776th meeting of the New England Ophthalmological Society

THE FUTURE OF OPHTHALMOLOGY

ETHICS AND RISK MANAGEMENT
with B. Thomas Hutchinson Lecture

NEOS DISTINGUISHED ACHIEVEMENT AWARD RECIPIENT

September 6, 2019
Back Bay Event Center
180 Berkeley Street, Boston, MA
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180 Berkeley Street  
Boston, MA 02110

THE FUTURE OF OPHTHALMOLOGY  
Carolyn Kloek, MD, Moderator  
Shlomit Schaal, MD, Program Committee Coordinator

ETHICS AND RISK MANAGEMENT  
with B. Thomas Hutchinson Lecture  
Alice Lorch, MD, MPH, Moderator  
Carolyn Kloek, MD, Program Committee Coordinator

NEOS DISTINGUISHED ACHIEVEMENT AWARD RECIPIENT  
Phil Aitken, MD

Accreditation: The New England Ophthalmological Society designates this live activity for a maximum of 7 AMA PRA Category 1 Credits™ (3.5 in Risk Management). Physicians should claim only the credit commensurate with the extent of their participation in the activity.

The New England Ophthalmological Society is accredited by the Massachusetts Medical Society to provide continuing medical education for physicians.
Your attendance at this 776th meeting of the New England Ophthalmological Society is so welcome and meaningful to our organization. We are so excited to bring some new initiatives to our 135th year. Our membership has never been so diverse or talented. We are working hard to hear from you and ensure we are providing you with maximum value in our educational sessions as well as through our many committees which strive tirelessly to enhance your professional endeavors on behalf of patients throughout New England.

This Society is not just a professional one. It is a community which fosters friendships spanning decades, connecting generations, and which brings us all closer. A few of our new enterprises this year include the invitation of the incoming first year residents to the six New England academic programs (Yale, Brown, Tufts, University of Massachusetts, Boston University, Harvard University) to one of the 2019-2020 Speaker’s Dinners. They are our newest colleagues, and we welcome them to New England! We will be trying out a new venue space for the first time in ages. Change is important, and this new space on November 1st will be a great chance to explore a different location for our vendors and all of you. We are working to incorporate more social time into our meetings so you can spend more time catching up with colleagues you may not otherwise have the chance to see. With views of the Charles River and time and space for a membership lunch and end-of-the day reception, this new meeting location should prove the perfect place to try something new and foster time and atmosphere for great conversation and connections. We are also revamping our fundraising opportunities and donor levels. Donations are critical to our growth and success. We hope that these new sponsorship opportunities and recognitions for contributions to our Society will welcome new and exciting patronage and support which will help sustain us well into the future.

This academic year will bring us into the year 2020. That is a special year for us, a Society which works collectively to bring perfect vision to our patients whenever possible. It is a privilege to serve you, the membership. Please feel free to reach out to me directly. I welcome hearing from you and will work hard this year, as President, to live up to the high standards set by past-presidents, as well as to ensure NEOS is fulfilling your expectations and needs as an ophthalmologist in this great region we proudly call New England.

Mary K. Daly, MD
President, NEOS
GUEST OF HONOR

DIMITRI AZAR, MD, MBA

In 2017, Dr. Azar joined Alphabet Verily Life Sciences as Senior Director of Ophthalmic Innovations (including diagnostic, therapeutic, drug delivery and surgical innovations). He is Distinguished Professor of Ophthalmology, and served as Dean of the University of Illinois College of Medicine from 2011 to 2018. Previously he was Professor of Ophthalmology and Director of the Cornea and Refractive Surgery Services at the Massachusetts Eye and Ear Infirmary and Harvard Medical School.

Dr. Azar was Independent Non-Executive Director of Novartis AG (2012-2019). He serves as a Member of Verily Advisory Board at Verily Life Sciences LLC.

He is an internationally recognized ophthalmic surgeon and prolific researcher. He has been named one of The Best Doctors in America and one of the Castle Connolly Top Doctors in America annually since 1994. He has held multiple committee positions with the American Academy of Ophthalmology, and was board member and Vice President of the Association of Research in Vision and Ophthalmology. He is a member of the American Ophthalmological Association and sits on the Board of Trustees of the Chicago Ophthalmological Society and the Chicago Medical Society.

