



STATE BOARD OF OPTOMETRY
 2450 DEL PASO ROAD, SUITE 105, SACRAMENTO, CA 95834
 P (916) 575-7170 F (916) 575-7292 www.optometry .ca.gov



Continuing Education Course
 Approval Checklist

Title:

Provider Name:

- Completed Application
 - Open to all Optometrists? Yes No
 - Maintain Record Agreement? Yes No
- Correct Application Fee
- Detailed Course Summary
- Detailed Course Outline
- PowerPoint and/or other Presentation Materials
- Advertising (optional)
- CV for EACH Course Instructor
- License Verification for Each Course Instructor
 - Disciplinary History? Yes No



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CONTINUING EDUCATION COURSE APPROVAL APPLICATION

\$50 Mandatory Fee

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule, a detailed course outline and presentation materials (e.g., PowerPoint presentation). Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

Form section for Course Title and Course Presentation Date. Course Title: 2nd Annual Optometric Glaucoma Symposium. Course Presentation Date: 02/04/2017.

Course Provider Contact Information

Form section for Provider Name. Andrew (First), Iwach (Last), George (Middle).

Form section for Provider Mailing Address. Street: 55 Stevenson Street, City: San Francisco, State: CA, Zip: 94105.

Form section for Provider Email Address. cme@glaucomasf.com

Form section for Will the proposed course be open to all California licensed optometrists? YES (checked) NO

Form section for Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation? YES (checked) NO

Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

Form section for Instructor Name. Andrew (First), Iwach (Last), George (Middle).

Form section for License Number and License Type. License Number: G56142, License Type: M.D.

Form section for Phone Number and Email Address. Phone Number: (415) 986-0835, Email Address: cme@glaucomasf.com

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Signature of Course Provider

Date: 08/02/2016



2nd Annual Optometric Glaucoma Symposium

Additional Course Instructor Information

Instructor Name: Terri-Diann Pickering

License Number: A60486

License Type: M.D.

Phone Number: 415-986-0835

E-Mail Address: cme@glaucomasf.com

Instructor Name: Sunita Radhakrishnan

License Number: A101235

License Type: M.D.

Phone Number: 415-986-0835

E-Mail Address: cme@glaucomasf.com



2nd Annual Optometric Glaucoma Symposium

PROPOSED COURSE SCHEDULE

1:30 – 2:00pm	Registration	
2:00 – 3:00pm	Sunita Radhakrishnan, MD	Cannabis and Glaucoma
3:00 – 4:00pm	Terri Pickering, MD	Sudden Impact: Steroids & Glaucoma
4:00 – 5:00pm	Andrew G. Iwach, MD	Glaucoma 2016: Commonly Asked Questions
5:00 – 5:30pm	Panel Discussion	

NUMBER OF CE HOURS REQUESTED: 3 HOURS



2nd Annual Optometric Glaucoma Symposium

Course Summary

Cannabis and Glaucoma – Dr. Sunita Radhakrishnan, MD

The role of cannabis in glaucoma treatment will be discussed including the composition of cannabis, its effect on intraocular pressure, and the issues that preclude the use of cannabis (in currently available forms) for the treatment of glaucoma. This is an important topic because glaucoma is one of the conditions for which the use of medical marijuana is approved; patients are interested in this treatment and many have false beliefs regarding its efficacy. Provider and patient education is key in order to ensure optimal glaucoma care. This topic is especially relevant in California given the recent passage of Prop 64 which approved the use of recreational marijuana. The availability and public acceptance of cannabis is increasing but this is not matched by the scientific rigor required to assess its proper role in the treatment of glaucoma.

Sudden Impact: Steroids & Glaucoma – Dr. Terri Pickering, MD

The adverse impact of steroids on intraocular pressure can be sudden and quite severe. While this potential side effect of steroids is widely known in the ophthalmic and optometric communities, we often forget that glaucoma patients, glaucoma suspects, and their blood relatives are at much higher risk for being steroid responders. This lecture will help raise awareness of this issue. I will explain that steroids of all types and routes of administration can cause rapid and large intraocular pressure increases, which can cause severe optic nerve head damage in susceptible individuals. I will also show prevalent steroid use, given its over-the-counter availability, and that even when we remember to ask, many patients don't know they're using a steroid.

Glaucoma 2016: Commonly Asked Questions – Dr. Andrew G. Iwach, MD

This course will review new developments in the management of glaucoma, including medications and various diagnostic and management issues. The information will be put into context with a practicality to help clinicians understand the relevance



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and impact of this information. In addition, changes and new developments in research and their associated impacts on clinical practice will be discussed. Given the recent changes in regulatory requirements, some of these will be reviewed and likewise interpreted as to the importance of implementing these new recommendations.

2nd Annual Optometric Glaucoma Symposium

Course Outline

The 2nd Annual Optometric Glaucoma Symposium is a continuing education course that will take place on Saturday, February 4, 2017, at the Palace Hotel in San Francisco, California. Glaucoma specialists are scheduled to lecture before an audience of approximately 200 optometrists. Speakers will discuss a variety of current issues and recent developments in glaucoma and update attendees on the diagnosis and management of glaucoma.

Topics covered at the program include, but are not limited to:

- Cannabis and Glaucoma
 - Mechanisms to Reducing Intraocular Pressure
 - Decrease aqueous production
 - Increase trabecular outflow
 - Increase uveoscleral outflow
 - Effects of Cannabis in glaucoma
 - Lowers intraocular pressure orally, intravenously, and by smoking, but not topically in the eye
 - Duration: 3-4 hours (vs. 24 hours with latanoprost)
 - Side effects of smoking marijuana
 - Increased heart rate
 - Decrease blood pressure
 - Conjunctival hyperemia
 - Impaired immune system response
 - Impaired memory for recent events
 - Difficulty concentrating
 - Impaired motor coordination
 - Tolerance to repeated doses
 - Decreased testosterone in men who are chronic users
 - Short-term withdrawal symptoms after
 - Emphysema-like lung changes
 - Increase risk of cancer
 - Flach AJ. Delta-9-Tetrahydrocannabinol (THC) in the Treatment of End-Stage Open-Angle Glaucoma. *Trans Am Ophthalmol Soc* 2002;100:215-224.
 - Tolerance and systemic toxicity limits usefulness of potential treatment with cannabinoids
 - AGS Position Statement on Marijuana
 - Side effects, short duration of action, and lack of evidence that its use alters the course of glaucoma


- Does not recommend the use of this drug in any form for the treatment of glaucoma
 - AAO Recommendation
 - No scientific evidence has been found to demonstrate increased benefits and/or diminished risks of marijuana to treat glaucoma compared with other pharmaceutical agents available currently
 - Properly designed and analyzed studies are needed to describe the mechanism of action and to demonstrate the safety and efficacy of oral and topical cannabinoids compared to other available therapies
 - Legalization of Marijuana
 - Effects on prescribing
 - Possible Cannabinoid Sustained Ocular Delivery Device?
 - Steroids and Glaucoma
 - Prevalence and relevance of steroids
 - Steroids used in medical conditions
 - Allergy
 - Itching
 - Psoriasis
 - Thinning Hair
 - Asthma
 - Arthritis
 - Steroids used in medications
 - Inhalers
 - Topical
 - Shampoo
 - Ear Drops
 - Eye Drops
 - Joint Injections
 - Oral
 - Epidural
 - IV
 - Intraocular
 - Over the counter
 - Nasal Sprays
 - Topical Creams
 - Steroid Induced Glaucoma
 - Increasing in frequency
 - Likely Under-reported
 - Hair loss, acne, tendonitis, poison ivy, seasonal allergies
 - PMR, asthma, RA, immunosuppression

- Most common in patients with Primary Open Angle Glaucoma & their blood relatives
 - One of the most difficult glaucomas to treat
- Steroid Prescribing Data
 - Increasing in frequency
 - IOP effect under-appreciated by MD's and patients / consumers
 - HTN, TIAs, angina, MI, aortic aneurysm
 - Alzheimer's, stroke, hearing loss
 - Inadequate warnings
 - Patients have access to OTC steroids without MD advice / monitoring
 - Chronic use is common since conditions usually are chronic
- Genetics in steroid glaucoma
 - TIGR gene (chromosome 15q24)
 - Codes for one of the lysyl oxidases (enzymes used in ECM cross-linking)
 - Polymorphisms lead to altered enzyme and abnormal glycosaminoglycans, leading to a thicker, more impervious ECM
 - 30% of people over 60 have some sort of susceptibility
 - Worldwide 5th most common identifiable risk factor for Open Angle Glaucoma
 - Accounts for 1-5% of all Open Angle Glaucoma
 - Ethnicity Statistics
 - But also occurs in 80% of controls
 - Genetic and Environmental Factors
 - Steroid Potency
 - Duration of treatment
 - African-American
- Risk Factors
 - Higher risk in first degree relatives
 - Every week of steroid use averaged over a lifetime = 4% increased risk
 - Every week without steroid use = 2% decreased risk
- Mechanism of steroids on intraocular pressure and glaucoma
 - Aqueous outflow blocked by ECM thickening
 - TIGR gene induced
 - Disruption and breakdown of normal elastic fiber network causes collapse of Schlemm's Canal and aqueous veins
 - Permanent Trabecular Meshwork damage = Permanent increased intraocular pressure

- Managing Glaucoma
 - Predictive risk factors
 - Cup:Disc Ratio
 - Central Corneal Thickness
 - Intraocular Pressure
 - Age
 - Visual Field: Pattern Standard Deviation
 - Assessing Risk for Glaucoma
 - Conversion into Primary Open Angle Glaucoma with observation vs. medication
 - Age considerations with treating glaucoma
 - Tools for Assessing Risk
 - Scoring Tool for Assessing Risk (S.T.A.R. II)
 - Mobile Phone Applications
 - Glaucoma Calculator
 - Target Intraocular Pressure Calculator
 - Song C, et al. Risk Calculation Variability Over Time in Ocular Hypertensive Subjects. J Glaucoma 2014;23(1).
 - Available glaucoma risk models can fluctuate significantly
 - Needs further refinement of glaucoma prediction models
 - Examining for Glaucoma
 - Patient History
 - Family History
 - Ocular History: trauma, surgery, medications
 - Medical History
 - Social History
 - Slit lamp findings
 - Gonioscopy findings
 - Pachymetry
 - Visual Field
 - Optic Nerve Head Examination
- Neovascular Glaucoma
 - Etiology
 - Retinal ischemia/hypoxia releases VEGF
 - VEGF causes new blood vessel growth & fibrovascular membrane
 - Obstruction of the Trabecula Meshwork and Peripheral Anterior Synechiae causes glaucoma
 - Early diagnosis critical

- Most common etiology
 - Central Retinal Vein Occlusion
 - Proliferative Diabetic Retinopathy
 - Carotid Artery Occlusive Disease
- Less common etiology
 - Branch Retinal Vein Occlusion
 - Central Retinal Artery Occlusion
 - Intraocular Tumor
 - Chronic Retinal Detachment
 - UGH Syndrome
 - Chronic or Severe Ocular Inflammation
 - Endophthalmitis
 - Sickle Cell Retinopathy
 - Retinopathy of Prematurity
 - Radiation Retinopathy
 - Eales Disease
 - Coats Disease
 - Carotid-Cavernous Fistula
 - Ocular Ischemic Syndrome
 - Takayasu Disease
 - Giant Cell Arteritis
 - Anterior Segment Ischemia
 - Trauma
 - Metastatic Intraocular Malignant Lymphoma
- Findings
 - Early
 - Normal intraocular pressures
 - Neovascular tufts at pupillary margin
 - Neovascularization of Iris (NVI) and/or Neovascularization of the Angle (NVA)
 - Poorly reactive pupil
 - Ectropion uvea
 - Can lead to NVA, proliferation of neovascular tissue over the angle, and elevated intraocular pressure
 - Advanced
 - Acute severe pain, headache, nausea, and/or vomiting
 - Photophobia
 - Reduced Visual Acuity
 - Elevated intraocular pressures
 - Conjunctival injection

- Corneal edema
- Hyphema
- Rubeosis
- Distorted, fixed, mid-dilated pupil
- Retinal neovascularization and/or hemorrhage
- Optic nerve damage
- Management of Neovascular Glaucoma
 - Identify underlying etiology
 - Systemic Workup and Intervention
 - Consider Prophylactic PRP for high risk NVG
- CRVO Management
 - Fluorescein Angiography to determine Nonischemic or Ischemic
 - Nonischemic: unlikely to develop NVG
 - Nonischemic to Ischemic CRVO Conversion Rate within 8 months: 15%
 - Ischemic: 40% incidence of NVG
 - Neovascular appearance from 2 weeks to 2 years
 - >80% present within first 6 months
 - Predictors of Neovascularization after CRVO
 - Extensive Retinal Capillary Nonperfusion on FA
 - Extensive Retinal Hemorrhages
 - More Common in Men
 - Prophylactic PRP before Neovascularization
 - Extensive Capillary Nonperfusion
 - Significant Systemic Vascular Disease
 - Monocular
 - Compliance, Follow-up Issues
 - Medications
 - Beta-Blockers
 - Brimonidine
 - Carbonic Anhydrase Inhibitor
 - Prostaglandin Analogs
 - Atropine & Prednisolone Acetate
 - Anti-VEGF
 - Bevacizumab (Avastin)
 - Ranibizumab (Lucentis)
 - Aflibercept (Eyelea)



GLAUCOMA CENTER
OF SAN FRANCISCO

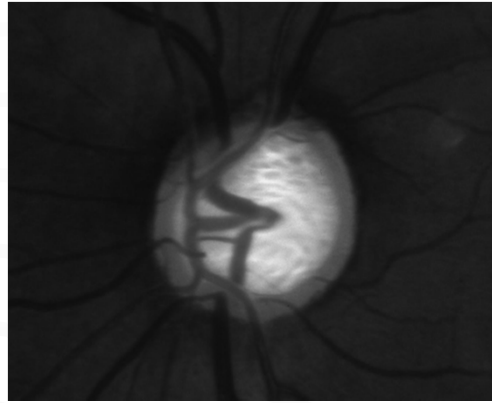
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STEVENSON

Cannabis and glaucoma

Sunita Radhakrishnan, M.D.

