Medicare Coverage for Vision Assistive Equipment

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Vision loss that cannot be corrected medically, surgically, or by refractive means is considered low vision. Low vision often results in impairment of daily activities, loss of independence, increased risk of fractures, excess health care expense, and reduced physical functioning, quality of life, and life expectancy. Vision rehabilitation can enable more independent functioning for individuals with low vision. The Centers for Medicare and Medicaid Services recognizes the importance of rehabilitation for achieving medically necessary goals but has denied Medicare coverage for vision assistive equipment that is necessary to complete these goals, although they provide coverage for assistive equipment to provide compensation for other disabilities. We believe that this is discriminatory and does not comport with congressional intent. The Centers for Medicare and Medicaid Services should provide coverage for vision assistive equipment, allowing beneficiaries with vision loss to benefit fully from Medicare-covered rehabilitation to achieve the cost-effective results of these services.

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Never tell a patient there is nothing more to be done. Rehabilitation is always an option.

Helen Keller

Visual impairment and blindness are among the 10 most common causes of disability in the United States.1 They often result in reduced physical functioning and in impaired activities of daily living (ADLs), instrumental activities of daily living (IADLs), and safety in moving about the environment.2 Affected ADLs include dressing, bathing, eating, transferring, and toileting. Affected IADLs include more complex but essential daily tasks such as preparing meals, taking medications, using the telephone, self-health monitoring (eg, using devices such as glucometers or sphygmomanometers), and providing wound and ostomy care.3 Vision loss is associated with increased falls (resulting in injury or fractures)4-6 and health care costs7,8 and with decreased life expectancy9 and quality of life.10 Progression of vision loss has been associated with greater risk of injury and with skilled nursing facility or other long-term care use.11

THE VISION REHABILITATION PROCESS

When vision loss cannot be corrected medically, surgically, or by refractive means, the result is a diagnosis of visual impairment, ranging from low vision to blindness. The ADLs and IADLs that are impaired or impeded by vision loss may be improved through vision rehabilitation (VR) in combination with vision assistive equipment (VAE) (Table 1). Rehabilitation and assistive devices can help and are often essential to improve performance of ADLs and IADLs and to enable more independent functioning for individuals with low vi-
Table 1. Examples of Vision Assistive Equipment for Activities of Daily Living and Instrumental Activities of Daily Living

<table>
<thead>
<tr>
<th>Type</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectacle-mounted magnifiers, microscopes, clip-on lenses (loupes)</td>
<td>Hands-free close-up tasks (eg, reading labels, medical care instructions)</td>
</tr>
</tbody>
</table>
| Handheld and stand magnifiers, can be illuminated       | Close-up tasks (eg, reading labels, mail, recipes, price labels; spot training for VAE, to improve performance of VR, a beneficiary must have at least moderate impairment in both eyes, defined as visual acuity of less than 20/60 after correction of refractive error (ICD-9-CM code 369.25). In addition, beneficiaries with central scotomas (code 368.41), generalized visual field contraction or constriction (code 368.45), homonymous bilateral field defects (code 368.46), and heteronymous bilateral visual field defects (code 368.47) are eligible for rehabilitation services coverage, even if their visual acuity is 20/60 or better.

INCIDENCE AND PREVALENCE OF LOW VISION AND USE OF VAE

For 2000, in analyzing each of the major studies that evaluated incidence and prevalence of blindness and low vision, Massof estimated that 1,250,000 individuals 65 years or older (3.6%) had visual acuity of less than 20/70 and that vision loss in 15% to 20% was from cataracts and was potentially reversible. US Census Bureau data for 2000 indicated that there were 35,076,990 individuals 65 years or older, of whom 3,425,835 (97.7%) were enrolled in Medicare, and 1,049,050 (3.0%) of these had uncorrectable visual acuity of less than 20/60 (low vision or blindness) after eliminating those with cataracts. By 2008, there were 37,384,186 individuals 65 years or older who had enrolled in Medicare. Using the schema by Massof, after eliminating those whose vision loss was due to cataracts and was correctable, we estimate the prevalence of low vision and blindness to be 1,150,075 among Medicare beneficiaries 65 years or older and the overall annual incidence among this group to be approximately 250,000 cases.