He has published 450 papers and chapters, 22 textbooks and 40 patents. His work on Matrix Metalloproteinases in wound healing and angiogenesis has been continuously funded by the NIH R01 award since 1993. He has received multiple leadership awards, including the Lans Distinguished Award from the International Society of Refractive Surgery and the Barraquer and Lifetime Achievement Awards from the American Academy of Ophthalmology. He holds a medical degree from the American University of Beirut, Lebanon, and an Honorary MA from Harvard University and an Executive MBA with high honors from the University of Chicago, Booth School of Business.
Dr. Thomas Hutchinson was born in Flatwoods, West Virginia. After graduating from West Virginia University where he was elected to Phi Beta Kappa, he received his medical degree from Harvard Medical School. Following internship at Pennsylvania Hospital in Philadelphia and two years in the Public Health Service, Dr. Hutchinson returned to Boston for a fellowship in the Howe Laboratory, Harvard Medical School, a residency in ophthalmology and a fellowship in glaucoma at the Massachusetts Eye and Ear Infirmary.

He is a founding partner of Ophthalmic Consultants of Boston. He is a past president of the American Academy of Ophthalmology, past chair of the Advisory Board of the Foundation of the AAO, and has served as a member of the AAO Board of Trustees and the Foundation Advisor Board. In addition, Dr. Hutchinson has served as the first Secretary of Ophthalmic Practice. He has served for 9 years as a director and one as chairman of the American Board of Ophthalmology as well as a director of OMIC.

As an Associate Clinical Professor of Ophthalmology at Harvard Medical School, he has for over 40 years maintained an active role in the teaching of medical students and residents. He has trained over 100 ophthalmic fellows in the subspecialty management of glaucoma and cataract. For many years he was the director of the Harvard Post-Graduate Course and for 10 years was the assistant chief editor of Archives of Ophthalmology. Dr. Hutchinson was a founding officer and is a past president of the Massachusetts Society of Eye Physicians and Surgeons, past president of the Society to Prevent Blindness-Massachusetts, and a past president of the New England Ophthalmological Society. He is also a member of the American Glaucoma Society and a founding director and past president of the Chandler-Grant Glaucoma Society. Dr. Hutchinson is the author of multiple peer reviewed articles, editorials, and book chapters, and has lectured extensively.

His professional interests also include quality assurance, credentialing and public service programs, and for 25 years Dr. Hutchinson was the founding Chairman of AAO’s Eye Care America, the largest public service program in American medicine.

Dr. Hutchinson has received multiple awards, including the AAO Senior Honor Award, the Lifetime Achievement Award, and the Distinguished Service Award, as well as being Guest of Honor at the Academy’s 100th anniversary. In addition, he has been Man of the Year from NEOS as well as numerous regional and national awards.

Dr. Hutchinson’s constant dedication to quality of care and ethical medicine has been a pillar of quality in local, regional and national ophthalmology.

**Previous Hutchinson Lecturers**

George A. Williams, MD - 2017  
Thomas S. Harbin, Jr. MD, MBA - 2016  
John W. Shore, MD - 2014  
Richard L. Abbott, MD - 2013
Dr. Woodward is a physician-scientist focused on healthcare delivery specifically for the anterior segment of the eye. Her career goal is to dramatically extend high-quality, affordable eye care to underserved and under-represented communities nationally and globally.

Funded by the National Eye Institute, her research has focused on novel ophthalmic technologies and eHealth clinical programs – particularly disease-monitoring tools with low acquisition and delivery costs. Her research goal is to personalize treatments earlier and more accurately in order to improve outcomes.

She is the director of Telemedicine and Clinical Programs for the University of Michigan’s Kellogg Eye Center eHealth. She serves on the American Academy of Ophthalmology’s Research, Regulatory & External Scientific Relations Committee and American Academy of Ophthalmology’s Telemedicine Task Force. She collaborates with national and international leaders in telemedicine, cornea, health sciences, and engineering, including close collaboration with Aravind Eye Hospitals in India.

She has extensive publications in the area of telemedicine, including the use of smartphones and electronic health record data to improve ophthalmic diagnosis. Her work has focused on the use of telemedicine for screening and consultation as well as patient attitudes towards telemedicine care. A cornea specialist, she has also published in the area of corneal transplantation and eye banking. She has served as an Associate Editor for the International Journal of Eye Banking, Cataract and Refractive Surgery and BMC Ophthalmology.
PHIL A. AITKEN, MD
Burlington, VT

Phil Aitken epitomizes the kind of doctor we all want to have taking care of us if we have a medical problem. He is conscientious, thoughtful, intelligent and soft spoken.

