The Ophthalmic Assistant

A Text for Allied and Associated Ophthalmic Personnel

TENTH EDITION

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Table of Contents

Instructions for online access

Cover image

Title Page

Copyright

Foreword: An all purpose resource

Foreword: How paraoptometric assistants and optometry students can benefit from this textbook

Foreword: challenges for opticianry

Foreword: How this textbook can be a valuable tool for physician assistants

Preface

List of Contributors

List of Reviewers

Dedication

Section One: Basic Sciences
Chapter 1: Anatomy of the eye

Surface anatomy
Tear film
Cornea
Sclera
Uvea
Angle structures
Lens
Vitreous
Retina
Optic nerve
Visual pathway
Ocular muscles
Summary

Chapter 2: Physiology of the eye

Alignment of the eyes
Looking straight ahead (fixation)
Locking images (fusion)
Eye movements
Looking toward a close object
Seeing in depth
Focusing at near (accommodation)
Transparent pathway for light
Retinal images
Intraocular pressure
Tears
Color vision

Chapter 3: Optics

Physical optics
Geometric optics
Spherical aberration
Chromatic aberration
Cylinders
Transposition
Practical aspects of optics
Optical illusions

Chapter 4: Pharmacology
General principles
Complications of locally administered drugs
Prescription writing
Autonomic drugs
Drugs that lower intraocular pressure
Anesthetics
Antiallergic and antiinflammatory agents
Contact lens solutions
Stains
Side effects of systemic medication

Chapter 5: Microbiology
Bacteria
Viruses
Fungi
Other microbes
Clinical indications for smears and cultures
Taking smears
Making a stain
Specimen collection for culture
Other aids to identify organisms
Summary

Section Two: Clinical Practice

Chapter 6: Office efficiency and public relations
How to make patients happy
Scheduling appointments
Booking the arriving patient
The reception room
Running late
Scribes
Making future appointments
Financing
Recall cards
Automated voice machines
Filing
Electronic medical and health records
Prescription pads
Office equipment
Personal qualities for improved office efficiency
Improving the patient experience through service recovery
Secretarial duties
Handling the ophthalmologist’s schedule
Handling sales representatives
Handling mail
Medical ethics
In the physician’s absence
Aids in public relations
Patient surveys
Publicity
Advertising
Summary

Chapter 7: History taking
Organization of a history
History procedure
General information
Chief complaint
History of present illness
Past health, medications, and allergies
Family history
Tips in history taking
Scribes
Summary

Chapter 8: Preliminary examination
Vision assessment
Measurement of glasses
Accommodation
Convergence
Color vision
Depth perception
External examination
Examination of the ocular muscles
Instillation of eyedrops and ointment
Ophthalmoscopy
Visual fields
Summary

Chapter 9: Visual function and impairment
Introduction
Aspects of vision loss
Types of vision
Luminance versus illumination
Measurement and assessment of visual loss
Aspects of visual impairment
Visual functions
Why perform visual screening
Testing
Everyday visual experience
Interventions for rehabilitation

Chapter 10: Understanding ophthalmic equipment
Equipment used for refraction
Equipment used to detect muscle imbalance
Instruments used to determine power of lenses
Instruments used to examine the interior of the eye
Instruments used to study the anterior segment of the eye
Instruments used to examine the angle structures of the eye
Instruments used to assess the cornea
Instruments used to determine tear flow
Instruments used to measure intraocular pressure (tonometer)

Special instruments
Computerized corneal topographic analysis
Diagnostic ultrasound: A-scan and B-scan
Radioactive phosphorus
Electroretinography and electrooculography
Lasers

Summary

Chapter 11: Refractive errors and how to correct them

Emmetropia
Ametropia
Refractometry and refraction
Retinoscopy
Autorefractors
Subjective refining of refraction
Anisometropia
Aniseikonia
Aphakia
When to refract after cataract surgery
Presbyopia
Complaints: how to anticipate them
Glasses checks and how to handle them: 12 key points

