Clinical Leadership in Quality: 2014

Sunil Eappen, M.D.
Assistant Professor of Anesthesia, Harvard Medical School
Chief Medical Officer, Chief of Anesthesiology, Massachusetts Eye and Ear

Joan W. Miller, M.D.
Henry Willard Williams Professor and Chair of Ophthalmology, Harvard Medical School
Chief of Ophthalmology, Massachusetts Eye and Ear, Massachusetts General Hospital

D. Bradley Welling, M.D., Ph.D.
Walter Augustus LeCompte Professor and Chair of Otology and Laryngology, Harvard Medical School
Chief of Otolaryngology, Massachusetts Eye and Ear, Massachusetts General Hospital

Hugh Curtin, M.D.
Professor of Radiology, Harvard Medical School
Chief of Radiology, Massachusetts Eye and Ear

Teresa C. Chen, M.D.
Associate Professor of Ophthalmology, Harvard Medical School
Chief Quality Officer, Department of Ophthalmology, Massachusetts Eye and Ear

Christopher J. Hartnick, M.D., M.S.
Professor of Otolaryngology, Harvard Medical School
Vice Chair of Safety and Quality/Clinical Research, Department of Otolaryngology, Massachusetts Eye and Ear Infirmary
Director, Division of Pediatric Otolaryngology, Massachusetts Eye and Ear

Eileen Lowell, R.N., M.M.
Vice President of Patient Care Services, Chief Nursing Officer, Massachusetts Eye and Ear

Members of the Mass. Eye and Ear Quality Steering Committee also include:

Linda Belkner, R.N.
Director, Quality and Patient Safety

Mary Kennedy
Risk Manager

Michael Ricci
Chief Information Officer

Contributors

Olamuyiwa Adebona
Shahraman Aliyeva
John Anderson
Christopher Andreoli
Sandra Baptista-Pires
Linda Belkner
Jean Bibou
Sheila Bokob-Gergioanni
Stacey Brauner
Charlene Callahan
Dean Cestari
Kenneth Chang
Peggy Chang
Wendy Chao
Yvonne Chen
Sheleen Chen
Teresa Chen
James Chodosh
Janet Cohan
Louise Collins
Lisa Cowan
Laura D’Amico
Linda Dagi
Reza Dana
Mindy Davis
Suzanne Day
Sandy DeCilio
Peter Delisle
Daniel Deschler
Gillian Derickis
April Dobbs
Claes Dotmahn
Anne Marie Donnelly
Dean Eliot
Tobias Elze
Kevin Emerick
Kimberly Farewell
Tanya Fedynsky
John Fernandes
Cheric Florio
Ramon Franco
Martha Fraser
Suzanne Freitag
Sandra Gallagher
Matthew Gardiner
Amanda Guggis

Evangelos Grigasoudas
Stacy Gray
Scott Greenstein
Tessa Hadlock
Christopher Halpin
Christopher Hartnick
Eric Holbrook
David Hunter
Mary-Lou Jackson
Maryann Jerier
Grazi Jonak
Justin Kanoff
Dipti Kamani
Melanie Kazlauskas
Ivana Kim
Leo Kim
Carolyn Kloek
Elliott Kozin
Sharon Kujawa
Anne Marie Lane
Patricia Li
Arnie-Marie Lobu
John Loewenstein
Katie Lue
Joe Marshall
Maureen Martinez
Kathy McCormack
Fran McDonald
Michael McKeown
Lisa McElhaney
Ralph Melson
Joan Miller
John Miller
Alfred Winiwarter
Nicola Moretti
Anne Murphy
Garyfa Pagonis
George Papadakis
Lois Pat cascule
Eric Pierce
Roberto Pineda

Corinne Powers
Suzette Proctor
Andrew Rakbin
Gregory Randolph
Nikhil Raoul
Steven Rauch
Michael Reinhart
Aaron Ramenschneider
Mike Ricci
Debbie Rich
Joseph Rizzo
Debra Rogers
Barbara Scully
Alexandra Selivanova
Jennifer Street
Debra Tregarth
Angela Tavallai
Joseph Vadaszkulami
Peter Veldman
Rhonda Walcott-Harris
Suzanne Ward
Rachel Wassenstrom
Amy Watts
Bradley Welling
Julia Wong
Janet Yedziuk
Lucy Young

Medical Illustrations by:
Laurel Cook Lhowe

Graphic Design by:
Marc Harpin,
Rhumba Design
A Letter from the President

Dear Colleagues in Healthcare,

We are proud to present the 2014 Quality and Outcomes Report of Massachusetts Eye and Ear. This annual report showcases the results that are achieved by an outstanding group of surgeons, nurses and staff who continually strive for the best outcomes for all of our patients. These individuals work hard to ensure each patient has the best experience possible while under our care, as well as resulting quality of life.

We thank the Department Chiefs at Mass. Eye and Ear — Drs. Hugh Curtin, Sunny Eappen, Joan Miller and Brad Welling — who enable us to achieve the success reflected in the information you’ll see here. We continually evolve to serve our patient population better, which is made up largely of people seen on an outpatient basis. We have only 41 inpatient beds, but serve almost 27,000 surgical patients in a year. Many of the benchmarks of care in the field are being set here at Mass. Eye and Ear, but we’re never satisfied with what we’ve achieved and always work to improve our results. By publishing this report each year, we can quantify and show what is being accomplished, so we can continue to improve those outcomes.

In this report you’ll find information about our attention to patient safety, and learn about how we use collaboration, advances in technology, and clinical research to improve patient treatments and the results we achieve. The report provides an avenue for transparency and accountability, which we feel is very important. We hope to set the standard for outcomes achieved, and to be able to document our continuing improvement through the information included in these pages.

We also wish to thank the members of the quality team and the physicians, nurses and other staff who work so hard to provide the highest quality care each day.

We hope you find this publication interesting and useful. We welcome your comments and feedback. For an electronic version of this report and to see new innovations from Mass. Eye and Ear, please visit MassEyeAndEar.org/Quality.

John Fernandez
President & CEO
About Massachusetts Eye and Ear

Founded in 1824, Massachusetts Eye and Ear is a pre-eminent specialty, teaching and research hospital dedicated to caring for disorders of the eyes, ears, nose, throat, head and neck. Our dedicated staff provides primary and subspecialty care and serves as a referral center for inpatient and outpatient medical and surgical care.

Mass. Eye and Ear is the leading authority in its specialties throughout the northeast and is a resource globally for advances in patient care, research and education. As the primary academic center for Harvard Medical School’s Departments of Ophthalmology and Otology and Laryngology, we are deeply committed to providing a superb education to the next generation of visionary healthcare leaders. Our world-renowned experts are continuously innovating in the fields of translational and bench research, turning insights into cures that benefit countless people. We continue to forge new partnerships and alliances — locally, nationally and beyond our borders — to increase our reach and make our expertise, services and resources available to all who need them.

Pivotal to our clinical quality efforts is the use of the Longitudinal Medical Record (LMR), an integrated and secure system of communication and medical record sharing among the majority of Harvard Medical School’s network of hospitals and affiliates. This network facilitates quick and easy communication among referring physicians and Mass. Eye and Ear’s consulting ophthalmologists, otolaryngologists and radiologists. It also enables our physicians to instantly tap our in-house specialists, affording seamless and rapid access to some of the best ophthalmology and otolaryngology resources available.

2013 Hospital Statistics
(Jan. 1 – Dec. 31, 2013)

Patient Volume

Outpatient services ......................................................... 388,551
Ambulatory surgery services and laser .......................... 5,242
Inpatient surgical services ............................................. 1,116
Emergency Department services ................................. 18,547
Discharges ...................................................................... 1,439

Beds .................................................................................. 41

Overall Operating Revenue ........................................... $369,216,877

For more information, visit MassEyeAndEar.org/Locations
The volume of surgery at Mass. Eye and Ear continued to grow significantly this year with the opening of the Longwood operating rooms. We continue to be the only hospital in the region to publicly report quality outcomes data. This is our 4th consecutive year of reporting.
Mass. Eye and Ear has 21 operating rooms between the Main Operating Room and the 6th floor Surgical Suites at the main campus and 4 operating rooms at the Longwood Site on Huntington Avenue. Currently we only care for adult ambulatory patients at MEE-Longwood, but we expect to have initiated pediatric care in January 2015 and anticipate offering otolaryngology and audiology services in the summer of 2015. Regardless of where surgery is performed, the same measures of quality and care are applied across all locations. Overall volume has grown annually for the past 5 years.

The ophthalmology and otolaryngology surgical volumes have been split fairly evenly over the past 5 years. This year’s difference was spurred on by the growth of ophthalmology volume at the Longwood Site.
Mass. Eye and Ear cares for the most pediatric otolaryngologic patients in the area and for more pediatric surgical patients than anyone other than Boston Children’s Hospital. Pediatric surgical volume has remained approximately one-third of Mass. Eye and Ear’s overall volume for the last few years.

Nausea is one of the most common and troublesome complications occurring after surgery for both pediatric and adult patients. Additionally, it is well known that patients undergoing both ophthalmologic and otolaryngologic procedures are at significantly higher risk of postoperative nausea and vomiting (PONV) when compared to patients having other types of surgery. As a result, nearly every one of our patients receives prophylactic treatment with the latest combination of appropriate antiemetic medications in order to minimize the chances of PONV.
Pain after surgery is one of patients’ most common fears and one of the most common complaints after surgery. Our goal is to have patients awaken in the operating room and arrive in the Post Anesthesia Care Unit (PACU) or recovery room as comfortable as possible. Often, in the recovery room, the patient may need more analgesics prior to leaving. Our goal is to ensure that every patient leaves this area feeling comfortable, whether going home or to their hospital room.

We use a 10-point visual analog score for adults to self-report their pain. The scores reported here reflect the adults’ perception of their own pain assessment and their request for pain medications.

For pediatric patients old enough to assess their own scores, we use the same 10-point scale as used for adults. For patients too young to use the scale, the nurses in the PACU use the FLACC (Facial-Legs-Arms-Crying-Comfortable) scale that attributes behavioral characteristics to a 10-point pain scale. These are the scores reported above for pediatric patients.

Using 0-10 scales, our goal is to treat pain above a score of 3 and discharge patients from the PACU with scores less than 3.

We report a sample subset of patients from 2013 (N=6,138 for adults and N=3,398 for pediatric patients.)
At the Mass. Eye and Ear/Harvard Medical School Department of Ophthalmology, we have nearly two centuries of experience in developing innovative approaches to treating eye disease and reducing blindness worldwide. We founded subspecialty training in the areas of cornea, retina and glaucoma, and have pioneered tools and treatments for numerous diseases and conditions ranging from retinal detachment to age-related macular degeneration to corneal scarring. Our patient-centered core values focus on delivering the highest quality of care through education, innovation and service excellence.
Department of Ophthalmology
Massachusetts Eye and Ear, Harvard Medical School

We Are:
• The primary teaching hospital of the Harvard Medical School Department of Ophthalmology
• Home to Schepens Eye Research Institute, Howe Laboratory, and Berman-Gund Laboratory for the Study of Retinal Degenerations
• Accelerating research and discovery through our multidisciplinary institutes and subspecialty-based centers of excellence:

Institutes:
Ocular Genomics Institute
Ocular Regenerative Medicine Institute
Infectious Disease Institute

Centers of Excellence:
Age-related Macular Degeneration
Cornea
Diabetic Eye Disease
Glaucoma
Mobility Enhancement & Vision Rehabilitation
Ocular Oncology

Clinical Affiliations
• Massachusetts General Hospital (MGH) Department of Ophthalmology
  - Mass. Eye and Ear provides comprehensive and subspecialty care and inpatient consultations to MGH patients, including 24/7 emergency eye care and trauma coverage. Mass. Eye and Ear clinicians also coordinate Neuro-Ophthalmology and Burn Unit consultations at MGH.
  - Mass. Eye and Ear staff screen MGH patients with or at high risk for diabetic eye disease on a same-day basis in the main campus Retina Service and through MGH’s Chelsea HealthCare Center teleretinal screening program.
  - Mass. Eye and Ear’s new Same Day Service evaluates urgent and emergent eye concerns of MGH patients as a less costly, more efficient alternative to Emergency Department care.
• Joslin Diabetes Center/Beetham Eye Institute (BEI)
  - Mass. Eye and Ear and BEI clinicians provide coordinated, integrated and comprehensive care to patients throughout the region to prevent, diagnose and treat patients with or at risk for diabetic eye disease.

Academic Affiliations
Harvard Medical School
Massachusetts General Hospital
Brigham and Women’s Hospital
Joslin Diabetes Center/Beetham Eye Institute
Boston Children’s Hospital
Beth Israel Deaconess Medical Center
Veterans Affairs Boston Healthcare System
Veterans Affairs Maine Healthcare System
Cambridge Health Alliance
Aravind Eye Hospital, India
Eye and ENT Hospital of Fudan University, Shanghai, China
For more information about the Mass. Eye and Ear Quality Program or the Department of Ophthalmology, please visit our website at www.MassEyeAndEar.org.

- Brigham and Women’s Hospital (BWH)
  - Mass. Eye and Ear provides comprehensive and subspecialty care and inpatient consultations to BWH patients, including 24/7 emergency eye care and trauma coverage.
  - BWH patients may also receive a full range of ophthalmic care (including Same Day Service urgent consultation and evaluations) at Mass. Eye and Ear, Longwood, which is staffed by Mass. Eye and Ear clinicians with participation from Joslin diabetes specialists.