Among Vermont ophthalmologists Phil is considered to be one of the best. He has been the glue that holds the Vermont Ophthalmological Society together. Phil was instrumental in organizing meetings and bringing in some of the best speakers in the nation. His dedication to education and learning is unparalleled.

Phil has been a member of NEOS since 1978. He has worked on many committees including: Program Committee, Executive Committee, Budget/Finance Committee, Admissions Committee, and Ophthalmic Services Committee. He has also given many lectures and moderated many sessions. Phil was President of NEOS in 1993-1994.

Phil is an active member of the American Academy of Ophthalmology. Over the past several decades he has dedicated his time and talents to many committees for this organization including serving six years on the AAO Ethics Committee. Phil is involved with education at a local, state, national and international level.

Phil was born in Friend, Nebraska with a population of 1000, “When everyone was home.” He first attended Oregon State University and completed his college degree at Wheaton College in Illinois. He received his medical degree at Baylor College of Medicine. After an Internship and Neurology Residency at the University of Vermont, he served two years as a commissioned officer at the National Institutes of Health. Following this he completed an Ophthalmology residency at George Washington University. He then traveled to London to complete a Neuro-ophthalmology Fellowship at the National Hospital, Queen Square, and later an Oculoplastics Fellowship at Moorfield’s Hospital.

Phil was the founding chair of ophthalmology at the University of Vermont and served in that position for seventeen years. He has been involved in many research projects and published in many journals. An amazing testament to Phil’s love of ophthalmology and teaching is that he continues as a professor of ophthalmology and neurology and works as a neuro-ophthalmologist at the University of Vermont even into his latter years of life. Phil is a role model for both young and not so young ophthalmologists.

—Christopher Soares, MD
MORNING SESSION

THE FUTURE OF OPHTHALMOLOGY
Carolyn Kloek, MD, Moderator
Shlomit Schaal, MD, Program Committee Coordinator

Professional Practice Gaps:
Feedback from NEOS members and Program Committee review identified the need to expand awareness of future innovations in the field of ophthalmology; a desire to learn more about technological advances that may change the practice of ophthalmology.

Program Objectives:
The content and format of this education activity has been specifically designed to fill the practice gaps in the audience’s current potential scope of profession activities by:

1. Describing future directions in the field of ophthalmology.
2. Describing current state and identify future possible uses of artificial intelligence in ophthalmology.
3. List innovations in the pipeline that will impact the future practice of ophthalmology.

7:00 a.m.  Registration/Exhibits
7:30  Best of the NEOS Hal Freeman Video Library .............................. Main Hall
7:30-8:15  Grand Rounds................................................................. Freedom Room
8:30  Introduction........................................................................... Carolyn Kloek MD
8:35  The Eye Exam of the Future.................................................. Jorge Arroyo, MD
8:47  Novel Therapeutic Innovations in Ophthalmology ............ Jeffrey Heier, MD
8:59  Genomics and Precision Medicine in Ophthalmology .......... Rachel Huckfeldt, MD, PhD
9:11  Introduction of Guest of Honor ................................. Carolyn Kloek, MD
9:16  Artificial Intelligence in Ophthalmology ....................... Dimitri Azar, MD, MBA
9:41  Business Meeting
Distinguished Achievement Award Presentation,
Phil Aitken, MD ............................................................... Michael Bradbury, MD
Introduction................................................................. Christopher Soares, MD
9:51  Refreshment Break / Exhibits
10:21  Cultivating Diversity and Inclusion in Ophthalmology, MD................................. James Chodosh, MD
10:33  The Role of Ophthalmologists in Population Health .................................................. Christopher Andreoli, MD
10:45  The Role of Ophthalmology in the Medical School Curriculum.............................................. Susan Forster, MD
10:57 Surgical Correction of Presbyopia ......................... Dimitri Azar, MD, MBA
11:22 Questions and Panel Discussion .................. Carolyn Kloek, MD, Moderator
Christopher Andreoli, MD  James Chodosh, MD
Jorge Arroyo MD  Susan Forster, MD
Dimitri Azar, MD, MBA  Jeffrey Heier, MD

11:45 **LUNCHEON SEMINARS**
I. Wavefront-guided and Q-based Custom LASIK:
Advantages and Limitations – Dimitri Azar, MD
   Freedom Room

