

# Medical Management of Glaucoma

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**Springer** Healthcare

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# Author biographies

**Keith Barton, MD** is a Consultant Ophthalmologist at the Moorfields Eye Hospital, and is an Honorary Reader for the Department of Epidemiology at the Institute of Ophthalmology, University College London. Additionally, Dr Barton is the Chairman of the International Glaucoma Association, a registered charity for people with glaucoma.

Keith Barton is a Glaucoma Specialist whose research interests include the surgical management of glaucoma, specifically secondary glaucoma and the use of aqueous shunt devices, and the management of cataract in glaucoma.

**Roger A Hitchings, MD** is an Honorary Consultant Ophthalmologist at Moorfields Eye Hospital, London and Professor Emeritus in Glaucoma and Allied studies at the University of London. He was Director of Research and Development at Moorfields Eye Hospital.

As a glaucoma specialist, he has a special interest in optic nerve imaging, visual field progression, glaucoma surgery, and normal tension glaucoma. He has also carried out research into the effect of topically applied medications on the conjunctiva and the success of glaucoma surgery. He has authored and edited 4 books, including the *Atlas of Clinical Ophthalmology* (with Dr David J Spalton and Dr Paul Hunter; winner of “BMA Medical Book of the Year”, 2005) and the two volume book *Glaucoma* (coeditors Dr Tarek Shaarawy, Dr Mark B Sherwood, and Dr Jonathan G Crowston), 15 book chapters, and over 200 peer-reviewed papers on glaucoma.

Roger Hitchings developed the glaucoma department at Moorfields Eye Hospital into the largest in the UK and one of the largest in the world. It now functions with ophthalmologists and scientists, representing all aspects of subspecialization in glaucoma.

He is currently past president of the European Glaucoma Society, and Founder Member of the World Glaucoma Association (AIGS).

As Director of Research and Development, he had responsibility for establishing the Clinical Trials Unit and the associated Reading Centre. The latter has become one of the key centers for the evaluation of ophthalmic clinical trials in the UK. He was responsible for developing the Royal College of Ophthalmologists' 5 year Strategic Plan for Eye research, which set out research goals in the specialty.

He has delivered a number of invited lectures, including:

- 1997 “Duke Elder Lecture” Annual Meeting Royal College of Ophthalmologists
- 2000 Shaffer Lecture American Academy of Ophthalmology Annual meeting
- 2001 Guest Lecturer honoring George L Spaeth at the American Glaucoma Society
- 2002 Ida Mann Lecture Oxford
- 2006 Goldmann Lecture Glaucoma Research Society Vancouver
- 2008 Bowman Lecture Royal College of Ophthalmologists
- 2009 Bartisch Lecture University of Dresden

**Donald L Budenz, MD, MPH** is the Kittner Distinguished Professor and Chair of the Department of Ophthalmology, University of North Carolina in Chapel Hill. Dr Budenz completed medical school at Harvard and was trained in ophthalmology at the University of Pennsylvania's Scheie Eye Institute. He performed a glaucoma fellowship at the Bascom Palmer Eye Institute, University of Miami School of Medicine where he subsequently became Professor of Ophthalmology and Associate Medical Director. He completed a Master in Public Health at the Johns Hopkins Bloomberg School of Public Health. Dr Budenz has authored over 130 peer reviewed scientific articles, numerous book chapters, and a single-authored textbook entitled *Atlas of Visual Fields*. His areas of research include medical testing for glaucoma, epidemiology of eye disease, and clinical trials in glaucoma surgery.



# Abbreviations

<b>AAO</b>	American Academy of Ophthalmology
<b>APAC</b>	Acute primary angle-closure
<b>AGIS</b>	Advanced Glaucoma Intervention Study
<b>CAI</b>	Carbonic anhydrase inhibitors
<b>CCT</b>	Central corneal thickness
<b>CPAC</b>	Chronic angle-closure or chronic primary angle-closure
<b>CPACG</b>	Chronic primary angle-closure glaucoma
<b>DOPP</b>	Diastolic ocular perfusion pressure
<b>GAT</b>	Goldmann applanation tonometry
<b>GON</b>	Glaucomatous optic neuropathy
<b>IOP</b>	Intraocular pressure
<b>MAOI</b>	Monoamine oxidase inhibitors
<b>NPG</b>	Normal-pressure glaucoma
<b>NTG</b>	Normal-tension glaucoma
<b>OHT</b>	Ocular hypertension
<b>ORA</b>	Ocular response analyzer
<b>PACG</b>	Primary angle-closure glaucoma
<b>PGA</b>	Prostaglandin analogue
<b>POAG</b>	Primary open-angle glaucoma
<b>RGC</b>	Retinal ganglion cells
<b>SWAP</b>	Short wavelength automated perimetry
<b>WHO</b>	World Health Organization

# Foreword

This single volume textbook provides a short introduction to the ophthalmic subspecialty area: glaucoma. It does not claim to be comprehensive, but sets out to give the ophthalmology resident and other healthcare professionals a guide to the subject. It is to be hoped that it will stimulate the reader to look at original sources of information in specific areas within the subspecialty, and, hopefully generate interest for the them to develop specialist expertise of their own.

## Introduction

### Definition of glaucoma

The term glaucoma encompasses a number of diseases in which there is a progressive loss of retinal ganglion cells (RGC) with corresponding visual field loss that results in a characteristic “cupped” appearance in the optic nerve head. Glaucoma results in an irreversible loss of visual field, usually starting in the periphery (Figure 1.1) [1], and sometimes affecting the central visual field first (Figure 1.2), but leading to varying degrees of visual disability and, in a small but significant proportion of patients, blindness.

This damage to the optic nerve is often but not always associated with an increase in intraocular pressure (IOP). In the past, the term glaucoma was often confined to patients with IOP elevation; however, generally this is no longer the case because it is recognized that the role played by IOP varies from patient to patient. Some optic nerves appear to withstand sustained mild IOP elevation for many years without obvious damage, whereas others will develop optic neuropathy when the IOP has never been outside the normal range (known as normal-tension or normal-pressure glaucoma [NTG or NPG]; see page 17). There appears to be no difference in the morphometric appearance between eyes that have glaucoma in association with elevated IOP and those with NTG. These two syndromes are now believed to represent one disease spectrum, and lowering IOP in eyes with NTG has proven to be beneficial in preventing progression.