Summary

Chapter 12: History of spectacles
Antiquity
The beginning
Early eyeglasses
Rivet spectacles
Manufacture
The frame
Scissor spectacles and fork glasses
Single lenses and monocles
Spring spectacle frames
Temple pieces and curved earpieces
Lorgnettes
Goggles and sunglasses
Glasses in the Far East
Summary

Chapter 13: Facts about glasses
   History
   Frames
   Dispensing spectacle frames
   Lenses
   Production of prescription lenses
   Care of glasses

Chapter 14: Rigid contact lenses: basics
   Development
   Optics
   How the corneal contact lens works
   Terminology
   Designs
   Patient examination
   Fitting corneal contact lenses
   Evaluating contact lenses
   Insertion and removal techniques
   Care
Chapter 15: Soft contact lenses

History of hydrophilic lenses
Advantages
Disadvantages
Patient evaluation
Manufacture
Inventory versus diagnostic lenses
Lens inspection
Disinfection
Cleaning
Insertion and removal techniques
Taco test
Precautions for wear
Wearing schedules
Thin and ultrathin lenses
Correction of astigmatism
Medical uses
Extended-wear lenses
Disposable lenses
Innovations in design
Contact lenses in industry
Special occupations
Common questions and answers
Role of the ophthalmic assistant

Chapter 16: Advanced techniques in soft and rigid contact lens fitting

Abnormal symptoms and signs
Follow-up keratometry
Special lenses
Contact lenses for keratoconus
Role of corneal topography
Manufacturing and modification
Gas-permeable lenses
Hydrogel tinted contact lenses
Recommendations for selection of rigid or soft contact lenses

Chapter 17: Dry eyes
The tear film
Function of the tears
Tear film assessment
Role of blinking
Tests for dry eyes
Instructions on taking samples
Test for meibomian gland dysfunction
Tear physiology
Grading of dry eyes
Symptoms
Physiology
Sjögren’s syndrome
Management of the dry eye patient: treatment
Summary

Chapter 18: Managing a contact lens practice
Patient management
Planning
Understanding your organization
Finances
Marketing
Advertising
Staff development
The contact lens practice staff
Office equipment and space
Ongoing care

Chapter 19: Visual fields

Preliminary procedures
Facilities for field testing
Confrontation test
Perimeters
Measuring a field on the perimeter
Charts
Special perimetric techniques
Normal visual field
Pathologic defects in the visual field
Contraction of the visual field
Hysterical visual field
Summary

Chapter 20: Automated visual field testing

Differences between manual and automated perimeters
Understanding threshold
Threshold testing
Frequency doubling Technology
Units of measure
Automated perimetry: basic rules of testing
Analysis software and printouts
Summary

Section Three: Common Clinical Eye Problems

Chapter 21: Ocular injuries

Diagnosis of ocular injury
Conjunctival and corneal foreign bodies
Intraocular foreign bodies
Contusion of the eyelids: black eye
Contusions of the globe
Penetrating eye injuries
Lacerations of the lids
Fractures of the orbit
Chemical injuries
Injuries caused by sports
Injuries caused by radiant energy
Prevention of traumatic injuries to the eye
First-aid care by the ophthalmic assistant
Computed tomography scans (also see Chapter 40)
Magnetic resonance imaging

Chapter 22: The urgent case
Ocular emergencies
Urgent case: to be seen within the hour
Urgent case: to be seen the same day
Temporal arteritis
Priority case: to be seen within days
Summary

Chapter 23: Common eye disorders
Conjunctiva
Cornea
Eyelids
Lacrimal apparatus

Chapter 24: Common retinal disorders
Retinal artery occlusion
Retinal vein occlusion
Diabetic retinopathy
Retinitis pigmentosa
Retinopathy of prematurity
Retinoschisis
Retinal breaks
Retinal detachment
Central serous chorioretinopathy
Changes in the retina from concussion
Foreign body in the eye
Solar maculopathy (eclipse burns of the retina)
Age-related macular degeneration
Ocular manifestations of common systemic diseases
Infectious diseases of the retina and choroids
Malignant melanoma
Retinal imaging modalities: fluorescein angiography

