Appendix A
CASE STUDIES

Case One, Mrs. A

Description: 78-year old woman

Vision and health: Near-normal vision (20/40); early stage Parkinson's disease (332)

Living situation: Lives with spouse

Overall functioning: Able to take care of her household and is active with her family

Problem(s): Her son brought Mrs. A for a low vision exam. His mother has not been able to read, has stopped doing the daily crossword, and recently made an error with her medication because she misread the dosage label. Her regular eye doctor slightly increased the strength of her reading spectacle prescription, but that has not helped. Mrs. A and her family say that her eyesight is obviously getting bad, and want something that will help her be able to read again.

Goal(s):

- Independent reading; medication label identification; medication management
- Home management including paying bills and using telephone
- Family education to increase safety awareness while performing basic ADLs

1	Vision limitation affecting ADLs present? →	**No**
2	Resolved by correcting refractive error? →	**- - -**
3	Will VAE permit enhanced participation in ADLs? →	**- - -**
4	Other limiting conditions present? →	**Yes**
5	Can they be ameliorated / compensated for? →	**Yes**
6	Is beneficiary able / willing to use VAE safely? →	**- - -**
7	**VAE REASONABLE AND NECESSARY?** →	**NO. The limitation that is affecting the patient's ability to accomplish ADLs is related to her Parkinson's disease, not vision loss.**

Discussion: Examination confirmed that Mrs. A had near-normal vision, no loss in her visual fields, with reduced contrast sensitivity, but well within what would be expected at her age. When asked to demonstrate her reading capability, with the doctor holding the reading material, she read fluently. However, when Mrs. A held the page to read it, the shaking of her hands from Parkinson-related tremors made it impossible for her to properly focus on the page.

After an occupational therapy evaluation, Mrs. A was taught compensatory techniques such as using weight cuffs and proper body mechanics (decreasing degrees of freedom of her joints) to reduce tremor, however she was not able to decrease her gross tremor. Furnishing VAE would not improve her ability to read at this time. Mrs. A was taught to read while resting objects on a solid surface to minimize the effects of her Parkinsonian tremors on her ability to read and to use task-specific lighting to enhance her contrast sensitivity.

Case Two, Mr. B

Description: 80-year old man

Vision and health: Hyperopia (367.0); presbyopia (367.4); cataracts (366.22); mild (presenile) dementia (290.10)

Living situation: Lives alone in low income senior housing

Overall functioning: Independent and in good health overall

Problem(s): The housing coordinator became concerned after Mr. B activated the smoke alarms a number of times within a short time period. She was also concerned that Mr. B seemed to be losing weight and had fallen several times, although without serious injury. Investigation revealed that Mr. B had lost his glasses, could not read the preparation instructions on his pre-packaged food and was eating less. Several times he had mistakenly set the oven too high and burned the food.

Goal(s):

- Independent meal preparation and nutritional monitoring
- Increase home safety and decrease risk of falls through environmental modification

1	Vision limitation affecting ADLs present? →	**Yes**
2	Resolved by correcting refractive error? →	**Yes**
3	Will VAE permit enhanced participation in ADLs? →	**- - -**
4	Other limiting conditions present? →	**- - -**
5	Can they be ameliorated / compensated for? →	**- - -**
6	Is beneficiary able / willing to use VAE safely? →	**- - -**
7	**VAE REASONABLE AND NECESSARY?** →	**NO. Bifocal lenses are sufficient to permit the patient to safely and independently accomplish ADLs, and are prescribed for correction of refractive error and presbyopia, neither of which qualifies for VAE.**

Discussion: Bifocal eyeglasses were prescribed to correct for hyperopia and presbyopia. Mr. B was instructed in proper bifocal use, and was able to function properly when wearing them. The new glasses allowed Mr. B to perform necessary ADLs. Croakies (elastic eyeglass retainers) were also provided to keep the glasses on his head. Mr. B was referred to OT for falls risk, cognitive and safety assessments.

Case Three, Mrs. C

Description: 65-year old woman

Vision and health: Dry macular degeneration (362.51); glaucoma (365.11); severe vision impairment (369.22) due to field constriction; multiple central scotomas (368.41); reduced contrast sensitivity

Living situation: Lives alone in her own home

Overall functioning: Until recently, independent in daily activities

Problem(s): Mrs. C is increasingly frustrated at not being able to write grocery lists, read recipes and cooking instructions to prepare meals, and to organize and manage her medications. She recently mistook one prescription pill for another similar one. She has eyeglasses and keeps trying to use them, but they do not help.