- Children’s Hospital Ophthalmology Foundation
  - Mass. Eye and Ear ophthalmologists provide subspecialty care in glaucoma and cornea disease at Boston Children’s Hospital.
  - Children’s Hospital clinicians staff the comprehensive Pediatric Ophthalmology and Strabismus Service at Mass. Eye and Ear.

Ophthalmology Resources at Mass. Eye and Ear
- Highly skilled teams provide a full spectrum of primary and subspecialty ophthalmic care.
- Our dedicated Eye Emergency Department is available 24/7.
- The Morse Laser Center provides advanced laser procedures using state-of-the-art refractive, glaucoma, retinal and anterior segment lasers.
- The Ocular Surface Imaging Center enables rapid, non-invasive corneal biopsies.
- Our Electoretinography Service performs evaluations of patients referred for diagnosis, prognosis, genetic counseling and treatment of retinal degenerative disorders.
- The David Glendenning Cogan Laboratory of Ophthalmic Pathology provides enhanced diagnostic services in conjunction with the MGH Surgical Pathology Service.
- Our expanding Optometry Service provides screening and vision care in the context of ophthalmic practice.
- The full service Contact Lens Service specializes in therapeutic fits, bandage and specialty contact lenses.
- The Howe Library houses one of the most extensive ophthalmology research collections in the world.
- The Medical Unit is staffed by Mass. Eye and Ear hospitalists and nurse practitioners.
- The Radiology Department houses a dedicated MRI/CT imaging suite.
- Our dedicated Social Work and Discharge Planning Department provides information, counseling and referral services to patients and their families.
- The International Program assists patients with appointments, transportation, accommodations and language translation.
- The Retina Service houses a dedicated ophthalmic ultrasound imaging suite.
Data reported for 2010, 2011, 2012, and 2013 represent calendar years. The 2009 data represent 12-month results as noted.

This bar graph shows the number of ophthalmology patients seen monthly by the Mass. Eye and Ear Emergency Department during the past five calendar years. Throughout this time, the Emergency Department maintained a high volume of ophthalmic emergency visits, with an average of 1,060 patients per month in 2009, 1,050 in 2010, 1,091 in 2011, 1,304 in 2012 and 1,266 in 2013. Patient volume generally increases in the summer.
For the past five years, the average ophthalmology visit time in the Mass. Eye and Ear Emergency Department was better than the average national and state visit times.

The Mass. Eye and Ear Emergency Department has a lower LWBS rate when compared to national benchmarks.

Emergency Department: Ophthalmology Visit Times

The average ophthalmology visit time in the Mass. Eye and Ear Emergency Department for 2013 was 3.1 hours. The visit time is defined as the total time from when the patient walked in the door at the Mass. Eye and Ear Emergency Department to when the patient walked out the door after seeing an ophthalmologist. According to the 2010 Press Ganey Emergency Department Pulse Report, patients across the United States spent an average of four hours and seven minutes (4.12 hours) per ER visit. The Massachusetts (State) average visit time was 4.06 hours.

Emergency Department: Ophthalmology “Left Without Being Seen” (LWBS) Rate

The Mass. Eye and Ear Emergency Department reported a “left without being seen” (LWBS) rate of 1.1% (170/15,189) of patients for all ophthalmic emergency visits in 2013; unchanged from 2012.

LWBS refers to those patients who present to an emergency department but leave before being seen by a physician. According to a 2009 report by the Society for Academic Emergency Medicine, the national LWBS rate is 1.7%. LWBS rates vary greatly between hospitals; a review of the literature suggests a national range of 1.7% to 4.4%.

References:
The photo on the left illustrates the right eye of a patient who sustained a nail gun injury at a construction site. The nail was removed and the wound closed; there was no retina or lens damage. After repair, the patient did well and recovered to 20/20 vision.

Photo courtesy of Matthew Gardiner, M.D.

In a retrospective review of 124 pediatric open-globe injuries managed by the Eye Trauma Service and/or Retina Service between February 1999 and April 2009, analysis showed a median visual acuity at presentation of “hand motions” (N = 123), and a final best-corrected median visual acuity of 20/40 (N = 124) at ten months median follow-up.

Endophthalmitis rates after eye trauma surgery performed at Mass. Eye and Ear are the lowest rates reported in the country. Based on the Mass. Eye and Ear experience and the low percentage of cases with endophthalmitis, we recommend that institutions adopt a standardized protocol for treating open-globe injuries and consider the use of prophylactic systemic antibiotics.1

The Comprehensive Ophthalmology and Cataract Consultation Service at Mass. Eye and Ear provides a full spectrum of integrated patient care, including annual and diabetic eye exams, prescriptions for eyeglasses, continued management of a wide range of eye problems, and subspecialty referrals for advanced care as needed. The most common surgery that we perform is cataract extraction with intraocular lens implantation.

Similar results were reported for calendar years 2012, 2011, and 2010. These results are also consistent with an earlier 12-month period between July 2008 and June 2009, when data collection began. For the past five years, the Comprehensive Ophthalmology and Cataract Consultation Service has consistently met or exceeded international benchmarks for successful cataract surgery.

During the 2013 calendar year, the Comprehensive Ophthalmology and Cataract Consultation Service performed cataract surgery on 1,719 eyes at all surgical locations. This chart depicts the results of the 1,664 eyes that had at least one month of follow-up data. Of these 1,664 eyes, 95.7% (1,593/1,664) of cataract patients achieved within one diopter of target refraction after cataract surgery.

References:
The Mass. Eye and Ear Comprehensive Ophthalmology Service has excellent intraoperative complication rates compared to international benchmarks.

Cataract Surgery: Intraoperative Complication Rates

Of the 1,719 cataract surgeries performed by the Comprehensive Ophthalmology and Cataract Consultation Service during the 2013 calendar year at all surgical locations, only 2.6% (44/1,719) had intraoperative complications. These results are displayed in the graph above. Similar results were reported in calendar year 2012, during which time only 2.5% (36/1,464) of cataract surgeries had intraoperative complications.

**Mass. Eye and Ear 2013 Intraoperative Complication Rates:**
- Descemet’s tear: 0.3% (4/1,719)
- Posterior capsule tear and/or vitreous loss: 1.6% (27/1,719)
- Dropped lens/retained lens fragment: 0.2% (4/1,719)
- Zonular dialysis: 0.5% (9/1,719)

**International Benchmarks:**
- Descemet’s tear: 0% - 0.9%
- Posterior capsule tear and/or vitreous loss: 0.3% - 4.4%
- Dropped lens/retained lens fragment: 0% - 1.7%
- Zonular dialysis: 0.1% - 1.2%

References:
Retina Surgery:
Retinal Detachment and Retinal Detachment Repair

Primary rhegmatogenous retinal detachment is one of the most common retinal conditions requiring surgical repair by the Mass. Eye and Ear Retina Service. During calendar year 2013, the Retina Service performed 489 surgical procedures to repair rhegmatogenous retinal detachments at all surgical locations. Techniques used included pneumatic retinopexy, pars plana vitrectomy, and/or scleral buckle surgery.

Single surgery success rate of retinal reattachment was determined for primary, uncomplicated rhegmatogenous retinal detachments of less than one month duration for 220 eyes. In those 220 eyes, 76.4% (168/220) of the retinas were successfully reattached after one surgery at three months or greater of follow-up. Similar results were reported for calendar year 2012, during which time 80% (138/173) of retinas were successfully reattached after the first surgery.

The Mass. Eye and Ear Retina Service single surgery success rate is comparable to international benchmarks reported in the literature, which show single surgery success rates ranging from 59% to 95% for primary rhegmatogenous retinal detachment repair.1-5

Benchmarks were determined from a literature review of studies that reported single surgery success rates for at least two of the three surgical techniques in this analysis (i.e., pneumatic retinopexy, pars plana vitrectomy, and/or scleral buckle).

References:
Retina Surgery:
Final Retinal Reattachment Rate for Primary Rhegmatogenous Retinal Detachment

During calendar year 2013, the Mass. Eye and Ear Retina Service performed 489 surgical repairs to repair rhegmatogenous retinal detachments at all surgical locations. Surgical techniques included pneumatic retinopexy, pars plana vitrectomy, and/or scleral buckle surgery. This analysis includes the 284 procedures performed on 220 eyes with primary uncomplicated rhegmatogenous retinal detachments with at least three months of follow-up.

Retinal reattachment was successfully achieved in 99.5% (219/220) of eyes with a primary rhegmatogenous retinal detachment during calendar year 2013. This success rate reflects eyes that had one or more surgeries, which may have included pars plana vitrectomy, scleral buckle, and pneumatic retinopexy. The smaller number of cases in calendar year 2010 may be attributable to a more stringent follow-up of having at least five months of data.

References:

Macular Hole Surgery:
Single Surgery Success Rate at Three Months

During calendar year 2013, the Mass. Eye and Ear Retina Service performed 68 surgeries (including pars plana vitrectomy, membrane peel, and gas tamponade) for macular hole repair on 61 eyes at all surgical locations. The single surgery success rate for macular hole closure was determined for primary, uncomplicated macular holes of less than six months duration for a total of 33 eyes.

Of the 33 eyes that underwent primary macular hole surgery in 2013, 31 eyes (93.9%) achieved surgical success with a single operation. Success was defined as any primary macular hole that remained fully closed at greater than three months after the first surgery. Similar results were reported in calendar year 2012, during which time 27 eyes (93.1%) with primary macular hole achieved surgical success with a single operation. A review of the literature suggests that single surgery success rates for macular hole surgery range from 89.8% to 93.0%.1-3

References:
Retina Surgery:
Rates of Endophthalmitis After Intravitreal Injection

During the 2013 calendar year, the Mass. Eye and Ear Retina Service performed 7,458 intravitreal injections at all service locations. Of these, no cases of acute endophthalmitis after intravitreal injection were identified.

In order to identify cases of acute endophthalmitis, a retrospective review was performed of all consecutive eyes that underwent intravitreal injections from January 1, 2009 to December 31, 2013. During this five-year period, 21,050 intravitreal injections were performed by the Mass. Eye and Ear Retina Service. The overall incidence rate of endophthalmitis after intravitreal injection during this five-year period was 0.01% (three out of 21,050 injections).

Tumors located within the eye can be challenging to diagnose and treat effectively without causing damage to the eye, resulting in a loss of vision. Proton beam irradiation is one of the most effective therapies for treating intraocular tumors while minimizing visual loss from radiation complications. Perforation of the globe is a potential complication during tumor localization surgery.

During calendar year 2013, the Ophthalmic Oncology Service at Mass. Eye and Ear performed tantalum ring surgery in preparation for proton beam irradiation on 101 eyes. Zero cases of globe perforation from surgery were reported. There were also no cases of globe perforation reported in 2012.

Glaucoma is a group of disorders that affect the optic nerve, which transmits image signals from the retina to the brain. In glaucoma, damage to the optic nerve results in vision loss. The main risk factor for glaucoma is elevated pressure in the eye. Members of the Mass. Eye and Ear Glaucoma Consultation Service are trained in the most advanced laser and surgical procedures to treat glaucoma. Our specialists treat patients with all forms and stages of glaucoma—even those with advanced disease—and often receive referrals of difficult cases.

For the past four years, the Mass. Eye and Ear Glaucoma Consultation Service has maintained excellent trabeculectomy and tube shunt infection rates compared to international benchmarks.
The Mass. Eye and Ear Glaucoma Consultation Service continues to maintain very favorable intraoperative complication rates compared to international benchmarks.

Of the 217 cases of trabeculectomy surgery or glaucoma implant surgery performed by the Glaucoma Consultation Service during the 2013 calendar year at all surgical locations, 98.6% (214/217) of patients had no intraoperative complications. The cases analyzed include only those trabeculectomy or implant surgeries not combined with cataract or keratoprosthesis procedures. Similar results were reported for calendar year 2012, 2011, and 2010, during which time 97.2% (314/323), 99.6% (269/270) and 95.5% (234/245) of patients had no intraoperative complications, respectively. These results are also consistent with an earlier 24-month period between July 2007 and June 2009 when 97.1% (299/308) of eyes had no intraoperative complications.

Mass. Eye and Ear 2013 complication rates:
- Conjunctival tear/buttonhole: 1.4%
- Hyphema: 0%
- Scleral flap trauma: 0%
- Vitreous loss (vitreous prolapse): 0%
- Suprachoroidal hemorrhage: 0%
- Scleral perforation: 0%

The 217 cases evaluated included:
- 79 trabeculectomies without scarring
- 14 trabeculectomies with previous scarring
- 105 primary tube surgeries
- 19 tube revisions

References:
Preoperative and postoperative intraocular pressure (IOP) measurements were taken using the Tono-Pen (Reichert, Buffalo, NY) prior to the laser procedure and within one hour of the conclusion of the laser procedure. For this analysis, if multiple pressure readings were taken, the average pressure reading was used when calculating the IOP difference (postoperative minus preoperative). All measurements were taken by a certified ophthalmic technician. All patients received either brimonidine 0.1% or 0.15% or apraclonidine 0.5% before the laser procedure and prednisolone 1% after the procedure.

During calendar year 2013, the Glaucoma Consultation Service performed anterior segment laser procedures on 742 eyes at all laser locations. Of the 742 eyes, this analysis includes the 587 eyes that had laser peripheral iridotomies (210), capsulotomies (65) and laser trabeculoplasties (312). Of the 312 laser trabeculoplasties, 64 were argon laser trabeculoplasties (ALT) and 248 were selective laser trabeculoplasties (SLT). Similar results were reported in calendar year 2012, when data collection began.