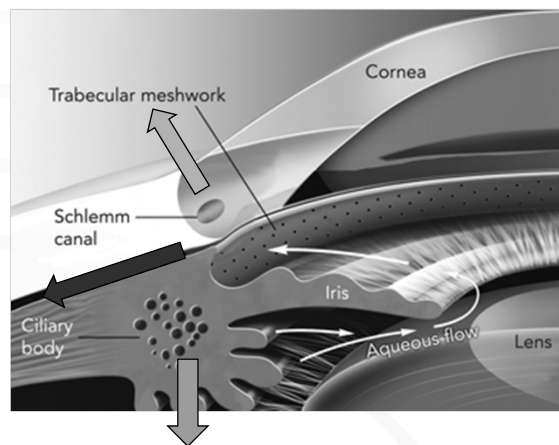
Glaucoma Center of San Francisco
Glaucoma Research and Education Group

Financial Disclosure: None



Glaucoma is a group of disorders characterized by optic nerve damage

Currently, the only way to treat glaucoma is by lowering intraocular pressure



Mechanisms to reduce IOP

- Decreased aqueous production
- Increased trabecular outflow
- Increased uveoscleral outflow

Cannabis and IOP

- Cannabis sativa (marijuana plant)
- Reduces IOP by an unknown mechanism
- Most prominent ingredient
 - Cannabinoids

Cannabis sativa

Lowers IOP when administered orally,
intravenously, or by smoking
BUT NOT
when topically applied to the eye

Duration of IOP lowering



3-4 hours



24 hours

Potential side effects with smoking marijuana

- increased heart rate
- decrease in blood pressure
- conjunctival hyperemia
- impaired immune system response
- impaired memory for recent events
- difficulty concentrating
- impaired motor coordination
- tolerance to repeated doses
- decreased testosterone in men who are chronic users
- short-term withdrawal symptoms after
- emphysema-like lung changes
- increased risk of cancer

DELTA-9-TETRAHYDROCANNABINOL (THC) IN THE TREATMENT OF END-STAGE OPEN-ANGLE GLAUCOMA

BY *Allan J. Flach, MD*

Trans Am Ophthalmol Soc 2002;100:215-224

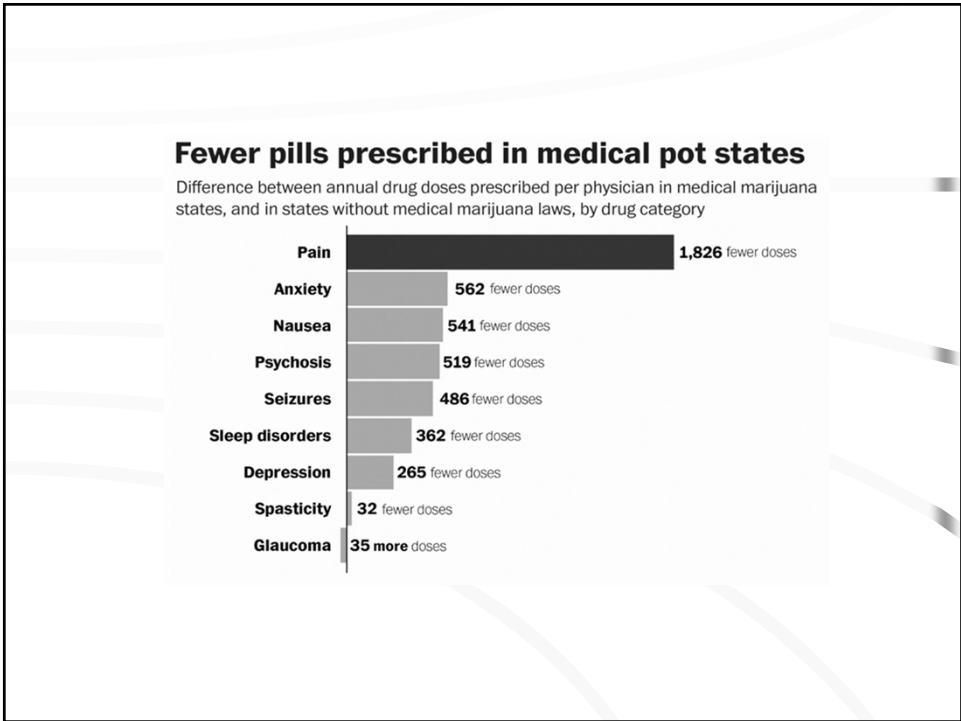
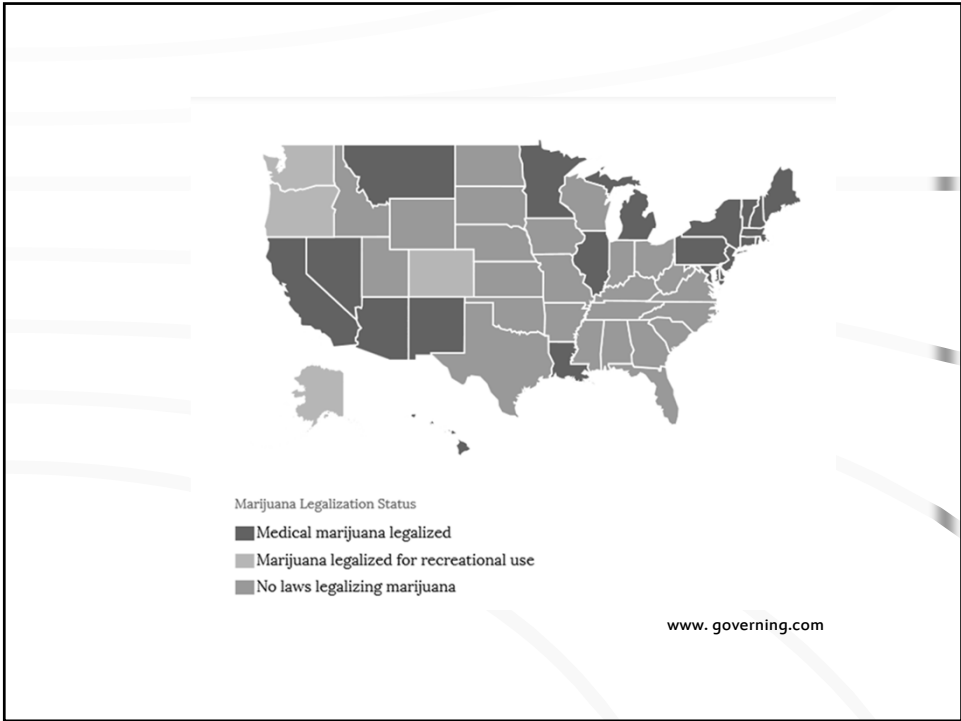
Conclusions: This uncontrolled, unmasked, nonrandomized study does not permit definitive conclusions about the efficacy or toxicity of cannabinoids in the treatment of glaucoma. There is an impression that this treatment can lower intraocular pressure, but the development of tolerance and significant systemic toxicity appears to limit the usefulness of this potential treatment. Both patients and ophthalmologists greatly appreciated the opportunity to participate in this study.

AGS Position Statement on Marijuana and the
Treatment of Glaucoma
August 2009

Although marijuana can lower the intraocular pressure (IOP), its side effects and short duration of action, coupled with a lack of evidence that its use alters the course of glaucoma, **preclude recommending this drug in any form for the treatment of glaucoma at the present time.**

AAO Task Force On
Complementary Therapies
June 2014

- Based on a search of published peer-reviewed literature, **no scientific evidence has been found that demonstrates increased benefits and/or diminished risks of marijuana use to treat glaucoma** compared with the wide variety of pharmaceutical agents now available.
- If further investigation is desired, properly designed and analyzed studies are needed to describe the mechanism of action and to demonstrate the safety and effectiveness of oral and topical cannabinoids compared to other available therapies for treating glaucoma.



California's high on its billion-dollar 'green rush'

State voters to get a chance to fully legalize cannabis in November.

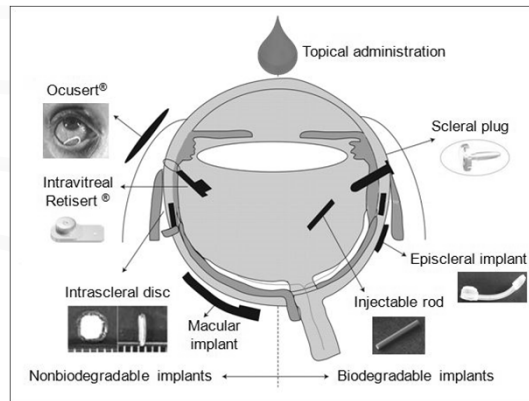
By Heesun Wee, special to CNBC.com
Tuesday, 12 Jul 2016 | 4:40 PM ET




692 SHARES

370 COMMENTS Join the Discussion

Cannabinoid sustained ocular delivery device?



Short B, Toxicol Pathol Jan 2008

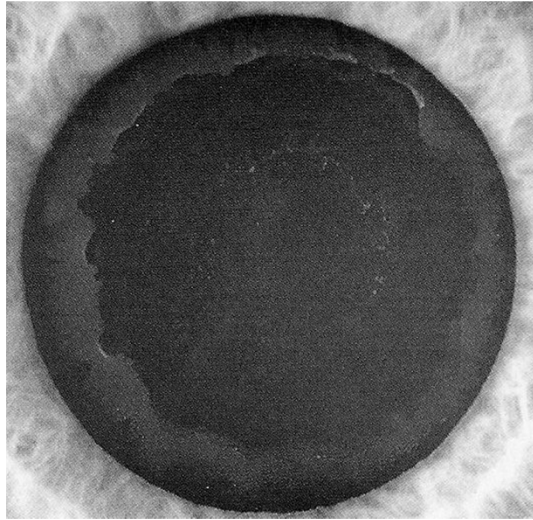


Sudden Impact: Steroids & Glaucoma

Terri Pickering, M.D.
Clinical Instructor
California Pacific Medical Center
San Francisco, California

Financial Disclosures

None



Eye World. October 2014. Cataract surgery in pseudoexfoliation cases.

Sudden Impact: Steroids

- * Steroids first used in the US in 1912
- * Use now ubiquitous with:
 - allergy
 - itching
 - psoriasis
 - thinning hair
 - asthma
 - arthritis

Abelson MB, McLaughlin J. A close look at pseudoexfoliation. *Rev Ophthalmol.* August 2014:52-55.

Schlötzer-Schrehardt U, Naumann GOH. Ocular and systemic pseudoexfoliation syndrome. *Am J Ophthalmol* 2006;141(5):921-937.

Sudden Impact: Steroids

- * Steroids first used in the US in 1912
- * Preparations are now ubiquitous with:
 - nasal spray **OTC
 - inhalers
 - topical creams **OTC
 - shampoo
 - joint injections
 - ear drops

Abelson MB, McLaughlin J. A close look at pseudoexfoliation. Rev Ophthalmol. August 2014;52-55.

Schlotzer-Schrehardt U, Naumann GOH. Ocular and systemic pseudoexfoliation syndrome. Am J Ophthalmol 2006;141(5):921-937.

Sudden Impact: Steroids

- * Steroids first used in the US in 1912
- * Preparations are now ubiquitous with:
 - eye drops
 - oral **OTC in Mexico
 - epidural
 - IV
 - intraocular implants
 - intravitreal injections

Abelson MB, McLaughlin J. A close look at pseudoexfoliation. Rev Ophthalmol. August 2014;52-55.

Schlotzer-Schrehardt U, Naumann GOH. Ocular and systemic pseudoexfoliation syndrome. Am J Ophthalmol 2006;141(5):921-937.

Steroid-Induced Glaucoma

- * Increasing in frequency
- * Likely under-reported
 - hair loss, acne, tendonitis, poison ivy, seasonal allergies
 - PMR, asthma, RA, immunosuppression
- * More common in patients with POAG & their blood relatives

Ritch R. Ocular and systemic manifestations of exfoliation syndrome. J Glaucoma. 2014(23);8:S1-S8.

Prescribing Data: all Steroid preparations

- * Increasing across all specialties - a panacea
- * IOP effect under-appreciated by most MDs, and ALL patients/consumers
 - HTN, TIAs, angina, MI, aortic aneurysm
 - Alzheimer's, stroke, hearing loss
- * Warnings inadequate e.g. Flonase commercial has no mention of eye pressure or glaucoma

Ritch R. Ocular and systemic manifestations of exfoliation syndrome. J Glaucoma. 2014(23);8:S1-S8.

Steroid Glaucoma: Genetics

- * TIGR gene (chromosome 15q24): codes for one of the lysyl oxidases, enzymes used in ECM cross-linking
- * Polymorphisms → altered enzyme → abnormal glycosaminoglycans → thicker, more impervious ECM

Abelson MB, McLaughlin J. A close look at pseudoexfoliation. Rev Ophthalmol. August 2014;52-55.

Thorleifsson G, Magnusson KP, Sulem P, et al. Common sequence variants in the LOXL1 gene confer susceptibility to exfoliation glaucoma. Science. 2007;317(5843):1397-1400.

Steroid Glaucoma: Mechanism

- * Aqueous outflow blocked by ECM thickening
 - in intertrabecular spaces
 - beneath the inner & outer wall of SC
 - in the JXT → progressive thickening of the JXT, the site of greatest outflow resistance
- * TIGR gene is induced
- * Disruption & breakdown of normal elastic fiber network → collapse of SC & aqueous veins

Ritch R. Ocular and systemic manifestations of exfoliation syndrome. J Glaucoma. 2014(23);8:S1-S8.

Steroid Glaucoma: Genetic Factors

- * Common variants of the TIGR gene
- * **BUT** also in 80% of controls, so ...
- * Why do some develop glaucoma & others do not?
- * Do other genetic or environmental factors play a role in who develops glaucoma?
 - steroid potency is crucial
 - duration of treatment
 - African-Americans in the US
 - some exquisitely sensitive

Pasquale LR, Jiwani AZ, Zehavi-Dorin T, et al. Solar exposure and residential geographic history in relation to exfoliation syndrome in the United States and Israel. *JAMA Ophthalmol.* 2014;132(12):1439-45.

Steroid Glaucoma Risk Factors

- * Study in US
 - all over 60
 - all glaucoma patients or relatives
- * ↑'d First-degree relatives ↑'s risk
- * Every week of steroid use averaged over a lifetime → 4% ↑'d risk
- * Every week without use (pulsed treatment) → 2% ↓'d risk

Pasquale LR, Jiwani AZ, Zehavi-Dorin T, et al. Solar exposure and residential geographic history in relation to exfoliation syndrome in the United States and Israel. *JAMA Ophthalmol.* 2014;132(12):1439-45.

The Dark Side of Steroids

- * Consumers have access to OTC steroids without MD advice or monitoring...
- * ...chronic use VERY common since most conditions treated are CHRONIC...
- * ...Permanent TM damage —> permanent ↑'d IOP...
- * One of the most difficult glaucomas to treat

Pasquale LR. Preventing exfoliation syndrome. Rev of Ophthal. October 2014

Worldwide TIGR

- * Global estimates: 30% of people over 60 have some form of susceptibility
- * Worldwide 5th most common identifiable risk factor for OAG accounting for 1-5% of all OAG

Abelson MB, McLaughlin J. A close look at pseudoexfoliation. Rev Ophthalmol. August 2014:52-55.

TIGR Gene

- * South Chinese: 0.32%
 - * Australians: 0.98% → 6%
 - BUT Aborigines: 23%
 - * Black S. Africans: 7.7% → 18.9% with age
 - * Greeks: 11.9%
 - * Norwegians: 16.6%
 - * Saudi Arabians: 17%
 - * Finnish: 21%
 - * Nepal: 12% in 1 ethnic grp
 - * Common: Japan & Mongolia
 - * US whites: 12%
- % of all OAG cases:
- * ≥ 50% in Norway, Ireland, Greece, Saudi Arabia
 - * 25% in S. African Zulus & Ethiopians

Ritch R. Ocular and systemic manifestations of exfoliation syndrome. J Glaucoma. 2014(23);8:S1-S8.

Topouzis F, Wilson MR, Harris A. Prevalence of open-angle glaucoma in Greece: the Thessaloniki Eye Study. Am J Ophthalmol. 2007;144:511-519.

Thank you



Glaucoma 2016: Commonly Asked Questions

Andrew G. Iwach, M.D.

Associate Clinical Professor
University of California, San Francisco
San Francisco, California

Financial Disclosure

- I have the following financial interests or relationships to disclose:
- Consultant
 - AcuMEMS
 - Alcon Laboratories, Inc.
 - Ellex Laser Systems

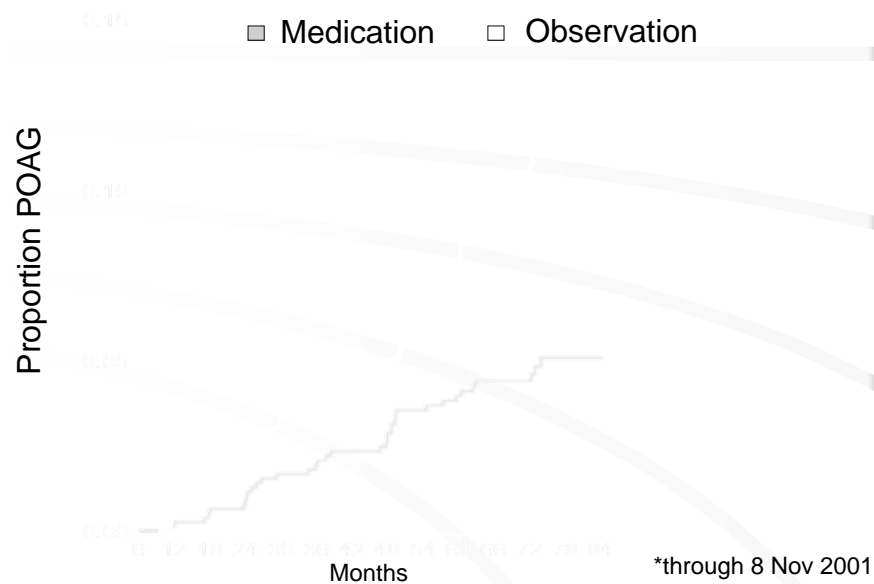
Predictive Risk Factors

- Significant risk factors identified by OHTS for the development of glaucoma:
 - Cup-Disc ratio
 - Central Cornea Thickness: CCT
 - Intraocular Pressure: IOP
 - Age
 - Pattern Standard Deviation: PSD
 - Visual Field

Gordon et al. Arch Ophthalmology. 2002;120:714-720.