Chapter 25: Glaucoma
Acknowledgments
Classification
Primary open-angle or chronic glaucoma
Secondary glaucoma
Primary angle-closure glaucoma
Congenital glaucoma
Diagnosis
Treatment
Management of the patient by the ophthalmic assistant
Summary

Chapter 26: Uveitis
Introduction
Classification of uveitis
Approach to the patient with uveitis
Treatment of uveitis

Chapter 27: Examination of the newborn, infant, and small child
Approach to parent and child
Vision assessment
External examination
Instillation of eyedrops
Refraction
Retina and optic nerve examination
Common pediatric disorders

Chapter 28: Maintenance of ophthalmic equipment and instruments

- Applanation tonometer
- Noncontact tonometer
- Lensmeter
- Keratometer
- Slit-lamp biomicroscope
- Phoropter (Figure 28.4)
- Projector

Section Four: Surgical Techniques

Chapter 29: Aseptic technique and minor office surgery

- Aseptic technique
- Minor office surgery
- Complications during and after office surgery

Chapter 30: The operative patient

- Arrangements for the operation
- Preparing the child and parent for surgery
- Preparing the adult for major ocular surgery
- Eye surgery
- Types of anesthesia

Chapter 31: Highlights of ocular surgery

- Strabismus surgery
- Cataract surgery
- Glaucoma surgery
- Retinal detachment surgery
Chapter 32: Surgical correction of presbyopia

Introduction
The underlying problem
Surgical corrective procedures
Summary

Chapter 33: Assisting the surgeon

Bedside ophthalmic assistant
Operating room assistant
Amoric environment
Care and handling of surgical instruments
Operating room microscope
Ethical behavior of the ophthalmic assistant
Medicolegal tips

Chapter 34: Lasers in ophthalmology

Laser theory
Pumping and spontaneous emission
Stimulated emission
Types of lasers and their clinical use
Safety in the laser clinic
Future applications of laser technology

Chapter 35: Ambulatory surgery
Ambulatory surgery centers
Tips on medical/legal protection
Preparation for admission
Admission for surgery
Postoperative recovery
Summary

Chapter 36: Refractive surgery
Basic principles of refractive surgery
Photorefractive keratectomy, phototherapeutic keratectomy, and laser in situ keratomileusis
Additional procedures
Surgery: patient selection, counseling, and examination
Summary

Chapter 37: Corneal collagen crosslinking in the management of ectatic diseases
Keratoconus
Pellucid marginal degeneration
Corneal ectasia following LASIK
Development of Corneal Crosslinking
Basic research on safety of CXL
Technique of CXL
Contraindication to CXL
Clinical outcomes of CXL
Topographically linked ablation
Intrastromal corneal rings
Potential future advances in CXL
Summary

Chapter 38: Wavefront aberrations and custom ablation

Section Five: Ocular imaging

Chapter 39: Optical coherence tomography
Chapter 40: Computerized corneal topography

Introduction and basics

Clinical Uses

Corneal topography analysis in refractive surgery

Corneal topography and cataract surgery

Corneal topography and contact lens fitting

Keratoconus

Summary

Chapter 41: Specular microscopy

Specular microscope

Endothelial specular photomicrography

Chapter 42: Diagnostic ultrasound

Acknowledgment

General considerations and conventional ultrasound diagnoses

Ultrasound biomicroscopy

Section Six: Special procedures
Chapter 43: Ocular motility, binocular vision, and strabismus

- Evaluation of strabismus
- Retinal correspondence
- Amblyopia
- Eccentric fixation
- Treatment of strabismus
- Summary

Chapter 44: Ophthalmic photography

- Photographic terms
- Digital imaging
- External photography
- Photo slit-lamp biomicrography
- Goniography
- Endothelial specular photomicrography
- Fundus photography
- Fluorescein angiography
- Video recording
- Image presentation
- Summary