Goal(s):

- Independent meal preparation using compensatory techniques
- Independent and accurate medication management with assistive devices
- Independent home safety management

1	Vision limitation affecting ADLs present? →	**Yes**
2	Resolved by correcting refractive error? →	**No**
3	Will VAE permit enhanced participation in ADLs? →	**No**
4	Other limiting conditions present? →	**- - -**
5	Can they be ameliorated / compensated for? →	**- - -**
6	Is beneficiary able / willing to use VAE safely? →	**- - -**
7	**VAE REASONABLE AND NECESSARY?** →	**NO. VAE will not help to correct the problems the patient is having due to central scotomas and field constriction.**

Discussion: Mrs. C has impaired functioning due to her vision loss. She was evaluated for many VAEs, but she was unable to use them because the combination of multiple central scotomas, reduced central vision from macular degeneration, and reduced peripheral vision due to glaucoma has left her with an extremely small area of usable vision. She was referred for vision rehabilitation training to learn compensatory techniques that will enable Mrs. C to learn adapted ways to accomplish ADLs, despite her vision loss. She was also referred for mental health consultation for support services to help her cope with her vision loss.

In occupational therapy, Mrs. C was taught compensatory techniques for accomplishing daily tasks using assistive devices. A non-visual system was devised for managing medications using audio prescription bottles reinforced by a tactile marking system. Suggestions for marking cooking equipment and utensils with similar tactile marking proved effective in helping her to continue to prepare many familiar dishes. She also was taught techniques for cutting and organizing cooking tasks that would ensure her safety, despite her impaired vision. Other techniques for organizing bills and coins, using contrast and large print to write grocery lists, and using a digital recorder to record her grocery lists, have enabled her to continue to manage her home with minimum assistance.

She was also referred to physical therapy for gait and balance training, due to an increased risk of falls, common in patients who lose depth perception when the eyes are unequally affected. Combined with counseling, rehabilitation services have enabled Mrs. C to learn compensatory skills that allow her to be safe, and as independent as possible in daily activities.

Case Four, Mr. D

Description: 25-year old man

Vision and health: Traumatic Brain Injury from a serious motorcycle accident, resulting in diffuse closed trauma. This caused profound vision impairment in both eyes (369.08), and significant cognitive and orientation problems as well as seizures (780.39). He is also extremely bothered by glare.

Living situation: Lives with his mother and two younger siblings

Overall functioning: Is often confused, and has violent episodes that are increasing in frequency and severity

Problem(s): Mr. D is increasingly angry and frustrated at not being able to see things. He spills food all over the table and himself, and refuses to use trailing techniques to find his way through the house, often bumping into things and falling. His home care nurse's efforts to teach him to manage his own medications have been unsuccessful and he refuses to keep a daily log as requested by his doctor because he says he cannot see to write.

Goal(s):

- Family education to assist patient in medication management
- Increase safe indoor mobility
- Ability to write lists and notes, such as directions from physician, medication schedule, questions to ask doctor, etc., using compensatory techniques

1	Vision limitation affecting ADLs present? →	**Yes**
2	Resolved by correcting refractive error? →	**No**
3	Will VAE permit enhanced participation in ADLs? →	**Yes**
4	Other limiting conditions present? →	**Yes**
5	Can they be ameliorated / compensated for? →	**No**
6	Is beneficiary able / willing to use VAE safely? →	**- - -**
7	**VAE REASONABLE AND NECESSARY?** →	**NO. The patient's behavior is unstable and he is unable to accept and learn how to use VAE at this time.**

Discussion: Tinted eyeglasses were initially prescribed to reduce Mr. D's glare problems indoors. Although they made him more comfortable, they are not adequate to permit him to do close tasks, such as reading and writing. VAE could help this patient identify medications

and maintain a medical log. However, due to his unstable behavior, he is not a candidate for VAE at this time. Occupational therapy evaluation is recommended to address his safety and basic ADLs with his family. Because use of VAE was rejected by the patient, he is not a candidate for VAE or low vision rehabilitation services at this time.

Case Five, Mr. E

Description: 84-year old man

Vision and health: Wet macular degeneration (362.52) causing moderate vision impairment (369.25); hypertension (401); hypercholesterolemia (272.0)

Living situation: Lives with his spouse in a retirement community

Overall functioning: Until recently, was independent and active

Problem(s): Increased difficulty seeing small details, such as dosing instructions for taking his medications. His medical doctor feels he is at increased risk for falls. His eye doctor has told him he cannot give him a stronger lens to be able to read. He is increasingly depressed over his increasing dependency on his wife, is having substantial difficulty in accomplishing daily activities, and wants to be independent.