II. Improving Telemedicine Implementation - Maria Woodward, MD
   Patriot Room

**BE SURE TO SCAN IN AT REGISTRATION BEFORE GOING TO LUNCHEON SEMINAR TO RECEIVE CREDIT**
AFTERNOON SESSION

ETHICS AND RISK MANAGEMENT

Moderator: Alice Lorch, MD, MPH
Program Committee Coordinator: Carolyn Kloek, MD

Professional Practice Gaps:
Review of feedback from the prior two sessions revealed that attendees enjoyed speaker anecdotes about their own experiences. Sharing of personal experience may be lacking in clinical practice and so physician attendees could benefit from the infusion of anecdote to illustrate difficult physician situations in the Ethics/Risk Management Session.

Program Objectives:
The content and format of this educational activity has been specifically designed to fill the practice gaps in the audience's current potential scope of professional activities by:


1:00 p.m. Introduction .................................................. Alice Lorch, MD, MPH

1:05 An Overview of Telemedicine as it is used for Subspecialities at Partners ........................................... Joseph Kvedar, MD

1:25 Telemedicine for Diabetic Retinal Disease: Expanding the Boundaries of Novel Therapies and Evidence-Based Eye Care .................................................. Paolo Silva, MD

1:40 Development of StrabisPIX - An APP to Support Physician-prescribed, Self-obtained Images for Telemedicine .......................................................... David Hunter, MD

1:55 Introduction of Guest of Honor and B. Thomas Hutchinson Lecture ....................... Alice Lorch, MD, MPH

2:00 Telemedicine and the Anterior Segment ............... Maria Woodward, MD

2:20 Refreshment Break and Exhibits

2:50 Digital Transformation Health Strategies ............ Carolyn Kloek, MD

3:05 Risk Management Issues of Telemedicine ................. Laura Fine, MD

3:20 Safety and Effectiveness of Ophthalmic Telemedicine ........................................ Maria Woodward, MD

3:40 Questions and Panel Discussion ............... Alice Lorch, MD, MPH, Moderator
Laura Fine, MD Carolyn Kloek, MD
David Hunter, MD Paolo Silva, MD
Joseph Kvedar, MD Maria Woodward, MD
Objective: To describe some of the potential future changes in the eye exam.

Niels Bohr famously said that “Prediction is very difficult, especially if it’s about the future.” However, given recent technological advancements in hardware and software, there are some hints as to where the eye exam may be headed. Advancements in swept source OCT will soon allow a fully automated 10-minute eye exam that produces extremely accurate measurements of visual acuity, refraction, color vision, pupillary responses, ocular alignment, confrontation visual fields, as well as high definition anterior segment, lens, vitreous, optic nerve and retinal imaging. Smartphone cameras with appropriate adapters are able to obtain high resolution fundus images. These devices provide an overwhelming amount of data that will require machine learning techniques to fully dissect and comprehend. It is hoped that these advances in the eye exam of the future will reduce the time required to examine the eye and improve reliability, reproducibility and accuracy of ascertaining a diagnosis, and most importantly, will provide much more profound insights into general health status and disease states of our patients.


Objective: To describe advances in drug development and drug delivery for treatments of retinal disease.

It has been almost 2 decades since an understanding of the role of Vascular Endothelial Growth Factor (VEGF) in retinal vascular disease and development of strong anti-VEGF agents has dramatically altered our ability to manage common diseases like wet AMD, diabetic retinopathy, and retinal venous occlusive disease. However, the remarkable success of these agents created a high bar for further advances. Recent advances in drug development and drug delivery have led to an unprecedented explosion of exciting clinical trials in a myriad of retinal diseases. New mechanisms of actions beyond anti-VEGF therapy are being explored; gene therapy techniques are being used to attack wet and dry AMD, inherited retinal diseases, and soon, retinal vascular diseases; cell-based therapies are being developed with renewed interest. Many of these approaches had been hindered by appropriate means of drug delivery, but advances to include suprachoroidal delivery, reservoir implants, and subretinal delivery are under evaluation. We will touch upon many of these advances to appreciate the breadth and scope of current research.


Objective: The objective of this presentation is to review how genotype-directed therapies can be used to improve the care of patients with inherited retinal diseases.