Trabeculectomy is the gold standard incisional surgery for glaucoma patients who require surgery. There were 93 mitomycin C trabeculectomy surgeries (with or without scarring) performed by the Glaucoma Consultation Service for the 2013 calendar year at all surgical locations. Reoperation rates were calculated at the one-month and six-month postoperative time period. Reoperations were defined as glaucoma procedures required for further intraocular pressure lowering (i.e., repeat trabeculectomy, tube shunt surgery, diode cyclophotocoagulation, etc.). One patient was lost to follow-up at the six-month time period.

The Mass. Eye and Ear Glaucoma Consultation Service reoperation rate for mitomycin C trabeculectomy surgery at one month was 2.2% (two patients underwent bleb revisions) and at six months was 4.3% (the aforementioned two bleb revisions, and two tube shunt surgeries). To the best of our knowledge, published data on one- and six-month reoperation rates are lacking; thus, our rates are good internal benchmarks to continue to follow.

In summary, the Mass. Eye and Ear Glaucoma Consultation Service achieves excellent surgical success with trabeculectomy, and reoperation rates are low.
Refractive surgery, commonly known as laser vision correction, is a term given to surgical procedures designed to correct certain visual problems such as myopia (nearsightedness), hyperopia (farsightedness), and astigmatism. The Mass. Eye and Ear Cornea and Refractive Surgery Service offers a number of refractive procedures, the most common of which are laser-assisted in situ keratomileusis (LASIK) and photorefractive keratectomy (PRK).

During the 2013 calendar year, 248 of the 263 eyes that had LASIK surgery had sufficient follow-up data for analysis. Sufficient follow-up was defined as at least one month of follow-up for myopia and three months follow-up for hyperopia.

In calendar year 2013, the overall LASIK success rate for achieving within 0.5 diopters of target refraction for myopia and hyperopia was 88.7% (220/248 eyes).
The Mass. Eye and Ear Cornea and Refractive Surgery Service continues to maintain a high overall success rate for LASIK surgery for myopia.

Refractive Surgery — LASIK for Different Degrees of Myopia: Achieving Target Refraction (Spherical Equivalent)

In calendar year 2013, 212 of the 248 eyes had LASIK surgery for myopia, and the success rates based on the degree of myopia are graphed here. LASIK for low myopia was performed on 80 eyes, and of these, 95% (76/80 eyes) were successful. For the 116 eyes with moderate myopia, 87.9% (102/116 eyes) were successful; and for the 16 eyes with high myopia, 81.3% (13/16 eyes) achieved within 0.5 diopters of target refraction at one month follow-up.

Similar results were reported for the 2012, 2011 and 2010 calendar years, during which time the success rate for low myopia was 90.4% (75/83 eyes), 97.3% (71/73 eyes) and 91.5% (86/94 eyes), respectively. Moderate myopia success rates were consistent for 2012, 2011 and 2010 with 91.2% (145/159 eyes), 82.1% (128/156 eyes) and 85.4% (105/123 eyes), respectively. Results for LASIK for high myopia ranged from 75.9% (22/29 eyes) in 2012, to 96.8% (30/31 eyes) in 2011 and 80% (28/35 eyes) in 2010. These results are also consistent with the 12-month period between July 2008 and June 2009, which had success rates for low, moderate and high myopia of 86.1% (93/108 eyes), 87.8% (145/165) and 81.3% (13/16 eyes), respectively.
Refractive Surgery — LASIK for Hyperopia:
Achieving Target Refraction (Spherical Equivalent)

Of the 51 eyes that had LASIK surgery for hyperopia during the 2013 calendar year, 36 had three months or more of follow-up data for analysis. The overall 2013 LASIK success rate for achieving within 0.5 diopters of target refraction was 80.6% (29/36 eyes) for hyperopia.

A review of the literature suggests that the success rate for achieving within 0.5 diopters of the intended target correction after LASIK for hyperopia ranges between 66.7% and 91%.1-3


Refractive Surgery — LASIK:
Enhancement/Retreatment Rates at Six Months Follow-up

Of the 248 eyes that had LASIK surgery for myopia or hyperopia during the 2013 calendar year, 5.2% (13/248) had an enhancement/retreatment procedure within six months. Similar results have been reported since calendar year 2010, when data collection for enhancement/retreatment rates began.

LASIK retreatment rates of between 3.8% and 29.4% have been reported in the literature.1-3

Cornea Surgery:
Keratoprosthesis (KPro)

(Left) Photograph of keratoprosthesis (KPro)

Photo courtesy of Claes Dohlman, M.D., Ph.D.

Cornea Surgery:
Surgical Indications for Keratoprosthesis (KPro)

Thirty-seven patients received the type 1 Boston keratoprosthesis (KPro) during calendar year 2013. Of these 37 patients, 29 (78.3%) received a KPro for the first time and are included in this analysis. Similar data were reported for calendar year 2012, during which time 36 patients received a type 1 KPro, with 25 of them having a primary type 1 KPro with at least three months of follow-up data.

Indications for KPro surgery included failed corneal grafts (18/29, 62.1%), aniridic keratopathy (6/29, 20.7%), corneal neovascularization (3/29, 10.3%), mucus membrane pemphigoid (1/29, 3.4%), and perforated cornea (1/29, 3.4%). Nine patients (9/29, 31%) received the KPro as a primary procedure. Two aniridic eyes had prior failed grafts but were only graphed in the aniridic keratopathy category.


The Boston keratoprosthesis (KPro) is an artificial cornea developed at Mass. Eye and Ear by Claes Dohlman, M.D., Ph.D. and colleagues. Dr. Dohlman is former Chief and Chair of the Department of Ophthalmology, and currently Emeritus Professor of Ophthalmology at Harvard Medical School.

In development since the 1960s, the KPro received FDA clearance in 1992 and achieved European Conformity (CE) Mark approval in June 2014. It is the most commonly used artificial cornea in the U.S. and worldwide, with more than 10,000 implantations to date. The KPro is reserved for patients blinded by corneal disease and for whom a standard corneal transplant is not a viable option.
Cornea Surgery: Visual Outcomes of Keratoprosthesis (KPro)

During calendar year 2013, 29 patients underwent primary type 1 Boston keratoprosthesis (KPro) surgery for the first time and had at least three months of follow-up data available for analysis. Of these 29 patients, 22 (76%) achieved 20/200 vision or better at any point within the three-month postoperative period or beyond. This is comparable to national benchmarks of 56% to 89% reported in the literature.1-2

Seven patients did not achieve a postoperative vision of 20/200 or better, and in each case, the patient had pre-existing severe retinal disease or advanced glaucoma, which limited the visual acuity.


KPro retention rates at three months were 100% in 2011, 2012, and 2013.

Cornea Surgery: Keratoprothesis (KPro) Retention Rates

Of the 29 primary type 1 Boston keratoprosthesis (KPro) surgeries in calendar year 2013 for which three months of follow-up data were available, 100% of patients retained the KPro at three months. Similar results were reported for calendar years 2011 and 2012, during which time, 100% of patients retained the KPro at three months. According to the literature, expected retention rates range from 90.5% to 95% of patients.1-2

The proportion of keratoplasties performed in partial thickness fashion by surgeons of the Mass. Eye and Ear Cornea Service increased from 10% in 2009 to 67% in 2013.
In 2013, the most common indications for elective full-thickness keratoplasties (PKs) at Mass. Eye and Ear were failed corneal graft (41.4%), corneal scar (24.1%), and keratoconus (15.5%).

During the 2013 calendar year, 134 penetrating (full-thickness) keratoplasties (PKs) were performed by the Mass. Eye and Ear Cornea and Refractive Surgery Service at all surgical locations. The current analysis includes only those elective PKs for which up to three months of follow-up data were available and which were not done in combination with retinal, glaucoma or KPro procedures. This left 58 (43.3%) elective PKs for analysis for calendar year 2013. These 58 elective PKs included first-time grafts in uninflamed host beds as well as those performed in eyes at high risk of rejection, including those with extensive corneal neovascularization and/or eyes with a failed corneal graft.

Indications for elective PKs included failed corneal graft (24/58, 41.4%), corneal scar (14/58, 24.1%), keratoconus (9/58, 15.5%), Fuchs’ dystrophy (4/58, 6.9%), bullous keratopathy (3/58, 5.2%), corneal edema (2/58, 3.5%), corneal dystrophy (1/58, 1.7%), and neurotrophic keratopathy (1/58, 1.7%).

Fifty-eight of the 134 PKs (full-thickness) performed in 2013 at all surgical locations were elective with up to three months follow-up analysis. Of these elective PKs, 57 (98.3%) achieved surgical success, which is defined as a graft at three months follow-up with minimal (to no) clinical edema and which possesses clarity sufficient to permit the examiner to have an unencumbered view of the interior of the eye including iris details.

During the 2013 calendar year, the Mass. Eye and Ear Ophthalmic Plastic Surgery Service performed external dacryocystorhinostomy (Ex-DCR) procedures on 73 eyes of 65 patients at all surgical locations. Seventeen eyes of 16 patients were excluded for pre-existing ocular conditions such as Wegener’s granulomatosis, sarcoidosis, cancer (e.g., lymphoma), and benign tumors. This analysis includes the remaining 56 eyes of 49 patients who underwent primary Ex-DCR in 2013 for primary acquired nasolacrimal duct obstruction (NLDO). Of these eyes, 1.8% (1/56) required a second procedure within six months in order to achieve surgical success. Similar results were reported for calendar year 2012, during which time there were no reoperations within six months of primary Ex-DCR.

Ex-DCR is often considered the standard of care for NLDO. A review of the literature suggests that 7.8% - 12.5% of patients require reoperation following primary Ex-DCR for primary acquired NLDO.1-3


Dacryocystorhinostomy (DCR) is a surgery that aims to improve tear drainage from the lacrimal sac to the nose.
Oculoplastic Surgery: 
Reoperation Rate for Endoscopic Dacryocystorhinostomy (En-DCR) Surgery at Six Months Follow-up

During the 2013 calendar year, the Mass. Eye and Ear Ophthalmic Plastic Surgery Service performed endoscopic dacryocystorhinostomy (En-DCR) procedures on 41 eyes of 37 patients at all surgical locations. Twenty-three eyes of 20 patients were excluded for pre-existing ocular conditions such as Wegener’s granulomatosis, sarcoidosis, cancer (e.g., lymphoma), and benign tumors. Procedures involving laser DCR were also excluded. This analysis includes the remaining 18 eyes of 17 patients who underwent primary En-DCR in 2013 for primary acquired nasolacrimal duct obstruction. Of these eyes, 5.6% (1/18) required a second procedure within six months to achieve surgical success.

A review of the literature suggests that 2% to 11% of patients who undergo primary En-DCR for primary acquired nasolacrimal duct obstruction require a revision.\(^1-4\)


Oculoplastic Surgery: 
Reoperation Rate for Lid Surgeries at Six Months Follow-up

During the 2013 calendar year, the Mass. Eye and Ear Ophthalmic Plastic Surgery Service performed upper-lid blepharoplasty and/or ptosis repair surgeries on 574 eyelids in 341 patients at all surgical locations. Of these eyelids, only 3.1% (18/574) required a second procedure within six months in order to achieve surgical success. Similar results were reported for calendar years 2011 and 2012, during which time 2.6% (11/416) and 1.7% (8/467) of eyelids, respectively, required a second procedure within six months. These results are also consistent with an earlier 12-month period from March 2008 to February 2009 when 2.9% (10/343) of eyelids required a reoperation.

A review of the literature suggests that reoperation rates after eyelid surgery range from 2.6% to 8.7%.\(^1,2\)

Pediatric and Adult Strabismus Surgery

Recession and resection procedures are most commonly performed for horizontal misalignment. Other surgeries less frequently performed include loop myopexies and transpositions.

Pediatric and Adult Strabismus Surgery: Outcomes Criteria

Strabismus surgery, the most commonly performed ophthalmic procedure in children, is offered to adults as well. Surgery is performed for a variety of indications including restoration of binocular vision, restitution of normal eye contact (reconstructive), treatment of double vision, or reduction of anomalous head posture (torticollis). Since the desired surgical outcome depends on the primary indication of surgery, we developed a unique goal-directed methodology to assess surgical outcomes. This approach provides the most clinically relevant appraisal of our outcomes. The model excludes no patient based on diagnosis or procedure performed, and therefore facilitates stratification based on the presence or absence of risk factors (ophthalmic or systemic) that might impact results. The tables on the following pages summarize the criteria, and the figures that follow illustrate our outcomes using this goal-directed methodology. These reported pediatric and adult strabismus surgery outcomes include procedures done at all surgical locations.

Indications for strabismus surgery included restoration of binocular vision, restitution of normal eye contact (reconstructive), treatment of double vision, or reduction of anomalous head posture (torticollis).