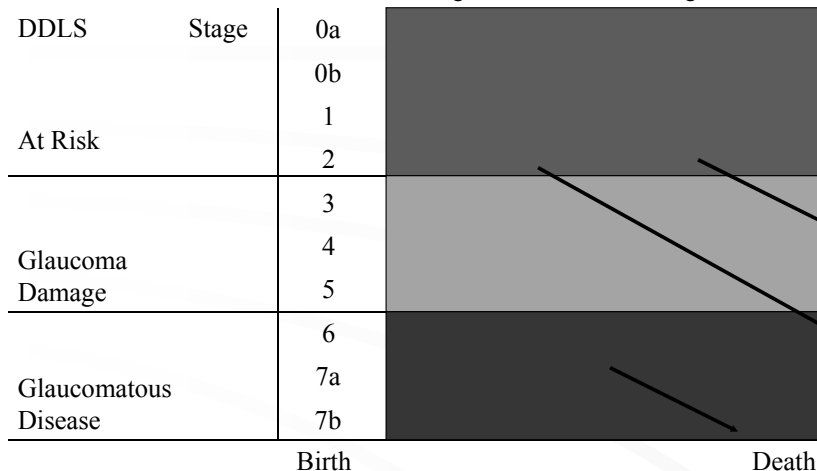
Primary POAG Endpoints*

Log Rank P-value <0.001, Hazard Ratio 0.40, 95% CI (0.27, 0.59)



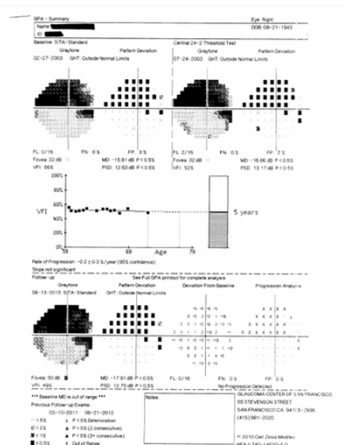
The Glaucoma Graph

Age at Presentation & Target IOP



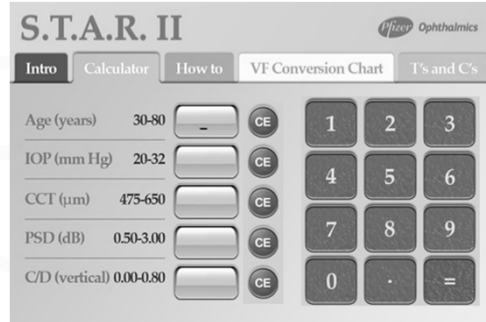
The glaucoma graph coordinates a patient's age with the three main stages of glaucoma. As presented by George Spaeth, M.D.

Most Patients are Asymptomatic

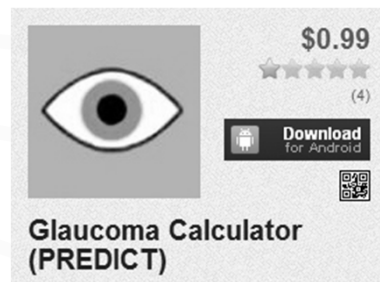
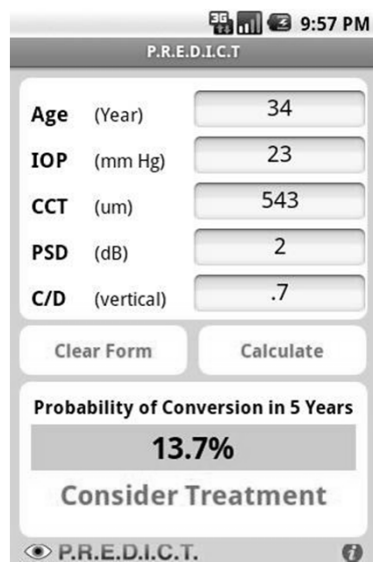


Do No Harm

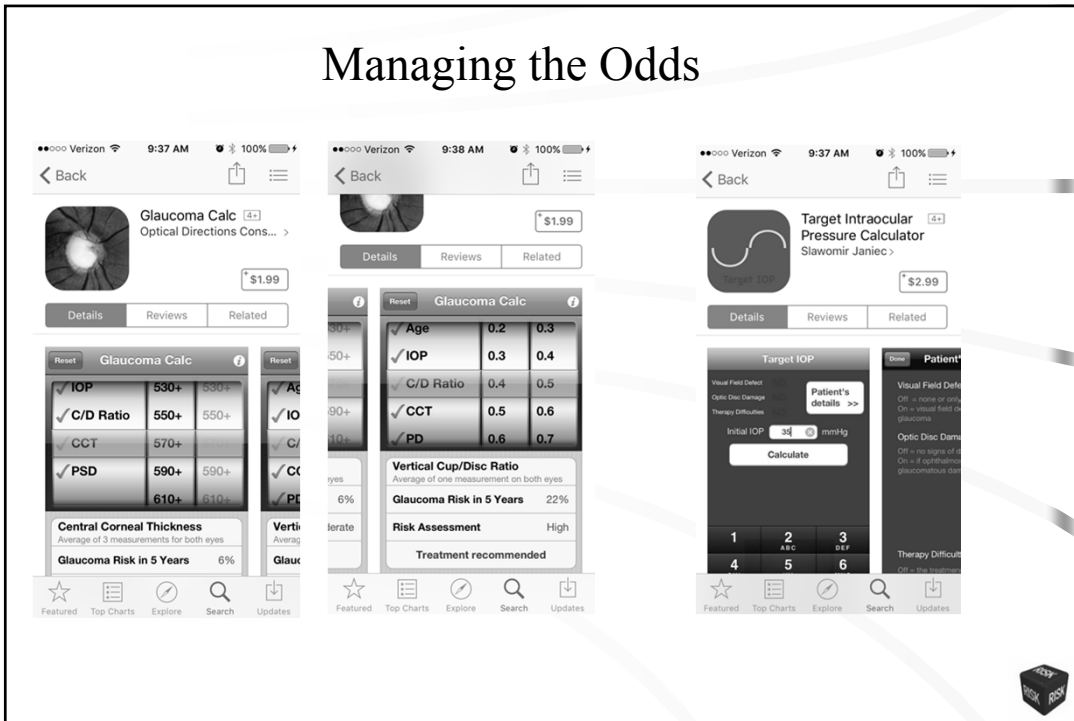
Managing the Odds



Managing the Odds



Managing the Odds



Glaucoma: Managing the Odds

ORIGINAL STUDY

Risk Calculation Variability Over Time in Ocular Hypertensive Subjects

Christian Song, MD,* Carlos Gustavo De Moraes, MD,*† Ilana Forchheimer, MD,*
Tiago S. Prata, MD, PhD,* Robert Ritch, MD,†‡ and Jeffrey M. Liebmann, MD*†

To our knowledge, our study is the first to demonstrate that calculated risk based on the available glaucoma risk models can fluctuate significantly and should be interpreted with caution. It also indicates that further refinement of the glaucoma prediction models in OHT patients, by accounting for variations in risk factor measurements over time, is needed. Additional work is necessary to define the frequency with which updated risk factors should be incorporated into prediction models. Although

J Glaucoma • Volume 23, Number 1, January 2014



Glaucoma: Managing the Odds

ORIGINAL STUDY

To our knowledge, our study is the first to demonstrate that calculated risk based on the available glaucoma risk models can fluctuate significantly and should be interpreted with caution. It also indicates that further refinement of the glaucoma prediction models in OHT patients, by accounting for variations in risk factor measurements over time, is needed. Additional work is necessary to define the frequency with which updated risk factors should be incorporated into prediction models. Although

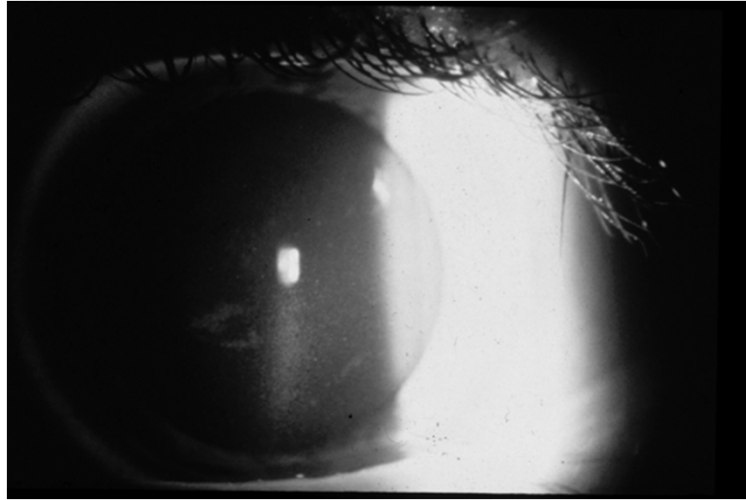
J Glaucoma • Volume 23, Number 1, January 2014



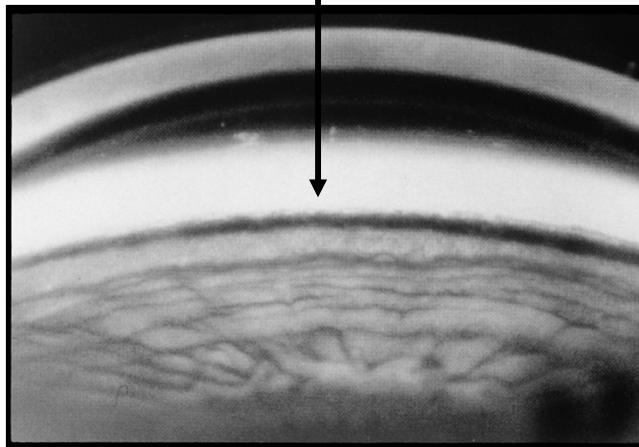
HISTORY

- Family History
 - Specific as Possible
- Ocular History
 - Trauma
 - LTP, Surgery
 - Medications
- Medical History
- Social History

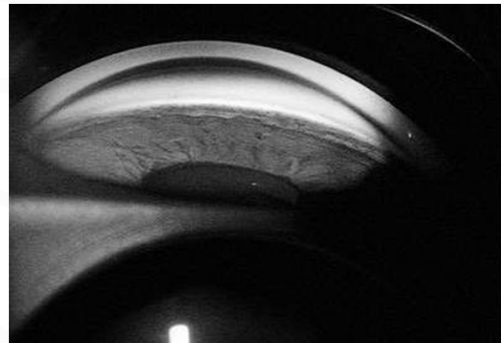
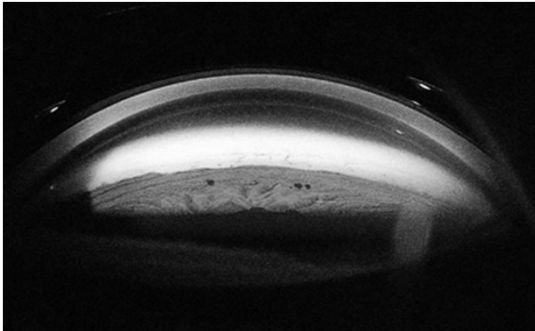
Krukenberg's spindle



Pigmented TM



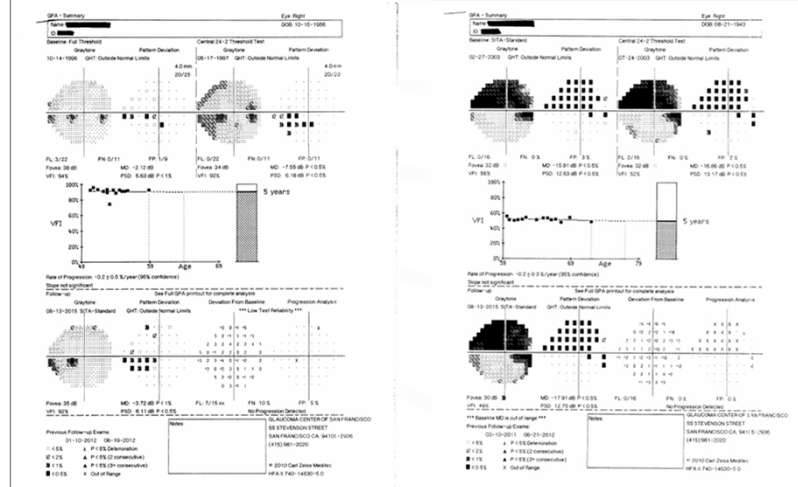
Ocular Trauma and Glaucoma



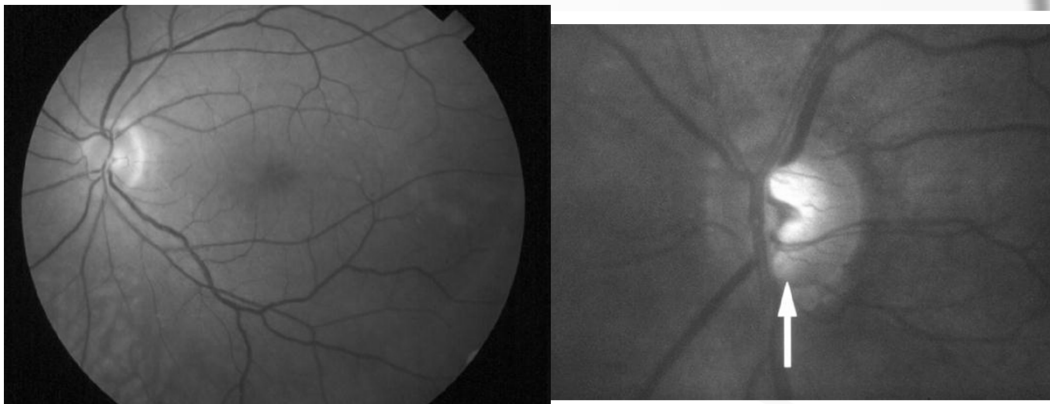
Pachymetry



Visual Field



Optic Nerve Head Examination

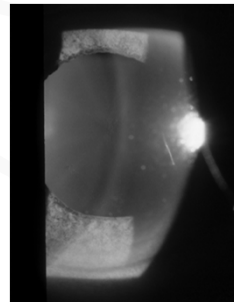


Neovascular Glaucoma: Overview

- Neovascular glaucoma 1st documented in 1871
- Numerous secondary ocular and systemic diseases: One common element
- Retinal ischemia/hypoxia, Subsequent Release of VEGF
- VEGF causes new blood vessel growth, Fibrovascular membrane
- Obstruction of the TM +/- PAS, Potentially devastating glaucoma
- Early Diagnosis and Treatment (IOP & Etiology) is critical

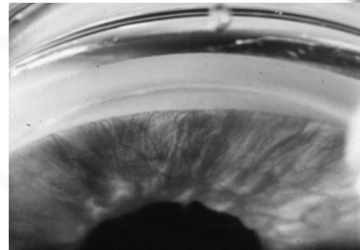
NVG: Early Findings

- Normal IOP
- Careful gonioscopy in all eyes at high risk for NVG is critical
- Tiny, neovascular, dilated capillary tufts at pupillary margin
- High magnification on Slit Lamp
 - NVI - irregular, nonradial vessels usually not in the iris stroma
 - NVA - can occur with or without NVI
- Poorly reactive pupil
- Ectropion uvea
- May lead to....
 - NVI continuous with NVA
 - Proliferation of neovascular tissue over the angle
 - Elevated IOP



NVG: Advanced Findings

- Acute severe pain, headache, nausea, and/or vomiting
- Photophobia
- Reduced visual acuity (counting fingers to hand motion)
- Elevated IOP (≥ 60 mm Hg)
- Conjunctival injection
- Corneal edema
- Often Hyphema
- Rubeosis
- Distorted, fixed, mid-dilated pupil
- Retinal neovascularization, hemorrhage
- Optic nerve damage



NVG Etiology: Most Common

- Central Retinal Vein Occlusion (CRVO)
- Proliferative Diabetic Retinopathy
- Carotid Artery Occlusive Disease

NVG Etiology: Less Common

- Branch Retinal Vein Occlusion
- Central Retinal Artery Occlusion (CRAO)
- Intraocular Tumor
- Chronic Retinal Detachment
- UGH Syndrome
- Chronic or Severe Ocular Inflammation
- Endophthalmitis
- Sickle Cell Retinopathy
- ROP
- Radiation Retinopathy