The 2017 FDA approval of a gene augmentation therapy for RPE65-associated retinal dystrophy contributed to growing optimism regarding gene-specific treatments for inherited eye diseases. Ongoing efforts to develop these types of therapies has made identifying the genetic cause of disease for individual patients with inherited retinal degenerations (IRDs) increasingly important. Using IRDs to illustrate the potential power of precision medicine in ophthalmology, this presentation will review advances in genetic testing for Mendelian diseases and then focus on the types of gene-specific therapeutic strategies currently being evaluated in clinical trials.
ARTIFICIAL INTELLIGENCE IN OPHTHALMOLOGY

Dimitri Azar, MD, MBA
UNIVERSITY OF CHICAGO, CHICAGO, IL

Objectives: 1) To illustrate examples of how the future of ophthalmology will involve the convergence of data technology and biomedical sciences. Machine learning and other AI algorithms can potentially improve referral patterns and diagnoses. We are now in a new era of AI and increasing technological pervasiveness, including the use of microelectronics in medicine. 2) To illustrate how the growing trans-disciplinary convergence of ophthalmology with computational sciences will enhance the Flexner biomedical model of medical education. 3) To emphasize humanistic elements of ophthalmology, such as professionalism, compassion, communication, empathy, and respect. The exponential increase in the knowledge base provided by future technological advances in microelectronics and artificial intelligence should only serve as a foundation that will facilitate data interpretation and patient care.

In this talk we will describe how Artificial Intelligence (AI) can be helpful in various ophthalmological conditions. AI-based grading algorithm may be used to identify which patients should be referred to an ophthalmologist for evaluation and treatment. AI can improve work efficiency in settings of limited healthcare resources and can generate novel disease-specific patterns and novel features to gain innovative scientific insights. We will describe various AI learning algorithms, including unsupervised learning, supervised learning (including deep learning convolutional neural networks) and semi-supervised learning. These are helpful to interpret ophthalmological images. Convolutional neural networks start off any fine tuning and progressively learn the combinations and permutations of important features. AI applications will be described for the following conditions: refractive error prediction, corneal topography, dry eye diagnosis, diabetic retinopathy, and AMD.
CULTIVATING DIVERSITY AND INCLUSION IN OPHTHALMOLOGY

James Chodosh, MD, MPH
MASSACHUSETTS EYE AND EAR INFIRMARY, BOSTON, MA

Objective: To define the “diversity problem” in our profession and current efforts to address it.

Multiple studies have shown that our patients are best served when physician diversity mirrors the diversity of the populations we serve. However, the proportion of under-represented minorities (URMs) among practicing ophthalmologists falls well below population levels (6% vs. 31%). The proportion of URMs among those currently in residency training in Ophthalmology (8%) is similar to that of practicing ophthalmologists, suggesting a stable but still problematic diversity gap between physicians in Ophthalmology and the general population. Three years ago, the American Academy of Ophthalmology (AAO) and Association of University Professors of Ophthalmology (AUPO) teamed up to form the Minority Ophthalmology Mentoring (MOM) Program, which is focused on increasing diversity among practicing ophthalmologists. The approach at present is on increasing the pool of URM applicants to Ophthalmology residency training through a focus on students in their first and second years of medical school, and then mentoring those students through the process of preparing, applying, training, and succeeding as practicing ophthalmologists. The main activity of MOM takes place on the weekend of the annual AAO meeting during which URM medical students from around the country, who have applied and been accepted to MOM, attend a specially designed program of events during which students hear from practicing ophthalmologists about their experiences as URMs in Ophthalmology and why these ophthalmologists love what they do. Students also meet with individual mentors assigned to them. The goal is to capture and enhance the interest of URM medical students who may be competitive for the Ophthalmology residency match and then to help them navigate the process successfully. Early feedback from MOM participants has been very positive.

Objective: This talk will explore how an integrated ophthalmology practice supports population health and value-based care.

This talk will explore how an integrated ophthalmology practice supports population health and value-based care. Atrius Health is a large multi-specialty medical group with a primary care foundation and integrated specialty care that covers a wide geography in eastern Massachusetts. Atrius Health is a leader in a population health approach to care with a significant portion of its contracts tied to value based care and quality outcomes. We will explore the role of Ophthalmology in such an organization and how we are delivering on the needs of our patients and increasing national trends around value based care.
THE ROLE OF OPHTHALMOLOGY IN MEDICAL SCHOOL CURRICULUM

Susan Forster, MD

YALE EYE CENTER, NEW HAVEN, CT

Objective: To understand how we design ophthalmology curriculum for future health care providers.

