their patient's age and needs:

- The Motor-free Visual Perception Test (MVPT)
    - Suitable for children and adults ages 4 and up
    - This test aims to assess multiple visual skills when isolated from a person's motor skills.
- Beery-Buktenica Test of Visual-Motor Integration (Beery VMI)
    - Appropriate for children ages 0 to 6
    - Tests gross motor, fine motor, and visual-motor skills by having kids copy a range of increasingly difficult figures.
- Trail Making Test
    - Both parts of this test (part one that consists of just numbers and part two that consists of numbers and letters) evaluate executive functioning, visual search speed, scanning, processing capabilities, and mental flexibility.
    - This test can be used to determine visual functioning in adolescents and adults as well as cognitive deficits in adults. It is appropriate for patients ages 18 to 89.

- Line Bisection Test
    - Tests for unilateral spatial neglect in stroke patients. This test asks patients to draw a vertical line at the midway point of a series of horizontal lines.
    - Suitable for children and adults ages 7 and up
- Star Cancellation Test
    - Tests for unilateral spatial neglect/behavioral inattention in stroke patients. The Star Cancellation Test involves patients crossing out small stars on a page with small stars, large stars, and letters.
    - This test is suitable for children and adults ages 7 and up.
- Arrow Orientation Test
    - This test asks a patient to identify what direction an arrow is pointing. This gives therapists an idea of a patient's capability for scanning, orientation, and object recognition.
    - This test is appropriate for adolescents and adults over the age of 10.
- Developmental Test of Visual Perception (DTVP)
    - DTVP measures visual perception and visual-motor integration in children between 4 and 10 years old.
- Test of Visual Perception Skills (TVPS)
    - Aims to determine visual perception skills in kids ages 5 to 21

Based on the results of this testing, a therapist can develop an appropriate treatment plan. Deficits that low vision occupational therapists can address include decreased visual acuity, double vision, poor central vision, and impaired contrast sensitivity. Therapists can also address functional limitations such as difficulty reading, impaired ability to write, and trouble identifying money. Therapists should discuss the results of the evaluation with the patient. This will not only make them aware of what activities they struggled with (if they are not already aware), but this is used as a starting point to formulate goals together.

Goals for a patient with low vision will vary based on any important activities they identify and any safety concerns that become apparent during the evaluation process. These goals often follow a certain format. For example:

- The patient will improve (reading, writing, or other vision-based skill) using (specify adaptive equipment/assistive device here).
- The patient will demonstrate competence in using (adaptive equipment/assistive device) while (reading, writing, or other vision-based skill).
- The patient will safely and effectively complete (ADL, IADL, or other functional task) with the use of (adaptive equipment/assistive device).

In some cases, therapists will not be able to incorporate patient activities or goals into therapy. This might be due to safety issues that pose a more imminent concern, the patient identifying multiple goals across various skill areas, and patients verbalizing goals that are either unrealistic or unattainable for their circumstances. Certain therapist-identified goals may also be omitted if a patient has a caregiver who they prefer to complete this task for them.

Section 5 Personal Reflection

How might a therapist explain to a patient what goals are prioritized due to safety concerns?

Section 5 Key Words

Bisection - Dividing something, usually a line, into two equal parts

Central vision - The most important aspect of vision, which involves taking in colors, shapes, and sharpness of details; this type of vision is processed by the macula, so it's often limited in those who have macular degeneration

Confrontation - Testing a patient's visual fields in four quadrants while they are looking straight ahead

No light perception - Total blindness, as a person cannot detect or processing any stimulus, including light or images

Pursuits - A visual function that involves tracking one moving object

Saccades - The act of scanning between two stationary objects

Unilateral neglect - A symptom that causes difficulty attending to stimuli on the left side of the body or environment; this often results from a stroke on the right side of the brain; neglect is similar to inattention, but more severe since it refers to a complete lack of awareness

Visual-motor integration - A general skill that includes motor control related to vision, eye-hand coordination, and visual perception/processing

Section 6: Low Vision Treatment [37,38,39,40,41,42,43]

As with all types of occupational therapy treatment, someone might receive remedial rehabilitation or compensatory strategies to address low vision concerns. Depending on the person's abilities, they might benefit from a combination of both for various skill areas. Therapists often get a good sense of what therapeutic approach they need to utilize as a result of the evaluation process. A good candidate for remedial therapy is someone who has the potential to learn or relearn certain tasks in the same way other people would. Occupational therapy with a remedial focus aims to restore or establish skills that someone struggles with as a result of a disability or impairment. In the case of some chronic eye disorders that impact older adults, remedial therapy is not always possible due to the extent of vision loss present. In these cases, compensatory therapy is indicated. Remedial therapy is a great approach for training toddlers, children, and even adolescents to strengthen certain visual skills in the presence of an eye-related disorder. For example, it is not uncommon for therapists to use remedial techniques to address visual-motor integration concerns in a young child.