Goal(s):

- Independent medication label identification and medication management
- Independent monitoring of blood pressure and maintenance of a medical log
- Read and write notes, such as directions from physician, medication schedule, questions to ask doctor, etc., pay bills
- Falls risk assessment and increase safety awareness while performing ADLs
- Environmental modification to increase safety

1	Vision limitation affecting ADLs present? →	**Yes**
2	Resolved by correcting refractive error? →	**No**
3	Will VAE permit enhanced participation in ADLs? →	**Yes**
4	Other limiting conditions present? →	**No**
5	Can they be ameliorated / compensated for? →	**- - -**
6	Is beneficiary able / willing to use VAE safely? →	**Yes**
7	**VAE REASONABLE AND NECESSARY?** →	**YES. The patient was prescribed:** • **5x magnifying loupe to allow reading of medication labels and small print** • **3x hand held magnifier with a light to allow him to read larger pages of print such as medical instructions, using both eyes**

Discussion: The patient is motivated to use VAE and good outcomes can be expected by introducing VAE into his daily routine. A low vision examination determined that magnification was effective in helping Mr. E to see printed material and write more easily. Trial with a number of magnifiers showed that a 3x hand held magnifier, with instruction in proper page positioning was effective in allowing him to read pages of standard-sized printed material. However, because of his reduced central vision, this level of magnification did not allow him to focus on very small print, such as on a prescription bottle, or the inserts that are included with medication. A 5x loupe, a small magnification device that is attached to his glasses over his better eye, allowed him to read this smaller print. Mr. E was referred for mental health services to help him better adjust to his declining vision, and was referred to vision rehabilitation for compensatory training in adaptive techniques to allow him to perform ADLs independently and safely.

An occupational therapist helped Mr. E to enhance contrast by using task lighting in his daily activities, as well as using a felt-tipped pen and bold lined paper to keep his blood pressure log. He was given instruction in proper use of the hand held magnifier to read the blood pressure gauge (a blood pressure gauge with large numerals is another option for Mr. E). Environmental modifications have helped to decrease his risk of falls. His wife received education to improve her safety awareness and understanding of how to best assist her husband.

A system was also developed to ensure organization and management of his medications that included using a loupe for medication identification, organizing medications in a pill box, and creating a simple daily chart to check off medications as they are taken, which can be read with the hand held magnifier.

Case Six, the Other Mr. E

Description: 84-year old man

Vision and health: Wet macular degeneration (362.52) causing moderate vision impairment (369.25); hypertension (401); hypercholesterolemia (272.0).

Living situation: Lives with his spouse in a retirement community

Overall functioning: Until recently, was independent and active

Problem(s): Increased difficulty seeing small details, such as dosing instructions for taking his medications and reading instructions. He is at increased risk for falls. He has experienced multiple episodes of reduced vision, most recently, 2 months prior to his visit, and is very depressed. Because of reduced vision, he has rejected the VAE that would help him because he "can't read like that," and has stopped doing most activities.

Goal(s):

- Independent medication label identification and medication management
- Independent blood pressure monitoring and maintenance of a medical log
- Read and write lists and notes, such as shopping lists and directions from physician, medication schedules, questions to ask doctor, etc., pay bills

1	Vision limitation affecting ADLs present? →	**Yes**
2	Resolved by correcting refractive error? →	**No**
3	Will VAE permit enhanced participation in ADLs? →	**Yes**
4	Other limiting conditions present? →	**No**
5	Can they be ameliorated / compensated for? →	**- - -**
6	Is beneficiary able / willing to use VAE safely? →	**No**
7	**VAE REASONABLE AND NECESSARY?** →	**NO. Although able to use VAE, this patient is presently uninterested and unmotivated to use VAE.**

Discussion: Although magnification devices enabled Mr. E to see small printed material and write more easily, he is uninterested in using VAE. He was referred for an occupational therapy evaluation to address his decreased ADL function, but is not willing to participate in rehabilitation. He was referred for mental health services to help him cope with his reduced vision and understand that, with help, his functional status can be greatly improved. He was made aware when he is ready to receive vision rehabilitation training, he will be referred back for VAE prescription.

Case Seven, Mrs. F

Description: 67-year old woman

Vision and health: Profound vision impairment (369.08); homonymous bilateral filed defects (368.46); history of multiple strokes; weakness in left side, and speech deficits resulting from her most recent stroke; bowel dysfunction

Living situation: Lives alone, has limited daily assistance in her home

Overall functioning: Mrs. F was easily fatigued and had limited use of her left hand. She recently confused several of her medications and after taking a wrong medication dose had to be taken to the emergency room. She has also fallen several times because she refuses to use the quad-cane her doctor had prescribed after consulting with a physical therapist.