NVG Etiology: Less Common

- Eales disease
- Coats Disease
- Carotid-cavernous Fistula
- Ocular Ischemic Syndrome
- Takayasu Disease
- Giant Cell Arteritis
- Anterior Segment Ischemia
- Trauma
- Metastatic Intraocular Malignant Lymphoma

NVG: Management

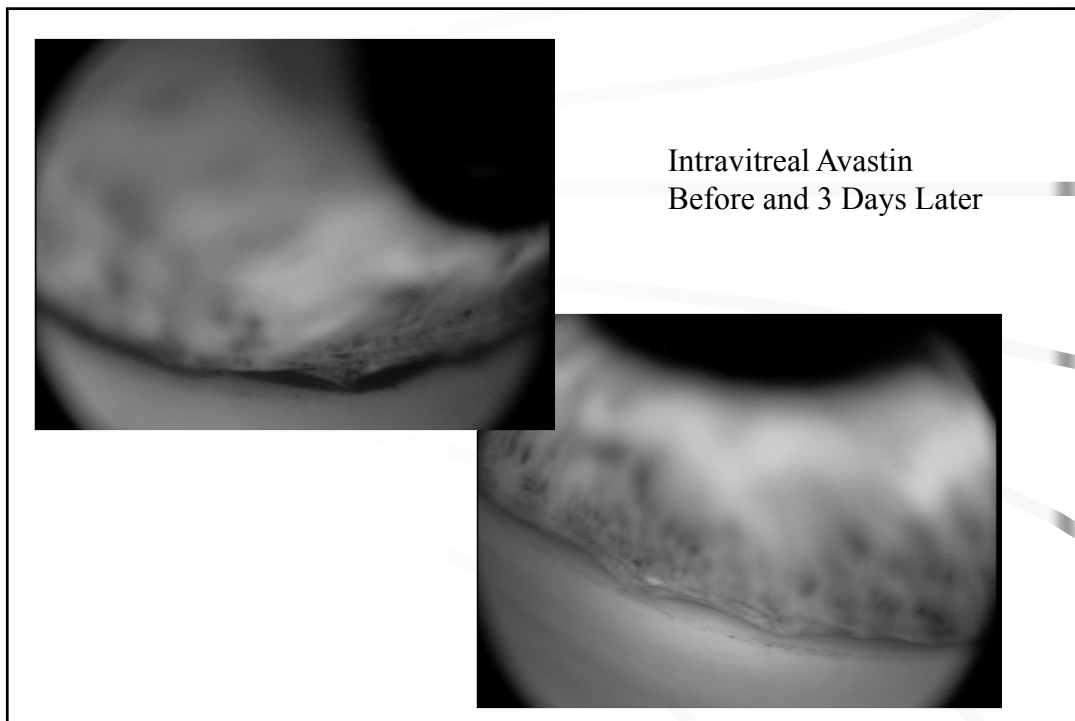
- Identifying the underlying etiology
- Systemic Workup + Intervention e.g...
 - CRVO
 - Diabetic retinopathy
 - CRAO
- Consider Prophylactic PRP
 - High risk of NVG
 - Early NV with normal IOP
- Critical Goal: Prevention of NVG

NVG: CRVO Management

- 36,000 New Cases Each Year in the US
- Fluorescein Angiography: Nonischemic vs. Ischemic CRVO
- Nonischemic CRVO: Unlikely to Develop NVG
- Nonischemic to Ischemic CRVO Conversions Rate within 8 months: 15%
- Ischemic CRVO: 40% Incidence of NVG
- NV Appearance from 2 weeks to 2 years , > 80% present within the first 6 months
- The Strongest Predictors of NV After CRVO include
 - Extensive Retinal Capillary Nonperfusion on FA, Extensive retinal hemorrhages
 - More Common in Men

NVG: Management

- Prophylactic PRP before NV Seen if...
 - Extensive Capillary Nonperfusion
 - Significant Systemic vascular disease
 - Monocular
 - Compliance, Follow-up Issues
- Medications:
 - Beta-blockers
 - Brimonidine
 - Carbonic anhydrase inhibitor
 - PG Analogs
 - Atropine, Prednisolone Acetate
 - Anti-VEGF Agents
 - bevacizumab (Avastin)
 - ranibizumab (Lucentis)
 - aflibercept (Eyelea)





Glaucoma Center of San Francisco



www.GlaucomaSF.com

CURRICULUM VITAE

Name: **SUNITA RADHAKRISHNAN, M.D.**

Position: Associate, Glaucoma Center of San Francisco
2007 to Present
Research Director, Glaucoma Research and Education Group
2007 to Present
Assistant Clinical Professor (Volunteer), University of California
San Francisco
2010 to Present

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San Francisco, CA 94105
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Fax: 415 981 2019

EDUCATION

1990 – 1996	Kilpauk Medical College, Chennai, India	Medical School
1996 – 1998	Regional Institute of Ophthalmology, Chennai, India	Residency 1 <u>Ophthalmology</u>
2001 – 2002	St. Francis Hospital, Evanston, IL	Internship <u>Medicine</u>
2003 – 2006	Cole Eye Institute, Cleveland Clinic, Cleveland, OH	Residency 2 <u>Ophthalmology</u>
2006 – 2007	Wilmer Eye Institute, Johns Hopkins Hospital Baltimore, MD	Fellowship <u>Glaucoma</u>

LICENSES, CERTIFICATION

ECFMG certification	2000
Maryland (D64161)	2006
California (A101235)	2007
American Board of Ophthalmology Certification	2008

PREVIOUS POSITIONS

2000 – 2001	Departments of Biomedical Engineering and Medicine, Case Western Reserve University, Cleveland, OH	Research Associate
2002 – 2003	Carl Zeiss Meditec, Inc., Dublin CA	Clinical Research Scientist

PROFESSIONAL ACTIVITIES

PROFESSIONAL ORGANIZATIONS

MEMBERSHIPS

2000 – 2008	Association for Research in Vision and Ophthalmology
2001 – Present	American Academy of Ophthalmology
2007 – Present	American Glaucoma Society
2010 – Present	California Academy of Eye Physicians and Surgeons
2016	Women in Ophthalmology

PEER REVIEWER

2006 – Present	Journal of Cataract and Refractive Surgery
2007 – Present	Ophthalmology
2007 – Present	Investigative Ophthalmology and Visual Sciences
2007 – Present	Ophthalmic Surgery, Lasers and Imaging
2008 – Present	Journal of Refractive Surgery
2008 – Present	Clinical and Experimental Ophthalmology
2009 – Present	British Journal of Ophthalmology
2011 – Present	Journal of Glaucoma
2013 – Present	JAMA Ophthalmology
2015 – Present	Eye

SERVICE TO PROFESSIONAL ORGANIZATIONS

Academy Express, AAO Advisory Panel	2008 – Present
Patient Education Committee, Glaucoma Research Foundation	2009 – Present
Editor-in-Chief, Gleams Newsletter, Glaucoma Research Foundation	2012 – Present
Member, Glaucoma Panel, Ophthalmic Technology Assessment Committee	2013 – Present
Member, Self-Assessment Committee, AAO	2014 – Present

INVITED PRESENTATIONS

- Aug 2005 Anterior segment optical coherence tomography. *OCT Workshop, Cole Eye Institute, Cleveland Clinic, OH*
- Apr 2007 Anterior segment optical coherence tomography of the anterior chamber angle. *Current Concepts in Ophthalmology, Baltimore, MD*
- Aug 2007 Detection of primary angle closure with anterior segment optical coherence tomography. *Bascom Palmer Eye Institute, Miami, FL.*
- Feb 2008 Setons: Pearls and Pitfalls. *12th Annual Glaucoma Symposium, San Francisco, CA.*
- Sep 2008 Trabeculectomy, Exfoliation Glaucoma, Updates on anterior and posterior segment imaging. *What's new in Glaucoma in the Napa Valley, presented by University of California San Francisco.*
- Nov 2008 Anterior segment OCT in my practice. *Glaucoma 2008 – The Pendulum Swings. Annual AAO Meeting 2008 - Subspecialty Day.*
- Feb 2009 Ex-PRESS shunt-Revisited. *13th Annual Glaucoma Symposium, San Francisco, CA.*
- Jun 2009 Primary angle closure and new imaging modalities. *Glaucoma Grand Rounds, California Pacific Medical Center, San Francisco, CA.*
- Jul 2009. Optic nerve and anterior segment imaging in glaucoma. *Stanford Basic Science Course, Palo Alto, CA.*
- Sep 2009 Which Spectral Domain OCT is best for glaucoma? Ocular perfusion pressure and glaucoma, Ex-PRESS shunt, Update on angle closure, Assessing Visual Field Progression. *What's new in Glaucoma in the Napa Valley, presented by University of California San Francisco*
- Feb 2010 Seeing is believing? and When good blebs go bad. *14th Annual Glaucoma Symposium, San Francisco. CA.*
- Sep 2010 Medical therapy for glaucoma, Trabeculectomy, What causes glaucoma? Visual field view. *What's new in Glaucoma in the Napa Valley, presented by University of California San Francisco, Napa, CA*
- Dec 2010 Anterior Segment OCT in Glaucoma. *Ophthalmic Imaging 2011 presented by Bascom Palmer Eye Institute, Miami, FL*
- Feb 2011 Tube placement – Is further back better? *15th Annual Glaucoma Symposium, San Francisco. CA.*
- Sep 2011 Normal tension glaucoma, IOP assessment after LASIK, Spectral Domain OCTs. *What's new in Glaucoma in the Napa Valley, presented by University of California San Francisco, Napa, CA*
- Dec 2011 AC Angle Imaging in Glaucoma. *UCSF Ophthalmology Update 2011, San Francisco, CA*
- Dec 2011 Anterior Segment OCT in Glaucoma. *Ophthalmic Imaging 2012 presented by Bascom Palmer Eye Institute, Miami, FL*
- Feb 2012 Anterior segment imaging – Seeing all the angles. *16th Annual Glaucoma Symposium, San Francisco. CA.*
- Jun 2012 Angle Assessment in Glaucoma, *Ocular Symposium, San Francisco, CA*

- Sep 2012 New risk factors in angle closure glaucoma, Imaging of the anterior segment, Algorithm for medical management of glaucoma. *What's new in Glaucoma in the Napa Valley, presented by University of California San Francisco, Napa, CA*
- Dec 2012 Angle assessment in Glaucoma. *UCSF Ophthalmology Update 2012, San Francisco, CA*
- Feb 2013 Narrow angles – is an LPI enough? *17th Annual Glaucoma Symposium, San Francisco, CA.*
- Jun 2013 AC Angle assessment. *Ocular Symposium, San Francisco, CA*
- Feb 2014 Glaucoma medications: Circadian Efficacy. *18th Annual Glaucoma Symposium, San Francisco, CA.*
- Jun 2014 Assessment of the AC angle, LPI for narrow angles. *Glaucoma Summit Forum, Nanchang Eye Hospital, Nanchang, People's Republic of China.*
- Sep 2014 Status of Medical Therapy. *What's new in Glaucoma in the Napa Valley, presented by University of California San Francisco, Napa, CA*
- Sep 2014 Angle Closure Disease: an Update. *Grand Rounds, University of California San Francisco, San Francisco, CA.*
- Feb 2015 Status of Medical Therapy in Glaucoma. *19th Annual Glaucoma Symposium, San Francisco, CA.*
- July 2015 Lasers and surgery for glaucoma. *Bay Area Ophthalmology Course, Stanford University, Palo Alto, CA.*
- Sept 2015 Glaucoma Medications, Visual field: Basics, Uveitic Glaucoma. *What's new in Glaucoma in the Napa Valley, presented by University of California San Francisco, Napa, CA*
- Feb 2016 Managing narrow angles, Glaucoma: To drive or not to drive. *20th Annual Glaucoma Symposium, San Francisco, CA.*
- July 2016 Lasers and surgery for glaucoma. *Bay Area Ophthalmology Course, Stanford University, Palo Alto, CA.*
- Aug 2016 Anterior segment imaging in glaucoma. *Women In Ophthalmology 2016 Summer Symposium, Williamsburg, VA.*

TEACHING AND MENTORING

1. Research Director, Glaucoma Center of San Francisco and Glaucoma Research and Education Group (GREG)

The Clinical Research Fellowship program run by GREG sponsors one international ophthalmologist every year and provides the fellow the opportunity to perform clinical research in glaucoma as well as to refine his/her skills in the diagnosis and management of glaucoma. Fellows undertake 1-2 projects during their training and present their research at major national scientific meetings such as AAO, AGS and ARVO. Previous fellows under my direct supervision include:

2007 – 2008	Lidiya Rudavska	Ukraine
2008 – 2010	Chan Li	People's Republic of China
2010	Haiyan Wang	People's Republic of China

2011 – 2012	Yuehua Li	People's Republic of China
2013 – 2014	Dmitry Yarovoy	Russian Federation
2014 – 2015	Lian Chen	People's Republic of China

2. Glaucoma Resident Lecture Series for ophthalmology residents of California Pacific Medical Center, San Francisco and University of California, San Francisco
3. Lectures in ophthalmology for Physician Assistant Lecture Series, Stanford University, Palo Alto, CA.
4. Lectures in ophthalmology for Optometrists at the Ocular Symposium, San Francisco, CA

RESEARCH ACTIVITIES

Research interests – Anterior segment optical coherence tomography, Imaging of the anterior chamber angle, Optical coherence tomography of the optic nerve and retinal nerve fiber layer, Bleb revision.

ORIGINAL REPORTS

1. Real time optical coherence tomography of the anterior segment at 1310nm. **Radhakrishnan S**; Rollins AM; Izatt JA et al. *Archives of Ophthalmology*, 2001; 119:1179-1185.
2. Correction of geometric and refractive image distortions in optical coherence tomography applying Fermat's principle. Westphal V, Rollins AM, **Radhakrishnan S**, Izatt JA. *Optics Express*. 2002;10:397-404.
3. Comparison of optical coherence tomography and ultrasound biomicroscopy for detection of narrow anterior chamber angles. **Radhakrishnan S**, Goldsmith J, Westphal V, Smith SD, Dueker D, Huang D, Rollins AM and Izatt JA. *Archives of Ophthalmology*. 2005;123:1053-1059.
4. Reproducibility of measurements with anterior segment optical coherence tomography. **Radhakrishnan S**, See J, Smith SD, Friedman DS, Nolan WP, Ce Z, Aung T, Chew PT. *Invest Ophthalmol and Vis Sci*. 2007;48:3683-8.
5. Detection of primary angle closure using anterior segment optical coherence tomography in Asian eyes. Nolan WP, See J, Chew PT, Friedman DS, Smith SD, **Radhakrishnan S**, Ce Z, Foster PJ, Aung T. *Ophthalmology*. 2007;114:33-39.
6. Bilateral macular lesions in a 10-year old girl. **Radhakrishnan S**, Bala E, Peachey NS, Lewis H, Traboulsi EI. *Am J Ophthalmol* 2007;143:184-185.
7. Outcomes of surgical bleb revision for complications of trabeculectomy. **Radhakrishnan S**, Quigley HA, Jampel HD, Friedman DS, Ahmad SI, Congdon NC, McKinnon S. *Ophthalmology*. 2009;116:1713-1718.