Because of the development and use of more effective treatments (and possibly as a function of the compression of morbidity), the rates of low vision and blindness over the next several decades may plateau and even decline. An acceleration in the overall rate of decline of long-term disability prevalence (from 0.6% in 1984 to 2.2% in 2004-2005) is also reflected in downward trends of progressive vision loss, especially among the approximately 35% of community-dwelling adults who visited an eye care professional within the last year.
dressed through rehabilitation, their participation in ADLs and IADLs may be reduced, while their risk for more long-term and severe disability increases.26 In addition, the incidence rate of dementia doubles with each 5-year age group after age 65 years, and more than 22% of the US population older than 71 years has cognitive impairment without dementia, which increases their risk of dementia.25 Patients with dementia and vision loss may have excess deficits in their functional behaviors if their vision loss is inadequately addressed.28,29 Setting forth the complex interactions of disorders that could affect ability to benefit from VR and VAE is beyond the scope of the present article; however, it is clear that overall morbidity, especially cognitive impairment, can decrease the efficacy of VR, while addressing vision loss may improve the efficacy of overall rehabilitation. Considering these factors, a substantial number of new Medicare enrollees aged 65 years and increasing each year thereafter would be unable to benefit from VR or VAE.

The remaining Medicare cohort with low vision or blindness comprises beneficiaries younger than 65 years who are enrolled in Medicare because of disability status rather than age. In 2008, of the total number of Medicare beneficiaries 83.0% (37 584 186 of 45 301 837) were enrolled because of their age, while 17.0% (7 717 651) were enrolled because of disability status.10 Among these 7.7 million younger Medicare beneficiaries, the prevalence of low vision (1.5%) and blindness (0.65%) sums to 2.15%.10 Although there is evidence that among those with other disabilities the prevalence of vision loss may be somewhat higher, the data are inconclusive.30-32 For each year from 2005 to 2008, the number of Medicare beneficiaries younger than 65 years with disabilities increased by a mean of 271 063. We estimate that the upper boundary for the annual incidence of blindness and low vision among new Medicare beneficiaries younger than 65 years is less than 5830 (not more than the overall prevalence of 2.15%) for this group. Many of these individuals qualify for Medicare because of traumatic brain injury or congenital, developmental, multiple, or other acquired disabilities, and it is likely that a significant number may be unable to benefit from VR and VAE.

Among all Medicare beneficiaries, we estimate that in 2008 there were 256 000 new beneficiaries with low vision or blindness (Table 2). There are no accurate data on the extent of comorbidities among these beneficiaries that would limit the usefulness of VR; however, we believe that between 128 000 and 192 000 may qualify for and be able to benefit from VR and VAE. Patients who believe that a physician visit is likely to lead to a therapeutic and helpful intervention seem to be more likely to seek care. Sloan et al33 found that, while patients having diagnosed diabetes were likely to have follow-up vision examinations (with the frequency increasing with the severity of retinopathy), patients with diagnosed age-related macular degeneration (before the introduction of anti-vascular endothelial growth factor therapy) had less frequent eye examinations than before their diagnosis; the authors suggest that diagnosis of an “incurable” disease leads to a decrease in visits for eye care. Not surprisingly, costs (including copayments, eyeglasses, and medications) have also been documented as a barrier to effective eye care.34 Overall, compliance with eye care practice guidelines is about 50%. For example, compliance with eye care recommendations for patients with diabetes averages about 50%,35,36 although regular examinations and laser treatment are effective in minimizing the progression and complications of diabetic retinopathy. Similarly, adherence with a medication regimen and regular examinations for patients with glaucoma are usually effective in controlling progression of the disease and in preserving vision.27,28 For most patients, VR and VAE training following a thorough low vision examination will require 6 to 12 visits of 1 to 2 hours each over 4 to 12 weeks. Because of the potential for gain in independent function, we expect that at least half of the eligible Medicare beneficiaries (64 000-96 000) will initiate VR services. However, because of the intensity of the therapy and training visits required, we anticipate that only about half of those who begin VR (approximately 40 000 Medicare beneficiaries) will complete a plan of care that includes VAE.

### MEDICARE COVERAGE FOR VR AND VAE

Because many types of VAE contain a lens, the CMS classifies them as eyeglasses and denies coverage under Medicare’s established policy of denying coverage for eyeglasses. This interpretation is misguided and does not represent congressional intent; there is a clear distinction between VAE and devices used for correction of refractive error or presbyopia such as conventional or reading eyeglasses, the use of which generally results in normal or near-normal vision. Refraction is the correction of abnormalities in the ability of the eye to focus on distant objects.
clearly at a distance, while presbyopia is an inability of the eye to change focus to see adequately at close-up range; these deficits are corrected using eyeglasses, which generally result in normal or near-normal vision. Optical VAE compensates for visual impairments; it does not correct them. Optical VAE works by the following means: (1) provides magnification to compensate for reduced best-corrected visual acuity and may be used in conjunction with eccentric viewing techniques; (2) increases contrast, which is essential for many individuals with low vision; (3) controls illumination to compensate for photophobia and for visual adaptation and glare recovery disorders; and (4) expands the viewable visual field, which may be accomplished with prisms and can be particularly useful in addressing vision loss for patients with hemispatial neglect or hemianopia, common consequences of stroke or brain injury.