Problem(s): Mrs. F is having trouble preparing meals and she is losing weight. She is opposed to additional help and wants to be independent. She also neglects to use adaptive equipment for walking, saying she does not need it, that she can do just fine on her own. She has prescription eyeglasses to address refractive error, but they do not compensate for her peripheral field losses. Her overall vision is inadequate for independent functioning.

Goal(s):

- Independent meal preparation
- Independent medication administration
- Read medical and nutrition information; write and read recipes, grocery lists, notes, etc.
- Environmental modification to decrease risk of falls

1	Vision limitation affecting ADLs present? →	**Yes**
2	Resolved by correcting refractive error? →	**No**
3	Will VAE permit enhanced participation in ADLs? →	**Yes**
4	Other limiting conditions present? →	**Yes**
5	Can they be ameliorated / compensated for? →	**Yes**
6	Is beneficiary able / willing to use VAE safely? →	**No**
7	**VAE REASONABLE AND NECESSARY?** →	**NO. Although compensations could be made for the patient's left side weaknesses and mobility limitations, the patient is not motivated to use VAE and has demonstrated a disregard for safe use of other adaptive equipment.**

Discussion: Magnification was effective in helping Mrs. F to see written material, but she rejected all recommended VAE as well as vision rehabilitation saying she did not need it. It was determined that the right sided brain injury she incurred resulted in severe visual-perceptual-cognitive deficits that prohibit her from being a candidate for low vision rehabilitation services or VAE at this time. Occupational therapy was recommended to address her decreased ADLs and assess risk of falls. Nursing assessment was recommended to determine if Mrs. F might benefit from home health services.

Case Eight, Mrs. G

Description: 75-year old woman

Vision and health: Diabetes with ophthalmic manifestations (250.50); proliferative diabetic retinopathy (362.02); severe-profound vision impairment (369.14); insulin dependent diabetes (648.0) peripheral neuropathy; hypertension (401); osteoporosis (733.01)

Living situation: Lives with her daughter, who works full-time

Overall functioning: Rarely goes outside. Is comfortable moving around the home, is fairly independent, and involved in her own care. She has a history of sores and cuts on her feet, and has fallen many times. Both mother and daughter want to avoid in-home help if possible.

Problem(s): Tight glycemic control is essential to minimize further retinal damage from diabetes. Mrs. G's doctor has asked her to keep a daily log of her glucose levels and what she eats during the day, but she has difficulty seeing well enough to make entries in her log. She has been misreading her glucometer during checks through the day, and forgetting what her sugar reading was, or what she had to eat during the day. Her daughter recently came home to find her mother unconscious on the floor. Mrs. G is also being treated for a wound on her foot that went undetected until it became so severe she complained of foot pain.

Goal(s):

- Modified independent self-monitoring of blood glucose levels with adaptive equipment
- Modified independent dietary planning and monitoring with adaptive equipment
- Patient and family education in skin care to decrease further skin infection and ulceration
- Environmental modification to decrease risk of falls and increase functional safety in ADLs

1	Vision limitation affecting ADLs present? →	**Yes**
2	Resolved by correcting refractive error? →	**No**
3	Will VAE permit enhanced participation in ADLs? →	**Yes**
4	Other limiting conditions present? →	**Yes**
5	Can they be ameliorated / compensated for? →	**Yes**
6	Is beneficiary able / willing to use VAE safely? →	**Yes**
7	**VAE REASONABLE AND NECESSARY?** →	**YES. The patient was prescribed:** • **5x hand held magnifier with a table clamp for hands-free reading** • **Magnifying mirror with light for self – examination of feet** • **Table-top electronic magnification device to read and write in her health journal**

Discussion: This patient is a willing and able candidate for VAE that will allow her to continue to monitor her healthcare, control her diabetes, and report the results.

A low vision examination determined that magnification was effective in helping her to read, and to write legibly. However, due to neuropathy in her fingers, the patient had difficulty holding a standard magnifying glass. Trial with several types of hand held and stand magnifiers showed that a 5x magnifier was effective for her to read medication label sized print, but that she couldn't hold the device long enough or steady enough to read when holding it in her hand. Therefore, a table clamp was also prescribed, which is a 1-foot flexible metal gooseneck with two clamps (one is attached to a table edge, the other to the magnifier handle) and Mrs. G was able to place the medication bottle on the table under the magnifier and could read it with her hands free. When it was clipped to the leg of a chair and positioned over her foot, the hand magnifier also allowed Mrs. G to see the tops of her feet and her toes to do a foot check, and an accompanying lighted magnifying mirror was prescribed to allow her to check the bottoms of her feet. Mrs. G's daughter also received education to assist her mom while inspecting her skin. Mrs. G was also given a large print log book to record her medication dosage, however she was not able to read or write in it, but was able to with electronic magnification. A table-top magnification device was prescribed. Mrs. G was referred for vision rehabilitation services from an occupational therapist to ensure safe and appropriate use of the prescribed devices in the activities for which they were prescribed. Diabetes self-management education services were also recommended.