Chapter 45: Visual aids for the partially sighted

- Factor of age
- Low-vision optical devices
- Optical aids
- Types of magnifying devices (Figures 45.2–45.5)
- Lighting
- Nonoptical visual aids
- The partially sighted child
- Selection of a visual aid

Section Seven: Community ocular programs
Chapter 46: Blind persons in the modern world

- Blindness defined
- Partial sight and blindness
- Recent vision loss
- Total blindness
- The blind child
- Rehabilitation
- Available aids

Chapter 47: Art and the eye

- Dedication
- El Greco (1541–1614)
- The eyes of the Impressionists
- Claude Monet (1840–1926)
- Vincent van Gogh (1853–1890)
- Edgar Degas (1834–1917)
- Camille Pissarro (1830–1903)
- Mary Cassatt (1844–1926)
- Summary

Chapter 48: Reading problems in children

- Acknowledgment
- Whose problem is it?
- Terminology
- Act of reading
- Types of slow readers
- Characteristics of the child with a reading disability
- Role of brain and eye dominance
- Neurologic factors
- Educational considerations
- Problems at home
- Conditions that are confused with a learning disability
- Treatment
Section Eight: Expanded roles in eye care delivery

Chapter 50: Computers in ophthalmic practice
- Computer basics
- Computer components
- Computer tasks
- Computer-controlled ophthalmologic equipment
- Special ophthalmologic applications
- Summary

Section Nine: Role of assistants in eye care

Chapter 51: Allied health personnel in ophthalmology
- Clinical roles for ophthalmic medical personnel
- Education of ophthalmic medical personnel and the certification process
- The certification process of ophthalmic medical personnel
- Government recognition of ophthalmic training and certification programs
- Recertification
- Ophthalmic medical personnel subspecialty areas in the JCHAPO family
- Ophthalmic medical personnel allied with JCAHPO
- Independent allied health personnel in visual science
- The future of allied health personnel in ophthalmology

Chapter 52: Ophthalmology ethics
Introduction
Informed consent
Confidentiality
Truth telling
Boundary issues
Multiculturalism
Vulnerable populations
Pediatric ethics
Futility
Medical error
Impaired physicians and ophthalmic professionals
Resource allocation
Research ethics
Innovation
Genetics ethics
Advertising
Fee splitting
Medical industry
Cosmetic surgery
Financial issues
Trainees in patient care
Resolution of ethical dilemmas

Chapter 53: Ophthalmic allied health personnel: scope of practice

Introduction
Defining scope of practice
Licensure and certification
Determining the scope of practice
Insurance risk and malpractice
Privacy practices
Treatment
Payment
Provider internal operations
Law enforcement
Public health reporting
Ethics and scope of practice
Summary

Chapter 54: Testing and certification of ophthalmic skills
   Introduction
   Knowledge-based examinations
   Examination format and administration
   Skill-based examinations
   Summary

Chapter 55: The development of ophthalmic assistants in North America
   Introduction and history
   Nature of the work
   Working conditions

Chapter 56: Ophthalmic assisting in the international community and in the prevention of blindness
   Acknowledgments
   Introduction
   VISION 2020: The Right to Sight
   Latin America
   Sub-Saharan Africa
   North Africa and the Middle East
   South and Southeast Asia
   Ophthalmic assistants elsewhere
   Summary

Section Ten: Atlas of clinical ophthalmic disorders

Chapter 57: Atlas of common eye diseases and disorders
   References to Figures
Glossary

Appendices

Appendix 1 Ocular emergencies
Appendix 2 Following universal precautions
Appendix 3 Principles of informed consent
Appendix 4 Abbreviations and symbols in clinical use
Appendix 5 Metric conversion (US)
Appendix 6 Optical constants of the eye