8. Examining the Long-term Effect of Phacoemulsification on Intraocular Pressure Using Phakic Fellow Eye as Control. Chang TC, Budenz D, Liu A, Kim W, Dang T, Li C, Iwach AG, **Radhakrishnan S**, Singh K. *Journal of Cataract & Refractive Surgery*. 2012;38:866-70.
9. Reproducibility of scleral spur identification and angle measurements using Fourier Domain Anterior Segment Optical Coherence Tomography. Cumba R, **Radhakrishnan S**, Bell N, Nagi K, Chuang A, Lin S, Mankiewicz K, Feldman R. *Journal of Ophthalmology*. 2012, Article ID 487309.
10. Plateau iris in Whites versus Asians. Leeungurasatien T, **Radhakrishnan S**, Porco T, Huang GF, Osmanovic S, Huang JY, Lin SC. *Eye Sci*. 2012;27:13-18.
11. Central Serous Chorioretinopathy Following Trabeculectomy in a Patient with Microphthalmos and Congenital Rubella Syndrome. Takakura A, Haug S, **Radhakrishnan S**, Fu A, Jumper MG, McDonald R, Johnson R, Lujan B, Cunningham E. *Retinal Cases & Brief Reports*. 2014;8:153-6.
12. The Effect of Phacoemulsification on Intraocular Pressure in Glaucoma Patients: A report by the American Academy of Ophthalmology. Chen PP, Lin SC, Junk AK, **Radhakrishnan S**, Singh K, Chen TC. *Ophthalmology*. 2015;122:1294-307
13. Blebitis After EX-PRESS Glaucoma Filtration Device Implantation – a Case Series. Yarovoy D, **Radhakrishnan S**, Pickering T, Iwach AG. *Journal of Glaucoma*. 2016;25:422-5.
14. Repeatability of Selective Laser Trabeculoplasty for open angle glaucoma. Francis BA, Loewen N, Hong B, Dustin L, Kaplowitz K, Kinast R, Bacharach J, **Radhakrishnan S**, Iwach AG, Rudavska L, Ichhpujani P, Katz LJ. *BMC Ophthalmology*. 2016;16:128

ABSTRACTS

1. Real-time optical coherence tomography of the human anterior segment. Izatt JA, Rollins AM, **Radhakrishnan S**, et al. # 3589, ARVO 2000, Poster.
2. Non-invasive characterization of anterior segment structures using real-time OCT at 1310nm. **Radhakrishnan S**, Reeves D, Lass JH, et al. SPIE Proceedings, Photon Migration, Optical coherence tomography and Microscopy. 2001; 4431: 43-45.
3. Measurement of anterior segment parameters in normal eyes using OCT and comparison with conventional clinical techniques. **Radhakrishnan S**, Reeves D, Lass JH, et al. #4240, presented at the ARVO 2001, Poster

4. Optical coherence tomography imaging of LASIK flaps using 0.8 μm and 1.3 μm wavelengths of light – a comparison study. **Radhakrishnan S**, Li Y, Huang D et al. #187, ARVO 2002, Poster.
5. Comparison of Optical Coherence Tomography and Ultrasound Biomicroscopy in identifying anatomically narrow angles. Goldsmith JA, **Radhakrishnan S**, Westphal V, Huang D, et al. #287, ARVO 2002, Poster.
6. Comparison of Optical Coherence Tomography and Linear Array Anterior Segment Echography in imaging iris lesions. Bardenstein D, **Radhakrishnan S**, Izatt JA et al. #2855. ARVO 2002, Poster.
7. Real-time optical coherence tomography of the anterior segment using hand-held and slit-lamp adapted systems. **Radhakrishnan S**, Patil CA, Rollins AM, Izatt JA et al Conference 4619, BIOS 2002, Photonics West 2002, San Jose, California, Oral presentation.
8. Biometry of the anterior chamber with optical coherence tomography. **Radhakrishnan S**, Netto MV, Li Y, Chalita MR, Huang D. #2377, ARVO 2004, Poster.
9. Illumination-induced changes in the angle configuration: An evaluation by anterior segment optical coherence tomography. **Radhakrishnan S**, See J, Chew P, Nolan W, Ce Z, Friedman DS, Smith SD. ARVO 2005, Poster.
10. Detection of patients at risk of angle-closure using anterior segment OCT. Nolan WP, See J, Aung T, Ce Z, **Radhakrishnan S**, Friedman DS, Smith SD, Chew PT. ARVO 2005, Poster.
11. Effect of laser peripheral iridotomy on angle configuration in eyes with angle closure: an evaluation by the anterior segment OCT. See J, Chew PT, Nolan WP, Ce Z, **Radhakrishnan S**, Smith SD, Friedman DS, Aung T. ARVO 2005, Poster.
12. Reproducibility of anterior chamber angle measurements obtained with anterior segment optical coherence tomography. **Radhakrishnan S**, See J, Chew P, Nolan W, Ce Z, Friedman DS, Smith SD. ARVO 2006, Poster.
13. Measurement of changes in angle configuration following phacoemulsification using the anterior segment OCT. Nolan WP, See J, Chew P, Chan YH, Ce Z, Smith SD **Radhakrishnan S**, , Friedman DS, Aung T. ARVO 2006, Poster.
14. Comparison of the anterior segment optical coherence tomography and ultrasound biomicroscopy in the evaluation of patients with angle closure. See J, Chew PT, Nolan WP, Chan YH, Ce Z, Smith SD, **Radhakrishnan S**, Foster PJ, Friedman DS, Aung T. ARVO 2006, Poster.

15. Success of revision surgery for complications of trabeculectomy. **Radhakrishnan S**, Quigley HA, Jampel H, Friedman DS, Congdon NC, Ahmad SI, McKinnon S, Zack D. AGS 2008, Poster.
16. Repeat selective laser trabeculoplasty in patients with open angle glaucoma. Rudavska L, **Radhakrishnan S**, Iwach AI, Tanaka G, Pickering T, Dickens C, Hetherington JJ, Shi J. ARVO 2008, Poster
17. Quantitative analysis of iris curvature using anterior segment OCT in patients undergoing laser peripheral iridotomy. Smith SD, See J, Aguiar L, Aung T, Nolan WP, Friedman DS, **Radhakrishnan S**, Ce Z, Chew PTK. ARVO 2008, Poster.
18. Micropulse laser trabeculoplasty. **Radhakrishnan S**, Rudavska L, Iwach AG. AGS 2009. Poster.
19. Differences in iris thickness parameters between Chinese and Caucasians as a potential risk factor for angle closure glaucoma. Nguyen RP, Pekmezci M, **Radhakrishnan S**, He M, Lin S. ARVO 2009. Poster.
20. Long-term outcomes of bleb needling with intra-operative transconjunctival mitomycin-C. Li C, Brown N, Iwach A, Shi J, Mata-Plathy M, Pickering T, Nguyen N, Hetherington J and **Radhakrishnan S**. AGS 2010 and ARVO 2010. Poster.
21. Measurement of Ganglion Cell Complex and Retinal Nerve Fiber Layer with Fourier-Domain Optical Coherence Tomography and Comparison with RNFL Thickness by Time-Domain Optical Coherence Tomography. **Radhakrishnan S**, Li C, Pickering T, Hetherington J, Tanaka HG, Iwach AG. AGS 2010. Poster.
22. Variable change in angle morphology after iridotomy between Whites and Chinese. Osmanovic S, **Radhakrishnan S**, Lin S, Pekmezci M, M He. ARVO 2010. Poster.
23. Thicker irides in Chinese versus Caucasians and the association with angle closure. Gonzalez E, Pekmezci M, Poroc T, He M, **Radhakrishnan S**, Lin S. ARVO and AAO 2010. Poster.
24. EyeCam versus Gonioscopy for anterior chamber angle evaluation. Wang H, Pickering T, Iwach AG, **Radhakrishnan S**. AAO 2010 and AGS 2011. Poster
25. Bleb needling after Ex-PRESS filtration device implantation. Li Y, Pickering T, **Radhakrishnan S**, Iwach AG. AGS 2012. Poster
26. Blebitis after ExPress filtration device implantation. **Radhakrishnan S**, Yarovoy D, Pickering T, Iwach AG. AAO 2013. Poster

27. Trabeculodialysis in uveitic glaucoma. **Radhakrishnan S**, Yarovoy D, Chen L, Pickering T, Iwach AG. AAO 2014 and AGS 2015. Poster.
28. Outcomes of Laser Peripheral Iridotomy in Caucasian Primary Angle Closure Suspects. **Radhakrishnan S**, Chen L, Pickering T, Wan J, Iwach AG. AGS 2016. Poster

REVIEWS, CHAPTERS

1. Emerging Clinical Applications of Optical Coherence Tomography. Rollins AM, Sivak MV, **Radhakrishnan S**, Lass JH, Huang D, Cooper KD and Izatt JA. Optics and Photonics News 13:36, 2002
2. Real-Time Imaging of Ultrastructure and Blood Flows using Optical Coherence Tomography. Rollins AM, Yazdanfar S, **Radhakrishnan S**, Westphal V, Sivak MV and Izatt JA, in Handbook of Optical Biomedical Diagnostics, V. Tuchin, Ed., SPIE Press, Inc., Bellingham, WA, 2002.
3. Corneal and Anterior Segment Optical Coherence Tomography. Huang D, Li Y, **Radhakrishnan S** and Chalita MR. In: Schuman JS, Puliafito CA and Fujimoto JG eds. Optical Coherence tomography of Ocular Diseases, 2nd edition. 2004.
4. Optical coherence tomography of the anterior segment of the eye. Huang D, Li Y, **Radhakrishnan S**. Ophthalmol Clin North Am. 2004;17;1-6
5. Optic Nerve Sheath Meningiomas. **Radhakrishnan S**, Lee MS. Curr Treat Options Neurol. 2005;7:51-55.
6. Optical coherence tomography imaging of the anterior chamber angle. **Radhakrishnan S**, Huang D, Smith SD. Ophthalmol Clin North Am. 2005;18;375-381.
7. Quantitative measurement of the anterior chamber angle with optical coherence tomography. **Radhakrishnan S**, Li Y, Huang D. Anterior Segment Optical Coherence Tomography. 1st edition, 2006.
8. Uveitic glaucoma. **Radhakrishnan S**, Cunningham ET, Iwach A. The Glaucoma Book, Eds Samples J and Schacknow P, 2010.
9. The developmental glaucomas. **Radhakrishnan S**, Pickering TD, Wong P, Dickens D and Hoskins D. Duane's textbook of Ophthalmology.
10. Anterior Segment OCT. *EyeWiki*. **Radhakrishnan S**.

11. **Radhakrishnan S**, Cunningham ET, Iwach A. Inflammatory disease and glaucoma. In: Samples J and Schacknow P, eds. Clinical Glaucoma Care – The Essentials. Springer; 2014:375-90.
12. Complications of glaucoma surgery. **Radhakrishnan S**, Iwach AG. In: Ichhpujani P, Spaeth GL and Yanoff M, eds. Expert Techniques in Ophthalmic Surgery. First edition. 2015:385-93.
13. Development in anterior segment imaging for glaucoma. **Radhakrishnan S, Yarovoy D**. Current Opinion in Ophthalmology. 2014;25:98-103.
14. Diagnosis and Monitoring of Primary Angle Closure. **Radhakrishnan S, Chen L**. Current Ophthalmology Reports. 2015;3:51-57.

TERRI-DIANN PICKERING, M.D.

EMPLOYMENT

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Private practice: 2001 to present

Gary Aguilar, MD, Inc.
909 Hyde Street, Suite 530
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Telephone: (415) 775-3392
Facsimile: (415) 776-7456
Private practice: 1999-2005

Lee K. Schwartz, MD, Inc.
2300 California Street, Suite 300
San Francisco, CA 94115
Telephone: (415) 921-7555
Facsimile: (415) 921-1475
Private practice: 1999-2001

EDUCATION

University of Southern California, Doheny Eye Institute
Los Angeles, California
Fellowship: Glaucoma 1998-1999

University of California San Francisco, Department of Ophthalmology
San Francisco, California
Residency: Ophthalmology 1995-1998

California Pacific Medical Center, Department of Medicine
San Francisco, California
Internship: Medicine 1994-1995

Harvard Medical School
Boston, Massachusetts
Medical Doctorate: 1990-1994

Johns Hopkins University, School of Arts and Sciences
Baltimore, Maryland
B.A.: Biophysics (with Departmental Honors) 1986-1990

ACADEMIC APPOINTMENTS

California Pacific Medical Center, San Francisco: Clinical Instructor, Department of
Ophthalmology, 2000 to present

St. Mary's Medical Center, San Francisco: Chairperson, Department of Ophthalmology 2004 - 2006

St. Francis Medical Center, San Francisco: Institutional Review Board 2004

OTHER APPOINTMENTS

San Francisco Medical Society: Board of Directors, 2010 to present

Glaucoma Research Foundation: Chairperson, Patient Education Committee, 2010 to 2012

American Board of Ophthalmology: Oral Boards Examiner, 2006 to present

Blue Shield of California: Credentialing Committee, 2000 to present

American Academy of Ophthalmology: Eye Health and Public Information Task Force 2003-2004

CERTIFICATIONS

American Board of Ophthalmology: Board Certified, 2000 and Re-Certified, 2010

California Board of Medical Examiners: Licensed, 1995 to present

HONORS

Best Doctors in America 2009 - 2012

Harvard Medical School

Student National Medical Association Research Forum
Award for Clinical Research, 1993

Hartford Foundation / American Federation for Aging Research
Scholarship in Geriatric Pharmacology, 1991

The Johns Hopkins University

Beneficial-Hodson Academic Merit-Based Scholarship, 1986-1990

Seal of Excellence of Service, 1990

Alpha Epsilon Delta Pre-Medical Honor Society, 1987-1990

RESEARCH

Massachusetts Eye and Ear Infirmary

Photorefractive keratectomy (PRK) research with Jonathan Talamo, M.D.
Modulation of corneal wound healing after PRK.
June 1993 to August 1993

The Johns Hopkins University

Basic science research with Richard Cone, M.D.
Investigation of sperm to antibody binding in order to devise contraceptive/prophylactic agents.
September 1988 to May 1990

Basic science research with Andrew Harris, M.D.
Investigation of the properties of gap junction membrane channel proteins.
September 1988 to May 1990

PUBLICATIONS/POSTERS

Pickering, T. Glaucoma Associated with Chemical Burns. *Glaucoma Today*, May/June 2012.

Li Y, **Pickering T-D**, Radhakrishnan S, Iwach AG. Bleb Needling after Express Filtration Device Implantation. Poster at the annual meeting of the American Glaucoma Society, New York, New York, March 2012.

Pickering, T. The Ex-PRESS glaucoma filtration device experience. *Ophthalmology Times*, January 2011.

PUBLICATIONS/POSTERS (continued)

Rudavska L, Shi JM, Iwach AG, Jasti S, **Pickering T-D**, Hetherington J, Tanaka G, Radhakrishnan S. Repeat selective laser trabeculoplasty in patients with open-angle glaucoma. *Ophthalmology*, 2008.

Pickering T-D. Glaucoma and pregnancy. In GLEAMS, September 2008, published by the Glaucoma Research Foundation..

Pickering T-D. OCT applications in glaucoma. In *Ophthalmology Management*, May 2007.

Shi JM, Iwach AG, Mata-Plathy M, Novack GD, Aykan U, **Pickering T-D**, Wong PC, Dickens CJ. Efficacy of Selective Laser Trabeculoplasty in Primary Open-Angle Glaucoma. Poster at the annual meeting of the American Glaucoma Society, San Francisco, California, 2007.

Pickering T-D, Wong PC, Dickens CJ, Hoskins, Jr. HD: The Developmental Glaucomas, Chapter 51 in Duane's *Clinical Ophthalmology*, Tasman & Jaeger eds. 2004.

Pickering T-D, Carter SR: Cyanoacrylate Tissue Adhesive in CO2 Laser Blepharoplasty. Poster at ARVO, Fort Lauderdale, Florida, 1999.

Pickering T-D, Gurwitz JH, Zaleznik D, Noonan JP, Avorn J: The appropriateness of oral fluoroquinolone prescribing in the long-term care setting. *J Am Geriatrics Soc* 42:28-32, 1994.

PRESENTATIONS

Optic Nerve Imaging & Progression: When is it Time to Change Treatment?

National Medical Association, Annual Meeting
New Orleans, Louisiana, July 2012

Trabeculectomy: Improving Outcomes

Glaucoma 360 Symposium, Glaucoma Research and Education Group
San Francisco, California, February 2012

Glaucoma Medications 2011

Pacific Vision Institute
San Francisco, California, October, 2011

Surgical Procedures for Glaucoma

Glaucoma Research Foundation Board of Directors Meeting
San Francisco, California, April, 2011

Uveitis

Glaucoma Symposium, Glaucoma Research and Education Group
San Francisco, California, February 2011

Glaucoma and the Aging Eye

Golden Gate Breakfast Club
San Francisco, California, December 2010

The Ex-PRESS Experience

Presented at Glaucoma Management: The Next Era
ALCON Educational Meeting
Dallas, Texas, October 2010

The Ex-PRESS Experience

Presented at the ALCON speaker booth
American Academy of Ophthalmology, Annual Meeting
Chicago, Illinois, October 2010

How Can I Better Manage Visual Field Progression?