Preliminary data from an ongoing study with a national sample that includes more than 600 patients who were referred for VR suggest that about one-third of the referred patients have visual acuities of 20/60 or better and were referred because of constricted visual fields, poor contrast sensitivity, or central scotomas (J. E. Goldstein, OD, and the Low Vision Research Network Study Group, oral communication, March 6, 2010). Of the remaining patients, about two-thirds have visual acuities of 20/60 to 20/200, while the other one-third have visual acuities of 20/200 or worse and are considered legally blind. The mean per capita cost of VAE is estimated to be approximately $800.

Although physician-prescribed rehabilitation services for qualifying beneficiaries are covered by Medicare, VAE that is needed to benefit effectively from rehabilitation by beneficiaries with vision loss has been excluded from coverage. A Medicare beneficiary with vision loss who qualifies for Medicare-covered rehabilitation services should also qualify for VAE necessary to implement their rehabilitation care plan and to enable them to use the skills and techniques that have been acquired through the rehabilitation process. The American Academy of Ophthalmology, American Optometric Association, and American Occupational Therapy Association recognize the therapeutic value of VR and the use of VAE. Moreover, the United States Department of Veterans Affairs considers VAE as prosthetic devices and provides them to veterans with visual impairments. A recently completed randomized controlled trial, the Veterans Affairs Low Vision Intervention Trial, provided strong evidence of the effectiveness of rehabilitation for low vision. The trial also showed that VAE combined with rehabilitation of low vision is cost-effective. Although recognizing the need for and value of VR, the CMS has consistently denied coverage for VAE, relying on 42 USC 1395y $1862(a)(7), which explicitly excludes coverage

Exceptions exist for eyeglasses, contact lenses, or intraocular lens implants supplied to Medicare beneficiaries with aphakic or pseudophakic disease, in which case the lens of the eye has been surgically removed, most often because of cataracts.

Before 2002, most VR services were provided through a vocational rehabilitation model by teachers who were unlicensed, mostly uncertified and working outside of traditional health care settings. Since then, the establishment of Medicare coverage for rehabilitation services to beneficiaries with vision loss on the same basis as to beneficiaries with other medical conditions that result in reduced physical functioning has resulted in a burgeoning interest in VR. There has also been a growing recognition that longer life expectancy will increase the prevalence of visual impairments from age-related eye diseases. These changes shift the responsibility for rehabilitation of individuals with vision loss (ie, VR) to the medical rehabilitation community, particularly occupational therapists already working with patients whose vision loss resulted from disorders such as stroke. Wainapel et al observed that 5.8% of admissions to a hospital rehabilitation inpatient unit met criteria for legal blindness and that an additional 1% met criteria for low vision. They commented presciently that health care professionals working in rehabilitation should become more familiar with, and proficient in, the basic principles and treatment techniques used in the rehabilitation of visually impaired persons.

There is compelling evidence that VR is effective in improving health, quality of life, daily functioning, and self-sufficiency in ADLs and IADLs for patients with traumatic brain injury, stroke, and diabetes, as well as age-related macular degeneration and other common causes of vision loss. Deficits in visual perception have been associated with loss of independence in self-care, while improved ability to function independently can result in decreased dependence. For example, patients with diabetes and vision impairment who learn to self-monitor their glucose levels and independently administer insulin through rehabilitation and diabetes self-management education may reduce the need for home health care or clinic visits for medication management. Enhancing functional vision through rehabilitation decreases disability and increases functional ability by improving a patient’s ability to perform essential life functions (ADLs and IADLs), which can reduce the cost of subsequent Medicare-covered health care services.