Supplementary resources

Index

Appendices

Appendix 7 Office supplies in common use
Appendix 8 Estimating visual loss
Appendix 9 Vision and driving
Appendix 10 Translations of commonly asked questions and commands
Appendix 11 Diopters to millimeters of radius conversion tables
Appendix 12 Vertex conversion table
Appendix 13 Diopters of corneal refracting power to millimeters of radius of curvature
Appendix 14 Compensation for effect of vertex distances when plus lens is moved away from the eye
Appendix 15 Compensation for effect of vertex distances when plus lens is moved toward the eye
Appendix 16 Dioptric curves for extended range of keratometer
Appendix 17 Skill checklists
advised to check the most current information provided (i) on procedures featured or (ii) by the manufacturer of each product to be administered, to verify the recommended dose or formula, the method and duration of administration, and contraindications. It is the responsibility of practitioners, relying on their own experience and knowledge of their patients, to make diagnoses, to determine dosages and the best treatment for each individual patient, and to take all appropriate safety precautions.

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Foreword: An all purpose resource

The Ophthalmic Assistant, first published in 1968, has become the classic text for ophthalmic assistants and associated personnel over the past 50 years. The material presented is a mini-textbook of ophthalmology and eye care covering basic sciences, new testing procedures, new equipment, and the involvement of associated allied health personnel in the community.

In this tenth edition, Harold Stein and Raymond Stein of Toronto, Canada, are again joined by Melvin Freeman of Seattle, Washington and several new contributors in vision function and impairment and uveitis. The new chapters on the Dry Eye and an Atlas of Clinical Disorders is of particular importance. This text is well illustrated and written in a style that is easy to read and understand. Associated personnel can learn comfortably and easily. The Ophthalmic Assistant contains basic information on everything from testing vision and glaucoma to common surgical procedures, both minor and major, with an emphasis throughout on technical considerations. Refractive surgery is given special emphasis and the newer diagnostic modalities of ocular imaging are included. The authors’ knowledge of the variety of information ophthalmic assistants need to know to perform their tasks comfortably, capably, and appropriately is obvious and impressive.

This text is of value to all ophthalmic personnel and associated health personnel who work with patients. By reviewing, discussing, and understanding the material in this book, they will be able to apply the valuable information contained in this text to their responsibilities in the best interest of patient care. Complete ophthalmologic care can best be provided when all team members are secure in their knowledge of ocular problems and clear in their roles and responsibilities. The delivery of care by teams is of increasing importance as the aging population is growing more rapidly than the capacity of existing ophthalmologists to provide care for it alone.

Previous editions of The Ophthalmic Assistant have been used as the standard text by ophthalmic assistants the world over, and this enhanced edition, with new and updated information and color illustrations and photographs, will continue this tradition.

Bruce E. Spivey, MD, Immediate Past President, International Council of Ophthalmology; Founding CEO, American Academy of Ophthalmology; Chairman Emeritus of Ophthalmology, California Pacific Medical Center, CA, USA; Past President, American Ophthalmology Society; Past President, American Board of Medical Specialties; Past President, Council of Medical Specialty Societies
Foreword: How paraoptometric assistants and optometry students can benefit from this textbook

*The Ophthalmic Assistant* was originally written in 1968. Over the past nine editions and 50 years it has expanded to cover all the newer areas of eye care delivery. This updated edition includes new tests, illustrations, and photographs, as well as a diversity of new information. There are excellent illustrations throughout the tenth edition, as well as both color and black-and-white photographs interspersed throughout each chapter. It is essentially a mini-textbook in eye care delivery. It can benefit both paraoptometric assistants and optometry students. It can also benefit optometrists who are interested in the latest information on refractive surgery, wavefront technology, glaucoma, and surgical techniques that are used in the current practice of ophthalmology. This volume includes chapters devoted to cross-linking and optical coherence tomography. The text is easy to read, with excellent artwork and information interspersed throughout all the chapters.

The authors, Dr. Harold Stein, Dr. Raymond Stein, and Dr. Melvin Freeman, are well known to their peers in the educational field. While the book is mainly written by these three authors, there are many chapters contributed by specialists in various fields of eye care. The text includes close to 1000 pages of high-quality illustrations, many of which are original. This is an excellent vehicle for dissemination of information.