National Medical Association, Annual Meeting
Orlando, Florida, August 2010

PRESENTATIONS (continued)

Ex-PRESS Shunts: Here to Stay?

Cordes Society Meeting, University of California San Francisco Department of Ophthalmology
San Francisco, California, March 2010

Ex-PRESS Shunts: Here to Stay?

Glaucoma Symposium, Glaucoma Research and Education Group
San Francisco, California, February 2010

Ocular Imaging in Glaucoma

National Medical Association, Annual Meeting
Las Vegas, Nevada, July 2009

Exfoliation Syndrome

Glaucoma Symposium, Glaucoma Research and Education Group
San Francisco, California, February 2009

The Diversity of Glaucoma

Ocular Symposium
San Francisco, California, June 2008

Update on Ocular Medications

San Francisco Cornea, Cataract, and Refractive Surgery Symposium
San Francisco, California, April 2008

Glaucoma and Pregnancy

Glaucoma Symposium, Glaucoma Research and Education Group
San Francisco, California, February 2008

Beyond Language Differences: Increasing Cultural Competency in Your Practice

Clinical Instruction Course
American Academy of Ophthalmology, Annual Meeting 2007

Ocular Hypertension and Optic Nerve Head Imaging

Ocular Symposium
San Francisco, California, June 2007

Current Challenges in Glaucoma Management

Unite For Sight International Health Conference, Stanford University School of Medicine
Palo Alto, California, April 2007

To Tube or Not to Tube

Glaucoma Symposium, Glaucoma Research and Education Group
San Francisco, California, February 2007

Pediatric Glaucoma Update

Glaucoma Symposium, Glaucoma Research and Education Group
San Francisco, California, February 2006

Congenital Glaucoma

Clinical Instruction Course, University of California San Francisco Department of Ophthalmology
San Francisco, California, August 2005

Angle Surgeries for Glaucoma

Glaucoma Symposium, Glaucoma Research and Education Group
San Francisco, California, February 2005

Point-Counterpoint in Glaucoma: The Experts Debate

Clinical Instruction Course
American Academy of Ophthalmology, Annual Meeting 2002 to 2004

PRESENTATIONS (continued)

Challenges in Glaucoma

Ocular Symposium

San Francisco, California, June 2004

Corneal Pachymetry

Asian Optometric Study Group

San Francisco, California, May 2004

Normal Tension Glaucoma

Morgan Symposium, University of California Berkeley School of Optometry

Emeryville, California, April 2004

Cataract Surgery in Glaucoma Patients

Glaucoma Symposium, Glaucoma Research and Education Group

San Francisco, California, February 2003 & 2004

Ethnic Variations in Ocular Parameters: Corneal Thickness and the Optic Nerve

Asian Optometric Study Group

San Francisco, California, June 2003

Cornea and Lens Related Glaucomas

Clinical Instruction Course, California Pacific Medical Center Department of Ophthalmology

San Francisco, California, May 2003

Surgically Induced Angle Closure

Glaucoma Grand Rounds, University of California San Francisco Department of Ophthalmology

San Francisco, California, September 2002

Pharmacologic Treatments of Ocular Disorders

24th Annual Seminar in General Medicine

City of Hope National Medical Center, Duarte, California, June 1999

Indications for Glaucoma Drainage Devices

Glaucoma Symposium, University of Southern California, Doheny Eye Institute

Los Angeles, California, December 1998

Cyanoacrylate Tissue Adhesive in CO₂ Laser Blepharoplasty

Cordes Society Meeting, University of California San Francisco Department of Ophthalmology

San Francisco, California, April 1998

Central Serous Retinopathy in Non-Caucasian Populations

Pacific Coast Oto-Ophthalmic Society Meeting

San Diego, California, April 1998

SOCIETIES & ORGANIZATIONS

American Academy of Ophthalmology: Eye Care America Volunteer, 2003 to present

Glaucoma Research Foundation: GLEAMS Editorial Board Member, 2010 to present

San Francisco Medical Society: Board of Directors, 2011 to present

Glaucoma Research Foundation: Chairperson, Patient Education Committee, 2010 to 2012

San Francisco Medical Society: Editorial Board Member, 2007 to 2010

American Glaucoma Society

California Academy of Eye Physicians and Surgeons

Sinkler-Miller Medical Association

VOLUNTEER ACTIVITIES

Free glaucoma screening:

Fundus photo screening for Prevent Blindness Northern California, San Francisco, CA, March 2012

Vision Health Fair with Prevent Blindness Northern California, Oakland, CA, October 2010

At the Black EXPO with the Glaucoma Research Foundation, Oakland, CA, July 2008

In an African-American neighborhood, San Francisco, CA, July 2003 and 2002

CURRICULUM VITAE
Andrew G. Iwach, MD

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55 Stevenson Street
San Francisco, California 94105-2936

Contact Information Tel.: (415) 981-2020
Fax: (415) 981-2019
www.glaucomaSF.com

Languages English, Ukrainian, some Russian and Spanish

Education

1976-1980 School of Engineering
University of California, Los Angeles

1980-1984 School of Medicine
University of California, Los Angeles

1984-1985 Internship
Mercy Hospital, San Diego, California

1985-1988 Residency in Ophthalmology
Stanford University Medical Center

1988-1989 Robert N. Shaffer Glaucoma Fellow
University of California, San Francisco

Board Certification, Licensure

1984 National Board of Medical Examiners
1985 California State Medical License
1991 American Board of Ophthalmology

Honors

1977 Phi Eta Sigma Honor Society
1978 Tau Beta Pi Engineering Honor Society
1982 Lange Medical Award for Academic Achievement
1982 American Cancer Society Research Fellowship
1982 UCLA Dean's Fund Medical Research Fellowship
1987 Stanford Ophthalmology Resident Research Award
1994 American Academy of Ophthalmology Honor Achievement Award
2004 American Academy of Ophthalmology Senior Honor Achievement Award
2012 American Academy of Ophthalmology Secretariat Award

Ophthalmic Industry Consultant/Lecturer

1990 - Present	Merck Sharpe & Dohme Pharmaceuticals
1990 - Present	Allergan Pharmaceuticals
1994 - Present	Alcon Pharmaceuticals
1999 - Present	Novartis Pharmaceuticals
2001 - Present	Lumenis (Coherent) Lasers
2002 - Present	Pfizer (Pharmacia) Pharmaceuticals
2003 - Present	Zeiss-Humphrey Instruments
2013 - Present	Ellex

Appointments

Glaucoma Center of San Francisco
Executive Director
2005-Present

University of California, San Francisco
Associate Clinical Professor of Ophthalmology
1992-Present

American Board of Ophthalmology
Examiner, 2012-Present

Glaucoma Research Foundation
Board Chair, 2011-Present
Vice President, 2010-2011
Treasurer of the Board, 2005-2010
Secretary of the Board, 2003-2006
Member, Board of Directors, 2000-Present
Research Director, 1989-1990

American Academy of Ophthalmology
Fellow, 1991-Present
Subcommittee Member, AAOE Editorial Committee, 2014-Present
Media Advisory Task Force Member, 2009-Present
Secretary of Communications, 2006-2011
Academy Express Chief Medical Editor, 2006-2011
EyeCare America Volunteer, 1991- Present
Committee Member, Patient Education Committee, 2006-2011
Chair, Communications Advisory Board, 2006-2011
Committee Member, Committee on Medical Information Technology, 1998-2004
Media Spokesperson, 1992 - Present
Committee Member, Computer-Based Patient Records Activities, 1998

American Glaucoma Society
Fellow, 1992 - Present
Committee Member, Practice Management Subcommittee, 2015- Present

Glaucoma 360 New Horizons Forum
Co-Founder and Moderator, 2012-present

Glaucoma Research and Education Group
Co-Founder and Executive Director, 1994 - Present
Annual Glaucoma 360 CME Program (previously Annual Glaucoma Symposium)
Program Director and Moderator, 1997 - Present

Eye Surgery Center of San Francisco
Co-Founder

St. Mary's Hospital & Medical Center
Chairman, Department of Ophthalmology, 1999-2007

Member, Continuing Medical Education Committee, 2001-2007

San Francisco Medical Society
Member, Professional Relations and Ethics Committee, 2000 - Present

Glaucoma Associates of Northern California, Inc.
Glaucoma Specialist
1989-2005

American College of Surgeons
Fellow

Pacific Coast Oto-Ophthalmologic Society
Program Chairman, 1995-1996

National Women's Health Resource Center
Advisory Council Member

Best Doctors,
Peer-Selected Referral Listing, 2001-Present

Castle Connolly America's Top Doctor
Peer-Nominated Referral Listing, 2008-Present

Certificate of Special Congressional Recognition
for exemplary service to patients
from Congresswoman Jackie Speier and Senator Dianne Feinstein

Ophthalmology
Scientific Reviewer, 1995-Present

American Journal of Ophthalmology
Scientific Reviewer, 1995-Present

Archives of Ophthalmology
Scientific Reviewer, 1995-Present

Ophthalmic Surgery and Lasers
Scientific Reviewer, 1995-Present

Journal of Glaucoma
Scientific Reviewer, 1996-Present

EyeCare Technology
Editorial Board, 1993-1996

Super Doctors
Peer-Nominated Referral Listing, 2012-Present

Hospital Staff Affiliations

University of California, San Francisco Medical Center, San Francisco
California Pacific Medical Center, San Francisco
St. Mary's Medical Center, San Francisco
Kaiser Permanente Hospital, San Francisco
Summit Hospital, Oakland
Eye Surgery Center of San Francisco

Research Involvement

THC:YAG laser for use in glaucoma
Computerized medical database management

Long-term prognosis for glaucoma in Sturge-Weber Syndrome
Ophthalmic clinical drug studies including phase I, II, III, and IV
Transconjunctival application of mitomycin-C in filtering surgery
Applications for optical coherence tomography in glaucoma
Selective laser trabeculoplasty
ExPRESS shunt implantation
Minimally invasive glaucoma surgery

Thesis Collaborations

“Segregation analysis of primary congenital glaucoma” (doctorate thesis submitted 1995)
“The effectiveness of art therapy on self-esteem, self-concept, and depression in children with glaucoma” (masters thesis submitted 1998)

Professional Memberships

American Glaucoma Society, Fellow
American Academy of Ophthalmology, Fellow
American College of Surgeons, Fellow
American Medical Association
California Medical Association
Frederick C. Cordes Eye Society
San Francisco County Medical Association
Alameda-Contra Costa Medical Association
West Coast Glaucoma Society

Presentations

- 1987 Personal Computers in an Eye Clinic and Eye Pathology Laboratory
 Scientific Exhibit, Senior Author
 American Academy of Ophthalmology, Annual Meeting
 Dallas, TX
- Traumatic Hyphema: A Comprehensive Review
 Stanford University Medical Center
 Stanford, CA
- 1988 Computers in an Eye Pathology Laboratory
 Association of Ophthalmic Pathologists
 Dallas, TX
- Intraocular Lens Power Calculations and Analysis Simplified
 Stanford University Ophthalmology Research Seminar
 Stanford, CA
- Personal Computers in an Eye Clinic and Eye Pathology Laboratory
 Scientific Exhibit, Senior Author
 American Academy of Ophthalmology, Annual Meeting
 Las Vegas, NV
- 1989 Medline: A Simplified Approach to Searching Commercial Databases
 Scientific Exhibit, Senior Author
 Analysis of Medical and Surgical Management of Glaucoma in
 Sturge-Weber Syndrome, Paper
 American Academy of Ophthalmology, Annual Meeting
 New Orleans, LA
- Personal Computers, Relational Databases, and Statistical Packages Integrated for Data
 Analysis: Review of Postoperative Lens Implant Refractive Results as a Case Study, Poster
 Association for Research in Vision & Ophthalmology, Annual Meeting
 Sarasota, FL

- Classification of the Glaucomas
Stanford University Basic Science Course, Instructor
Stanford, CA
- 1990 A New Contact Neodymium:YAG Laser for Cyclophotocoagulation, Poster
Stability and Contamination Potential for 1% 5-Fluorouracil Solution, Poster
Association for Research in Vision & Ophthalmology, Annual Meeting
Sarasota, FL
- Holmium Thermal Sclerostomy Study
University of Oklahoma Laser Sclerostomy Symposium
Oklahoma City, OK
- Medline: A Simplified Approach to Using Powerful Commercial Databases
Scientific Exhibit, Senior Author
Automated Perimetry Skills Transfer Course, Instructor
Glaucoma: News & Views, Instructor
American Academy of Ophthalmology, Annual Meeting
Atlanta, GA
- Holmium Laser: A New Laser Treatment for Glaucoma
Deuxieme Seminaire de Perimetrie
Brussels, Belgium
- Tonometry
Stanford University Basic Science Course, Instructor
Stanford, CA
- Angle-Closure Glaucoma
University of California, San Francisco Basic Science Course
San Francisco, CA
- Holmium Laser Sclerostomy Workshops and Symposia, Instructor
Central Hospital, Paris, France
St. Joseph's Hospital, Paris, France
Rothchild Eye Institute, Paris, France
Bologna University, Bologna, Italy
San Francisco, CA
- 1991 Glaucoma Surgery Procedures and Their Indications
University of California, Berkeley, School of Optometry
Berkeley, CA
- Holmium Thermal Sclerostomy
Pacific Coast Oto-Ophthalmological Society, Annual Meeting
Monterey, CA
- Holmium Laser Sclerostomy
American Osteopathic Colleges of Ophthalmology & Otolaryngology, Head & Neck Surgery 75th
Clinical Assembly
Monterey, CA
- Current Trends in Glaucoma
Consortium of Ophthalmic Research & Education
Santa Cruz, CA
- Subconjunctival THC:YAG (Holmium) Laser Sclerostomy Ab Externo, Poster
Association for Research in Vision & Ophthalmology, Annual Meeting
Sarasota, FL
- Current Trends in Glaucoma
California Optometric Association Annual Congress

Sacramento, CA

Medical Treatment, Visual Fields, and Surgical Advances in the Management of
Glaucoma
American Society of Ophthalmic Registered Nurses Update '91
San Francisco, CA

THC:YAG Laser Thermal Sclerostomy
Stanford University, Dept. of Ophthalmology, Grand Rounds
Stanford, CA

Subconjunctival THC:YAG (Holmium) Laser Ab Externo Sclerostomy
American Society for Laser Medicine & Surgery
San Diego, CA

Glaucoma: Current Concepts
Alameda-Contra Costa Counties Optometric Society
Berkeley, CA

Subconjunctival Limbal Sclerostomy with the Holmium Laser
Dallas Spring Ophthalmology Symposium
Dallas, TX

Holmium Laser Sclerostomy Seminar & Workshop, Program Chair
University of California, San Francisco, Dept. of Ophthalmology
San Francisco, CA

Tonometry
Anterior Segment Anatomy & Aqueous Dynamics
Computer Searching
Stanford University Basic Science Course, Instructor
Stanford, CA

Medline: A Simplified Approach to Using Powerful Commercial Databases
Scientific Exhibit, Senior Author

Automated Perimetry Skills Transfer Course, Instructor

Glaucoma: News & Views, Instructor
American Academy of Ophthalmology, Annual Meeting
Anaheim, CA

1992 THC:YAG Laser Thermal Sclerostomy
San Antonio Society of Ophthalmology
San Antonio, TX

Holmium Laser Sclerostomy Workshops and Symposia
Cedar Sinai Medical Center, Los Angeles, CA
Oshima Ophthalmology Hospital, Fukuoka, Japan

Holmium Laser Thermal Sclerostomy
Nd:YAG Laser Cyclophotocoagulations in the Therapy of Glaucomas
Ninth Congress of the European Society of Ophthalmology
Brussels, Belgium

Holmium Laser Sclerostomy Seminar & Workshop, Program Chair
University of California, San Francisco, Dept. of Ophthalmology
San Francisco, CA

Subconjunctival THC:YAG (Holmium) Laser Thermal Sclerostomy Ab Externo
International Society of Optical Engineering
Los Angeles, CA

THC:YAG (Holmium) Laser Thermal Sclerostomy Ab Externo

Fourth Congress of the European Glaucoma Society
Amsterdam, Netherlands

Laser Sclerostomy
Orange County Society of Ophthalmology
Orange, CA

Filtration Surgery in the 1990s
University of Washington School of Medicine, Visiting Professor
Seattle, Washington