### Pediatric and Adult Strabismus Surgery: Outcomes Criteria

#### 1. Goal—Binocular Potential for Esotropia (ET)

<table>
<thead>
<tr>
<th>Subjective</th>
<th>Distance angle</th>
<th>Near angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>ET≤10Δ or XT≤5Δ</td>
<td>No XT, any ET</td>
</tr>
<tr>
<td>Good</td>
<td>10Δ&lt; ET≤15Δ or 5Δ&lt; XT ≤10Δ</td>
<td>X(T)&lt;10Δ any ET</td>
</tr>
<tr>
<td>Poor</td>
<td>Recommend reoperation (horizontal)</td>
<td>ET&gt;15 or XT&gt;10 (horizontal)</td>
</tr>
</tbody>
</table>

1. Order of preference for angle used: > simultaneous prism-and-cover test (SPCT) > alternate prism-and-cover test (APCT) > Krimsky

**Δ = prism diopter**

#### 2. Goal—Binocular Potential for Exotropia (XT)

<table>
<thead>
<tr>
<th>Sensory</th>
<th>Distance angle</th>
<th>Near angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>Near stereo-acuity &lt;2 octaves worsened from pre-op and not diminished to nil2</td>
<td>XT&lt;10Δ or ET&lt;6Δ or XT&lt;10Δ or ET&lt;6Δ</td>
</tr>
<tr>
<td>Good</td>
<td>10Δ≤XT&lt;15Δ or 6Δ≤ET≤10Δ</td>
<td>10≤XT&lt;15Δ or 6≤ET≤10Δ</td>
</tr>
<tr>
<td>Poor</td>
<td>Recommend reoperation (horizontal)</td>
<td>XT≥15Δ or ET&gt;10Δ</td>
</tr>
</tbody>
</table>

1. Order of preference for angle used: > simultaneous prism-and-cover test (SPCT) > alternate prism-and-cover test (APCT) > Krimsky

2. Accept Worth-4-dot test (W4D) fusion if stereo-acuity data not available

**Δ = prism diopter**

#### 3. Goal—Reconstructive (ET or XT)

<table>
<thead>
<tr>
<th>Subjective</th>
<th>Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent³</td>
<td>ET or XT≤10Δ</td>
</tr>
<tr>
<td>Good</td>
<td>10Δ&lt;ET or XT≤15Δ</td>
</tr>
<tr>
<td>Poor</td>
<td>Recommend reoperation (horizontal)</td>
</tr>
</tbody>
</table>

1. Order of preference for angle used: Krimsky > simultaneous prism-and-cover test (SPCT) > alternate prism-and-cover test (APCT)

2. Near angle (unless stated goal of distance angle)

3. Ignore coexisting vertical deviation
4. **Goal—Resolution of Diplopia (ET or XT)**

<table>
<thead>
<tr>
<th>Subjective</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>No diplopia in primary&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Good&lt;sup&gt;2,3&lt;/sup&gt;</td>
<td>Diplopia controlled with prism</td>
</tr>
<tr>
<td>Poor</td>
<td>Recommend reoperation for diplopia and/or diplopia not comfortably controlled with prism correction</td>
</tr>
</tbody>
</table>

<sup>1</sup> At distance and near but may have rare diplopia in primary, or diplopia away from primary

<sup>2</sup> Pre-existing vertical alignment controlled with prism does not affect result if no increase

<sup>3</sup> New vertical alignment requiring prism cannot exceed “good” outcome

5. **Goal—Reduction of Torticollis (ET or XT)**

<table>
<thead>
<tr>
<th>Subjective&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Torticollis&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>≤8°</td>
</tr>
<tr>
<td>Good</td>
<td>&gt;8°≤12°</td>
</tr>
<tr>
<td>Poor</td>
<td>Recommend reoperation for diplopia or torticollis &gt;12°</td>
</tr>
</tbody>
</table>

<sup>1</sup> Subjective category trumps the other categories

<sup>2</sup> Distance (unless stated goal of near)
Of the 97 patients with exotropia, 29 patients underwent surgery to restore binocular vision, 60 for reconstructive purposes, and 8 for diplopia. Exotropia patients are grouped according to the primary goal for surgery.

These graphs illustrate outcomes of exotropia surgery performed by ophthalmologists in the Pediatric Ophthalmology and Strabismus Service, a collaboration of the Children's Hospital Ophthalmology Foundation (CHOF) and Mass. Eye and Ear, during calendar years 2013 and 2012, when data collection began. Outcomes were graded as excellent, good, or poor, based on criteria determined by the primary goal of surgery. The results were then secondarily stratified based on the presence or absence of associated risk factors.

Of the 97 patients with exotropia who underwent strabismus surgery in 2013, 50 patients had associated risk factors.

This figure presents outcomes for exotropia surgery in patients with or without associated risk factors. Risk factors included the following: bilateral vision limitation (e.g., albinism), conditions resulting in hyper- or hypotonia, craniosynostosis or craniofacial anomalies, 3rd nerve palsy, 4th nerve palsy, prior strabismus surgery, Duane syndrome, prior surgery for retinal detachment, Graves' orbitopathy, antecedent orbital trauma with or without orbital fracture, congenital fibrosis of the extraocular muscles and simultaneous surgery for nystagmus or vertical strabismus.
Of 146 patients with esotropia, 62 underwent surgery to restore binocular vision, 63 for reconstructive goals, and 21 to resolve diplopia.

These graphs illustrate outcomes of esotropia surgery performed by ophthalmologists in the Pediatric Ophthalmology and Strabismus Service, a collaboration of the Children's Hospital Ophthalmology Foundation (CHOF) and Mass. Eye and Ear, during calendar years 2013 and 2012, when data collection began. Outcomes were graded as excellent, good, or poor, based on criteria determined by the primary goal of surgery. The results were then secondarily stratified based on the presence or absence of associated risk factors.

Of the 146 patients with esotropia who underwent strabismus surgery in 2013, 64 patients had associated risk factors.

This figure presents outcomes for esotropia surgery in patients with or without associated risk factors. Risk factors included the following: prior strabismus surgery, bilateral vision limitation (e.g., albinism), systemic conditions resulting in hyper- or hypotonia, craniosynostosis or craniofacial anomalies, Graves’ orbitopathy, antecedent orbital trauma with or without orbital fracture, prior surgery for retinal detachment, heavy eye syndrome, Brown syndrome, Duane syndrome, 6th nerve palsy, preoperative esotropia ≥ 50 prism diopters, congenital fibrosis of the extraocular muscles, and simultaneous surgery for nystagmus or vertical strabismus.
Of the 350 procedures performed for strabismus correction, three (0.9%) were complicated by postoperative infections within 30 days of the procedure. There were no cases of associated vision loss.

Scleral perforation is a major complication of strabismus surgery, typically occurring during the reattachment of the eye muscles to the globe. An associated retinal hole can give rise to retinal detachment in some cases.

This figure demonstrates the scleral perforation rate for strabismus surgery performed by ophthalmologists in the Pediatric Ophthalmology and Strabismus Service, a collaboration of the Children’s Hospital Ophthalmology Foundation (CHOF) and Mass. Eye and Ear during calendar year 2013.

Infection after intraocular or extraocular surgery may be complicated by postoperative infection. This figure demonstrates the postoperative infection rates for strabismus, cataract, and ptosis surgeries performed by ophthalmologists in the Pediatric Ophthalmology and Strabismus Service, a collaboration of the Children’s Hospital Ophthalmology Foundation (CHOF) and Mass. Eye and Ear during calendar year 2013.
During calendar year 2013, the Mass. Eye and Ear Neuro-Ophthalmology Service ordered 407 outpatient neuroimaging scans (e.g., MRI, CT scans, etc.). Thirty-four of these scans were excluded from analysis because they were cancelled (21) or performed at outside hospitals (13). This left a total of 373 scans for the current analysis. Follow-up rates reflect the length of time from when the scan was performed to when the ordering physician was able to successfully reach the patient (not necessarily the first call to the patient).

Of the 373 imaging studies included in the 2013 analysis, scan follow-up rates were as follows: 102 scans (27.3%) were reviewed with the patient within one business day; 151 (40.5%) within two business days; 309 (82.8%) within seven calendar days; and 352 (94.4%) within 14 calendar days.

To the best of our knowledge, there are no ophthalmology studies that report the percentage of patients who receive imaging results at specified time points. The Veterans Health Administration (VHA) published guidelines in 2009 stating that all test results should be given to patients within 14 calendar days after the test results are made available to the physician. Similar guidelines have been published in the European community.1-3

On January 2, 2013, the Mass. Eye and Ear Neuro-Ophthalmology Service launched a patient satisfaction survey to prospectively evaluate the patient experience in the Neuro-Ophthalmology Clinic. The voluntary survey was completed by 295 patients during the 2013 calendar year. The results summarized here reflect the responses of 165 new patients and 130 established patients, 55.9% and 44.1%, respectively.

Prior to every appointment in the Neuro-Ophthalmology Clinic, patients are given detailed information and instructions to better prepare them for the visit. These instructions explain to the patient that Neuro-Ophthalmology visits are much longer than most doctor visits, that it is important to bring past imaging studies (i.e., MRI or CT scans), and that the dilated eye exam will make their vision blurry for a few hours after the eye exam is completed. These instructions are meant to better inform the patients.

When asked to rate the overall quality of service, 290 patients (98.3%) responded that the quality of service in the Neuro-Ophthalmology Clinic was either “Excellent” or “Very Good.” The response options are indicated in the graph on the left.

When asked to rate the clarity of instructions that are given prior to their Neuro-Ophthalmology appointments, 87% of patients (257) responded that the clarity of the instructions was either “Excellent” or “Very Good.”

Two hundred ninety patients (98.3%) rated the friendliness and courteousness of the Neuro-Ophthalmology physicians as either “Excellent” or “Very Good.”
Based on their experience, 286 patients (97%) said they would be either “Extremely Likely” or “Very Likely” to recommend the Mass. Eye and Ear Neuro-Ophthalmology Service to others.

Two hundred eighty seven patients (97.3%) responded that the friendliness and courteousness of the administrative staff was “Excellent” or “Very Good.”
The Mass. Eye and Ear Ocular Immunology and Uveitis Service saw a total of 2,635 patients over 6,183 office visits during the 2013 calendar year. The calendar year 2013 data depicted here only includes the 1,724 patients seen at the main Boston campus.

Of the 1,724 patients seen in 2013 by the Ocular Immunology and Uveitis Service, 469 patients (27.2%) were treated for ocular inflammation with some form of systemic medication, ranging from prescription oral nonsteroidal anti-inflammatory drugs (NSAIDs) (e.g., ibuprofen, naproxen, etc.) to oral corticosteroids (i.e., prednisone) to immunosuppressive agents (e.g., methotrexate, mycophenolate mofetil, etc.). The significant increase from 2012 to 2013 in the percentage of patients on systemic therapy for control of their ocular inflammatory disease could be partly explained by limiting the analysis to patients seen at the main hospital (a population of patients with more severe disease).

*Data reported for the 2012 calendar year includes all patients seen by the Uveitis Service at any Mass. Eye and Ear location. For calendar year 2013 data, the graphed data depicts only patients who were seen at the main Boston hospital.

(left) Photo of the right eye of a patient with peripheral ulcerative keratitis (PUK)

Photo courtesy of George Papaliodis, M.D.

Patients reported improvement on all IVI subscales with the greatest improvement for reading.
99% of patients treated by the Vision Rehabilitation Service rated the quality of service as either “Excellent” or “Above Average.”

Based on their experience, 99% of patients said they would recommend the Mass. Eye and Ear Vision Rehabilitation Service to friends or family.

The Mass. Eye and Ear Vision Rehabilitation Service offers multidisciplinary Comprehensive Vision Rehabilitation tailored to each patient’s unique goals. Interventions address difficulties with reading, activities of daily living, and patient safety. Interventions help patients to continue participation in activities despite vision loss, and visits also address the psychosocial adjustment to low vision. During 2013, 262 patients completed a six-question survey after their initial consultation.

Ninety-five percent of patients reported that the explanation of their rehabilitation options was either “Excellent” or “Above Average.”

One hundred percent of patients rated their interactions with staff as “Excellent” or “Above Average.”
The Mass. Eye and Ear/Harvard Medical School Department of Otolaryngology combines the expertise of highly specialized otolaryngology physicians, audiologists, speech-language pathologists and auxiliary healthcare professionals to provide clinical care for patients with problems affecting the ear, nose, throat, head and neck areas. Our clinical commitment is strengthened by our robust research presence, as our physicians and scientists work together to advance the care we provide to our patients.
Mass. Eye and Ear/Harvard Medical School Department of Otolaryngology is firmly committed to delivering excellence in clinical care, research and teaching. We provide comprehensive medical and surgical care in a variety of subspecialties in the field of otolaryngology, including:

- General Otolaryngology
- Pediatric Otolaryngology
- Audiology
- Otology and Neurotology
- Otoneurology
- Vestibular Disorders
- Head and Neck Oncology
- Laryngology
- Rhinology
- Facial Plastic and Reconstructive Surgery
- Facial Nerve Disorders
- Dermatology
- Laser Reconstructive Surgery
- Thyroid and Parathyroid Endocrine Surgery

We are also a center of research in these areas of expertise, with one of the largest and most productive communities of otolaryngology researchers anywhere in the world. We have a long history of medical breakthroughs, including the discovery of stem cells in the adult inner ear and the ability to screen infants at birth for deafness. Our physicians and scientists are committed to advancing the care we provide to our patients.