The text is divided into nine sections: (1) basic sciences, (2) clinical practice, (3) Common Clinical Eye Problems, (4) surgical techniques, (5) ocular imaging, (6) special procedures, (7) community ocular programs, (8) expanded roles in eye care delivery, (9) role of assistants in eye care, and (10) a newly added color atlas of eye disease and disorders. In addition, there is an extensive appendix with some material and tables not found in other textbooks.

The basic sciences section includes anatomy, physiology, optics, pharmacology, and microbiology related to the eye. The pharmacology chapter gives a considerable amount of information on newer medications that are used today.

The clinical practice section includes chapters on history taking and office efficiency as well as preliminary ocular examination. It introduces refractive errors and how to correct them along with automated refractors and their use in clinical practice. There are chapters on the basic principles of spectacles. There are three chapters devoted to rigid and soft contact lenses and advanced
techniques in rigid and soft contact lens fittings. Visual fields, along with automated visual field testing, have been included, as well as chapters applied to clinical practice.

Section Three focuses on common clinical eye problems, such as ocular injuries, urgent cases, and common eye and retinal disorders and diseases. Glaucoma has a special chapter and there is a chapter on examination of children.

Section Four covers surgical technique, which includes management of the operative patient and highlights of major ocular surgery, management of laser surgery, ambulatory surgery, and refractive surgery. Those chapters related to ocular surgery and refractive surgery are of value to optometrists in comanagement situations of cataracts and refractive surgery, providing a basic text on understanding what problems may occur.

Section Five deals with ocular imaging, including ocular coherence tomography, computerized corneal topography, specular microscopy, and diagnostic ultrasound.

The special procedures described in Section Six include ocular motility and binocular vision, as well as an excellent chapter on ophthalmic photography and a chapter on low vision aids.

In Section Seven, there is a chapter on the latest techniques in cardiopulmonary resuscitation.

This textbook is a condensed version of all aspects of eye care and eye care delivery. The authors have provided both a reference book for those using the index to find some special disease or disorder and also a training book for those needing to identify areas of special concerns. In addition to individual educational benefits, the book serves as a valuable library purchase to have available on the latest in ophthalmic practice and diagnostic testing.

Desmond Fonn, DipOptom MOptom FAAO, Distinguished Professor Emeritus, School of Optometry and Vision Science, University of Waterloo, Waterloo, ON, Canada
Foreword: challenges for opticianry

Developments in ophthalmology continue apace, and the authors, Drs. Harold Stein and Raymond Stein of Canada and Dr. Melvin Freeman of the United States, are authorities in providing easy-to-read information and illustration for allied health personnel. The book is used in many teaching programs and has one of the largest worldwide text sales in ophthalmology.

Opticians are part of an allied health group that is allied to ophthalmology. They provide service in the eye care field by being end distributors of spectacles and contact lenses for the public. Part of their responsibility is the understanding, in general, of what is being achieved today in the field of ophthalmology.

The field of ophthalmology is truly amazing. Tremendous outcomes in patient care are being achieved on a daily basis in offices, clinics, and operating rooms throughout the world. The results have a very important and positive impact on the lives of the patients and their quality of life.

Members of the public often question opticians about eye care and what can be achieved today in the eye care field. Some are looking for recommendations and some are looking for positive answers to some of their symptoms and concerns. They often regard the optician as someone who can spend more time with them than their surgeon and be helpful in answering questions.

Some of these accomplishments in ophthalmology are in the area of refraction; some are in the area of medical treatment of such diseases as acanthamoeba, conjunctivitis and glaucoma. Some are in the new surgical techniques of cataract surgery, glaucoma and lasers. Sophisticated measurements such as A-scans, imaging, wavefront aberrometers, and topography are presented clearly. Other opticians may be interested in the areas of contact lenses and the problems that occur in their management.