In occupational therapy, proper use of the magnifier and table clamp was reinforced. Mrs. G was instructed in proper position of her body when using the magnifier and magnification mirror to avoid strain, such as when lifting her feet to hold them over the magnification mirror, and to ensure optimum performance of the devices. The occupational therapist also instructed her in adaptive techniques for meal preparation and personal care tasks. The therapist recommended simple adaptations, such as marking the stove and microwave dials, improving kitchen lighting, and using non-skid mats to improve her safety and independence when performing these tasks, despite her loss of vision.

Mrs. G was also referred to physical therapy. Her neuropathy compromises two of the three main components of normal upright stance; vision and proprioception are compromised, leaving only vestibular function intact. It was determined that gait training by PT for safety would be particularly appropriate under these circumstances.

Case Nine, Mrs. H

Description: 80-year old woman

Vision and health: Wet macular degeneration (362.52); severe vision impairment (369.14); moderate dementia (294.1); Parkinson's disease (332)

Living situation: Lives alone, in the same apartment she has lived in for 50 years

Overall functioning: Declining independent functioning, but can complete familiar/repetitive tasks, such as preparing food. She has eyeglasses, which she wears out of habit, although with her degree of vision loss, they are no longer effective in helping her to see.

Problem(s): The family is concerned about Mrs. H's accidents and falls, and that she has been forgetting whether she took her medication. She is also losing weight, and was recently hospitalized for dehydration. She has a 'medalert' device, but keeps pushing it mistakenly. The one time she should have used it, when she fell in the bathroom, she did not push it. She remained on the floor for hours before a visiting family member found her.

Goal(s):

- Independent reading of medication labels and directions, food preparation recipes and instructions using adaptive equipment and compensatory techniques
- Modified independent monitoring of medications and ability to write in medication log using compensatory techniques and adaptive equipment
- Assessment of risk of falls and safety awareness while performing ADLs
- Family education in environmental modification to increase safety awareness

1	Vision limitation affecting ADLs present? →	**Yes**
2	Resolved by correcting refractive error? →	**No**
3	Will VAE permit enhanced participation in ADLs? →	**Yes**
4	Other limiting conditions present? →	**Yes**
5	Can they be ameliorated / compensated for? →	**No**
6	Is beneficiary able / willing to use VAE safely? →	**---**
7	**VAE REASONABLE AND NECESSARY?** →	**NO. Although VAE would help the patient improve vision, she would not gain any functional improvement due to her significant cognitive deficits.**

Discussion: Mrs. H gave a poor response to all VAE that were presented. Although she was able to read isolated letters, because of her dementia she was not able to use the equipment in any meaningful functional manner, i.e. with comprehension. She was referred for an occupational therapy evaluation to determine if she had the potential for compensatory training to improve her functioning and safety in basic activities of daily living. The OT determined that Mrs. H was not a candidate for therapeutic rehabilitation services, however Mrs. H's family received education in environmental modifications to decrease her risk of falls at home. They were also made aware that Mrs. H may need someone to stay with her to assist in her daily routine and prevent further risk of falls. A nursing evaluation was recommended to determine the patient's appropriateness for nursing home placement to ensure her health and safety.

Case Ten, Mr. I

Description: 68-year old man

Vision and health: Glaucoma (365.11) causing severe vision impairment in both eyes (369.22); COPD (491.21); rheumatoid arthritis (714.0)

Living situation: Has lived alone for many years

Overall functioning: Is independent and active, does his own shopping and other errands within his own neighborhood

Problem(s): As his vision has declined, he is having increasing difficulty in traveling in his neighborhood, shopping, reading and writing, and identifying his medications. He is at increased risk for falls. He has eyeglasses, which improve his visual acuity, but he is unable to read printed materials, and often does not see obstacles in his path, causing him to fall.

