

# **Advanced-Level Competencies and Learning Objectives in Visual Impairment and Low Vision Rehabilitation**

## **INTRODUCTION**

The visually impaired population aged 40 and older in the US is projected to increase by 2.4 times from 2014 to 2050, growing to a projected 7.3 million individuals, and the blind population aged 40 and older is projected to increase by 2.3 times, growing to a projected 3.1 million.[1] These changes in the population will necessitate better availability of low vision services.[2] The distribution of low vision service providers in the US is widely varied, with some states showing very few providers, as little few as 2-3.5 reported low vision providers per 1 million people in ten states.[3] This is additional evidence of the need for more low vision rehabilitation service providers. What type of providers are needed? Low vision rehabilitation has evolved from a service that was provided primarily by optometrists within their optometric practice to a model that involves collaboration between optometry and other rehabilitation professions in addressing the more complex vision rehabilitation needs of individuals with severe and profound vision impairment.[2] The WHO recommends three levels of low vision care: primary level services with screening of vision, simple advice on environmental modifications and non-optical interventions; secondary level services using existing eye health personnel, including optometrists, equipped with a limited range of magnifiers; and tertiary level services with a team of trained professionals providing care involving assessment of visual function, refraction, prescription and use of full range optical, non-optical and electronic low vision aids, multidisciplinary rehabilitation and training in visual skills and mobility.[4] The Low Vision Educators' Special Interest Group (SIG), under the parent organization of Association of Schools and Colleges of Optometry (ASCO), has proposed a two-tier model for the optometric practice of low vision rehabilitation in order to meet the public health demand for low vision rehabilitation services.[5, 6]

In this model, entry-level low vision rehabilitation strategies are targeted to serve patients with mild and moderate visual impairment whose rehabilitative goals may be addressed within the primary care optometric practice. Patients in this group would have best-corrected visual acuity in the better eye of 20/100 or better and not meet the Social Security criteria for legal blindness [7]. Advanced-level low vision rehabilitation strategies aim to serve individuals with mild and moderate impairment who have visual deficits or special rehabilitative needs that cannot be

addressed in primary care practice, individuals with legal blindness (including (also known as severe and profound visual impairment by ICD-9 classification), significant visual field loss, as well as individuals who have both visual impairments and other physical or cognitive impairments, necessitating specialized examination and management strategies.[5] These services are provided in interdisciplinary rehabilitation centers and advanced low vision care practices. This model is similar to the SmartSight™ model of vision rehabilitation from the American Academy of Ophthalmology which has Level 1 and 2 care for patients with low vision. Level 1 is targeted toward patients with vision less than 20/40, central scotoma, visual field loss, or loss of contrast sensitivity and Level 2 is targeted toward the same population but includes referral to multi-disciplinary vision rehabilitation services if greater complexity than difficulty with fine print is noted.[8]

To advance the two-tier model of optometric low vision rehabilitation and improve the quality and consistency of low vision education in optometric institutions and in post-graduate settings, the Low Vision Educators' SIG brought together educators from North American schools and colleges of optometry to formulate competencies and associated learning objectives (LO's) for each level. The entry-level competencies and learning objectives were developed to identify the skill set and knowledge base needed for the first tier of care, primary care low vision rehabilitation.[6] Additionally, these competencies and LO's include an introduction to comprehensive low vision rehabilitation in order to instill awareness of advanced-level resources and strategies available when patients require this level of care. These competencies were offered as a guide to schools and college of optometry for low vision curriculum development, including coursework and clinical internships, within a doctorate of optometry program. The Entry-Level Competencies in Visual Impairment and Low Vision Rehabilitation were established by the ASCO Low Vision Educators SIG and approved by ASCO in 2010 with correlating learning objectives approved in 2012.[5]

For the second tier of care, the Low Vision Educators' SIG continued their work and created the advanced-level low vision rehabilitation competencies and associated learning objectives. These guidelines provide a framework and structure that may be utilized by optometric institutions and organizations providing post-graduation optometric education, such as residencies or continuing education programs. The advanced-level competencies build on the entry level competencies in low vision and visual impairment with the expectation that the entry-level education would be completed prior the advanced-level education.