Department Highlights
- Primary teaching hospital and coordinating center for Harvard Medical School’s Residency Program in Otolaryngology – Head and Neck Surgery.
- Home to a large community of otolaryngology researchers, including those from the Eaton-Peabody Laboratories of Auditory Physiology, Jenks Vestibular Physiology Laboratory, Jenks Vestibular Diagnostic Laboratory, Amelia Peabody Otoimmunochemistry Laboratory, Otopathology Laboratory, Norman Knight Center for Hyperbaric Medicine, National Temporal Bone, Hearing and Balance Pathology Resource Registry, Facial Nerve Regeneration Laboratory, Carolyn and Peter Lynch Center for Laser and Reconstructive Surgery and the Tillotson Cell Biology Unit.
Clinical Affiliations

- Massachusetts General Hospital (MGH)
  - Mass. Eye and Ear physicians and audiologists provide comprehensive and subspecialty care, including consultations and coordination of inpatient consultations for urgent patient care concerns and newborn infant auditory screening.

- Brigham and Women’s Hospital (BWH)
  - Mass. Eye and Ear provides otology/neurotology subspecialty support to the Otolaryngology Division of BWH.

- Mass. Eye and Ear Suburban Centers for Otolaryngology
  - Mass. Eye and Ear physicians and audiologists provide comprehensive community-based care throughout the greater Boston area, with locations in the Longwood Medical Area of Boston, Braintree, Concord, Duxbury, East Bridgewater, Medford, Milton, Newton-Wellesley, Quincy, Stoneham and Weymouth.

- Mass. Eye and Ear Balance and Vestibular Center at Braintree Rehabilitation Hospital
  - Mass. Eye and Ear specialists provide comprehensive vestibular diagnostic services, as well as otologic and neurologic assessment and care in a specialty clinic housed at the Braintree Rehabilitation Hospital.

Academic Affiliations

- Massachusetts General Hospital
- Brigham and Women’s Hospital
- Beth Israel Deaconess Medical Center
- Boston Children’s Hospital

Otolaryngology Resources at Mass. Eye and Ear

- Full spectrum of primary and subspecialty otolaryngology care.
- Highly skilled clinical and research teams in each area.
- New England’s only dedicated otolaryngology emergency services with staff coverage 24 hours a day, 7 days a week and available for walk-ins.
- Audiology Department, providing a full range of diagnostic and treatment services for patients with hearing loss, including newborn screening, audiometry, hearing aid services and cochlear implant and auditory rehabilitation services for adults and children.
- Clinical Vestibular Testing, offering an array of the latest equipment and highly trained staff to aid in diagnosis of vestibular and balance disorders in the Jenks Vestibular Diagnostic Laboratory and at the Mass. Eye and Ear Balance and Vestibular Center in Braintree.
• Facial Nerve Center, offering full diagnostic, surgical and rehabilitative services for patients with facial paralysis and movement disorders.

• Mohs Cutaneous Surgery Unit and Carolyn and Peter Lynch Center for Laser and Reconstructive Surgery, providing care for a wide array of dermatologic disorders and cancer.

• Head and Neck Oncology, providing the most up-to-date and effective evaluation and treatment modalities for patients with head and neck cancer, including medical oncology, microvascular surgery and collaboration with MGH radiation oncology and proton beam facilities.

• Thyroid and Parathyroid Endocrine Surgery, offering diagnostic and surgical care for patients with thyroid and parathyroid diseases of the head and neck, with world-renowned expertise in nerve preservation and electrophysiological intraoperative monitoring.

• Pediatric Airway, Voice and Swallowing Center, performing assessments and treatment of a wide spectrum of these congenital, developmental and acquired disorders in children.

• Voice Rehabilitation and Therapy, providing care for patients suffering from laryngeal cancer, laryngeal motion disorders, hoarseness, papillomatosis and keratosis and airway and voice disorders. Physicians work closely with speech-language pathologists in the Mass. Eye and Ear Voice and Speech Laboratory, which provides state-of-the-art audio and video diagnostic facilities, technicians and therapists.

• Sinus Center, providing clinical care to patients with all diseases of the nose and sinuses.

• Sleep Center, providing polysomnography sleep diagnostic studies for assessment of adults and children with sleep disturbances.

• Fully integrated access to all hospital support services and infrastructure, including social work and discharge planning, the Howe Library, clinical and research IT, medical unit, infectious disease unit, radiology unit, child life specialists, surgical pathology unit, international program and language translation support, dietary support and pharmacy services.
Data was collected and analyzed from 12,234 patients who received a diagnosis for an otolaryngologic complaint in the Mass. Eye and Ear Emergency Department between January 2011 and September 2013. The most frequent presenting complaints were related to the auditory or vestibular system (50.0%) (Figure 1). The five most common were impacted cerumen (10.8%), otitis externa (8.9%), otitis media (6.9%), epistaxis (6.0%) and hearing loss (5.6%) (Table 1).

Figure 1: Distribution of head and neck systems by frequency of presenting complaints

Table 1: Ten most common diagnoses among all patients

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>All Patients (N=12,234)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacted cerumen, No. (%)</td>
<td>1,322 (10.8)</td>
</tr>
<tr>
<td>Otitis externa, No. (%)</td>
<td>1,085 (8.9)</td>
</tr>
<tr>
<td>Otitis media, No. (%)</td>
<td>840 (6.9)</td>
</tr>
<tr>
<td>Epistaxis, No. (%)</td>
<td>731 (6.0)</td>
</tr>
<tr>
<td>Hearing loss, No. (%)</td>
<td>687 (5.6)</td>
</tr>
<tr>
<td>Sinusitis, No. (%)</td>
<td>547 (4.5)</td>
</tr>
<tr>
<td>Otalgia, No. (%)</td>
<td>495 (4.1)</td>
</tr>
<tr>
<td>Dizziness or vertigo, No. (%)</td>
<td>362 (3.0)</td>
</tr>
<tr>
<td>Trauma, No. (%)</td>
<td>354 (2.9)</td>
</tr>
<tr>
<td>Tonsillitis, No. (%)</td>
<td>342 (2.8)</td>
</tr>
</tbody>
</table>
Distances Traveled for Specific Diagnoses at the Massachusetts Eye and Ear Emergency Department

Patients originated from 42 states, although 93 percent were from Massachusetts. More than ninety percent of patients lived within a 50-mile radius of the Mass. Eye and Ear Emergency Department. For all patients, median travel distance was 9.6 miles. Established patients (9.4 miles) and new patients (9.6 miles) traveled similar distances ($P=0.535$). Visitors traveled similar distances for pediatric care (9.5 miles vs. 8.3 miles for an adult, $P=0.811$). Patients were willing to travel farther to seek specialized otolaryngologic care if it was a weekend (11.1 miles vs. 8.2 miles on a weekday, $P<0.0001$). Patients with hearing loss (11.1 miles) and trauma (10.3 miles) traveled the farthest, whereas those with impacted cerumen (7.1 miles) traveled the least ($P<0.0001$) (Figure 2).

Pediatric Otolaryngology

The Pediatric Otolaryngology Division is dedicated to delivering specialized care in the treatment of pediatric patients suffering from ear, nose and throat conditions. These conditions vary from routine to complex, including ear and sinus infections, obstructive or infectious problems of the tonsils and adenoids, malformations of the head and neck, hearing and language disorders and breathing and voice problems.

Postoperative Tapering of Medication to Prevent Sedation Withdrawal Symptoms

All patients undergoing laryngotracheal reconstruction (LTR) require postoperative tapering of sedation medication to prevent complications, especially sedation withdrawal symptoms. As part of ongoing quality initiatives, the Pediatric Otolaryngology Division implemented a standardized electronic sedation document and new training related to sedation medications for physicians, nurses and other health care providers. The initiative called for a real time, active decision-making process at the time of patient transfer from the pediatric intensive care unit to the floor setting. Over a two-year period, we examined the sedation wean in 29 consecutive pediatric patients who underwent LTR. With the new system-wide change, the mean length of sedation wean was reduced from 16.19 days to 8.92 days (p<0.05). Additionally, the number of patients requiring a narcotic prescription at the time of discharge decreased from 81.3 percent to 33.3 percent (p<0.05).

Decannulation Rates in Pediatric Airway Surgery

A new technique for laryngotracheal reconstruction (LTR) to treat pediatric airway stenosis has been developed and implemented in the past three years at Mass. Eye and Ear. This technique, known as the hybrid or 1.5-stage LTR, combines aspects of both the single- and double-stage LTRs in order to improve outcomes while minimizing complications. It is particularly useful in the subset of patients who have poor lung function, multilevel airway obstruction, or developmental delay, as they would likely need a tracheostomy tube for additional reasons. However, this technique prevents the complication of airway inflammation and formation of granulation tissue from stent placement, as seen with the double-stage technique.

From July 2011 to December 2013, thirteen patients underwent airway reconstruction using this technique. Of those patients, eight were decannulated within twelve months of surgery. Of those who were not decannulated, one required fundoplication for severe reflux, followed by revision LTR and is now preparing for decannulation; one has chronic lung disease preventing decannulation; one has severe tracheomalacia after tracheoesophageal fistula repair; one has severe stenosis after a motor vehicle accident; and one is currently preparing for decannulation. Including the two patients who are currently ready for removal of the tracheostomy tube, operation-specific and overall decannulation rates of 69.2% and 76.9%, respectively, are noted.

When compared to other published reports of patients undergoing single-stage LTRs (operation-specific and overall extubation rates = 80.2% and 93.4%, respectively), the decannulation rate in these patients is slightly lower due to other comorbidities. When compared to double-stage LTRs (operation-specific and overall decannulation rates = 50% and 80.2%, respectively), the results are similar.

The hybrid laryngotracheal reconstruction is a useful technique in a subset of pediatric patients with airway stenosis. Early results suggest that the technique has comparable rates of decannulation without the complications seen in single- or double-stage LTR, which are the techniques performed in a similar patient population.


Presented at the Annual Meeting of the American Academy of Otolaryngology-Head and Neck Surgery, September 2014, Orlando, FL.
Audiology

The Audiology Department at Mass. Eye and Ear provides a full range of diagnostic and treatment services for patients with hearing loss, including newborn screening, audimetry, hearing aid services and cochlear implant and auditory rehabilitation services for adults and children.

New Variable Predicts Hearing Aid Ownership

Logistic Regression Model: Word Recognition Performance v. Hearing Aid Ownership

Market surveys show that only 22% of those with hearing loss own hearing aids. This “rejection” is often ascribed to non-auditory factors like stigma, cosmetics and cost. However, our recent work shows that an auditory criterion — improved word recognition — predicts which patients will acquire hearing aids.

We tabulated hearing aid ownership in 1,000 consecutive patients. We separated patients with hearing loss into two groups: one in which word recognition for soft speech (40 dB HL) could improve with gain supplied by a hearing aid, and another in which it did not. Both groups had audiometric thresholds within established fitting ranges.

Like the national sample, exactly 22% of the hearing loss patients we sampled owned hearing aids. However, regardless of where patients received their hearing care, the group whose word recognition scores did not improve with level owned hearing aids at a rate of only 0.3%, while those whose word recognition could increase owned hearing aids at a rate of 50%. Results fit a logistic model where shift of the word recognition performance curve with level corresponded to the likelihood of ownership (see figure).

These results provide a better market penetrance model and use audiologic data in a way that better predicts patient outcomes.

Halpin C., Rauch S. Improvement in word recognition score with level is associated with hearing aid ownership among patients with hearing loss. Audiol. Neurotol. 2012 17:139-147.
Physicians in the Otology and Neurotology Division focus on the structure and function of the ear, as well as the nerves that connect the ear and the brain. They offer treatment and rehabilitation strategies for a complete range of disorders of the ear.

**Superior Semicircular Canal Dehiscence Syndrome (SSCD) Outcomes**

In superior semicircular canal dehiscence syndrome (SSCD), the superior canal of the inner ear is missing a portion of its bony covering. This condition may be congenital or acquired and may result in a number of bothersome symptoms, including aural fullness and pressure in the affected ear, imbalance, autophony or tinnitus. If symptoms are debilitating enough, patients may undergo a surgical repair of the bone with plugging of the affected canal. Variation in the location of the bony dehiscence means that patients may require different surgical approaches.

A New Classification System

A recent review of three hundred CT scans demonstrating SSCD at Mass. Eye and Ear has produced a new classification system for SSCD. This work will help lead neurotologic surgeons to better preoperative planning and, hopefully, to better surgical outcomes.

Patient Symptoms Before and After Surgery for SSCD

SSCD may result in a number of bothersome symptoms, including aural fullness (pressure in the affected ear), dizziness or a spinning sensation, autophony (sensitivity to loud noise) or tinnitus (pulsating ringing).

A review of surgical outcomes revealed that auditory symptoms, especially autophony and pressure, are alleviated with surgery for superior semicircular canal dehiscence syndrome.

An SSCD diagnosis is made based on clinical signs and symptoms, audiometric and balance testing as well as a high-resolution CT scan. Patients may have variable pre-operative complaints. For some individuals, the simple avoidance of triggers (straining, nose blowing) may be sufficient to alleviate their symptoms and may allow them to avoid surgery. Understanding which symptoms are most effectively relieved through surgery is critical for patient counseling. A review of SSCD surgical outcomes at Mass. Eye and Ear revealed that auditory symptoms are significantly reduced postoperatively. Patients with pre-existing migraine, disequilibrium, bilateral SSCD and large bony defects may experience a more prolonged recovery, though all of them noted satisfaction with their outcomes and resolution of their chief complaint. This information has helped surgeons better select patients for the procedure and also inform patients undergoing surgery of their expected outcomes.

Vestibular

The Vestibular Division at Mass. Eye and Ear brings together otolaryngology and otoneurology specialists to provide care for patients with vestibular and balance disorders.