Goal(s):

- Independence in reading medication labels and managing medications
- Safe indoor and outdoor mobility
- Environmental modification to decrease risk of falls and increase functional safety in ADLs
- Ability to read and write lists and notes, such as directions from physician, medication schedule, questions to ask doctor, etc., pay bills with adaptive equipment

1	Vision limitation affecting ADLs present? →	**Yes**
2	Resolved by correcting refractive error? →	**No**
3	Will VAE permit enhanced participation in ADLs? →	**Yes**
4	Other limiting conditions present? →	**Yes**
5	Can they be ameliorated / compensated for? →	**Yes**
6	Is beneficiary able / willing to use VAE safely? →	**Yes**
7	**VAE REASONABLE AND NECESSARY?** →	**YES. The patient was prescribed:** • **A telescopic system to permit safe travel on familiar routes by enabling him to see traffic lights and signs in the grocery store and pharmacy** • **Hand held electronic magnification that also enhances contrast, to read medication labels and medical instructions, recipes and cooking instructions, etc.**

Discussion: Mr. I is a candidate for VAE to increase his independence in ADLs and to manage his health conditions.

A low vision examination revealed that in addition to significant peripheral vision loss, Mr. I has extremely reduced contrast sensitivity. Consequently, increased magnification alone was not sufficient to allow him to read, and in most situations, he needed enhanced contrast as well. He demonstrated willingness and a capability to use a hand held electronic magnification device, which along with instruction in proper placement of reading materials, proved effective in allowing him to read various sized print. A telescopic system, which provides distance magnification effectively allowed him to see traffic lights, and was prescribed for outdoor travel. Mr. I was referred for orientation and mobility training and rehabilitation services to incorporate appropriate and safe use of the VAE into activities of daily living. An orientation and mobility instructor taught Mr. I to map out a route to familiar locations, and to use a white cane to navigate his way to and from, and into those locations through a series of landmarks.

An occupational therapist instructed Mr. I in proper grasp of the hand held magnification device to accommodate his arthritis and to avoid strain on his hand, wrist and neck, and taught him applied use of the device to read medication labels, food packages, and other printed material. He was taught a variety of compensatory techniques and environmental modifications to increase his safety at home in performing ADLs such as safely transferring in and out of the tub, increasing contrast in the bath tub (a dark bath mat against a white tub), and removing clutter and wires on the floor. Mr. I was instructed in proper use of adaptive devices, such as large handled utensils to use in cooking due to his arthritis, and a counter top cutting guide. Use of tactile markings on kitchen appliances and the telephone were also recommended and provided.

Case Eleven, Mr. J

Description: 76-year old man

Vision and health: Diabetes with ophthalmic manifestations (250.50); non-proliferative diabetic retinopathy (362.01) causing moderate vision impairment (369.25); cataract (nuclear sclerosis 366.16) causing blurred vision; insulin dependent diabetes (648.0); gastroparesis (536.3)

Living situation: Widowed, lives alone

Overall functioning: Mr. J often does not feel well, and spends much of his time managing his health care. He is fairly adept at meal preparation and his personal care and tries hard to adhere to his prescribed medication and nutrition plan.

Problem(s): Gastrointestinal health issues make it difficult to regulate his blood glucose levels, but strict glycemic control is needed to prevent further complications. Adherence to a strict diet is recommended to control his gastrointestinal condition. He is having trouble reading a glucometer and recording results, and is getting frustrated as his problems increase. His doctor asked him to maintain a daily log of his glucose levels and his food intake, but his writing is not legible and is not a reliable history.

Goals:

- Independent reading of health instructions and food packages with adaptive equipment
- Independent use of glucometer
- Ability to write and maintain medication and nutrition logs

1	Vision limitation affecting ADLs present? →	**Yes**
2	Resolved by correcting refractive error? →	**No**
3	Will VAE permit enhanced participation in ADLs? →	**Yes**
4	Other limiting conditions present? →	**No**
5	Can they be ameliorated / compensated for? →	**- - -**
6	Is beneficiary able / willing to use VAE safely? →	**Yes**
7	**VAE REASONABLE AND NECESSARY?** →	**YES. The patient was prescribed:** • **2x magnification, in spectacles for general reading and writing, such as health journals** • **2x flip-up loupe to augment the power for reading small print, such as food package ingredients**

Discussion: Mr. J wears eyeglasses that correct his refractive error and improve his vision. He will continue to use them for general near vision such as cooking and seeing the food on his plate, but they do not permit him to see detail, such as reading standard sized print. A 2x magnification enabled him to read standard sized print and write legibly. Magnifiers in non-standard (microscopic) spectacles were prescribed to allow for reading standard-sized print and for writing in his daily health logs. However, Mr. J needed additional magnification to read very small print, such as the ingredients on a food package. A flip-up loupe with an additional 2x magnification was prescribed to augment the power of the magnification in the spectacles. The device was mounted on the top of the spectacle frame and enabled him to easily add the stronger strength magnification lens for reading very small print, such as medication labels and information on food packages, when necessary. Mr. J was referred to occupational therapy for assessment of his skills in activities of daily living, and for rehabilitation to ensure his safety and independence in daily tasks such as meal preparation. A talking glucometer was suggested and he was trained to use it in combination with the flip-up loupe which permits him to record his glucose levels in his health journal and log books.