One such remedial technique is eccentric viewing (also known as pseudo fovea training), which is commonly used to manage conditions such as macular degeneration and diabetic retinopathy. If a person is unaware of where their vision begins and ends, therapists should guide them in finding their preferred retinal locus (PRL) before they provide training on eccentric viewing. This is done by looking at an object straight on, as someone normally would. Next the person is to move only their eyes left, right, up, down, and around in a circle. While doing this, they should pay special attention to what direction they see the best in. Once the patient and therapist have determined the PRL, therapists can instruct someone to use eccentric viewing functionally by moving their head and body more frequently when looking at items.

Amsler grid training is another technique commonly used with those who have macular degeneration and diabetic retinopathy. This technique is used for evaluation and treatment purposes. The grid test trains a person to be more aware of vision changes that are actively occurring, but it's also intended to help doctors track these changes more effectively between follow-up visits. Patients are instructed to complete this test once per day by looking at the Amsler grid from the distance they would normally read at and wearing prescribed reading glasses. They are to cover one eye while focusing on the central dot with their other eye for no more than 5-10 seconds. Therapists should instruct patients to pay attention to (and take note of) any blurred areas, missing lines, additional black spots, or other distortions. Patients should repeat the same steps with their other eye. If they note any of the above distortions, they should call their doctor to notify them.

Therapists can also educate patients in the use of visual scanning techniques to help adapt their scanning abilities to best compensate for their vision deficits. Cancellation activities, similar to the cancellation test, can be a great way to strengthen someone's scanning skills. Therapists can upgrade and downgrade these tasks in a variety of ways by:

- Adjusting the type of characters used - letters, numbers, and symbols might be harder or easier depending on the patient's background and their visual skills
- Changing the similarity of the target compared to the rest of the characters - having the patient look for a letter within a grid of letters will be harder than looking for a star within a grid of letters
- Modifying the format of the grid itself - patients will often be challenged more when characters are sporadically placed on the page compared to when they are organized in uniform lines
- The number of characters used - patients with severe deficits might only be able to work with 2 or 3 characters before working up to a more complex layout

Visual scanning can also be addressed through activities such as "I Spy" and other hidden object games, word and letter searches, tracing pictures on a light box, flashlight tag, ball toss or rolling, cup stacking and shuffling, mazes, puzzles, connect-the-dot worksheets, and oculomotor strengthening exercises such as eye stretches. Once a patient's visual scanning abilities improve to a certain extent, therapists can upgrade treatment to include saccade ladders. This involves placing sticky notes in a zig-zag pattern. Therapists can set this activity up by spacing the papers equally along the right

and left side of a tall object such as a filing cabinet. Patients should then stand several feet away and go through the ladder from bottom to top and back to the bottom. This is more difficult than an activity that includes only two objects, since patients must also move their eyes up and down instead of just left to right.

In some cases, individuals with impaired saccades might undergo saccadic eye movement therapy. This type of treatment involves strengthening one eye by having a patient wear a patch during certain visually-stimulating activities. For example, therapists might have patients wear a patch over the stronger eye while leading a patient through some of the activities we mentioned earlier. While many visual activities are implemented based on a therapist's initial assessment, an eye patch should only be used per a doctor's recommendation. This is usually the case when patients present with conditions such as amblyopia, strabismus, and diplopia. Doctors will recommend the eye patch along with a specific wearing schedule, which is usually around 6 hours a day. It's important that therapists educate patients and their caregivers about the importance of this schedule, since wearing the eye patch for too long can cause unnecessary eye strain while wearing it for too short of a time will not produce the desired results.

Visual tracking is another skill therapists can assist with. When therapists address this skill with kids, they can use tools such as the Beeline Reader, which offers a color gradient bar below text to guide them as they read. Therapists can also help children who are just learning to read by using apps that highlight each word as a child says them aloud. Other ways to address visual tracking in patients of all ages include spectating live sports (watching a ball go from one place to another, such as with tennis, soccer, or basketball), playing ping pong, practice reading only the first and last words of each line on a page, balloon or bean bag tossing, tracking a metronome or pendulum swinging, and following a laser pointer.