This text is intended to fill a role for ophthalmic assistants, optometrists, and opticians in providing clinical, scientific information on the vast smorgasbord of concerns that occur in the eye care field. It is essentially a mini-textbook of ophthalmology in a single soft-cover volume. The book is well illustrated with original illustrations and color photographs of disease processes. There are sections devoted to common eye and retinal disorders that occur. Numerous surgical techniques are illustrated, covering strabismus and cataracts, as well as refractive surgery.

The impact of refractive surgery in this decade has been enormous. It is therefore important to understand how it works, including LASIK, PRK, LASEK, lensectomies, and the phakic intraocular contact lens. New bifocal implants that will correct presbyopia have become a new threshold of surgical
expertise. The chapters will reveal both complications and positive results that occur.

There are special chapters devoted to low-vision aids and managing the blind patient. There are excellent chapters on photography for those who are interested in this field. There is a chapter devoted to ethics that is applicable to all those who deal with the public.

Four chapters are devoted to rigid contact lenses, soft contact lenses, advanced contact lens fitting, and the management of a contact lens practice. These cover complications and managing the dry eye patient. Although this does not compare with *Fitting Guide for Hard and Soft Contact Lenses*, written by the same authors, it does provide a basis for management of a contact lens practice.

The appendix is outstanding, with materials gleaned from many areas of research which will serve the optician well.

The well-designed illustrations and photographs that are provided throughout the text are of great help in assimilation of the information and thus contribute greatly to the usefulness of the text.

Opticians who are knowledgeable about the expanding testing, imaging, and surgical outcomes of ophthalmology will be better able to understand the concerns of some members of the public encountered in day-to-day practice. They will understand complications of contact lenses as well as complications that may follow surgery. They will understand the expanding role of refractive surgery in today’s environment and use of the sophisticated testing instrumentation required. This information will help in binding the optician to the public.

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32
Foreword: How this textbook can be a valuable tool for physician assistants

Since the first program was established in 1965, physician assistants (PAs) have assumed an increasingly important role in the delivery of health care in the United States. According to the Physician Assistant History Society, there are currently 210 PA programs in the United States and more than 108,000 individuals who have earned certification through the National Commission on Certification of Physician Assistants (NCCPA).

PAs are employed in a wide variety of health care settings including primary care offices, emergency departments, hospitals, and in nearly every medical and surgical specialty. Although only a small number of PAs are working in ophthalmic practices, every PA who treats patients encounters refractive errors and ocular disorders.

The scope of practice for PAs varies from state to state; however, PAs are able to perform many functions traditionally performed by physicians. In ophthalmic practices, besides addressing patients’ presurgical medical needs, PAs assist in surgery, administer intravitreal injections, provide pre-and postop surgical care, and manage many aspects of comprehensive ophthalmology.

Historically the curriculum in PA programs has given little attention to ocular disorders and treatments, with the main message being to refer to a specialist. However, awareness of the ocular implications of systemic diseases is vital to a holistic approach to patient care. For example, understanding the implications of a patient’s 12-year history of diabetes on his or her retinal vasculature is imperative for the PA who is addressing the patient’s overall health.

Since 1968 The Ophthalmic Assistant has been an excellent resource for those working in the field of eye care at all levels. Over the course of multiple editions, the textbook has been revised and expanded to remain relevant in a field that has seen exponential growth over the past several decades. Earlier editions of the textbook have included information on basic sciences, clinical practice, surgical techniques, ocular imaging, special procedures, community ocular programs, expanded roles in eye care delivery, and the role of assistants in eye care. There is a very detailed appendix that contains valuable reference materials. The tenth edition includes chapters with case studies of ophthalmic disorders and an atlas of common ocular conditions.

This text is laid out in a logical fashion and written in language that is understandable to those with limited knowledge about the eye. It has been the main textbook for nearly 20 years in our clinical ophthalmic assistant program. Students find it easy to understand and keep it well after graduation as the
foundation for their professional library. It will make an excellent addition to the reference library of the practicing PA.