Intratympanic Gentamicin Treatment for Ménière’s Disease Drop Attacks

Ménière’s disease is a degenerative inner ear condition causing progressive deafness and repeated attacks of whirling vertigo that can last for hours at a time. In approximately 90% of cases, the vertigo attacks can be controlled conservatively with a combination of diet and lifestyle changes plus medications. However, about 10% of cases require more aggressive treatment, most often by injection of the ototoxic drug gentamicin into the middle ear. Drop attacks are a rare and dangerous variant of Ménière’s disease in which patients are suddenly and violently thrown to the ground by their attacks without warning. Drop attacks have traditionally been treated by surgical labyrinthectomy to remove the balance organs. Of 3,450 patients with Ménière’s disease seen between 2000 and 2012, 320 had intratympanic gentamicin injections. Gentamicin was used to treat 24 cases of drop attacks. Initial control of drop attacks was achieved in 23/24 (95.8%). Only one drug injection was required in 20/24 (83.3%), while 2-4 injections were required in the other three ears. With a follow-up time of 12-120 months (mean = 43.5 months) after treatment, only two patients required subsequent labyrinthectomy for recurrent drop attacks. Gentamicin injections appear to be an excellent method of controlling Ménière’s drop attacks, avoiding the need for surgery in most cases.
The Head and Neck Oncology Division at Mass. Eye and Ear is firmly committed to providing the highest quality care to patients with the most challenging and severe malignancies of the head and neck region. For multiple reasons, including the exposure to bacterially contaminated secretions such as saliva, surgical interventions of this region are at a significant risk for infectious complications.

**Free Flap Surgical Site Infection Rates**

In conjunction with our Infectious Disease service, we reviewed 480 free tissue transfer reconstructive surgery cases (our most complex and time consuming surgical procedures for advanced cancers) over a 50-month period to assess our voluntary compliance with recommendations for prophylactic antibiotic use as utilized in other surgical fields as well as the overall infectious complication rate. Historically, infectious complication rates after advanced head and neck surgery are in the 20-40% range.

This analysis revealed 99.8% compliance rate with prophylactic antibiotic administration and an infection rate of 13.3%, amongst the lowest reported for free tissue transfer surgery of the head and neck and in the largest series of patients. This data will allow us to institute and evaluate further initiatives designed to lower this relatively low infection rate further, limiting potential patient morbidity.

<table>
<thead>
<tr>
<th>Author</th>
<th>Flaps</th>
<th>Cohort</th>
<th>SSI Rate</th>
<th>SSI Definition</th>
<th>SSI Risk Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jones</td>
<td>100</td>
<td>All defects</td>
<td>10%</td>
<td>Not reported</td>
<td>Not reported</td>
</tr>
<tr>
<td>Yang</td>
<td>129</td>
<td>Cancer</td>
<td>28.3%</td>
<td>CDC</td>
<td>Not reported</td>
</tr>
<tr>
<td>Bourget</td>
<td>137</td>
<td>All defects</td>
<td>28%</td>
<td>Frank purulence</td>
<td>Dehiscence, partial flap failure</td>
</tr>
<tr>
<td>Mucke</td>
<td>156</td>
<td>Cancer</td>
<td>40.4%</td>
<td>Purulent discharge</td>
<td>Flap type, duration of hospital stay, need for flap revision</td>
</tr>
<tr>
<td>Kamizono</td>
<td>182</td>
<td>Cancer</td>
<td>19%</td>
<td>CDC</td>
<td>Malnutrition, ASA, XRT, bone flap</td>
</tr>
<tr>
<td>Dassonville</td>
<td>213</td>
<td>All defects</td>
<td>10%</td>
<td>Not reported</td>
<td>Not reported</td>
</tr>
<tr>
<td>Karakida</td>
<td>276</td>
<td>Cancer</td>
<td>40.6%</td>
<td>CDC</td>
<td>ASA, surgical duration</td>
</tr>
<tr>
<td>Benatar</td>
<td>429</td>
<td>All defects</td>
<td>17%</td>
<td>Not reported</td>
<td>XRT</td>
</tr>
<tr>
<td><strong>Mass. Eye and Ear study</strong></td>
<td><strong>479</strong></td>
<td><strong>All defects</strong></td>
<td><strong>13.2%</strong></td>
<td><strong>CDC</strong></td>
<td><strong>None</strong></td>
</tr>
</tbody>
</table>

ASA: American Society of Anesthesiologists  
CDC: Centers for Disease Control  
XRT: Radiation Therapy
Continually tracking and assessing infectious complications occurring in association with advanced head and neck cancer surgery allows for the institution and evaluation of evolving protocols to further decrease the frequency and negative side effects of these occurrences. Similarly, appropriately directed antibiotic use as part of such protocols can curtail the evolution of challenging antibiotic resistant organisms.

In the right patient, the supraclavicular artery island flap provides an excellent reconstructive option without creating additional morbidity and helping to optimize quality of life. This finding is important given the morbidity created by a patient's cancer.

The Division of Head and Neck Oncology continues to work toward improving reconstruction following surgery for head and neck cancers. We recently introduced the supraclavicular flap to our institution, and we’ve completed the only reported study to date to describe the objective and subjective outcomes at the donor site from this surgical procedure.

We found that this flap harvest has no significant negative impact on overall shoulder function and quality of life. Subjective outcomes from two shoulder specific quality of life tools (Penn and Constant, as shown in the above graph) showed excellent results. Those patients with poorer outcomes also had concurrent neck dissection surgery that impacted shoulder function. Objective outcomes did reveal some limitation in range of motion, but this was equivalent to the non-operated shoulder and there was no loss of strength.

Laryngology

The Laryngology Division at Mass. Eye and Ear is one of only a few laryngology centers worldwide, comprised of physicians and other healthcare professionals dedicated to treating disorders of the voice box and upper airway in adults.

Spasmodic Dysphonia

Spasmodic Dysphonia is a rare neurological voice disorder that can devastate personally, socially and professionally. Affecting close to 50,000 people in the United States, it is a type of focal dystonia, a neurological disease where the brain sends too many signals causing unwanted movements in the larynx when the person tries to speak, typically resulting in a strained/strangled voice quality. The larynx functions normally during breathing, and technically there is nothing “wrong” with the larynx itself. It is a problem in the brain that happens to affect voice production.

The standard treatment is an injection of Botox® into the muscles of the voice box every few months in tiny amounts, in an outpatient-awake procedure that takes less than 1 minute to decrease the force of contraction and improve voice production. Although the treatment needs to be tailored to each patient’s case, members of the Laryngology Division reviewed some of the spasmodic dysphonia cases treated at Mass. Eye and Ear since 1994 in an attempt to summarize the disease course over 19 years. We tracked close to 100 patients and found the age at first injection was 53 years (range = 18-87). Seventy percent of these patients were women (age range 21-87) and 30 percent were men (18-87). As expected, the majority of patients (96 percent) had the adductor-type (squeezing closed type) Spasmodic Dysphonia, while only 4 percent had the abductor-type (opening type) Spasmodic Dysphonia. The adductor-type is technically easier to treat, and the following data comes from this group.

We found stability in the disease over time with the mean dose of Botox® rising from 2.35 units to 2.36 units. This patient cohort underwent an average of 14 injections with a mean time of 182 days between injections. They experienced 4 weeks of breathiness after the injection followed by 17 weeks of good voice before needing another injection.

- Botox® treatment for spasmodic dysphonia is effective, offering 17 weeks of good voice after 4 weeks of breathy voice.
- Long-term Botox® dose remains stable over years of treatment for most patients.
- The average patient returned for re-injection every 182 days.
- The average age at first injection was 53 years.
- More women are affected than men (70% women).
- 96 percent had adductor type spasmodic dysphonia.
- Botox® injections are fast, well tolerated and restore good vocal function.
Rhinology

Physicians in the Rhinology Division provide clinical care to patients with all diseases of the nose and sinuses. They team up with specialists in allergy and immunology, infectious disease, neurosurgery and radiology to provide a comprehensive approach to managing nasal and sinus disorders.

Long-Term Outcomes in Sinus Surgery

Problems in Quality of Life

Patients with chronic sinusitis were assessed with validated surveys to better understand the impact of their disease on their quality of life. One instrument, the EuroQol 5-Dimension Assessment (or EQ-5D), was used for the first time in U.S. patients with sinus problems for this study. The EQ-5D provides important initial data on the burden of disease and helps us to quantify our patient outcomes. In this study, individuals with sinusitis were compared to the general U.S. population across quality of life domains. The graph demonstrates that patients with sinusitis report significantly more problems with pain and discomfort, anxiety and depression, as well as problems performing their daily activities than do patients without sinusitis.

Changes in Quality of Life after Sinus Surgery

Patients who underwent sinus surgery at Mass. Eye and Ear were assessed for changes in quality of life postoperatively. Scores in all three domains significantly improved, and this change was noticed up to 2 years after surgery. This study is the first of its kind to quantify changes in quality of life after sinus surgery using the EQ-5D. This information may be used to perform cost-effectiveness analyses and to help make sure that the benefits provided through surgical procedures are worthwhile to patients suffering from sinus diseases.

References:
The Facial Plastic and Reconstructive Surgery Division is dedicated to the aesthetic and functional enhancement of the head and neck.

Quality of Life Outcomes Following Functional Rhinoplasty in Patients with Nasal Obstruction

(NOSE: Nasal Obstruction Symptoms Evaluation)

Nasal obstruction is one of the most common complaints in otolaryngology practice. From September 2009 to January 2011, 60 patients who presented with nasal obstruction underwent functional rhinoplasty. Patients were asked to complete the Nasal Obstruction Symptom Evaluation (NOSE) and Sleep Outcomes Survey (SOS) questionnaires at 1 month, 3 months, 6 months and 12 months follow up. Both surveys are validated disease-specific QOL instruments used to quantify both patient symptomatology and interventional effect. Twenty-three percent of patients had internal nasal valve dysfunction (group 1), 26.7 percent had external nasal valve dysfunction (group 2) and 50 percent had combined dysfunction (group 3) before surgery. Following surgery, their NOSE and SOS scores indicate an overall significant improvement in quality of life.


On the NOSE scale, lower scores indicate improved quality of life.
Nasal valve collapse caused by facial paralysis is an often overlooked but disturbing sequela of flaccid facial paralysis. From March 2009 to December 2013, physicians in the Facial Nerve Center at Mass. Eye and Ear prospectively studied the effect of placement of a fascia lata sling placement for correction of external nasal valve compromise in 68 patients with flaccid facial paralysis, utilizing a validated disease specific quality of life outcome survey, the Nasal Obstruction Symptom Evaluation (NOSE) scale. Ratings were ascertained preoperatively and postoperatively. Sixty patients completed a NOSE survey prior to surgical intervention and 40 completed the survey after intervention. There was a statistically significant difference in NOSE scores after fascia lata sling (Wilcoxin signed-rank test, p<0.001). All patients had improvement in their nasal obstruction, which persisted uniformly in follow-up.
Reference: Prospective Evaluation of Quality of Life improvement after Correction of the Alar Base in the Flaccidly Paralyzed Face.
Lindsay RW et al. (JAMA Facial Plast Surg. 2015 Jan 2. [Epub ahead of print])
The Thyroid and Parathyroid Endocrine Surgery Division at Mass. Eye and Ear strives to effectively minimize commonly associated risks, including vocal cord paralysis (VCP), in thyroid and parathyroid endocrine surgery by applying thorough preoperative evaluation and utilizing nerve monitoring technology during surgery.

**Surgical Outcomes in Professional Voice Users**

A recent analysis of 27 articles that reviewed more than 25,000 patients undergoing thyroidectomy found that the average postoperative VCP rate was 9.8% and ranged from 0 to 18.6%. VCP following thyroid surgery occurs due to injury to the recurrent laryngeal nerve (RLN), while other voice-related complications of thyroid surgery arise from injury to the external branch of the superior laryngeal nerve (EBSLN). Both the RLN and EBSLN are closely related to the thyroid gland. Injury to the EBSLN can be challenging to identify intraoperatively. This type of injury can cause easy voice fatigue, decreased pitch and inability to project voice. Thus, thyroid surgery in professional voice users has much higher stakes, as it can pose significant risk by affecting their career, livelihood and earning capacity. VCP may also affect those engaged in religious vocal professions.

The Division recently reviewed surgical outcomes in professional singers/voice users, the first such series in the world literature, which included many different genres of performers, including 44% classical/operatic, 19% religious (including 1 Gospel, 1 Jewish Cantor and 3 Choir), 25% pop/rock, 11% country & blues/folk, 4% Motown, 7% musical theater performers, 7% music teachers and 7% others (1 voiceover artist and 1 television meteorologist). Some patients indicated multiple genres of performance (figure 1).

We routinely employ RLN and EBSLN monitoring during surgery to aid in preventing injuries. In our series of 27 singers and professional voice users, return to performance was achieved in 100% of patients and the first postoperative performance occurred within a mean time of 2.26 months from surgery. Vocal instrument mean scores showed no statistically significant difference in preoperative vs. postoperative voice comparison (figure 2), indicative of successful vocal function preservation. Vocal instruments used were VHI (voice handicap index), SVHI (singing voice handicap index) and EASE (evaluation of the ability to sing easily). Most vocal professionals felt that vocal training to some extent was helpful in their return to professional vocal performance.

