

# Geriatric Ophthalmology

A Competency-based  
Approach

Hilary A. Beaver  
Andrew G. Lee  
*Editors*

*Second Edition*



Springer

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## Foreword

The Second Edition of *Geriatric Ophthalmology: A Competency-Based Approach* is a terrific and timely book especially for trainees in ophthalmology and related eye professions. And it will serve as a handy reference for those who are fully trained yet would like to update their skills in providing high-quality care to seniors. The Second Edition provides new information and up-to-date references to the continuously emerging science related to caring for the older eye patient. This pithy well-written book has been created by leaders in the emerging field of geriatric ophthalmology. It provides insightful and practical guidance for the common age-related eye conditions and the common comorbidities such as falls, dementia, and depression that profoundly impact the evaluation, treatment, and outcome of older eye patients. Indeed, the excellent eye professional will understand the unique issues their older patients manifest. Older patients dominate health care and more so in ophthalmology than most specialties. Yet American medicine has been slow to integrate geriatric concepts and principles into specialty medicine. For this reason, practical reference books are vital.

What is so different about the older patient? Many issues, but perhaps summarized by three characteristics: (1) the presence of a unique variety of comorbidities in each patient; (2) profound but variable loss of physiological function, especially in those over 80 or so; and (3) heterogeneity created by these variabilities. Together these phenomena result in a marked increased vulnerability in the older patient. This vulnerability makes the senior more prone to missed diagnoses and complications from surgical and medical interventions. Thus the excellent eye professional must carefully consider all comorbidities, some of which may not be obvious or listed on a problem list (such as early dementia or depression). These considerations are imperative in discussing the benefits and burdens of any evaluation or treatment in an older patient. The Institute of Medicine points out this need for all clinicians who deal with adults to become knowledgeable in geriatric principles appropriate to their practice [1].

This book is a reflection, in part, of a two-decade effort of the American Geriatrics Society with ongoing support of the John A. Hartford Foundation, and in the past the Atlantic Philanthropies, to introduce geriatrics into specialty medicine. As the late, visionary geriatrics leader, David H. Solomon, MD, in his prescient Foreword to the First Edition stated: “The goal is to help all ophthalmologists to improve the quality of care they provide to the millions of patients suffering from age-associated

eye conditions.” This effort, called the Geriatrics for Specialists Initiative (GSI), has resulted, among other accomplishments, in innovations in specialty-specific graduate medical education and the creation of new knowledge through sponsoring the career development of specialists committed to the geriatric aspects of their specialty. This research and career development effort is now promulgated by an entry-level award of the NIA/NIH called Grants for Early Medical and Surgical and Specialists Transitioning to Aging Research (GEMSSTAR). The editors of this book, Hilary A. Beaver and Drs. Andrew G. Lee, have long been leaders in the GSI.

The book follows a common template based on recommendations of the Accreditation Council for Graduate Medical Education (ACGME) to focus on competencies. Chapters start with a typical clinical scenario followed by practical information on medical knowledge, clinical care, management, inter-professional communication skills, professionalism, and system-based practice and conclude with a review of the patient vignette now with an informed geriatric approach. Each chapter is inclusive and easily reviewed.

This is likely to be a book that teachers will want in the hands of their trainees, and it serves as a thoughtful and practical template for curricula.

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## Preface

We rewrote and extended this text to serve those clinicians, scientists, students, and allied health professionals who focus on the needs of older adults. This book was born from three paradigm shifts in eye care for geriatric patients. First, eye care providers are moving away from the traditional “disease-diagnose-treat” model of ophthalmic care to a holistic model based on “disease prevention, contextual diagnosis, functional assessment, treatment and rehabilitation.” Second, there is an increasing recognition that geriatric patients are not just “older adults,” similar to the recognition that children are not just “little adults”; there are recognized differences in the anatomy, physiology, pathophysiology, pharmacology, clinical presentations, and responses to disease and treatments in both of these groups. Third is the move from a “medical knowledge”-based model of care to a competency-based model.

We have structured the chapters around the six Accreditation Council for Graduate Medical Education (ACGME) core competencies in medical education. These are Patient Care, Medical Knowledge, Professionalism, Interpersonal and Communication Skills, Practice-Based Learning and Improvement, and Systems-Based Practice. These are further described in the text and create a framework for how to approach patient care in the complicated situation of an at-risk elderly patient with multiple comorbidities.

We have chosen a case-driven format to highlight the concept of competencies in medicine instead of the traditional medical knowledge-based paradigm. We hope to align with the emerging consensus for more comprehensive understanding and proficiency by eye doctors in the ACGME competencies. Each chapter begins and ends with an illustrative case that exemplifies the points of care encompassed by the competencies. We have based the chapters on the main diseases in ophthalmology, cataract, glaucoma, diabetic retinopathy, and age-related macular degeneration, all diseases of aging, and the effect of vision loss on the geriatric patient in their quality of life (QOL). This book focuses on the most common eye conditions causing treatable and untreatable vision loss, the consequences of poor vision (falls, fractures, depression, worsening dementia), and comorbidities such as hearing loss and elder abuse that compound subnormal vision. We want this text to be useful to medical students, residents, fellows, clinicians, and allied health personnel in their care of older patients with geriatric ophthalmology problems. We hope that this little book encourages you to think about geriatric patients with the competencies in mind and

with the unique issues of our elderly population. Our goal is not to make eye doctors into geriatricians but to increase awareness and expertise by eye doctors in geriatric topics. After all we all will (hopefully) end up joining this demographic someday.