The lighthouse technique is another program that improves awareness via mental imagery to assist individuals with unilateral neglect. There are three major concepts associated with this technique: anchors, guides, and turns. You can think of anchors as the beacon on a lighthouse, since this involves the patient turning their eyes to a target (the target will often vary based on the activity or task) to help them scan their entire environment or a certain object. A good example of an anchor is having a therapist draw a line in highlighter down both sides of a piece of paper. This will cue someone to look all the way across the paper when reading or writing. Another example of an anchor is placing bright sticky notes on both sides of a computer screen. The bright colors attract someone's attention and remind them to look at the full screen, which can help them

when reading, typing, browsing the internet, playing games, or doing other work tasks. The use of anchors can be applied to a range of other functional tasks. Therapists can place them on both sides of a bathroom mirror to encourage someone to look at their entire body when dressing, grooming, or putting on makeup.

Therapists often teach patients to use their hands as guides because they help direct their eyes to places in the environment they need to look. However, guides can come in many forms: one finger (usually the index), a full hand, a ruler, or folded paper. These directives are meant to isolate certain images, words, or objects from others so that a person with visual deficits can more easily focus on certain parts of their environment.

Turns are the last aspect of the lighthouse technique. Unlike some of the other aspects of this technique, turns are a strategy rather than an object. Therapists must train patients in the sequence of turning their heads to the affected side followed by turning it to the unaffected side. This allows someone to take in the visual input from their weaker side and then let their brains interpret it effectively by turning away from it to improve attention.

Therapists might also implement activities that strengthen a patient's vestibulo-ocular reflex. This is done by having someone stand and hold a pencil (or other object) up at eye-level in front of them. They can slightly bend their elbow while doing this to keep the object even. The patient should then be instructed to maintain eye contact with the pencil as they rotate their head from left to right. Therapists should remind the patient to move their head as quickly as they can move it without causing any nausea or dizziness. Patients should complete this for 20 to 30 seconds before taking a break and repeating the process while moving their head up and down. Once a patient gets better with this initial training, the activity can be upgraded by adding walking. In this activity, an object should be mounted on the wall at about eye-level. The patient should begin by standing about 5 feet away from the object on the wall. They are then instructed to maintain eye contact with the object while walking forward (until they almost touch the wall) and backwards to their starting point.

To upgrade this task even further, therapists can have patients go through the same steps while also moving their head up and down. This can also be completed with head movements to the left and right. Patients should communicate with their therapist if they are feeling dizzy or nauseous at any point during this activity. Therapists should also remain nearby to ensure patients do not fall at any point.

Therapists should also offer communication training to caregivers, teachers, and others involved with patients who have vision concerns. Communication can not only help improve the orientation of someone with low vision, but it can improve the quality of their participation. Caregivers should be educated on the importance of giving clear instructions and speaking aloud whenever possible, since those with low vision might misinterpret facial expression, gestures, and other non-verbal cues. People should use the person's name often when speaking to them, especially at the start of a conversation or when posing questions or statements directly to them. If someone is teaching a student or anyone else with low vision, they should engage them in hands-on learning experiences and activities whenever possible. When a person with low vision must look at written or visual materials, be sure they also have clear, simple instructions to go along with them. Therapists and other professionals should make referrals as needed to individuals who might benefit from counseling or support groups. This can be especially helpful for those who are having difficulty adjusting to chronic, severe eye conditions such as macular degeneration.

Occupational therapy treatment might also consist of compensatory strategies. A patient who does not have the capacity to relearn skills the way they once did (or cannot learn skills in the same way other people do) might benefit from compensatory strategies including:

- Task modification
    - If the evaluation determines someone has poorer vision in their dominant eye, therapists should prioritize task adaptation and make adjustments based on the measured acuity someone has in that eye.
    - Limit any nearpoint activities (copying notes, coloring, computer work, etc.) to less than 15 minutes to avoid visual fatigue
    - Break long tasks into smaller steps and encourage the person to look away periodically to refocus their eyes
    - Allow rest breaks throughout the work or school day, especially when completing visually-fatiguing activities
    - Use separate hampers for lights and darks; this not only helps when doing laundry but it allows someone to put each article away in the correct place
    - Make lists when grocery shopping and include the aisle/location for each item