The position held by the CMS of providing coverage for rehabilitation services but not for the necessary equipment (VAE) is paradoxical; a beneficiary may receive VR care and be considered successfully rehabilitated and able, with an appropriate VAE, to perform ADLs and IADLs necessary for reasonable self-sufficiency. If a VAE is not provided, beneficiaries are unable to perform these tasks and are relegated to an unnecessarily dependent status. This is akin to providing a wheelchair and a home attendant to an individual with an amputated limb, while denying coverage for a lower extremity prosthesis that would allow for safe independent ambulation. This does not re-
reflect congressional intent in the wording of the eyeglass exclusion in the Medicare statute. Several federal courts have held that the CMS interpretation is wrong. These decisions support the position that the eyeglass exclusion is just that—an exclusion of Medicare coverage for conventional eyeglasses—and should not be broadly construed to include anything else. A federal district court in Maine held that a video monitor, commonly referred to as a closed-circuit television, that magnifies the size of print and is used by a beneficiary with macular degeneration to read prescriptions, therapy instructions, and financial documents and to engage in ADLs must be covered as durable medical equipment. Previously, the district court in that case had rejected the argument by the CMS that the device was excluded because it fell within the statutory exclusion for eyeglasses. Of particular significance, the judge held that the eyeglass exclusion in the Medicare statute excludes coverage only for routine eyeglasses but not more for elaborate treatments, citing 2 other court cases that reached the same conclusion regarding coverage for low vision technology.

PROPOSED MEDICARE COVERAGE CRITERIA FOR VAE

The flowchart in the Figure lists our proposed clinical criteria for Medicare coverage for VAE to restore a beneficiary’s ability to participate effectively in ADLs and summarizes an analysis that is consistent with other Medicare coverage algorithms.
Table 3. Case Summaries Illustrating Application of the Vision Assistive Equipment (VAE) Algorithm

<table>
<thead>
<tr>
<th>Patient No./Sex/Age, y</th>
<th>Vision Impairment</th>
<th>Diagnoses</th>
<th>VAE Prescribed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/F/78</td>
<td>Near-normal vision (no significant vision impairment)</td>
<td>Parkinson disease</td>
<td>No; limitations are not vision related</td>
</tr>
<tr>
<td>2/M/80</td>
<td>Hyperopia, presbyopia</td>
<td>Cataracts, mild dementia</td>
<td>No; bifocals are adequate and sufficient</td>
</tr>
<tr>
<td>3/F/65</td>
<td>Severe vision impairment, multiple central scotomas, field constriction</td>
<td>Macular degeneration, glaucoma</td>
<td>No; will not help because of extensive dense central scotomas and field constriction</td>
</tr>
<tr>
<td>4/M/25</td>
<td>Profound vision impairment, glare sensitivity</td>
<td>Traumatic brain injury, cognitive impairment, seizures</td>
<td>No, patient will not accept</td>
</tr>
<tr>
<td>5/M/84</td>
<td>Moderate vision impairment</td>
<td>Macular degeneration, hypertension, hypercholesterolemia</td>
<td>×5 Magnifying loupe, ×3 handheld magnifier</td>
</tr>
<tr>
<td>6/M/84</td>
<td>Moderate vision impairment</td>
<td>Macular degeneration, hypertension, hypercholesterolemia</td>
<td>No; patient is not interested or motivated</td>
</tr>
<tr>
<td>7/F/67</td>
<td>Profound vision impairment, homonymous bilateral field defects</td>
<td>Multiple cerebrovascular accidents, bowel dysfunction</td>
<td>No; patient is not motivated and has a history of unsafe use of equipment</td>
</tr>
<tr>
<td>8/F/75</td>
<td>Severe to profound vision impairment</td>
<td>Diabetic retinopathy, peripheral neuropathy, hypertension, osteoporosis</td>
<td>×5 Handheld magnifier, table clamp, magnifying mirror with light, table-top electronic magnification</td>
</tr>
<tr>
<td>9/F/80</td>
<td>Severe vision impairment</td>
<td>Macular degeneration, moderate dementia, Parkinson disease</td>
<td>No; proper use is compromised by cognitive deficits</td>
</tr>
<tr>
<td>10/M/68</td>
<td>Severe vision impairment</td>
<td>Glaucoma, chronic obstructive pulmonary disease, rheumatoid arthritis</td>
<td>Telescopic system, handheld electronic magnification</td>
</tr>
<tr>
<td>11/M/76</td>
<td>Moderate vision impairment, blurred vision</td>
<td>Diabetic retinopathy, cataracts, gastroparesis</td>
<td>×2 Magnification in spectacles, ×2 flip-up louppe</td>
</tr>
<tr>
<td>12/M/33</td>
<td>Profound vision impairment, reduced contrast, central scotomas</td>
<td>Stargardt disease</td>
<td>×5 Handheld magnifier, handheld telescope, electronic magnification system</td>
</tr>
<tr>
<td>13/F/75</td>
<td>Severe vision impairment</td>
<td>Diabetic retinopathy, macular edema, cerebrovascular accident, osteoarthritis</td>
<td>×7 Clip-on loupe, ×6 illuminated handheld magnifier with a built-up handle, closed-circuit television</td>
</tr>
<tr>
<td>14/M/65</td>
<td>Moderate vision impairment, reduced contrast</td>
<td>Macular degeneration, mild traumatic brain injury</td>
<td>No; rehabilitation, lighting, and environmental modifications are adequate</td>
</tr>
</tbody>
</table>

*a*Details are available in an appendix on request from the author.