With the number of hours in medical school curriculum dedicated to ophthalmology decreasing and faculty responsibilities and time pressures increasing, ophthalmic medical educators are challenged to develop innovative approaches to insure that we are teaching all medical students and other healthcare providers the fundamentals of ophthalmology that every health care provider should know. We also need to provide adequate exposure to ophthalmology in order to continue to attract promising medical students to our specialty. Flipped classrooms, buzz sessions, near peer teaching, outreach programs, as well as online teaching and learning will be discussed.
Objective: 1) To evaluate various surgical procedures for the treatment of presbyopia. 2) To explain the role of monovision as part of the management of presbyopic patients. 3) To illustrate corneal and intraocular lens surgical procedures for the management of presbyopia.

In this talk we will discuss several surgical procedures for the correction of presbyopia. These include corneal surgical presbyopia procedure (excimer laser corneal correction, CK, corneal inlays). Scleral surgical procedures include incisions, bands, and segments. Intraocular lens surgical procedures include multifocal IOLs (refractive, diffractive, and hybrid), accommodative IOLs, and smart IOLs. Quasi-surgical solutions will be addressed, including monovision. Comparison of the outcomes will be discussed.
TELEHEALTH AND AI: RETOOLING HEALTHCARE DELIVERY

Joseph Kvedar, MD
PARTNERS HEALTHCARE, BOSTON, MA

Objectives: 1. Learn how technologies such as mobile apps and wearables are changing healthcare delivery.
2. Learn the impact that augmented intelligence is having, particularly with reference to ophthalmology.
3. Learn the ethics/risk implications of integrating these technologies into care delivery.

The stark reality is, soon we won’t have enough healthcare providers to sufficiently care for our citizens. We must adopt the use of technology to create one-to-many care delivery models, rather than the more traditional one-to-one model that is already overburdened. In particular, artificial intelligence (AI) and other emerging technologies allow providers to outsource routine tasks to machines and, instead, focus on human interaction between a healthcare provider and patient. With the increasing application of these technologies, we must also manage the associated risks – from privacy and security to the ethical use of a growing pool of personal health data. As AI and other telehealth tools intersect with care delivery, how can we minimize the risks while improving care delivery, patient and provider satisfaction, and clinical outcomes?

Objective: To discuss the use of an ocular telemedicine to expand the reach of evidence-based diabetes eye care and describe novel methods of image acquisition and analysis that allows the identification of predictive markers for diabetic retinopathy.

There is a global need to provide appropriate diabetes eye care to the rapidly growing diabetes population which is projected reach over half a billion over the next 20 years. Current evidence based diabetes eye care is highly effective and has been shown to reduce the risk of severe and moderate vision loss by over 95%. However more than half of the diabetes population do not receive appropriate care. The current challenge lies in appropriately identifying patients at risk and enhancing the ability to deliver eye care to ultimately lead to preservation vision and prevention diabetes related blindness. Ocular telemedicine has the potential address these needs and expand the scope of eye care to virtually any location across different barriers to care. Maximizing telemedicine-based outcomes by utilizing technical enhancements to optimize image acquisition and automate image analysis as well as identification of predictive novel retinal lesions can potentially transform the way diabetes eye care is delivered and significantly expand its reach.

Objective: To appreciate the opportunities and limitations of developing a custom app to enhance the telemedicine experience.

The diagnosis of strabismus requires assessment of ocular motility and eye alignment in 9 diagnostic positions of gaze. As we attempted to expand our telemedicine efforts in pediatric and adult strabismus, we asked patients to submit images of their eye alignment in different gaze directions. These images were cumbersome to manage, frequently out of focus, and improperly formatted; privacy was also a concern. We therefore collaborated with the Boston Children’s Hospital (BCH) Innovation and Digital Health Accelerator to develop a smartphone application we call “StrabisPIX” to guide patients through the process of obtaining a series of images to provide a complete picture of eye alignment in 9 gaze positions. The app formats the images, transfers them to a secure BCH server in a HIPAA-compliant manner, and then deletes the images from the patient’s phone to further enhance privacy. The provider is then notified that an image is available, accesses the StrabisPIX dashboard, and reviews and comments on the findings. In this presentation I will highlight some of the challenges we faced in developing the app and dashboard, describe the current functionality within the context of the BCH Virtual Visit Program, and propose next steps for offer this technology to other institutions and expand its functionality for the benefit of other specialties within and beyond ophthalmology.