For the purposes of this text, we will rely upon the ACGME definitions of the six competencies. The reader might wish to view this glossary in the beginning as the definitions for these competencies are not always intuitive or self-explanatory. The website <http://www.acgme.org> (<https://www.acgme.org/Portals/0/MilestonesGuidebook.pdf>) further describes the use of the competencies [1], and [https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/240-Ophthalmology\\_2019.pdf?ver=2018-08-21-132343-853](https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/240-Ophthalmology_2019.pdf?ver=2018-08-21-132343-853) [2] has the definitions of these competencies – patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice. We have based the chapter structure of this book on the competencies.

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# Scope of the Problem and Demographic Shift in Population: Visual Disease Incidence and Prevalence in the Elderly Population

Jennifer Doyle and Gwen K. Sterns

The increasing number of elderly persons in the United States presents a rising challenge to our medical system and especially to our ophthalmologists. We see this due to a combination of lower fertility rates, aging of the post-World War II baby boomers, and increasing life expectancies. The older population is considered to be those 65 and older. In the United States, life expectancy at age 65 has increased from 11.9 years in 1902 to 19.1 years in 2009 [1]. In 2014, there were 46.2 million people aged 65 or older, representing 14.5% of the US population or about one in every seven Americans. This percentage is predicted to increase to 21.7% of the population by 2040 [2]. According to a 2010 Census Bureau report, the age group 85 and older is projected to double from 4.7 million in 2003 to 9.6 million in 2030, and by 2050 it is expected to increase to 20.9 million [1]. This age group of 85 and older is the fastest-growing segment of the US population. Similar aging of populations can be seen internationally.

The dramatic demographic shift in the United States toward an older population has impacted the specialty of ophthalmology disproportionately, as many common eye disorders occur with increasing frequency and severity with older age. As our population ages, we are seeing an increase in age-related eye diseases (AREDs). Most of these disease processes lack early warning signs and occur gradually over the years. They can often be detected and treated if a routine comprehensive eye exam is performed. The four most common age-related eye diseases are age-related macular degeneration (AMD), cataracts, diabetic retinopathy, and primary open-angle glaucoma [3]. Early recognition and treatment can help prevent vision loss in many of these patients and thus help to prevent and reduce disability from vision loss (Fig. 1).

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### Case Vignette

*A 70-year-old African-American man with a history of diabetes mellitus and chronic open-angle glaucoma can no longer safely drive his car. Over the past few months, he damaged his car backing into his garage and hitting the garage door. He is unable to read the road signs and is complaining about driving at night and in cloudy conditions. His last appointment with an ophthalmologist was 2 years ago. He missed several follow-up appointments and stopped his drops because he did not feel that they were improving his vision. He thought because his glasses were 2 years old; he needed an updated pair so he agreed to see his wife's ophthalmologist.*

*He was told he had advanced optic nerve head cupping from his untreated glaucoma and that this could not be reversed or corrected with glasses. He was also found to have cataracts as well as background diabetic retinopathy. Some of his visual loss could have been preventable had he continued his eye care and followed recommended treatment guidelines.*



**Fig. 1** As the elderly population ages, the number of extreme elderly, or those over the age of 85, will continue to advance. Family participation in coordination of care may be particularly important to aid these patients in accessing care

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## Practice-Based Learning and Improvement

The leading causes of age-related vision loss in the United States are age-related macular degeneration (AMD), cataracts, glaucoma, and diabetic retinopathy. The National Eye Institute looked at each condition in 2010. Based on statistics at that time, they made an estimation of Americans aged 65 and over that would have the same diseases in 2050. For AMD, the estimated number of Americans was 2.1 million in 2010 and 5.4 million predicted in 2050. For glaucoma, there were 2.7 million Americans in 2010 and an estimated 6.3 million by 2050. Diabetic retinopathy totaled 7.7 million in 2010 with numbers predicted to be up to 14.6 million in 2050. Between 2010 and 2050, the number of people with cataracts would potentially double from 24.4 million to 50 million [4].

There are prevention strategies that will help to avoid this expected increase in visual impairment and blindness in our elderly population. According to the CDC, patients with diabetes should have a dilated exam at least once a year. The CDC also recommends that people at higher risk for glaucoma should have a dilated exam every 2 years. Those at risk for glaucoma include all African-Americans aged 40 years or older, everyone older than age 60, and people with a family history of glaucoma [5]. Blood pressure control, glycemic control, and smoking cessation are other ways to lead to a reduction in vision loss [6].

This gentleman was at a high risk for loss of vision due to age and diagnosis of both diabetes and glaucoma. If his primary care provider had requested the patient to have proof of yearly eye examination, it may have helped detect the disease earlier. Alternatively, if the ophthalmologist had informed the primary care physician of the patient's missed appointments, it may have prompted earlier intervention. As doctors, we have to communicate with each other and work together to inform and educate patients about the importance of eye exams. It is also the responsibility of the patient to keep scheduled appointments and comply with recommendations made by physicians. In a high-risk population, such as those with dementia, the caregiver should make an additional effort to reschedule missed examinations and set up a reminder call system for those noncompliant patients.

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## Patient Care

The Eye Diseases Prevalence Research Group reported that approximately 1 in 28 Americans over age 40 years is diagnosed with low vision or blindness [6]. "Low vision" encompasses a variety of visual impairment problems. Low vision refers to uncorrectable vision loss that affects people's ability to participate in activities of daily living and/or things that they enjoy. It is more than just an acuity test or loss in field of vision, which separates it from "legal blindness" which does have a standardized definition to include acuity and field testing.

The patient in the clinical vignette has numerous problems affecting his vision. He has lost vision due to his chronic open-angle glaucoma, diabetes, and cataracts. Each one needs to be addressed. Treatment options for glaucoma include topical