The advanced-level low vision rehabilitation competencies and associated learning objectives were created to be broadly inclusive in nature. However, they are not intended to be prescriptive nor to define the sum of all skills and knowledge base that are required for optometrists providing advanced-level low vision services; instead they encompass the range of skills and knowledge base topics that may be part of an advanced-level provider's armamentarium. There is a wide variation in needed vision rehabilitation skills related to individual optometric practice settings (e.g. fitting devices for driving is particularly relevant to the doctors in states that allow driving with bioptic telescopes). For doctors wanting to develop additional skills that will serve them in caring for patients with visual impairment, the advanced-level guidelines may be used as a blueprint of what types of continuing education courses should be sought out. For residency directors and coordinators, these guidelines may serve as an all-inclusive reference from which they can tailor a program that fits the patient base and resources available through their program. According to the Optometric Residency Definition and Standards document from the Accreditation Council on Optometric Education, each residency must set program goals, and create: "a written curriculum that identifies and describes the specific activities for the fulfillment of the clinical, didactic and scholarly elements of the mission, goals, and objectives of the program."<sup>9</sup> A resource with competencies and learning objectives in advanced-level low vision rehabilitation will serve as a useful tool for residency program coordinators as they establish new programs or update current ones.

The work on the advanced-level competencies and learning objectives started in 2011 with completion in 2016. By the end of the five year process, twenty advanced-level competencies were established with associated learning objectives (see addendum). Each of the twenty competencies are advanced-level with most linked to an entry level competency as marked in the document. Ideally, the utilization of the entry-level and advanced-level documents will result in improved education regarding low vision rehabilitation within the OD curriculum and in programs for post-graduate years. The ultimate goal of this body of work is the provision of better and more accessible low vision rehabilitation care for individuals with visual impairment.

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**Competency 1.**

**Evaluate the strength of evidence from current research and emerging treatments for management of patients with vision impairment or blindness, including treatments commanding media attention. (1)\***

**Objective 1A** Apply research findings in patient management when indicated.

**Objective 1B** Counsel patients on how to distinguish the strength of the evidence supporting proposed treatments.

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**Competency 2.**

**Utilize screening tools to identify psychological, social, functional, and cognitive factors that impact vision rehabilitation. (4, 5, 6)**

**Objective 2A** Formulate case history questions concerning social issues.

**Objective 2B** Formulate case history questions and/or administer scales to identify daily living activities deficits and rehabilitation goals.

**Objective 2C** Identify and administer scales to screen for depression.

**Objective 2D** Identify and administer cognitive screening instruments.

**Objective 2E** State specific areas of concern and refer identified patients for further evaluation.

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**Competency 3. Identify and address physical, psychosocial, and vision rehabilitation issues that impact patients with inherited and syndromic disorders. (3, 15)**

**Objective 3A** Describe the inheritance patterns and genetic characteristics of hereditary conditions that cause visual impairment.

**Objective 3B** Identify the ocular and systemic characteristics of common syndromes that can result in visual impairment.

**Objective 3C** State the current medical treatments for conditions that cause visual impairment.

**Objective 3D** Formulate an individualized rehabilitation plan to address goals considering prognosis, genetics, psychosocial, and functional implications.

**Objective 3E** Communicate the condition's functional implications and the rehabilitation plan with patients, their family members and/or care providers.

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**Competency 4.**

**Evaluate central scotomas and associated eccentric viewing, incorporating individualized scotoma management strategies into the rehabilitation plan. (10)**

**Objective 4A** Document central scotoma location and size as well as direction of eccentric viewing position.

**Objective 4B** Determine rehabilitation potential and, subsequently, describe and demonstrate to the patient rehabilitation treatment strategies, such as magnification and eccentric viewing awareness and stabilization.

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**Competency 5.**

**Assess patients with peripheral field deficits and implement rehabilitation plans, incorporating field-enhancing systems, training, and co-management with orientation and mobility specialists and other professionals when indicated. (14)**

**Objective 5A** Describe rehabilitation therapies for visual field deficits.

**Objective 5B** Prepare a rehabilitation plan for a patient with visual field deficits that may involve collaboration with other rehabilitation professionals.

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**Competency 6.**

**Perform contrast sensitivity tests, interpret results and select treatment and management strategies to address contrast deficits. (9)**

**Objective 6A** Describe the mechanisms for contrast sensitivity loss based on the causative ocular condition.

**Objective 6B** Define how contrast sensitivity loss results in functional impairment.

**Objective 6C** Describe a broad range of vision rehabilitation strategies that can ameliorate functional impairment caused by contrast sensitivity loss.