**Objective:** To update clinicians on the current state of telemedicine and the anterior eye segment.

Telemedicine as a means to deliver care is expanding beyond diabetic retinopathy. There is mismatch of patients and resources for eye care needs, especially outside of traditional “business hours”. Anterior eye diseases represent a large portion of reasons for visits to an eye provider and are especially common conditions in acute care settings. Patients have cellphone cameras and are not afraid to use them. Physicians need to know if they care trust the information they are receiving (via a cellphone) to make a diagnostic or management decision. We as physicians have trusted (and validated) ways to remotely evaluate anterior eye complaints. New technology shows promise to improve our accuracy when managing diseases, help screen for diseases in remote and underserved populations, and diagnose diseases that carry a high-risk of vision loss.

**References:**


DIGITAL TRANSFORMATION IN HEALTHCARE

Carolyn Kloek, MD
OKLAHOMA UNIVERSITY MEDICINE/DEAN MCGEE EYE, EDMOND, OK

Objective: 1. Define the digital transformation that the healthcare industry is undergoing
2. Describe innovations that have been implemented to improve patient care delivery
3. Compare and contrast current care models with the patient-centric models of the future

The healthcare system is undergoing a digital transformation, similar to the digital
disruption that has impacted other key industries. A growing number of digital tools
have been developed and implemented to support the delivery of healthcare as well as the
clinical and business operational foundations of healthcare. Digital solutions are increasingly
being used to create new models of care delivery that increase patient access, achieve cost
avoidance, and create more personalized, integrated patient care.

While the in-person meeting of physicians and patients in a clinical practice or hospital will
remain an enduring and central element of patient care, an increasing number of virtual and
remote options will be available to patients. Big data, artificial intelligence, and decision
support tools will be available to physicians, other health care providers, and health systems
to aid in care delivery.

The future of healthcare will likely be a convergence of traditional patient care models
coupled with digital solutions that meet the needs of the patient as the healthcare consumer,
facilitate healthcare delivery, and advance decision-making and knowledge.

References: A digital (r)evolution: introducing The Lancet Digital Health. Editorial,
Volume 1, Issue 1, May 1, 2019.

https://www.beckershospitalreview.com/hospital-management-administration/the-no-1-

RISK MANAGEMENT ISSUES OF TELEMEDICINE

Laura C. Fine, MD
OPHTHALMIC CONSULTANTS OF BOSTON, BOSTON, MA

Objectives: Clarify the duties created by telemedicine. Understand informed consent requirements and challenges. Determine how findings and recommendations should be documented.

Ophthalmologists are often asked to review photos of patients to screen for conditions such as glaucoma, diabetic retinopathy, and ROP. These reviews are considered telemedicine and are subject to licensure and informed consent regulations in many states. They also establish a limited physician-patient relationship whose duties may not always be understood. Inadequate documentation of the findings and recommendations may lead to delay in diagnosis and treatment. This talk will address these risk management and liability issues.


SAFETY AND EFFECTIVENESS OF OPHTHALMIC TELEMEDICINE

Maria Woodward, MD, MSc
UNIVERSITY OF MICHIGAN, ANN ARBOR, MI

Objective: Evaluate the safety and effectiveness of ophthalmic digital healthcare for patients and providers.

Ophthalmic digital healthcare (telemedicine and artificial intelligence) is a rapidly changing space. Industry has entered the healthcare space and affects the delivery of patient care. Physicians will always have a role in the new landscape of medicine, but who is seen in traditional in-person settings likely will evolve. Physicians need to be able to evaluate the technology on the market to assess safety of devices and software. Physicians need to understand the effectiveness and limitations of current technology.


As a provider accredited by the Massachusetts Medical Society, NEOS must ensure balance, independence, objectivity, and scientific rigor in all its individually and jointly provided educational activities. All individuals in a position/role to control the content of an activity are expected to disclose to NEOS any relevant financial relationships they and their spouse/partner have with commercial interests.

The ACCME defines a commercial interest as *any entity producing, marketing, reselling or distributing health care goods or services consumed by, or used on, patients*. Relevant financial relationships are financial relationships in any amount, which occurred in the twelve-month period preceding the time that the individual was asked to assume a role controlling content of the CME activity, and which relate to the content of the educational activity.