Case Twelve, Mr. K

Description: 33-year old man

Vision and health: Stargardt's Disease (369.75); profound vision impairment (369.08); reduced contrast sensitivity; central scotomas (368.41)

Living situation: Lives with a spouse and a child

Overall functioning: Struggling to deal functionally with an acceleration of vision impairment from the disease. Mr. K was declared disabled due to his vision disability, and is receiving assistance (SSDI). He is highly motivated and determined to maintain independence and productivity, and would like to return to employment.

Problem(s): Mr. K was fired from his job as a copy editor for a local newspaper, where he had worked since graduating college with an English degree, because he could no longer perform his job duties. His sudden and significant vision decline made it impossible for him to read standard-sized print, and to edit copy legibly. He has decreased color perception and reduced contrast sensitivity, which makes print of all sizes difficult for him to read, and photos hard to see. His skills were not considered adequate for any other position in the newsroom. Mr. K's Stargardt's disease, which he developed suddenly, has no treatment and is not correctable with prescription glasses, contact lenses, or refractive surgery. He was declared permanently and totally disabled by SSA and is now receiving Medicare benefits.

Goal(s):

- Independence in working and community re-entry
- Improved reading and writing to permit employment and self-sufficiency in home management and ADLs
- Independent safe functional mobility indoors
- Outdoor mobility and ability to travel independently

1	Vision limitation affecting ADLs present? →	**Yes**
2	Resolved by correcting refractive error? →	**No**
3	Will VAE permit enhanced participation in ADLs? →	**Yes**
4	Other limiting conditions present? →	**No**
5	Can they be ameliorated / compensated for? →	**- - -**
6	Is beneficiary able / willing to use VAE safely? →	**Yes**

7	**VAE REASONABLE AND NECESSARY?**	→	**YES. The patient was prescribed:** • **5x hand held magnifier** • **Hand held telescopic system to see traffic lights, signs** • **Portable electronic magnification device that also enhances contrast, to read and write for work and for home**

Discussion: This patient is a willing and able candidate for VAE that will enable him to return to employment, and remain safe and independent in daily activities of living. Once he is able to return to work, he will no longer need, nor be eligible for, Medicare.

A low vision examination determined that magnification was effective in helping Mr. K to read some print, and to write legibly. A 5x hand held magnifier with a light was prescribed. However, due to his decreased contrast sensitivity, magnification alone was not sufficient to allow him to read small print, such as pages of newsprint and for most material he needed increased contrast to be able to read. However, electronic vision enhancement and magnification did prove effective in allowing him to read various sized prints and types of print materials. Because of his central scotomas, a system that allowed him to keep his eyes stationary after focusing, and then move the printed material from left to right, was most effective. Mr. K received visual skills training to develop a preferred retinal focus when using the VAE, allowing him to effectively maximize his remaining vision when using each of the devices. A color, portable electronic magnification device that can be connected to a standard PC, and which Mr. K can transport between home and work daily was prescribed. He was also prescribed a hand held telescope for distance viewing, to see traffic lights, signs, elevator buttons, etc. when traveling away from home.

Mr. K was referred for vision rehabilitation services from an occupational therapist to ensure safe and appropriate use of the prescribed devices. The visual skills training was reinforced and applied to ADLs, i.e. safe cutting techniques for meal preparation, shaving techniques, trimming nails, etc. Various writing techniques and adaptive devices were introduced for workplace and home management tasks to allow Mr. K to independently pay bills, write lists, sign documents, etc.

Mr. K was also referred for orientation and mobility skills training to ensure that he is able to safely navigate and travel to work and other locations, and can incorporate use of the VAE when traveling. He was given information on support groups and counseling services in his community that may help him deal most effectively with his vision loss and its impact on his life.

Mr. K was able to return to work with his former employer. Once the employer saw that use of VAE was effective, under the requirements of ADA he purchased a stationary model so that Mr. K would no longer need to transport the VAE back and forth to work. His Medicare status was discontinued.

Case Thirteen, Mrs. L

Description: 75-year old woman

Vision and health: Proliferative diabetic retinopathy (362.2) with macular edema (swelling) (362.07), causing severe vision impairment (369.22); history of CVA resulting in slight weakness in the right side; diabetes (648.0); osteoarthritis (715.4)

Living situation: Lives alone, has family/friend's assistance on the weekend

Overall functioning: Mrs. L is able to complete basic ADLs independently. On weekends, family or friends help with grocery shopping and laundry. She is able to ambulate safely using a white cane for mobility in the community.