Barbara T. Harris, PA MBA COT OSC, Director, Ophthalmic Medical Assistant Program, Department Chair Health Sciences, Caldwell Community College and Technical Institute, Past President, Consortium of Ophthalmic Training Programs (COTP), Past Chair, PA Section North Carolina Medical Society (NCMS), Past Board Member Joint Commission on Allied Health Personnel in Ophthalmology (JCAHPO)
Preface

Harold A. Stein
Raymond M. Stein
Melvin I. Freeman

Many ophthalmic assistants and technicians have no opportunity for formal training and learn their duties on the job. Experience and repetition alone may become excellent teachers. To paraphrase Sir William Osler, experience without knowledge is to sail an uncharted course, but knowledge without experience is never to go to sea at all. *The Ophthalmic Assistant* was written expressly for ancillary ophthalmic workers who assist eye doctors in the day-to-day care of eye patients. This book was designed to fill a vacuum in our community by providing a training basis for eye care personnel and meeting their needs for a reference source. The textbook has become a textbook of practical ophthalmology.

Originally published over 50 years ago in 1968, *The Ophthalmic Assistant* has grown in size by over 300%. It became necessary to continually expand the textbook to reflect the explosive growth of ophthalmic knowledge and ophthalmic technology. Over the years we broadened the scope of the textbook to provide not only practical technical information but also background information on ophthalmic disease processes and surgical procedures. In this tenth edition, we attempted to keep pace with the ever-expanding new developments in the field of eye care by updating each chapter. At the same time, we have tried to retain the original concept: to provide a concise, up-to-date review of the field of eye care that is easily readable, interesting, and illustrated.

*The Ophthalmic Assistant* provides reliable and competent information on eye care before and after regular visits to offices, clinics, and hospitals. Ophthalmic assistants must be familiar with sterile procedures, types of emergencies, and many technical aspects of eye care. This knowledge can increase the ophthalmic assistant’s efficiency, ensuring that all details of diagnostic work-up and regimen are understood and carried out. Although *The Ophthalmic Assistant* emphasizes the paramedical functions of the ophthalmic assistant and not the secretarial duties, we recognize that both positions in a small office may have to be carried out by the same individual.

We purposely avoided controversial subjects and highly specialized technical areas because of the varying degrees of training of eye assistants throughout the world. Rather, the emphasis is placed on illustrations and photographs that
illuminate and clarify ophthalmic technology and foster interest wherever possible.

While the main thrust of this book is toward the ophthalmic assistant, we hope the clarity, organization, and readability of the book will attract others in the ophthalmic community. To accommodate these readers, we included sections for the hospital ophthalmic assistant who aids in surgery, for the nurse who aids in the surgical and postoperative care of patients after surgery, and for the optometrist and their assistants who should have knowledge in recognizing diseases and disorders, particularly glaucoma and retinal disorders. We also include material of interest to those individuals working for optical and associated pharmaceutical companies. We have added and updated material for contact lens technicians, with a more detailed review to be found in our companion book, *Fitting Guide for Hard and Soft Contact Lenses*, fourth edition, published by Mosby. A companion book, *Ophthalmic Terminology*, third edition, published by Mosby, serves to expand the glossary and is designed for learning vocabulary and the origins of words. An additional publication, *Ophthalmic Dictionary and Vocabulary Builder for Eye Care Professionals*, fourth edition, authored by H.A. Stein, R.M. Stein, M.I. Freeman, and J.S. Massare and published by Jaypee-Highlights Medical Publishers, is also available for learning vocabulary and original words.

Refractive surgery and computerized corneal topography are two areas of eye care delivery that generate great clinical interest. The tenth edition expands on the chapter on refractive surgery with new emphasis on invasive surgery, as well as the section on computerized corneal topography. This edition also includes many color photographs as well as replacements in color of many black-and-white photographs.

We miss the influence and contributions of our previous coauthor, Dr. Bernard Slatt, whose premature passing away came shortly after the seventh edition was published. His memory gave us input, motivation, and direction in continuing this work.

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New chapters have been added for the tenth edition on dry eyes, uveitis,
visual impairment and disabilities, and an atlas of common ocular conditions.

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