Financial relationships are those relationships in which the individual benefits by receiving a salary, royalty, intellectual property rights, consulting fee, honoraria, ownership interest (e.g., stocks, stock options or other ownership interest, excluding diversified mutual funds), or other financial benefit. Financial benefits are usually associated with roles such as independent contractor (including contracted research), consulting, promotional speaking and teaching, membership on advisory committees or review panels, board membership, and other activities for which remuneration is received or expected. The MMS/ACCME considers relationships of the person involved in the CME activity to also include financial relationships of a spouse or partner.

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**Arroyo, Jorge:**

**Ownership Interest:** Envision Diagnostics

**Bradbury, Michael:**

**Ownership Interest:** Regeneron, Chase and Associates, Inc (Iviews imaging system)

**Chodosh, James:**

**Receipt of Intellectual Property Rights/Patent Holder:** Keratoprosthesis Designs, Mass. Eye and Ear

**Dagianis, John:**

**Fees for Non-CME Services Received Directly from Commercial Interest or their Agents:** Lumenis, Speaker Bureau

**Heier, Jeffrey:**

**Consulting Fees** - Name of Relevant Commercial Entity(ies):

**Contracted Research** - Name of Relevant Commercial Entity(ies): Aerpio,
Huckfeldt, Rachel:

Other Types - Name of Relevant Commercial Entity(ies):
I am the site principal investigator for clinical trials of gene-specific therapies sponsored by the following companies: Spark Therapeutics, AGTC, Meira GTx, ProQR. I do not receive any direct payments for these activities.

Hunter, David:

Royalty - Name of Relevant Commercial Entity(ies): Slack, Inc. Lippincott, Williams, Wilkins
Receipt of Intellectual Property Rights / Patent Holder - Name of Relevant Commercial Entity(ies): Johns Hopkins Boston Children's Hospital
Consulting Fees - Name of Relevant Commercial Entity(ies): Luminopia, Inc.
Ownership Interest - Name of Relevant Commercial Entity(ies): Rebion, Inc.

Kvedar, Joseph:

Consulting Fees - Name of Relevant Commercial Entity(ies): Medtronic, b.well
Ownership Interest - Name of Relevant Commercial Entity(ies): b.well, MD Revolution, Claritas Mind Sciences, LuminDx, Mint Health
Other Types - Name of Relevant Commercial Entity(ies):
LuminDx, Flare

Rizzo, Joseph

Receipt of Intellectual Property Rights/Patent Holder: Bionic Eye Technologies
Consulting Fees: GenSight
Ownership Interest: Bionic Eye Technologies

Silva, Paolo

Consulting Fees - Name of Relevant Commercial Entity(ies): Welch Allyn

Woodward, Maria

Royalty - Name of Relevant Commercial Entity(ies): Eversight - medical director compensation for travel related to eye banking work.
Ownership Interest - Name of Relevant Commercial Entity(ies): Vortex Surgical

NO FINANCIAL INTEREST

None of the other individuals in a position to control the content of this activity, including planners, CME Review Committee members, faculty presenters, moderators, panelists and reviewers have any relevant financial relationship with an ACCME-defined commercial interest to disclose.
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<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Moderator</th>
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<tr>
<td>November 1</td>
<td>Glaucoma</td>
<td>Christopher Teng, MD</td>
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<tr>
<td>NB; NEW LOCATION</td>
<td>Cataract</td>
<td>Joseph Williams, MD</td>
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<tr>
<td>BU SHERMAN HALL</td>
<td>Annual Meeting for Ophthalmic</td>
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<td>(This Meeting Only)</td>
<td>Medical Personnel</td>
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<td>March 13</td>
<td>Cornea</td>
<td>Nicoletta Fynn-Thompson, MD</td>
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<td>Innovations in Ophthalmology</td>
<td>Deborah Jacobs, MD</td>
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<tr>
<td>April 24</td>
<td>New Drugs in Ophthalmology – Drips to Drops</td>
<td>Lucia Sobrin, MD</td>
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<td>Retina</td>
<td>Peter Chang, MD</td>
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<td>June 5</td>
<td>Ocular Trauma</td>
<td>Magdalena Krzystolik, MD</td>
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<td></td>
<td>Subday: Neuro-ophthalmology</td>
<td>Crandall Peeler, MD</td>
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<td></td>
<td>Uveitis</td>
<td>Ninani Kombo, MD</td>
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<td></td>
<td>Strabismus</td>
<td>Oren Weisberg, MD</td>
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