Based on this unique series of professional voice users undergoing thyroid surgery, the Division has identified key elements of operative approach, including RLN and EBSLN nerve monitoring during surgery, minimum tissue handling and dissection and pre- and postoperative laryngeal exam to achieve successful preservation of vocal integrity in the professional voice user. These key elements will offer guidelines to other thyroid surgeons, enabling them to achieve similar voice outcomes and counsel professional singers anticipating thyroid surgery.

Figure 1. Percentages of different genres of professional voice users in the study (with some patients indicating multiple genres of performance)

These surgical outcomes show that thyroid surgery is safe and effective for professional voice users. By following key elements of operative approach, return to professional performance after thyroid surgery can be achieved in 100% of singers and professional voice users with the mean time to return to professional performance being 2.26 months.

Figure 2. Graph shows mean scores of different vocal instruments that were used to evaluate voice before and after thyroid surgery. No difference was noted in pre- and postoperative scores.

A comparison of preoperative vs. postoperative voice instrument scores showed no difference in quality of life after surgery.
The Department of Nursing at Mass. Eye and Ear provides quality care to a diverse population of adult and pediatric patients in the specialties of Ophthalmology and Otorhinolaryngology.

Patient/family centered care is the framework for nursing practice. Specialty clinical education and the use of evidence-based practice, combined with compassion and service excellence, define the provision of nursing care. Nursing based on a philosophy of holistic care supports the overall well-being of the patient.

Shared governance and collaborative practice fosters an environment that unites the care team with a single goal; excellence. Through a collegial atmosphere, nurses and physicians collaborate to ensure high quality outcomes.

During 2013, the Department of Nursing succeeded in promoting professional practice, maintaining and exceeding clinical benchmarks and recognizing the extraordinary contributions made by the nursing staff.
The Nursing Work Environment

The Department of Nursing recognizes that a professional work environment supports professional practice and improves patient outcomes. The Department of Nursing conducts an annual nursing work environment survey to assess the professional practice environment of its nursing staff. This voluntary survey, completed by 97% of the registered nurse workforce in 2013, a 6% increase from 2012, is designed to assess how the nurses feel regarding the quality of care they deliver and their nurse-physician relations.

Nursing Practice Environment Scale (PES)

Annual Response Rate

The PES is endorsed by the National Quality Forums and includes a focus on:
- Nursing Foundation for Quality of Care
- Collegial Nurse-Physician Relations

Using a 1-4 scale, our nurses assessed the quality of the care they delivered. Elements of this assessment included the high standards of nursing care expected, competence of their peers, and the presence of a clearly defined philosophy of nursing.
Mass. Eye and Ear's mission and vision seeks to promote excellence in clinical care, teaching and research. In support of this, the organization provides several avenues that foster collegial nurse-physician relations. The data reflects a strong culture of collegiality among nurses and physicians.

Nurses along with physician colleagues actively participate in the annual meetings of national organizations of eye and ear specialties such as the Society of Otorhinolaryngology and Head and Neck Nurses and the American Society of Ophthalmic Registered Nurses. Nursing and physician collaboration in research is evident at Mass. Eye and Ear, as noted by the acceptance for publication of, “Heat and Moisture Exchange Devices for Patients Undergoing Total Laryngectomy” (ORL Head Neck Nurs. 2014 Winter;32(1):20-3).

Nurse Quality Indicators (NDNQI®)

- Nurses felt they had enough time with their patients
- Nurses felt their discharged patients were adequately prepared

Collegial Nurse-Physician Relations

<table>
<thead>
<tr>
<th>Year</th>
<th>Score</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>2.85</td>
<td>26%</td>
</tr>
<tr>
<td>2008</td>
<td>2.75</td>
<td>22%</td>
</tr>
<tr>
<td>2009</td>
<td>2.84</td>
<td>22%</td>
</tr>
<tr>
<td>2010</td>
<td>2.80</td>
<td>20%</td>
</tr>
<tr>
<td>2011</td>
<td>2.95</td>
<td>28%</td>
</tr>
<tr>
<td>2012</td>
<td>2.98</td>
<td>28%</td>
</tr>
<tr>
<td>2013</td>
<td>2.97</td>
<td>28%</td>
</tr>
</tbody>
</table>

Mass. Eye and Ear's mission and vision seeks to promote excellence in clinical care, teaching and research. In support of this, the organization provides several avenues that foster collegial nurse-physician relations. The data reflects a strong culture of collegiality among nurses and physicians.

Nurses and physicians practice Team-Based Simulations to enhance crisis management of medical emergencies. Mass. Eye and Ear has a robust participation in Schwartz rounds, which are committed to providing the opportunity for clinicians to “re-fuel.” A majority of the Schwartz rounds have panels comprised of nurses and physicians who share the stories and challenges in providing compassionate care. This also contributes to the high level of collegiality.
Pressure Ulcer Prevalence Study (PUP)

Hospital acquired pressure ulcers have the potential to cause patient harm. Pain associated with a pressure ulcer as well as extending the patient’s hospitalization can impact the quality of their life. The aim of the Nursing Department is to prevent hospital acquired pressure ulcers through identifying patients at risk to develop pressure ulcer and conducting routine skin assessments. Monthly Pressure Ulcer Prevalence (PUP) rounds are conducted with a team of nursing staff members to identify patients at risk and to ensure compliance with prevention strategies. These prevention strategies are incorporated into the unit’s purposeful rounding. Through the end of 2013, the Adult Unit has been Pressure Ulcer free for 306 days.

The PUP study team consists of the Adult Unit’s Nursing Leadership, a Nursing Staff Champion and a Staff Specialist from the Center for Quality & Patient Safety. The team is guided by the National Quality Forum’s Nurse Sensitive Care Outcome Measure®.

The PUP study, initially conducted quarterly, was increased to a monthly frequency at the beginning of the 2013 fiscal year and continues on a monthly basis.

Hand Hygiene

Hand hygiene is the single most important way to prevent the transmission of infection. Unannounced, randomized spot checks are performed by representatives from all disciplines. Monitoring, combined with education and feedback, has resulted in high levels of employee compliance.
Improving Outcomes through Pediatric Simulation Program: Pediatric Simulated Cardiopulmonary Resuscitation Event Response

2011 — Year One
Enhanced knowledge base and skills of nurses, residents, fellows, and attendings required to effectively manage pediatric codes within the pediatric unit. Empowered staff through team training and role identification.

2012 — Year Two
Improved closed-loop communication and team leader identification; strengthening interdisciplinary collaboration.

2013 — Year Three
Expanded simulations to include units outside the pediatric floor that provide pediatric care. Increasing confidence in staff’s knowledge, skills, and communication.

Emergency Department Elopement

Hardwiring Patient Rounding in the Emergency Department resulted in major improvements including reduced elopement rates (patients who leave before being seen).
Participation in National Conferences

2013 SOHN 37th Annual Congress Vancouver, BC, CA - Society of Otorhinolaryngology and Head and Neck Nurses

Hope for Breaking the Silence: Cochlear Implants vs. Auditory Brain Stem Implants
Andria Ledoux, R.N.

“ I Am So Dizzy, My Head is Spinning” — Interventions of Meniere’s Disease
Amy Hanby, B.S.N., R.N.

Post-operative Bleeding after a Tonsillectomy or Tonsillectomy and Adenoidectomy as a Common Complication
Shanna Pagliuca, R.N.

Development of a Transition of Care for Pediatric Patients with Critical Airway Conditions across Institutions
Kevin Callans, B.S.N., R.N.

Building a Bridge… Finding a Voice
Ann Goulette, R.N., Jane Gallagher, R.N., & Kevin Callans, B.S.N., R.N.

2013 ASORN Annual Meeting - New Orleans, LA – American Society of Ophthalmic Registered Nurses

Age-related Macular Degeneration “Up close and personal”
Jo Ann Graziano, M.M., R.N. & Mary Jo Graziano, B.S.N., R.N., B.B.A.

Hardwiring Patient Rounding in the Emergency Department at Massachusetts Eye and Ear
Maureen Martinez, M.S., R.N.

Why I love my job and Mass. Eye and Ear

Mass. Eye and Ear is my home away from home. I love this place. Twenty-three years ago I sought employment for a night RN position on the medical/surgical unit to meet the needs of my family. Although I currently work in a very different job position, I am honored to work in such a great family atmosphere. I have seen enormous growth among staff throughout the years.

Mass. Eye & Ear provides a supportive environment that has encouraged my professional growth. I love the variety and daily challenges in my current operating room nurse position. I am continually learning and fascinated with the expertise of our surgeons. I feel like I make a difference in what I do and that I am valued as an employee.

Thanks,

Your proud employee,
Nancy Kotzuba, R.N., M.S.N.
The DAISY Foundation

The founders of the DAISY Foundation wanted to say “thank you” to nurses everywhere by establishing a recognition program to honor the super-human work nurses do for patients and families every day. Nearly 1,700 healthcare facilities internationally, inpatient and ambulatory care facilities from urban teaching hospitals to small rural community facilities participate in the DAISY program. Over 40,000 nurses have been honored as recipients of the award and nearly 400,000 nurses have been nominated.

In 2013, there were 46 nominations received for the DAISY award. The following 4 recipients were selected anonymously by the Professional Nurse Advisory Committee, a council comprised of staff nurses.

2013 DAISY Award Recipients:

Cindy Close, R.N. — “We had a 7-year-old boy in the PACU from Shriner’s Burn hospital. He was in the PACU for 2½ hours without his parents post-op. He really enjoyed playing games on the iPad. [...] Cindy Close, a PACU nurse was very taken by this young man, his courage and his beautiful smile. She went online and ordered an iPad for him to enjoy. She did this quietly and does not want any recognition. She truly felt this act of kindness made her day.”

Pearl Icuspit, R.N. — “I witnessed her caring for a very ill patient in the IMCU. This patient was anxious and having difficulty getting out secretions. Pearl came to her side and immediately helped calm her with her soothing voice and gentle touch. Pearl explained all of her actions to the patient as she was performing them. The patient was very comfortable when she was done and Pearl was then able to teach the patient how to take care of her secretions.”

Kristina Orlando, R.N. — “We met Kristina on our first visit to Mass. Eye and Ear. My son needed an evaluation under sedation of his left eye due to a suspicious mass. A week later, she made sure to be our nurse for what was the most traumatic experience of my life. She remembered everything about our family. She requested a social worker to visit us. She called down to the OR when they were late. She walked the halls with us. I truly believe she is the reason I made it through that horrible day. When she got off that day, she called the floor to check on us.”

Deb Trocchi, R.N. — “I went to EW and spoke to Deb asking what to do. Deb said “Do not worry, let me take care of it.” She went outside and after speaking with the parents she put the very agitated teenage girl with Down syndrome in a wheelchair and brought her upstairs to the 12th Floor Retina service herself. This is not the first time that I asked for Deb’s help at the EW. Kindness, professionalism... She calms down the patients with her smooth voice and manners; she was definitely destined to be the great nurse that she is and we are very lucky to have her here at Mass. Eye and Ear.”
Ophthalmology Department Full-time and Affiliate Medical Staff and Practice Locations

Ophthalmology Central Referral and Appointments Phone: 617-573-3202

Location: Mass. Eye and Ear Infirmary, 243 Charles Street, Boston, MA

Comprehensive Ophthalmology and Cataract Consultation 617-573-3202
Service Director: Sherleen H. Chen, M.D., F.A.C.S.
Sheila Borboli-Gerogiannis, M.D., F.A.C.S.
Stacey C. Brauner, M.D.
Han-Ying Peggy Chang, M.D.
Matthew F. Gardiner, M.D.
Scott H. Greenstein, M.D., F.A.C.S.
Kristine Lo, M.D.
Christian E. Song, M.D.

Cornea and External Disease 617-573-3938
Service Director: Reza Dana, M.D., M.Sc., M.P.H., F.A.R.V.O.
Associate Service Director: James Chodosh, M.D., M.P.H.
Joseph B. Ciolino, M.D.
Kathryn A. Colby, M.D., Ph.D.
Claes H. Dohlman, M.D., Ph.D.
Pedram Hamrah, M.D.
Deborah S. Jacobs, M.D.
Ula V. Jurkunas, M.D.
Deborah P. Langston, M.D., F.A.C.S.
Samir A. Melki, M.D., Ph.D.
Roberto Pineda, II, M.D.
Peter B. Veldman, M.D.

Emergency Ophthalmology and Eye Trauma
Emergency Department: 617-573-3431
Service Director: Matthew F. Gardiner, M.D.
Maggie B. Hymowitz, M.D.

Eye Trauma: 617-573-3022
Service Director: Alice C. Lorch, M.D. (AY15)
Yewlin Erin Chee, M.D. (AY14)

Glaucoma 617-573-3670
Service Director: Louis R. Pasquale, M.D., F.A.R.V.O.
Associate Service Director: Angela V. Turalba, M.D.
Teresa C. Chen, M.D.
Iryna A. Falkenstein, M.D.
Cynthia L. Grosskreutz, M.D., Ph.D.
Ambika S. Hoguet, M.D.
Pallavi Ojha, M.D.
Lucy Q. Shen, M.D.
Brian J. Song, M.D.
Janey L. Wiggs, M.D., Ph.D.

Neuro-Ophthalmology and Adult Strabismus 617-573-3412
Service Director: Joseph F. Rizzo, III, M.D.
Dean M. Cestari, M.D.
John W. Gittinger, M.D.
Simmons Lessell, M.D.