Laser Optic Nerve Sheath Fenestration, Poster
Association for Research in Vision & Ophthalmology, Annual Meeting
Sarasota, FL

Tonometry
Stanford University Basic Science Course, Instructor
Stanford, CA

Glaucoma Section Moderator
Pacific Coast Oto-Ophthalmological Society, Annual Meeting
Kona, HI

Ab Externo Holmium Laser Sclerostomies
University of California, Irvine College of Medicine, Dept. of Ophthalmology
Irvine, CA

Holmium Laser Sclerostomy: Surgical Technique
Baylor University Medical Center, Dept. of Ophthalmology
Dallas, TX

Medline: A Simplified Approach to Using Powerful Commercial Databases
Scientific Exhibit, Senior Author
Automated Perimetry Skills Transfer Course, Instructor
Glaucoma: News & Views, Instructor
American Academy of Ophthalmology, Annual Meeting
Dallas, TX

1993 THC:YAG Laser for Sclerostomy in the Management of Glaucoma
International Society of Optical Engineering (SPIE)
Los Angeles, CA

Visual Fields and Interpretation
American Society of Ophthalmic Registered Nurses, Regional Meeting
San Francisco, CA

Update on Holmium Laser Sclerostomy
16th Annual Midwest Glaucoma Symposium
Kansas City, MO

Visual Fields Workshop
Visual Fields Interpretation
On-Line Databases
EyeTech: The Eye Care Technology Exposition
Dallas, TX

Ophthalmology Scientific Program, Moderator
Holmium Laser Sclerostomy: An Update
Pacific Coast Oto-Ophthalmologic Society, Annual Meeting
Portland, OR

Thermal Sclerostomy Ab Externo with the THC:YAG (Holmium) Laser

Fourth International Congress of Laser Technology in Ophthalmology
Lugano, Switzerland

Holmium Laser Sclerostomy Symposium & Wet Lab
Yonsei University Medical College
Tokyo, Japan

Holmium Laser Workshop
Seoul, Korea

Acute Postoperative Glaucoma
California Association of Ophthalmology
San Francisco, CA

Anterior Segment Anatomy
Glaucoma Surgery
Tonometry
Stanford University Basic Science Course, Instructor
Stanford, CA

Medline: A Simplified Approach to Using Powerful Commercial Databases
Scientific Exhibit, Senior Author
Glaucoma: News & Views, Instructor
American Academy of Ophthalmology, Annual Meeting
Chicago, IL

1994 THC:YAG Laser Sclerostomy Clinical Trial
International Society of Optical Engineering
Los Angeles, CA

Optic Nerve Head and Nerve Fiber Layer Workshop
What's New in the Glaucoma Pharmacopia
Uses and Abuses of Lasers in Glaucoma
Visual Field Interpretation Workshop
On-Line Medical Databases
EyeTech: The Eye Care Technology Exposition
Las Vegas, NV

Ophthalmology Scientific Program, Moderator
Pacific Coast Oto-Ophthalmologic Society, Annual Meeting
Huntington Beach, CA

Laser Sclerostomy
27th International Congress of Ophthalmology
Toronto, Canada

Update of the Holmium Laser Sclerostomy Study: 30-Month Report
Antimetabolites and Filtering Surgery: The Good and The Bad
VideoGlaucoma 1994
Milan, Italy

Laser Cyclophotocoagulation
California Pacific Medical Center, Department of Ophthalmology
San Francisco, CA

Glaucoma: Current Views and News
Chronic Use of Iopidine
Cyclophotocoagulation: Indications and Methods
Holmium Laser Sclerostomy: Indications and Methods
Filtration with 5-FU on a Sponge
Other New Methods of Glaucoma Diagnosis and Treatment
Oregon Health Sciences University Glaucoma Seminar

Portland, OR
Las Vegas Ophthalmology Society, Las Vegas, NV
The Eye and Aging Seminar, San Francisco, CA
Leigh Valley Ophthalmic Society, Bethlehem, PA
Redwood Empire Ophthalmological Society, Santa Rosa, CA
Pierce County / Madigan Resident Program, Tacoma, WA
UCLA, Glaucoma Conference, Los Angeles, CA
Bakersfield Ophthalmology Journal Club, Bakersfield, CA

Neurological Visual Fields

American Society of Ophthalmic Registered Nurses, Annual Meeting
San Francisco, CA

Epidemiology of Glaucoma

Stanford University Basic Science Course, Instructor
Stanford, CA

Medline: A Simplified Approach to Using Powerful Commercial Databases

Scientific Exhibit, Senior Author

Glaucoma: News & Views, Instructor

American Academy of Ophthalmology, Annual Meeting
San Francisco, CA

1995

Laser Cyclophotocoagulation: An Overview

California Pacific Medical Center, Department of Ophthalmology
San Francisco, CA

Ophthalmology for Primary Care Physicians: Glaucoma News and Views

5th International Convention of Physicians, Dentists, & Pharmacists of the FreeWorld 1995
San Jose, CA

Lasers in Ophthalmology

American Society of Ophthalmic Registered Nurses, Regional Meeting
San Francisco, CA

Ophthalmology Workshop for Primary Care Physicians

American College of Physicians
Philadelphia, PA

Epidemiology of Glaucoma

Stanford University Basic Science Course, Instructor
Stanford, CA

Medline: A Simplified Approach to Using Powerful Commercial Databases

Scientific Exhibit, Senior Author

Glaucoma: News & Views, Instructor

American Academy of Ophthalmology, Annual Meeting
Atlanta, GA

1996

Advances in Glaucoma and Cataract Management: Intraoperative 5-FU Sponge

Stanford University School of Medicine, Department of Ophthalmology
Stanford, CA

Visual Field Interpretation Workshop, Instructor

Glaucoma: News & Views, Instructor

Congenital Glaucoma, Instructor

Medline: A Simplified Approach to Using Powerful Commercial Databases, Senior

Instructor
American Academy of Ophthalmology, Annual Meeting
Chicago, IL

Lasers in Glaucoma: Principles and Applications

- Filtration Surgery: Concepts and Development
Stanford University Basic Science Course, Instructor
Stanford, CA
- Current Surgical Management of Glaucoma
Current Medical & Laser Management of Glaucoma
Visual Fields: Interpretation, Lecture and Workshop, Instructor
EyeTech: The Eye Care Technology Exposition
Chicago, IL
- Introduction to Safe Computing: Getting Started Without Getting in Trouble
Clinical Laboratory Scientists of Alaska, Annual Alaska State Convention
Anchorage, AK
- 1997 Glaucoma Medications & Lasers Update
1st Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA
- 9TH Annual Alumni Postgraduate Convention
Loma Linda University, Loma Linda, CA
- New Concepts in Glaucoma Management
Sequoia Health Services, Redwood City, CA
- Trauma Specialty Focus: Angle-Closure and Angle Recession Glaucoma
Glaucoma Management Update
Glaucoma Symposium
American Society of Ophthalmic Registered Nurses, Annual Meeting
San Francisco, CA
- Glaucoma Update
American Society of Ophthalmic Registered Nurses, Annual Meeting
San Francisco, CA
- Inexpensive and Easy Computerized Searching of the Ophthalmic Literature,
Senior Instructor
Visual Fields Interpretation Workshop, Instructor
Glaucoma: News & Views, Instructor
American Academy of Ophthalmology, Annual Meeting
San Francisco, CA
- Lasers in Glaucoma: Principles and Applications
Filtration Surgery: Concepts and Development
Stanford University Basic Science Course, Instructor
Stanford, CA
- Introduction to Safe Computing: Getting Started Without Getting in Trouble
Clinical Laboratory Scientists of Alaska, Annual Alaska State Convention
Anchorage, AK
- 1998 Glaucoma Medications: An Update
ALTA California Ophthalmology Society Group
Sacramento, CA
- Glaucoma Medications & Lasers Update
2nd Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA
- Visual Field Interpretation Course and Workshop, Instructor
Inexpensive and Easy Computerized Searching of the Ophthalmic Literature, Senior
Instructor
American Academy of Ophthalmology, Annual Meeting, Instructor

New Orleans, LA

Advances in Cataract & Glaucoma Surgery
American Society of Ophthalmic Registered Nurses, Annual Meeting
New Orleans, LA

Open-Angle Glaucoma: A Focus on Current Management
Ophthalmic Society of the Redwood Empire
Santa Rosa, CA

Update on Surgical Techniques
Northern California Kaiser Permanente Ophthalmologic Society
Oakland, CA

Lasers in Glaucoma: Principles and Applications
Filtration Surgery: Concepts and Development
Stanford University Basic Science Course, Instructor
Stanford, CA

Current Surgical Management of Glaucoma
Current Laser Glaucoma Procedures
Review of Glaucoma Medications Used Currently in the USA
Peruvian Congress of Ophthalmology, Guest Lecturer
Lima, Peru

1999 Glaucoma Medications: Who's on First?
Barkan Society Annual Meeting
San Francisco, CA

Surgical Frontiers for Y2K - Selective Laser Trabeculoplasty
UCSF Dept. of Ophthalmology, Annual Meeting
San Francisco, CA

Management of Refractory Glaucomas
American Society of Ophthalmic Registered Nurses, Annual Meeting
Orlando, FL

Glaucoma Medications & Lasers Update
3rd Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA

Visual Field Interpretation Course & Workshop, Instructor
Glaucoma: News & Views, Senior Instructor
American Academy of Ophthalmology, Annual Meeting
Orlando, FL

Developmental and Childhood Glaucomas
Lasers in Glaucoma: Principles and Applications
Filtration Surgery: Concepts and Development
Stanford University Basic Science Course, Instructor
Stanford, CA

Current Surgical Management of Glaucoma & Cataract
The Use of Antimetabolites in Filtering Surgery
Glaucoma Medications: The Changing Algorithms
University of Colorado Third Annual Spring Ophthalmology Symposium
Denver, CO

2000 Glaucoma Medications: Who's on First?
F. C. Cordes Eye Society/UCSF, Annual Meeting
San Francisco, CA

Glaucoma Medications & Lasers Update
4th Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA

Developmental & Childhood Glaucomas
Lasers in Glaucoma: Principles & Applications
Filtration Surgery: Concepts & Development
Stanford University Basic Science Course, Instructor
Stanford, CA

Clinical & Surgical Updates in the Care of the Glaucoma Patient
American Society of Ophthalmic Registered Nurses, Regional Meeting
San Francisco, CA

Surgical Management of Glaucoma
Management of Refractory Glaucomas
American Society of Ophthalmic Registered Nurses, Annual Meeting
Dallas, TX

Laser Therapies
California Pacific Medical Center, Department of Ophthalmology
San Francisco, CA

Glaucoma: News & Views, Senior Instructor
Visual Field Interpretation Course & Workshop, Instructor
American Academy of Ophthalmology, Annual Meeting, Instructor
Dallas, TX

Rescula: Bringing New Options to Glaucoma Treatment
The California Eye Institute
San Francisco, CA

2001 Glaucoma Medications & Lasers Update
5th Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA

Cataract Management in Glaucoma
California Pacific Medical Center, Department of Ophthalmology
San Francisco, CA

Glaucoma Update
Smith-Kettlewell Eye Research Institute
San Francisco, CA

Glaucoma Management 2001: An Update
American Society of Ophthalmic Registered Nurses, Annual Meeting
New Orleans, LA

Visual Field Interpretation Course & Workshop, Instructor
Glaucoma: News & Views, Senior Instructor
Transconjunctival Mitomycin-C in Needle Revisions of Failing Filtering Blebs, Poster
Long-Term Results of Noncontact Nd:YAG Cyclophotocoagulation for Neovascular
Glaucoma, Poster
American Academy of Ophthalmology, Annual Meeting
New Orleans, LA

Developmental and Childhood Glaucomas
Lasers in Glaucoma: Principles and Applications
Filtration Surgery: Concepts and Development
Stanford University Basic Science Course, Instructor
Stanford, CA

- Selective Laser Trabeculoplasty (SLT)
F. C. Cordes Eye Society, UCSF Alumni Annual Meeting
San Francisco, CA
- 2002 Glaucoma Medications & Lasers Update
6th Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA
- Point-Counterpoint in Glaucoma: The Experts Debate, Senior Instructor
Visual Field Interpretation Course & Workshop, Instructor
Long-Term Results of Noncontact Transcleral Neodymium:YAG Laser
Cyclophotocoagulation for Neovascular Glaucoma, Poster
Transconjunctival Mitomycin-C in Needle Revisions of Failed Filtering Blebs, Poster
American Academy of Ophthalmology, Annual Meeting
Orlando, FL
- Selective Laser Trabeculoplasty (SLT)
Lumenis
San Francisco, CA
- Glaucoma Update
Merck & Co.
Spokane, WA
Portland, OR
Fremont, CA
- Glaucoma Update
Alcon
San Diego, CA
- Comparison of Different Prostaglandins in the Treatment of Glaucoma
Pharmacia Forum, Guest Lecturer
Santa Rosa, CA
San Jose, CA
- Applications in Clinical Practice
Pharmacia Forum, Guest Lecturer
San Jose, CA
- Pearls in Ocular Diagnosis
Ocular Symposium
San Francisco, CA
- Developmental and Childhood Glaucomas
Lasers in Glaucoma: Principles and Applications
Filtration Surgery: Concepts and Development
Stanford University Basic Science Course, Instructor
Stanford, CA
- 2003 Glaucoma Medications & Lasers Update
7th Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA
- Glaucoma and Filtering Surgery
Meredith Morgan Symposium
University of California, Berkeley
- New Vistas Through Optical Coherence Tomography (Panel)
American Society of Cataract and Refractive Surgery, Annual Meeting
Zeiss-Humphrey Moderator
San Francisco, California

Developmental and Childhood Glaucomas
Lasers in Glaucoma: Principles and Applications
Filtration Surgery: Concepts and Development
Stanford University Basic Science Course, Instructor
Stanford, CA

OCT and Application in Glaucoma Management
Japanese Glaucoma Society, Annual Meeting
Tokyo, Japan

Glaucoma Update 2003
Orange County Society of Ophthalmology
Irvine, California

Comparison of Prostaglandin Analogs: XLT Study
Pfizer, Inc.
Eureka, CA
Santa Rosa, CA
San Francisco, CA
Beverly Hills, CA
New York, NY

Individualized Risk Assessment for Therapy Decisions
Pfizer, Inc.
Beverly Hills, CA

Selective Laser Trabeculoplasty (SLT)
Lumenis
San Francisco, CA
San Jose, CA
Palo Alto, CA
Sacramento, CA
Walnut Creek, CA
Spokane, WA

The Cornea's Impact on Glaucoma Management
Pacific Eye Institute
San Francisco, CA

Glaucoma Update
Alcon
Phoenix, AZ
Long Beach, CA
Portland, OR

Glaucoma Update
Merck & Co.
Irvine, CA

Glaucoma Subspecialty Day, Instructor
Point-Counterpoint: The Experts Debate, Senior Instructor
American Academy of Ophthalmology, Annual Meeting
Anaheim, CA

Maximizing Trabeculectomy Survival
UCSF Department of Ophthalmology, Annual Meeting
San Francisco, CA

Glaucoma Update
Filtering Surgery for Glaucoma
Ocular Symposium
Optometry Alumni Association of UC Berkeley

San Francisco, California

Optical Coherence Tomography
Korean Glaucoma Society
Seoul, South Korea

Filtering Surgery for Glaucoma
UCSF Department of Ophthalmology
San Francisco, CA

2004 Glaucoma Medications & Lasers Update
8th Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA

Lasers and Glaucoma Management
UCSF Department of Ophthalmology
San Francisco, CA

Glaucoma Update 2004
Asian Optometric Study Group
San Francisco, CA

Changing Trends in Glaucoma Management
Alcon
Pasadena, CA
Riverside, CA
Phoenix, AZ
Palm Desert, CA
Newport Beach, CA

Glaucoma Update
Pfizer, Inc.
Seattle, WA
San Francisco, CA

XLT: Judging the Evidence
Persistency with Glaucoma Medical Therapy
Lumenis Symposium
American Society of Cataract & Refractive Surgery, Annual Meeting
San Diego, CA

Selective Laser Trabeculoplasty (SLT)
Lumenis
Houston, TX

Glaucoma Update
Ocular Symposium
Optometry Alumni Association of UC Berkeley
San Francisco, California