    - Request that your pharmacist provide your medications with large-print labels
    - Modify each pill bottle in a way that helps you identify it more easily (you can use tactile bumps, hair elastics, velcro, string, and other household items); for recordkeeping, make a legend that tells you what modification you assigned to each
    - Use non-skid and non-glare cleaning products on flooring, countertops, and furniture surfaces
    - Pay bills online whenever possible and enlarge font to help with accuracy
    - Organize papers with folders using large tabs or use different colored trays to distinguish between certain types of papers or essential versus unimportant
    - Opt for using the microwave if you feel unsafe using the oven or stovetop
    - Use digital readers and take advantage of their accessibility features, such as contrast, brightness, and font size
    - Slowly move when going from a dark room to a light room or the opposite; this will help your eyes adjust and can help prevent a fall due to disorientation or dizziness
    - Have patients measure the distance from their elbow to their fingers and instruct them not to get any closer to objects, paper, etc. while working
- Visual aids and other assistive devices
    - Magnifiers (hand or stand)
    - Screen readers
    - Head lamps
    - Typoscope
    - Braille dots and other tactile cues
    - Prescribed glasses or lenses
    - Voice recognition software

    - Speech-to-text programs
    - Voice-activated home systems, such as Alexa, Amazon Echo, and Google Nest
    - Talking pillboxes
    - OrCam products, which are wearable devices that assist with audio captioning and item recognition; popular products include the MyEye and Read
    - Audiobooks
    - Talking alarm clocks and other adaptive clocks
    - Large-text remote controls
    - Labelmakers
    - Large-text books, worksheets, checks, and other print resources
- Environmental modifications
    - Seat students with visual impairments at a slanted desk to make papers more visible; same for workers who interact with paperwork often
    - Remove clutter from walkways and hide exposed wires safely
    - Secure or remove throw rugs within the home
    - Ensure that thresholds, door jambs, grab bars, cutting boards, stairs, bath mats, and other equipment contrasts with the surface they are on
    - Grade lighting appropriately in walkways, like hallways and stairwells
    - Label small items, such as tools, paintbrushes, and cosmetics
    - Hang or stack clothing by color and keep similar colors on opposite ends of the rack or shelf
    - Get textured upholstery (or couch and chair covers) to offer tactile cues that help orient you to furniture as you sit down or stand up
    - Organize kitchen cabinets and refrigerator shelves in a way that helps you remember where items are

- Mark emergency exits clearly
- Mount kitchen tools and utensils that you use frequently on the wall
- Find areas that are easy to remember (and access) and keep frequently used items in each room in this place
- Use tactile bumps on any important buttons (TV remote, speed dial buttons on the phone, stove, microwave, oven, etc.)
- Modify room lighting (in household, school, and/or work) to minimize glare; this is best done by having shades on all windows to adjust light coming from outside and utilizing overhead lighting whenever possible
- Ensure that the placement of mirrors in the home is not producing a glare
- If you can't use overhead lighting or there isn't any, use task lighting in the form of multi-head lamps positioned behind or to the side of the person
- Have students sit in the middle of the front row in school, have workers sit in close proximity to where they must be to complete job duties
- Use blue light covers to eliminate glare from whiteboard, blackboard, computer screens, and other surfaces
- Configure written materials in a simple, clean way with dark text on a plain (ideally, white) background
    - For students, it's often best to cut worksheets with long walls of text into smaller sections so students can deal with less information at once; offer lined or bold-lined paper for all assignments
    - For others, chunk information even when it's given in large text
    - Avoid italics, cursive writing, or complex fonts
    - Use lowercase letters whenever possible, since they have more ascent and descent, which makes it easier to identify each letter

Section 6 Personal Reflection

What activities (and goals) might an occupational therapist prioritize if a patient presents with poor visual acuity and central vision loss?

Section 6 Key Words

Compensatory strategies - Strategies that help people engage in and complete certain tasks despite lacking certain physical or cognitive capabilities; these are more ideal for people who cannot relearn certain skills or regain certain abilities due to disability or injury

Eccentric viewing - A technique that helps manage central vision loss by moving the head and body to see the entire visual field; someone must do this by first moving only their eyes in all directions to gauge what direction they see best in; also called pseudo fovea training

Farpoint work - Tasks that involve looking at objects, images, or words located at a distance

Nearpoint work - Tasks that involve looking at objects, images, or words located close to you

Peripheral retinal locus - The PRL is used as a point of reference for eccentric viewing/ pseudo fovea training; therapists guide patients in moving just their eyes up, down, right, and left to determine the direction in which they have the best vision; patients then use this information to guide their head and body movements, which allow them to see their entire visual field

Remedial therapy - Any intervention that focuses on helping someone regain skills or relearn certain concepts to assist them in restoring their function and occupational performance