Ocular Tumors 617-573-3202
Han-Ying Peggy Chang, M.D.
Kathryn A. Colby, M.D., Ph.D.
Suzanne K. Freitag, M.D.
Evangelos S. Gragoudas, M.D.
Ivana K. Kim, M.D.
Daniel R. Lefebvre, M.D.
Michael K. Yoon, M.D.

Optical Pathology 617-573-3319
Service Director: Frederick A. Jakobiec, M.D., D.Sc.
Thaddeus P. Dryja, M.D.
Rebecca Stacy, M.D., Ph.D.

Optic Nerve Surgery 617-573-5550
Service Director: Suzanne K. Freitag, M.D.
Nahyoung Grace Lee, M.D.
Daniel R. Lefebvre, M.D.
Francis C. Sutula, M.D.
Michael K. Yoon, M.D.

Pediatric Ophthalmology and Strabismus (a collaboration on-site with Children’s Hospital) 617-355-6401
Ophthalmologist-in-Chief, Boston Children’s Hospital: David G. Hunter, M.D., Ph.D.
Service Director, Mass Eye and Ear: Melanie A. Kazlas, M.D.
Anna Maria Baglieri, O.D.
Kimberley Chan, O.D.
Linda R. Dagi, M.D.
Alexandra T. Elliot, M.D.
Anne B. Fulton, M.D.
Gena Heidary, M.D., Ph.D.
Suzanne C. Johnston, M.D.
Danielle M. Ledoux, M.D.
Jason Mantagos, M.D.
Kathryn B. Miller, O.D.
Robert A. Petersen, M.D., D.M.Sc.
Ankoor S. Shah, M.D., Ph.D., M.S.
Lois E. H. Smith, M.D., Ph.D.
Deborah K. VanderVeen, M.D.
Carolyn S. Wu, M.D.

Refractive Surgery 617-573-3234
Service Director: Roberto Pineda, II, M.D.
Ula V. Jurkunas, M.D.
Samir A. Melki, M.D., Ph.D.

Optometry/Contact Lens 617-573-3185
Service Director: Amy C. Watts, O.D.
Medical Director: James Chodosh, M.D., M.P.H.
Andrew D. Baker, O.D.
Mark M. Bernardo, O.D.
Shannon Bligdon, O.D.
Calliope Galatis, O.D.
Matt Goodman, O.D.
Kevin E. Houston, O.D.
Yan Jiang, O.D., Ph.D.
Charles D. Leahy, O.D., M.S.
Brittney J. Mazza, O.D.
Lotfi B. Merabet, O.D., Ph.D., M.P.H.
Amy Scally, O.D.
Retina Service
617-573-3288
Service Director: Evangelos S. Gragoudas, M.D.
Associate Service Director: Dean Elliott, M.D.
Jason I. Comander, M.D., Ph.D.
Deeba Husain, M.D.
Ivana K. Kim, M.D.
Leo A. Kim, M.D., Ph.D.
John I. Loewenstein, M.D.
Joan W. Miller, M.D., F.A.R.V.O.
Shizuo Mukai, M.D.
Lucia Sobrin, M.D., M.P.H.
Demetrios Vavvas, M.D., Ph.D.
David M. Wu, M.D., Ph.D.
Lucy H. Y. Young, M.D., Ph.D., F.A.C.S.

Retinal Degenerations/
Electroretinography (ERG)
617-573-3621
Service Director: Eric A. Pierce, M.D., Ph.D.
Jason I. Comander, M.D., Ph.D.
John I. Loewenstein, M.D.
Xiang Werderich, M.D.

Uveitis and Immunology
617-573-3591
Service Director: George N. Papaliodis, M.D.
Reza Dana, M.D., M.Sc., M.P.H., F.A.R.V.O.
Ann-Marie Lobo, M.D.
Lucia Sobrin, M.D., M.P.H.
Lucy H. Y. Young, M.D., Ph.D., F.A.C.S.

Vision Rehabilitation
617-573-4177
Service Director: Mary Lou Jackson, M.D.
Calliope Galatis, O.D.

Mass. Eye and Ear/Tele-Retinal Imaging
Program Director: Louis R. Pasquale, M.D., F.A.R.V.O.
Leo A. Kim, M.D., Ph.D.
Carolyn E. Kloek, M.D.
Brian J. Song, M.D.
Demetrios Vavvas, M.D., Ph.D.
David M. Wu, M.D., Ph.D.

Location: Mass. Eye and Ear/East Bridgewater,
400 North Bedford Street, East Bridgewater, MA,
Phone: 508-378-2058
Site Director: Angela V. Turalba, M.D.
(Depthoma Plastic Surgery)
Louis R. Pasquale, M.D., F.A.R.V.O.
(Glaucoma)
Demetrios Vavvas, M.D., Ph.D. (Retina)

Location: Mass. Eye and Ear/Longwood,
800 Huntington Avenue, Boston, MA,
Phone: 617-936-6100
Site Director: Carolyn E. Kloek, M.D.
(Depthoma Plastic Surgery)
Mark M. Bernardo, O.D. (Optometry)
Sheila Borboli-Gerogiannis, M.D., F.A.C.S.
(Comprehensive/Cataract, Cornea/Refractive)
Han-Ying Peggy Chang, M.D.
(Comprehensive, Cornea)
Iryna A. Falkenstein, M.D. (Glaucoma)
Yan Jiang, O.D., Ph.D. (Optometry)
Daniel R. Lefebvre, M.D.
(Depthoma Plastic Surgery)
Ann-Marie Lobo, M.D.
(Comprehensive/Cataract, Uveitis)
John I. Loewenstein, M.D. (Retina)
Zhonghui Katie Luo, M.D., Ph.D.
(Comprehensive/Cataract, Cornea/Refractive)
Lucy Q. Shen, M.D. (Glaucoma)
Brian J. Song, M.D. (Glaucoma)
Peter B. Veldman, M.D. (Cornea/Refractive)
David M. Wu, M.D., Ph.D. (Retina)

Location: Mass. Eye and Ear/Plainville,
30 Man Mar Drive, Suite 2, Plainville, MA,
Phone: 508-695-9550
Location: Mass. Eye and Ear/Providence,
One Randall Square, Suite 203, Providence, RI,
Phone: 401-453-4600
Southern New England Retina Associates
Site Director: Magdalena Krzyzstolik, M.D.
(Retina)
Paul B. Greenberg, M.D. (Retina)

Location: Mass. Eye and Ear/Stoneham,
One Montvale Avenue, Stoneham, MA,
Phone: 781-279-4418
Site Director: Matthew F. Gardiner, M.D.
(Comprehensive/Cataract, Ophthalmic Plastic Surgery)
Stacey C. Brauner, M.D.
(Comprehensive/Cataract)
Pedram Hamrah, M.D. (Cornea)
Ambika S. Hogue, M.D. (Glaucoma)
George N. Papaliodis, M.D.
(Comprehensive/Cataract, Uveitis)
Amy Scally, O.D. (Optometry)
Christian E. Song, M.D. (Comprehensive/Cataract, Cornea/Refractive)
Angela V. Turalba, M.D. (Glaucoma)
Peter B. Veldman, M.D. (Cornea/Refractive)
Michael K. Yoon, M.D. (Ophthalmic Plastic Surgery)
Lucy H. Y. Young, M.D., Ph.D., F.A.C.S.
(Retina)

Location: Mass. Eye and Ear/Retina Consultants,
3 Woodland Road, Stoneham, MA,
Phone: 781-662-5520
Site Director: Deeba Husain, M.D. (Retina)
Jason I. Comander, M.D., Ph.D. (Retina, Retinal Degenerations)
Leo A. Kim, M.D., Ph.D. (Retina)
Michael Pinnolis, M.D. (Retina)

Location: Mass. Eye and Ear/Waltham,
16 Trapelo Road, Suite 184, Waltham, MA,
Phone: 781-890-1023
Site Director: Jonathan Talamo, M.D.
(Comprehensive/Cataract, Cornea/Refractive)
Shannon Bligdon, O.D. (Optometry)
Kathryn Hatch, M.D. (Cornea/Refractive)
Nahyoung Grace Lee, M.D. (Ophthalmic Plastic Surgery)
Christian E. Song, M.D. (Comprehensive/Cataract, Cornea/Refractive)
Karen L. Zar, O.D. (Optometry)
# Otolaryngology Department Medical Staff

## Emergency Otolaryngology
Emergency Department: 617-573-3431  
Service Director: H. Gregory Ota, M.D.

## General Otolaryngology
Gregory W. Randolph, M.D., F.A.C.S.*  
617-573-4115  
Jean M. Bruch, D.M.D., M.D., 617-573-3793  
John M. Dobrowiski, M.D., 617-573-4104  
Allan J. Goldstein, M.D., 617-573-3705

## Facial Plastic and Reconstructive Surgery
Tessa A. Hadlock, M.D.*, 617-573-3641  
Richard E. Gliklich, M.D., 617-573-4105  
Linda N. Lee, M.D., 617-573-4105  
Robin W. Lindsay, M.D., 617-573-3778  
David A. Shaye, M.D., 617-573-4105

## Skin Cancer and Mohs Surgery
Jessica L. Fewkes, M.D., 617-573-3789  
Molly Yancovitz, M.D., 617-573-3789

## Laser Reconstructive Surgery
Oon Tian Tan, M.D., Ph.D., 617-573-6493

## Head and Neck Surgical Oncology
Derrick T. Lin, M.D., F.A.C.S.*, 617-573-3502  
Daniel G. Deschler, M.D., F.A.C.S., 617-573-4100  
Kevin S. Emerick, M.D., 617-573-4084  
Mark A. Varvares, M.D., 617-573-3192

## Laryngology
Ramon A. Franco, Jr., M.D.*, 617-573-3958  
Jean M. Bruch, D.M.D., M.D., 617-573-3793  
Daniel G. Deschler, M.D., F.A.C.S., 617-573-4100  
Christopher J. Hartnick, M.D., 617-573-4206  
Phillip C. Song, M.D., 617-573-3557

## Otology and Neurotology
Michael J. McKenna, M.D.*, 617-573-3672  
D. Bradley Welling, M.D., Ph.D.*, 617-573-3632  
Ronald K. de Venecia, M.D., Ph.D., 617-573-3715  
David H. Jung, M.D., Ph.D., 617-573-3130  
Daniel J. Lee, M.D., F.A.C.S., 617-573-3130

Alicia M. Quesnel, M.D., 617-573-3503  
Steven D. Rauch, M.D., 617-573-3644  
Felipe Santos, M.D., 617-573-3936  
Konstantina M. Stankovic, M.D., Ph.D., 617-573-3972

## Vestibular
Steven D. Rauch, M.D.*, 617-573-3644  
Richard F. Lewis, M.D., 617-573-3501  
Adrian J. Priesol, M.D., 617-573-4148  
Gregory T. Whitman, M.D., 617-573-6700

## Pediatric Otolaryngology
Christopher J. Hartnick, M.D.*, 617-573-4206  
Michael S. Cohen, M.D., 617-573-4250  
Donald G. Keamy, Jr., M.D., 617-573-4208  
Daniel J. Lee, M.D., F.A.C.S., 617-573-3130  
Leila A. Mankarious, M.D., 617-573-4103

## Rhinology
Eric H. Holbrook, M.D.,* 617-573-3209  
Stacey T. Gray, M.D., 617-573-4188  
Benjamin S. Bleier, M.D., 617-573-6966  
Nicolas Y. Busaba, M.D., F.A.C.S., 617-573-3558

## Thyroid and Parathyroid Endocrine Surgery
Gregory W. Randolph, M.D., F.A.C.S.*, 617-573-4115  
Paul M. Konowitz, M.D., 617-573-4084  
David J. Lesnik, M.D., 781-279-0971  
Derrick T. Lin, M.D., F.A.C.S., 617-573-3502

## Suburban Centers
Mass. Eye and Ear, Balance and Vestibular Center at Braintree Rehabilitation Hospital  
617-573-6700  
Steven D. Rauch, M.D.*  
Gregory T. Whitman, M.D.

## Mass. Eye and Ear, East Bridgewater
Main Line, 508-378-2059  
Audiology Services, 508-350-2800  
Mandana R. Namiranian, M.D.

## Mass. Eye and Ear, Medford
781-874-1965  
H. Gregory Ota, M.D.  
David M. Bowling, M.D.

## Mass. Eye and Ear, Newton-Wellesley
617-630-1699  
Mark F. Rounds, M.D.*  
Maynard C. Hansen, M.D.  
Brian J. Park, M.D.  
Kathryn A. Ryan, M.D.

## Mass. Eye and Ear, Quincy
617-774-1717  
Paul M. Konowitz, M.D., F.A.C.S.*  
Peter N. Friedensohn, M.D.  
Alex Grilli, M.D.  
John B. Lazor, M.D., M.B.A., F.A.C.S.  
Mandana R. Namiranian, M.D.  
Edward J. Reardon, M.D.

## Mass. Eye and Ear, Stoneham
781-279-0971  
Michael B. Rho, M.D.*  
David J. Lesnik, M.D.  
Dukhee Rhee, M.D.

## Mass. Eye and Ear, Weymouth-Duxbury
781-337-3424  
Cathy D. Chong, M.D.  
Ameen K. Dharia, M.D.  
Hani Z. Ibrahim, M.D., F.A.C.S.  
David S. Kam, D.M.D., M.D.  
Monica S. Lee, M.D.

## Otolaryngology Referral Line
617-573-3954

* denotes division leadership  
** denotes chair of the department