**Objective 6D** Identify the principles upon which various contrast sensitivity tests are based.

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**Competency 7.**

**Design spectacle lenses with high-powered refractive corrections and/or high-powered reading additions, incorporating lens parameters that are consistent with patient needs. (12)**

**Objective 7A** Determine available lens materials and select suitable frames for high-powered refractive corrections

**Objective 7B** Determine available multifocal designs for high-powered refractive corrections and for high-powered reading additions.

**Objective 7C** Determine appropriate segment heights and interpupillary distances (both distance and near) for high-powered refractive corrections and for high-powered reading additions to limit aberrations and prismatic effect.

**Objective 7D** Determine suitable lens design for full field high-powered reading corrections, such as aspheric, lenticulated and doublet design.

**Objective 7E** Counsel patients on relevant optical properties of high-powered reading additions, including working distance, depth of field, and potential for binocular viewing.

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**Competency 8.**

**Identify and coordinate care of patients with ocular disorders who are likely to experience improved visual function and achieve rehabilitation goals from contact lens designs. (12)**

**Objective 8A** Discuss the contact lens options that are available to enhance patient performance with prescribed low vision devices, visual function and/or visual comfort.

**Objective 8B** Fit or refer for contact lenses as needed.

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### **Competency 9.**

**Apply optical principles and incorporate patient-specific considerations into the evaluation, design, prescription and fitting of complex low vision devices. (11, 12)**

**Objective 9A** Identify impairments in visual function that impact the design, prescription and fitting of complex low vision devices. Impairments may include deficits in: visual acuity, contrast sensitivity, visual field, alignment, color vision, refractive error and accommodation as well as eye movement disorders like nystagmus.

**Objective 9B** Identify ocular disease/disorder related factors that impact the design, prescription and fitting of complex low vision devices.

**Objective 9C** Identify systemic disease/disorder related factors that impact the design, prescription and fitting of complex low vision devices.

**Objective 9D** Identify factors related to goals that impact the design, prescription and fitting of complex low vision devices.

**Objective 9E** Demonstrate ability to prescribe, fit, and dispense full field and bioptic spectacle-mounted telescopic devices.

**Objective 9F** Demonstrate ability to prescribe, fit and dispense full field and bifocal spectacle-mounted microscopes.

**Objective 9G** Demonstrate ability to prescribe, fit and dispense spectacle-mounted telemicroscopes.

**Objective 9H** Demonstrate ability to prescribe, fit and dispense field enhancement devices.

**Objective 9I** Demonstrate ability to analyze patient goals and utilize a combination of complex and/or low vision devices, when necessary, to achieve rehabilitative goals.

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### **Competency 10.**

**Identify and implement training in the use of basic and complex optical systems. (12, 18)**

**Objective 10A** Discuss the effectiveness of training in the use of optical devices.

**Objective 10B** Describe and demonstrate basic and advanced training techniques in the use of optical devices.

**Objective 10C** Determine best-suited distance or near corrections for using low vision devices.

**Objective 10D** Identify when patients need extended training, and collaborate with other rehabilitation professionals (eg, occupational therapists, rehabilitation teachers), as needed.

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### **Competency 11.**

**Incorporate illumination control strategies (e.g. glare, light/dark adaptation) for best visual function and comfort based on the individual's symptoms, examination findings and diagnoses. (9, 12)**

**Objective 11A** Demonstrate knowledge of illumination control strategies available through the use of assistive technology (e.g. reverse polarity, filtration, etc.).

**Objective 11B** Demonstrate knowledge of illumination control options available for ophthalmic lenses.

**Objective 11C** Demonstrate knowledge of illumination control devices with optical and non-optical assistive devices.

**Objective 11D** Assess the need for absorptive lenses in both indoor and outdoor settings and integrate findings into the prescription plan for ophthalmic lenses and other low vision devices.

**Objective 11E** Counsel patients regarding environmental modification strategies addressing glare concerns.

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**Competency 12.**

**Provide counseling on adaptive and/or assistive technology options for addressing information exchange goals, recommend options and co-manage with technology specialists. (13)**

**Objective 12A** Identify situations, in which adaptive and/or assistive technology would benefit a patient's functioning and independence.