Tunnel vision - A visual impairment that prevents someone from seeing objects or images in their peripheral visual fields; this symptom commonly results from glaucoma and diabetic retinopathy; also known as PVL or peripheral vision loss

Vestibulo-ocular reflex - This is a reflex that helps stabilize a person's gaze while their head is moving; this prevents concerns like dizziness and poor visual quality when a person is trying to see an object while walking or moving in another way; also known as the VOR

Section 7: Case Study

An 80-year-old woman was referred to occupational therapy due to concerns that have emerged since she sustained an ischemic stroke one week ago. A brief chart review shows that skilled nursing staff have logged several falls in the past week. When asked what led up to the falls, the patient reports that she was tripping over things that came "out of nowhere." Nursing notes also state that she is demonstrating difficulty with dressing and hygiene. According to the patient, she was entirely independent in ADLs, IADLs, and community mobility before the stroke. Her family corroborates these reports. The patient now demonstrates cognitive deficits that suggest she would have trouble with IADLs.

1. What visual impairment might this patient be experiencing?
2. What standardized assessment(s) might an OT administer during this patient's evaluation?
3. What treatments might this patient benefit from?

Section 8: Case Study Review

This section will review the case studies that were previously presented. Responses will guide the clinician through a discussion of potential answers as well as encourage reflection.

1. What visual impairment might this patient be experiencing?

   Based on the chart review and a report of the patient's biggest concerns, it would appear as if this patient has unilateral neglect, though this would need to be confirmed by further testing. Individuals with neglect are often taken aback by items that seemingly sneak up on them when they are walking and it is not uncommon for this to cause a person to fall. Dressing and hygiene are often some of the biggest functional impairments seen in individuals who have neglect, since it causes someone to only attend to one side of their body while the other side looks dirty or unkempt.

2. What standardized assessment(s) might an OT use during this patient's evaluation?

Since the patient is demonstrating cognitive deficits, the Trail Making Test would be a good indicator of her mental status. The new onset of falls also indicates there are some changes in cognition or vision that have developed, and the Trail Making Test will also shed some light on those skills. Since strokes often result in motor impairments, it would benefit the therapist to administer the Motor-free Visual Perception Test (MVPT). This would offer results as to a patient's visual skills apart from their motor abilities.

3. What treatments might this patient benefit from?

   Therapists can provide training on the use of anchors, turns, and guides (as per the lighthouse technique) to help people with neglect expand their visual field. After the initial instruction, therapists can incorporate these skills into various therapeutic activities to prepare the patient to add them to functional activities, such as dressing and grooming.

Section 9: Case Study

A 4-year-old boy presents to occupational therapy after suspected overstimulation from visual input. His mom and daycare provider both report that he frequently rubs his eyes when watching shows on his tablet, coloring, and looking at picture books. He cannot tolerate looking at bright images or colors for very long periods and will often look away from books when his parents are reading aloud to him. He has been learning the alphabet for several months now and frequently reverses letters when writing them. He often confuses similar letters and will usually swap "b" for "d" and "m" for "w" and vice versa. He writes his letters scattered across the page, even when he is given extensive instruction about how he should write them.

1. What standardized assessment(s) should the occupational therapist administer on this patient?

2. While occupational therapists can't diagnose, what diagnosis might they predict this child has?

3. What referral(s), if any, might an occupational therapist make for this child?

Section 10: Case Study Review

This section will review the case studies that were previously presented. Responses will guide the clinician through a discussion of potential answers as well as encourage reflection.

1. What standardized assessment(s) should the occupational therapist administer on this patient?

   The therapist should ideally administer the Beery VMI on this young patient to determine their ability to identify and draw specific shapes, lines, and patterns. This would help the therapist recognize impaired visual skills, while also taking the child's motor skills into account. If the therapist would like more clarification on where exactly the child's concerns lie, they should also administer the motor-perceptual subtest of the Beery VMI to assist with goal writing. Since it appears there might also be sensitivity related to visual input, the therapist should also administer the Sensory Profile to determine if the concerns have any roots in sensory concerns.

2. While occupational therapists can't diagnose, what diagnosis might they predict this child has?

   This child might be demonstrating signs of poor visual discrimination. However, this could also be due to motor planning deficits or even dyslexia, in some cases.

3. What referral(s), if any, might an occupational therapist make for this child?

   The therapist should suggest that the child receive educational testing to rule out diagnosis such as dyslexia and dysgraphia. If they are not already, the child should also receive formal vision testing from a pediatrician or ophthalmologist.

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