Glaucoma Review
Osler Institute Ophthalmology Board Review Course, Instructor
San Francisco, CA

Point-Counterpoint: The Experts Debate, Senior Instructor
American Academy of Ophthalmology, Annual Meeting
New Orleans, LA

Optical Coherence Tomography
Transconjunctival Needle Revisions of Failing Filtering Blebs
Royal Australian and New Zealand College of Ophthalmologists,
Annual Meeting

Melbourne, Australia

Selective Laser Trabeculoplasty (SLT)
UCSF Department of Ophthalmology, Annual Meeting
San Francisco, CA

2005 Glaucoma Medications & Lasers Update
 9th Annual Glaucoma Research & Education Group Glaucoma Symposium
 San Francisco, CA

Developmental/Congenital Glaucomas
Surgical Management of Glaucoma
Stanford University, Department of Ophthalmology
Stanford, CA

Developmental/Congenital Glaucomas
California Pacific Medical Center, Department of Ophthalmology
San Francisco, CA

Complexity of Cataract and Glaucoma in Ukrainians
Ukrainian Medical Association of North America, Scientific Conference
Edmonton, Alberta, Canada

Current Concepts in Glaucoma
Sacramento Optometric Society
Sacramento, CA

Transconjunctival Mitomycin-C in Needle Revisions of Failed Filtering Blebs
F. C. Cordes Eye Society, UCSF Alumni Annual Meeting
San Francisco, CA

Glaucoma: Initial Evaluation
American Society of Cataract & Refractive Surgery, Annual Meeting
Washington, DC

Glaucoma Update
Pfizer, Inc.
Honolulu, HI

Glaucoma Update
Ocular Symposium
San Francisco, CA

Current Concepts in Glaucoma Management
Ista Pharmaceuticals
Newport Beach, CA

Surgical Treatment of Glaucoma
UC San Francisco, Department of Ophthalmology
San Francisco, CA

Compliance and Persistence
Clinical Evaluation of the Normal-Tension Glaucoma Patient
Pfizer, Inc.
San Francisco, CA

Selective Laser trabeculoplasty
Lumenis
Beijing, People's Republic of China
Chicago, IL

Point-Counterpoint: The Experts Debate, Senior Instructor

Computerized Visual Field Interpretation Lab, instructor
Putting Patient Education to Work for Your Practice: Why and How To Do It Right
American Academy of Ophthalmology, Annual Meeting
Chicago, IL

The Importance of an Adherence Strategy
Pfizer, Inc.
Chicago, IL

Glaucoma Update 2005
Pfizer, Inc.
Fresno, CA
Monterey, CA
Agoura, CA
Beverly Hills, CA

Glaucoma: Laser Surgery
California Pacific Medical Center, Department of Ophthalmology
San Francisco, CA

Glaucoma: Laser Update
UC San Francisco, Department of Ophthalmology
San Francisco, CA

2006 Glaucoma Medications & Lasers Update
10th Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA

Glaucoma Update 2006
Ocular Symposium
San Francisco, CA

Glaucoma: Visual Field Evaluation
American Society of Cataract & Refractive Surgery, Annual Meeting
San Francisco, CA

Risk Evaluation in Glaucoma
Pfizer, Inc.
Pasadena, CA

Filtering Surgery
Stanford University School of Medicine, Dept. of Ophthalmology
Stanford, CA

Filtering Surgery
California Pacific Medical Center, Dept. of Ophthalmology
San Francisco, CA

Optical Coherence Tomography and Selective Laser Trabeculoplasty
Glaucoma Center of the Aiers Eye Clinic
Changsha, People's Republic of China

Optical Coherence Tomography and Selective Laser Trabeculoplasty
Lumenis
Shenzhen, People's Republic of China
Tiangjin, People's Republic of China

Adjunct Medications to Prostaglandins
Ista Pharmaceuticals
Las Vegas, NV

Glaucoma Management: Where Are We Today?

Pfizer, Inc.
Santa Barbara, CA

Glaucoma Review
Osler Institute Ophthalmology Board Review Course, Instructor
San Francisco, CA

Lasers and Filtering Surgery in Glaucoma
Bay Area Basic Science Course, Instructor
Stanford, CA

Angle-Closure Glaucoma
Who's on First?: Lasers vs. Medication
UC San Francisco, Department of Ophthalmology
San Francisco, CA

Risk Factors for Glaucoma
Glaucoma Medications Overview
The Role and Challenges of Filtering Surgery
Eye Bank of San Diego
San Diego, CA

SLT: An Update
Lumenis
Seattle, WA
San Jose, CA

Glaucoma Update 2006
Pfizer, Inc.
Stockton, CA
Modesto, CA

Impact of Central Corneal Measures on IOP
Merck & Co.
Redwood City, CA

SLT: Current Role in Glaucoma Management
Ellex Medical Lasers Limited
Melbourne, Australia
Sydney, Australia

Glaucoma Risk Evaluation and Treatment
Pfizer, Inc.
Dallas, TX

Putting Patient Education to Work for Your Practice: Why and How To Do It Right
Adjunctive Antifibrotic Agents with Bleb Needling Procedures
American Academy of Ophthalmology, Annual Meeting
Las Vegas, NV

Stratus OCT: Interpretation for Glaucoma Applications
Carl Zeiss Meditec
Las Vegas, NV

Optimal Treatment Algorithm for Glaucoma Management
Ophthalmology Times
Las Vegas, NV

SLT: Current Role in Glaucoma Management
Lumenis
Las Vegas, NV

- 2007 Glaucoma Medications & Lasers Update
 11th Annual Glaucoma Research & Education Group Glaucoma Symposium
 San Francisco, CA
- Filtering Surgery
 UC San Francisco, Department of Ophthalmology
 San Francisco, CA
- Lasers and Filtering Surgery in Glaucoma
 Bay Area Basic Science Course/Stanford University School of Medicine
 Stanford, CA
- Laser Surgery in Glaucoma
 California Pacific Medical Center, Dept. of Ophthalmology
 San Francisco
- Glaucoma Update
 Pfizer, Inc.
 Beverly Hills, CA
 Los Angeles
 San Jose, CA
- Managing Glaucoma: A Team Approach
 Pfizer, Inc. and UCLA Jules Stein Eye Institute
 Los Angeles, CA
- Surgical Options for Coexisting Uveitis and Glaucoma: What is the Role of Trabeculectomy, Pars Plana
 Vitreotomy and Tube Shunt Surgery?
 American Glaucoma Society
 San Francisco, CA
- Selective Laser Trabeculoplasty
 Lumenis
 Seattle, WA
- Who's On First? Medications vs. Lasers
 Morgan/Sarver Symposium of the UC Berkeley School of Optometry
 Berkeley, CA
- Glaucoma Update 2007
 Ocular Symposium
 San Francisco, CA
- Utilizing Technology for Ophthalmic Research and Education
 New Diagnostic and Therapeutic Modalities in the Management of Glaucoma
 European Ophthalmologic Society
 Vienna, Austria
- The Eyes Have It
 2007 9th Circuit Judicial Conference
 Honolulu, HI
- Lasers and Surgery in Glaucoma
 Bay Area Ophthalmologic Consortium/Stanford University School of Medicine
 Palo Alto, CA
- Remodeling a Filtering Bleb
 Beyond Language Difference: Increasing Cultural Competency in Your Practice to Improve Patient
 Communication and Compliance
 American Academy of Ophthalmology, Annual Meeting
 New Orleans, LA

- SLT: Current Role in Glaucoma Management
Lumenis
New Orleans, LA
Palo Alto, CA
- MicroPulse Laser Trabeculoplasty: Physician and Patient Perspectives
IRIDEX
New Orleans, LA
- Diurnal IOP Fluctuations
Merck & Co.
Berkeley, CA
- Glaucoma Review
American Academy of Ophthalmology, staff education
San Francisco, CA
- 2008 Glaucoma Medications & Lasers Update
12th Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA
- Lasers and Filtering Surgery in Glaucoma
Bay Area Basic Science Course/Stanford University School of Medicine
Stanford, CA
- Office Diagnosis of Open-Angle Glaucoma: What I Do and Why
Gonioscopy
Exfoliative Glaucoma
Combination Agents for Glaucoma
Trabeculectomy
UC San Francisco, Department of Ophthalmology
Napa Valley, CA
- MicroPulse Laser Trabeculoplasty
Trabeculectomy is Still the King
American Academy of Ophthalmology, Annual Meeting
Atlanta, GA
- MicroPulse Laser Trabeculoplasty
IRIDEX
Atlanta, GA
- SLT: Current Role in Glaucoma Management
Lumenis
Atlanta, GA
- 2009 Glaucoma Medications & Lasers Update
13th Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA
- Communicating Quality Care
Oregon Academy of Ophthalmology
Portland, OR
- Professional and Social Networking in Ophthalmology on the Internet
American Academy of Ophthalmology Mid-Year Forum
Washington, DC
- Factors in Glaucoma Therapy Decisions: Making the Best Choices for Your Patient
Pfizer, Inc.
Boston, MA
San Rafael, CA

Medications Verses Lasers: Who's On First?
Massachusetts Eye & Ear Infirmary, Dept. of Ophthalmology
Boston, MA

Glaucoma Update 2009
Ocular Symposium
San Francisco, CA

Ophthalmology Basics for the Physician's Assistant
Stanford University School of Medicine, Primary Care Associate Program
Stanford, CA

Congenital Glaucoma
California Pacific Medical Center, Department of Ophthalmology
San Francisco, CA

Lasers and Filtering Surgery in Glaucoma
Bay Area Basic Science Course/Stanford University School of Medicine
Stanford, CA

Lasers and Surgery in Glaucoma Management
Stanford University School of Medicine, Dept. of Ophthalmology
Stanford, CA

Why Take The Risk
Breakfast with the Experts
Can You Hear Me Now
American Academy of Ophthalmology, Annual Meeting
San Francisco, CA

2010

Glaucoma Medications & Lasers Update
14th Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA

Ophthalmology Overview for the Physician Assistant
Stanford University Primary Care Associate Program
Stanford, CA

ExPRESS Shunt: Pearls and Pitfalls
American Academy of Ophthalmology - American Glaucoma Society Joint Meeting, at the AAO
Annual Meeting
Chicago, IL

Why Take The Risk
Breakfast with the Experts
American Academy of Ophthalmology, Annual Meeting
Chicago, IL

Bleb Revision
UC San Francisco Dept. of Ophthalmology
San Francisco, CA

Medication, Lasers, & Surgery in Glaucoma Management
Stanford University School of Medicine, Dept. of Ophthalmology
Stanford, CA

Lasers and Filtering Surgery in Glaucoma
Bay Area Basic Science Course/Stanford University School of Medicine
Stanford, CA

2011

A Brave New World: Glaucoma Medications & Lasers Update
15th Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA

The ExPRESS Glaucoma Filtration Device
Alcon Pharmaceuticals
Los Angeles, CA

ExPRESS Shunt: From Skeptic to Believer
Alcon Pharmaceuticals
San Diego, CA

What You Should Know About Glaucoma and the Search for a Cure
National Association of Vision Professionals
San Francisco, CA

ExPRESS Shunt: Pearls and Pitfalls
American Academy of Ophthalmology - American Glaucoma Society Joint Meeting, at the AAO
Annual Meeting
Orlando, FL

Why Take The Risk
Breakfast with the Experts
American Academy of Ophthalmology, Annual Meeting
Orlando, FL

Lasers and Filtering Surgery in Glaucoma
Bay Area Basic Science Course/Stanford University School of Medicine
Stanford, CA

Panel Moderator
American Academy of Ophthalmology, Ophthalmic Business Council
San Francisco, CA

Glaucoma: Common Questions Ophthalmology Residents Ask
Stanford University, School of Medicine Dept. of Ophthalmology
Stanford, CA

2012

Glaucoma Management in a Brave New World
16th Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA

Open-Angle Glaucoma is a 24-Hour Disease - Shouldn't It Be Treated That way?
Alcon Pharmaceuticals
San Francisco, CA
Santa Cruz, CA

ExPRESS Shunt: From Skeptic to Believer
Alcon Pharmaceuticals
San Diego, CA

Perspectives in the Management of Elevated IOP
Merck & Co.
Chico, CA
San Francisco, CA
San Jose, CA
Las Vegas, NV

Glaucoma: Common Challenges Encountered

Ocular Symposium
San Francisco, CA

Ophthalmology Update
UC San Francisco, Dept of Ophthalmology
San Francisco, CA

Prostaglandins: What are the Alternatives?
Merck & Co.
Las Vegas, NV
Chico, CA
San Francisco, CA
San Jose, CA

Panel Moderator
American Academy of Ophthalmology, Ophthalmic Business Council
Palo Alto, CA

Current Role of SLT
American Academy of Ophthalmology Annual Meeting
Chicago, IL

Express Shunt: From Skeptic to Believer
Alcon Pharmaceuticals
Chicago, IL

Glaucoma Management in a Brave New World
UC San Francisco Dept. of Ophthalmology, December Course
San Francisco, CA

Glaucoma: Common Questions Ophthalmology Residents Ask
Stanford University, School of Medicine Dept. of Ophthalmology
Stanford, CA

2013

Congenital Glaucoma
California Pacific Medical Center, Dept of Ophthalmology
San Francisco, CA

Glaucoma: Managing the Odds
17th Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA

Perspectives in the Management of Elevated IOP
Merck & Co.
Cupertino, CA
Sacramento, CA

ExPRESS Shunt: From Skeptic to Believer
Alcon Pharmaceuticals, at the American Glaucoma Society
San Francisco, CA

ExPRESS Shunt : From Skeptic to Believer
Alcon Pharmaceuticals
San Francisco, CA

ExPRESS Shunt : From Skeptic to Believer
American Society of Cataract and Refractive Surgeons
San Francisco, CA

Current Role of SLT
Ellex

San Francisco, CA

Glaucoma Update 2013
Ocular Symposium
San Francisco, CA

Panel Moderator
American Academy of Ophthalmology, Ophthalmic Business Council
Palo Alto, CA

Glaucoma: Common Questions Ophthalmology Residents Ask
Stanford University, School of Medicine Dept. of Ophthalmology
Stanford, CA

Glaucoma & Lasers: Questions Residents Often Ask
UC San Francisco, Dept. of Ophthalmology
San Francisco, CA

Glaucoma Medications Vs. Lasers: Who's on First?
SLT is Not ALT Lite
Glaucoma Compliance Conundrum
Earlier is Better with SLT
Selective Trabeculoplasty: Current Role in Glaucoma Management
Ellex
New Orleans, LA

Glaucoma: Managing the Odds
UC San Francisco, Dept. of Ophthalmology
San Francisco, CA

2014

Managing Risk in the Treatment of Glaucoma
18th Annual Glaucoma Research & Education Group Glaucoma Symposium
San Francisco, CA

Glaucoma Update 2014
Ocular Symposium
San Francisco, CA

Approach to Neovascular Glaucoma
How I Select Goniotherapy Now and in the Future
Glaucoma Update 2014, UC San Francisco Dept. of Ophthalmology
Napa, CA

Glaucoma Management: Changing Treatment Algorithms
Glaucoma Update 2014, UC San Francisco Dept. of Ophthalmology
San Francisco, CA

Glaucoma Medications Vs. Laser: Who's on First?
Ellex
Chicago, IL

Glaucoma: Common Questions Ophthalmology Residents Ask
Stanford University, School of medicine Dept. of Ophthalmology
Stanford, CA

2015

Managing the Odds in the Treatment of Glaucoma
19th Annual Glaucoma 360 CME Program
San Francisco, CA

Glaucoma Update 2015
Ocular Symposium
San Francisco, CA

News & Views???

New Options

Glaucoma Update 2015, UC San Francisco Dept. of Ophthalmology
Napa, CA

Lasers & Surgery for Glaucoma

Stanford University, School of medicine Dept. of Ophthalmology
Stanford, CA

Congenital Glaucoma

California Pacific Medical Center, Dept of Ophthalmology
San Francisco, CA

2016

Managing the Odds in the Treatment of Glaucoma
20th Annual Glaucoma 360 CME Program
San Francisco, CA

Glaucoma: News and Views

1st Annual Optometric Glaucoma Symposium
San Francisco, CA

Publications

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Revised 2.29.2016