**Objective 12B** Discuss and demonstrate adaptive and/or assistive technology options specific to patient needs.

**Objective 12C** Collaborate with other professionals in the development and implementation of an adaptive and/or assistive technology plan.

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**Competency 13.**

**Adapt low vision evaluation and management strategies for the unique visual needs of patients of all ages and persons with cognitive and/or physical co-morbidities. (15)**

**Objective 13A** Utilize developmentally /cognitively appropriate assessments and discuss testing procedures for: visual acuity, contrast sensitivity, visual field, color vision, alignment, eye movements, refraction and accommodation.

**Objective 13B** Select, evaluate and prescribe developmentally/cognitively appropriate low vision and assistive devices/technology.

**Objective 13C** Educate the patient, caregivers, educators and rehabilitation professionals about the patient's visual and ocular health status.

**Objective 13D** Educate the patient, caregivers, educators and rehabilitation professionals about assistive devices, magnification strategies and environmental modifications that would enhance the patient's use of residual vision for learning and activities of daily living.

**Objective 13E** Coordinate care with physicians, educators, rehabilitation professionals, and caregivers.

**Objective 13F** Identify visual/ocular disorders associated with common syndromes, developmental disorders, hereditary disorders and aging.

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**Competency 14.**

**Evaluate and coordinate care of patients with visual loss and visual disorders from acquired brain injury to improve visual function and/or comfort. (14)**

**Objective 14A** Explain the anatomical location and physiological basis for common neurological deficits impacting vision.

**Objective 14B** Assess the visual system of patients with acquired brain injury.

**Objective 14C** Implement rehabilitation strategies for addressing the visual deficits of acquired brain injury and/or refer when indicated.

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**Competency 15. Prescribe vision devices for driving, train in device use, and collaborate with driver rehabilitation training programs, as allowed by government regulations. (16)**

**Objective 15A** Identify specific regulations and procedures related to vision enhancement devices for driving.



**Objective 15B** Describe the utilization of vision enhancement devices for drivers with visual impairment, including the advantages and disadvantages of available devices.

**Objective 15C** Select, evaluate and prescribe vision enhancement devices for driving.

**Objective 15D** Implement and/or refer to a program that provides training in visual skills and in the use of the prescribed device for driving with visual impairment.

**Objective 15E** Consult with driver rehabilitation professionals to individualize the program based on the patient's visual status.

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**Competency 16. Apply relevant criteria and discuss implications of the visual impairment, legal blindness status, and disability status. (17)**

**Objective 16A** Direct patients to educational services and benefits for which they may qualify based on visual status.

**Objective 16B** Direct patients to vocational services and benefits for which they may qualify based on visual status.

**Objective 16C** Direct patients to other services and benefits for which they may qualify based on visual status.

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**Competency 17. Coordinate patient management with professionals from multiple disciplines to address rehabilitation and health issues. (18)**

**Objective 17A** Define the roles of professionals who may be involved in the care of a visually impaired patient.

**Objective 17B** Prepare a treatment plan for a patient with visual impairment that may involve collaboration with other rehabilitation professionals.

**Objective 17C** Communicate with referring professionals or other vision rehabilitation professionals in form of letters or summary reports.

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**Competency 18. Provide counseling and education on implications of visual impairment, address patient concerns, and discuss available resources. (19)**

**Objective 18A** Translate assessment results for the prognosis and associated visual and systemic changes of the impairment to allow the patient to understand the functional implications of the impairment.

**Objective 18B** Provide individualized communications about the patient's visual impairment and rehabilitation plan in terms understandable to the patient and others.

**Objective 18C** Advocate for the patient to agencies and organizations that can provide services and support to the patient.

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**Competency 19. Comply with third party payer documentation and coding requirements for reimbursement of low vision rehabilitation services and devices. (20)**

**Objective 19A** Identify national, state/provincial, or local funding sources for low vision services and devices and access documentation and coding requirements that are unique to each funding source.

**Objective 19B** Comply with authorization requirements for reimbursement of low vision rehabilitation services and devices.

**Objective 19C** Demonstrate accurate and appropriate record documentation and coding relevant to low vision rehabilitation.