Detailed examples of flowchart applications are available in an appendix on request from the author, and case summaries are given in Table 3. By using the flowchart algorithm together with the questions enumerated herein, beneficiaries with vision loss will be treated consistently with other Medicare beneficiaries who require assistive equipment because of other disabilities.

1. Does the beneficiary have a vision limitation that significantly impairs his or her ability to participate in 1 or more ADLs? A vision limitation is one that:
   (a) Prevents the beneficiary from accomplishing ADLs or IADLS entirely, or
   (b) Places the beneficiary at a reasonably determined heightened risk of morbidity or mortality secondary to the attempts to participate in ADLs or IADLS, or
   (c) Prevents the beneficiary from completing ADLs or IADLS within a reasonable time frame.

2. Can the functional vision deficit be sufficiently resolved by correcting the beneficiary’s refractive error? If so, vision assistive devices are unnecessary and are ineligible for coverage.

3. Are the enhancements provided by a VAE needed to allow the beneficiary to participate in 1 or more ADLs? The type of VAE should be appropriate for the degree of the beneficiary’s functional vision impairments and his or her individual needs and goals.

4. Are there other conditions that limit the beneficiary’s ability to participate in ADLs at home? For these beneficiaries, even with VAE, they might not be able to participate in ADLs if the other conditions prevent effective use of the VAE or allow reasonable completion of the tasks even with VAE. Some examples are significant impairment of cognition or judgment and neuropsychiatric impairment.

5. If other limitations or comorbidities exist, can they be ameliorated or compensated sufficiently such that the provision of VAE will be reasonably expected to significantly enhance and improve the beneficiary’s ability to perform or use assistance to participate in ADLs?
   (a) If the amelioration or compensation requires the beneficiary’s compliance, noncompliance can be a basis for denial of VAE.
   (b) Partial compliance may result in adequate amelioration or compensation to permit the appropriate use of VAE.

6. Does the beneficiary demonstrate the capability and willingness to use VAE safely and consistently? Safety considerations, including risk to the beneficiary or others, and a history of unsafe behavior should be considered. For example, a device intended to assist in reading may create an unsafe condition if used when walking outdoors.

CONCLUSIONS

Medicare policy should be revised and clarified to eliminate discrimination against beneficiaries with vision loss and to provide coverage for VAE and devices. We are not suggesting that...
Medicare should cover devices or equipment used to correct refractive errors or presbyopia, consistent with the historical exclusion of these devices from Medicare coverage. For this reason, it is important to clearly distinguish between plus lenses used to correct presbyopia and plus lenses used for magnification that is required to compensate for visual acuity loss. We propose that an equivalent addition of 0.1 diopters (D) to the beneficiary’s distance correction (ie, “add”) is the appropriate boundary to define lenses used for magnification by beneficiaries who meet the Medicare coverage criteria for their VR. Standard presbyopia corrections reach a maximum of 4-D add and enable people to read standard print, which is equivalent to a visual acuity of approximately 20/50. Stronger lenses are referred to as microscopes and provide extra magnification as vision decreases. Magnification to compensate for loss of visual acuity to worse than 20/60, a moderate vision impairment, requires lenses (ie, microscopes) of at least ×1.5 magnification, which is equivalent to a 6-D add. These lenses should be eligible for Medicare coverage when prescribed for beneficiaries with moderate vision impairment or worse. Although patients with beginning vision loss might benefit from weaker adds (between + 4 and +6), these would not be eligible for coverage because the best-corrected visual acuity at initial examination would be 20/60 or better.

Devices prescribed for purposes other than correction of refractive error or presbyopia should be eligible for Medicare coverage on the same basis as other assistive equipment. We believe that this is in keeping with congressional intent in the Medicare statute and would ensure that Medicare beneficiaries with vision impairment have the same access to Medicare-covered services as beneficiaries with other disabilities. Coverage should be determined using the criteria delineated in the flowchart herein and the accompanying questions. Medicare should provide coverage for VAE to allow beneficiaries with vision loss to benefit fully from Medicare-covered rehabilitation to achieve the proven outcomes and cost-effective results of these services.

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