Problem(s): In the past three months, Mrs. L is having trouble reading newspapers and occasionally falls in her bathroom and living room. She has prescription eyeglasses but due to her diabetic retinopathy she feels they are not very helpful because her vision fluctuates throughout the day. She said a hand held magnifier which she bought in the supermarket to read prices and labels does not help her since, due to her osteoarthritis, she cannot grasp the magnifier for more than a few minutes before experiencing pain. She is also having problems recording her blood sugar levels and has burned herself seriously several times while cooking.

Goal(s):

- Independent meal preparation using compensatory techniques and adaptive devices
- Independent medication administration
- Environmental modification to decrease risk of falls and burns

1	Vision limitation affecting ADLs present? →	**Yes**
2	Resolved by correcting refractive error? →	**No**
3	Will VAE permit enhanced participation in ADLs? →	**Yes**
4	Other limiting conditions present? →	**Yes**
5	Can they be ameliorated / compensated for? →	**Yes**
6	Is beneficiary able / willing to use VAE safely? →	**Yes**
7	**VAE REASONABLE AND NECESSARY?** →	**YES. The patient was prescribed:** • **7x clip-on magnifying loupe** • **6x hand held illuminated magnifier with built-up handle** • **CCTV video magnifier**

Discussion: Mrs. L is a motivated candidate for VAE that will help her to independently and safely complete activities of daily living.

Mrs. L had a low vision examination on one of her "bad" vision days. During the exam, it was determined that she needed more magnification than she had been trying to use. A 7x clip-on loupe for her glasses was prescribed to use as needed in activities such as grocery shopping to read prices and labels, and leave her hands free to hold items. A 6x illuminated hand held magnifier with a built-up handle was also prescribed to increase visibility and enhance perceived contrast for individual tasks at home. A CCTV video magnifier was prescribed for more prolonged reading tasks.

Mrs. L was referred to occupational therapy for evaluation. Her therapist taught Mrs. L how to use adaptive techniques for meal preparation, and to increase contrast in her living room and bathroom to decrease her risk of falls. She also received joint protection education while performing ADLs, including using large handles for cooking, and avoiding heavy gripping and lifting. The OT also taught her proper use of the hand held magnifier to record blood sugar levels, and suggested a talking glucometer.

Case Fourteen, Mr. M

Description: 65-year old man

Vision and health: Dry macular degeneration (362.51) causing moderate vision impairment (369.25) and reduced contrast sensitivity; mild traumatic brain injury 5 years ago due to car accident; total hip replacement 3 months ago due to fall.

Living situation: Lives with his wife in a 2nd floor walk-up apartment

Overall functioning: Mr. M is able to complete basic ADLs independently using a memory log book to record his doctors' appointments and to manage his finances independently. However as his vision deteriorated, he began having trouble reading and writing, has fallen multiple times and now has a fear of falling. He worries that he is losing his independence. His wife cooks and cleans the house and is concerned about her husband's safety at home.

Problem(s): In the past six months, Mr. M noticed that he has been having difficulty in reading and managing his finances with his prescribed glasses and he is fearful of going outdoors because he cannot see the stairs clearly due to decreased contrast sensitivity. He fell 3 months ago because he missed a step. He feels that his vision has been getting worse and not being able to read and manage his finances is causing him significant stress.

Goal(s):

- Independent reading and finance management
- Environmental modification to decrease risk of falls

1	Vision limitation affecting ADLs present? →	**Yes**
2	Resolved by correcting refractive error? →	**No**
3	Will VAE permit enhanced participation in ADLs? →	**No**
4	Other limiting conditions present? →	**---**
5	Can they be ameliorated / compensated for? →	**---**
6	Is beneficiary able / willing to use VAE safely? →	**---**
7	**VAE REASONABLE AND NECESSARY?** →	**NO. Rehabilitation training in use of compensatory techniques and increased environmental contrast are adequate at this time. Reassess as needed.**

MEDICARE COVERAGE FOR VISION ASSISTIVE EQUIPMENT

Discussion: During a low vision examination, it was determined that Mr. M's prescribed glasses were of appropriate strength, however, it was found that he was using inappropriate lighting and was having trouble with glare. Instruction in appropriate lighting position, and techniques to reduce residual glare were successful in helping him to read.

Mr. M was referred to occupational therapy for evaluation. His therapist taught him how to use adaptive equipment (hip kits) to complete basic ADLs while maintaining total hip precaution techniques. Contrast was increased in his living room and bathroom to decrease his risks of falls, and the OT reinforced the proper use of task lighting and glare control devices. Mr. M and his wife were taught safety precautions to use while performing functional mobility inside the apartment and outdoors.