**Objective 19D** Participate in ongoing quality assurance record reviews.

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**Competency 20. Describe a plan for developing and maintaining a low vision rehabilitation practice.**

**Objective 20A** Describe the process and components of writing a business plan.

**Objective 20B** Evaluate the demand for low vision rehabilitation services, identify referral sources and develop strategies for establishing referral networks.

**Objective 20C** Describe the role and training of auxiliary staff in a vision rehabilitation practice.

**Objective 20D** Develop a plan outlining equipment needs and suppliers.

**Objective 20E** Design a schedule for evaluation and rehabilitation which optimizes patient care and efficiency.

\*Number in parentheses ( ) indicates the entry-level competency linked to the advanced-level competency.

## **ADDENDUM**

### **Process of Developing Advanced-Level Competencies and Learning Objectives in Visual Impairment and Low Vision Rehabilitation**

Low vision educators from schools and colleges of optometry throughout North America, as members of the Low Vision Educators Special Interest Group (LVE SIG), used a mixed consensus methodology to create the advanced-level competencies and associated learning objectives in visual impairment and low vision rehabilitation. This methodology was consistent with the process that the LVE SIG used in developing the entry-level competencies and associated learning objectives in visual Impairment and low vision rehabilitation.[1, 2] The consensus methods used were the Delphi process and a modified nominal group technique (NGT). Consensus development methods, like the Delphi process, are designed to gain opinions from members of a group and to work toward a consensus, without the influence or time delay of extended discussions and personality interplay. [3-5] The Delphi method includes distributing information on the topic in question (followed by a period of idea generation by the participants). The ideas are organized by the investigators and formatted into a rating scale questionnaire. A group of experts are asked to rate the ideas and may also be asked to comment on each idea anonymously. The investigators analyze the results of the ratings, inform each expert of the collective responses, and administer additional questionnaires (with comment sections) regarding ideas that were modified using feedback from participating experts. This process continues until consensus is achieved or the list of ideas is well-formulated.[3, 4] In addition to the Delphi method, a modified nominal group technique (NGT) was utilized by the LVE SIG as mentioned earlier. NGT also incorporates a panel of experts, but it is completed in person with a facilitator guiding the process. The experts silently generate ideas about the topic of inquiry. The ideas are listed for all to view and are discussed by the group. Then, each expert selects and ranks the top ideas in order of priority. Group discussion is held after rankings are reviewed by the facilitator and additional rankings occur. Multiple rounds can be held until a satisfactory level of agreement is reached.[6] This group used a hybrid of the two methods which negates a criticism of the Delphi method. The thrust of that criticism is that the method when used alone forces consensus by not allowing open discussion.[3]

In July 2011, the LVE SIG met at Illinois College of Optometry and formulated nineteen advanced-level competencies. In preparation for the meeting, LVE SIG Steering Committee members generated a starter set of competencies and lead members, subsequently, facilitated

two rounds of anonymous input from within the Steering Committee thru an online Delphi system (<http://armstrong.wharton.upenn.edu/delphi2/>). The specific format of the questionnaires utilized in the Delphi method was influenced by guidelines published by Kiely, Chakman, and Horton related to competency-based assessment in optometry, both in general and related to therapeutic competency.[7, 8] After lead members modified the items based on feedback given, another Delphi round was run with all LVE SIG members registered to attend the meeting. Prior to the meeting, feedback from these members was utilized to further edit the competencies. At the meeting, small groups worked collaboratively on a small number of items and, then, shared them with the full group for further discussion and refinement. Sixteen low vision educators, representing schools and colleges of optometry and the Veterans' Administration, participated in the formulation of the competencies (see list below). Learning objectives were developed with similar methodology over the next two meetings in July 2012 at Southern College of Optometry with twenty contributing participants and July 2013 at Michigan College of Optometry with twenty-one contributing participants (see list below). During the two additional meetings, eighty learning objectives were generated to compliment twenty advanced-level competencies. The twentieth competency with learning objectives was added to the original nineteen at the 2012 meeting when practice management was deemed an essential competency for advanced-level low vision rehabilitation practice. A final questionnaire with comments allowed was sent to a representative from each institution in the fall of 2015 requiring a response of approve, disapprove, or neither approve or disapprove for each competency and learning objective. Each item was approved by the majority of respondents. Items were edited a final time by a writing subcommittee based on comments from the surveys. Only edits that preserved the intent of each statement were allowed.

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