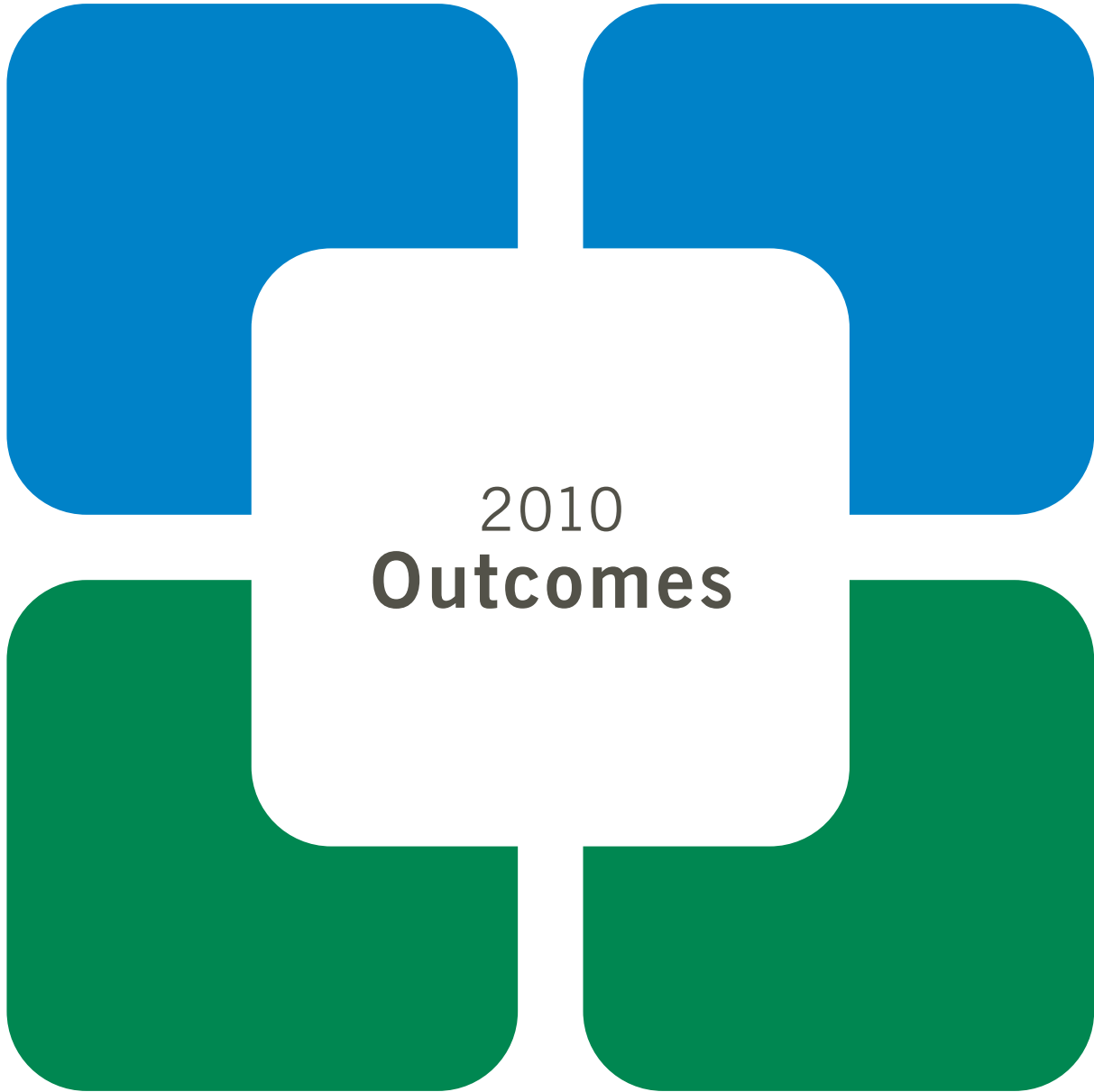


Head & Neck Institute



2010
Outcomes





To promote quality improvement, Cleveland Clinic has created a series of Outcomes books similar to this one for many of its institutes. Designed for a physician audience, the Outcomes books contain a summary of our surgical and medical trends and approaches, data on patient volumes and outcomes, and a review of new technologies and innovations.

Although we are unable to report all outcomes for all treatments provided at Cleveland Clinic — omission of outcomes for a particular treatment does not necessarily mean we do not offer that treatment — our goal is to increase outcomes reporting each year. When outcomes for a specific treatment are unavailable, we often report process measures associated with improved outcomes. When process measures are unavailable, we may report volume measures; a volume/outcome relationship has been demonstrated for many treatments, particularly those involving surgical techniques.

In addition to our internal efforts to measure clinical quality, Cleveland Clinic supports transparent public reporting of healthcare quality data and participates in the following public reporting initiatives:

- Joint Commission Performance Measurement Initiative (qualitycheck.org)
- Centers for Medicare & Medicaid (CMS) Hospital Compare (hospitalcompare.hhs.gov)
- Ohio Department of Health (ohiohospitalcompare.ohio.gov)
- Cleveland Clinic Quality Performance Report (clevelandclinic.org/QPR)

Our commitment to providing accurate, timely information about patient care also will help patients and referring physicians make informed healthcare decisions.

We hope you find these data valuable. To view all our Outcomes books, please visit Cleveland Clinic's Quality and Patient Safety website at clevelandclinic.org/quality/outcomes.



Dear Colleague:

It is my great pleasure to present Cleveland Clinic's annual Outcomes books. The current edition includes outcomes and volumes along with recent innovations and publications for Cleveland Clinic's clinical services through calendar year 2010.

Cleveland Clinic is celebrating its 90th Anniversary in 2011. Our founders were innovators. They created a unique model of medicine based on patient care, enhanced by research and education. We honor this legacy, measuring quality, reporting outcomes and continuously improving the value of medical services.

Cleveland Clinic Outcomes books are offered in print and online. Additional data is available through our online Quality Performance Report (clevelandclinic.org/QPR). The site offers data in advance of national and state public reporting sites, in key areas including heart attack, heart failure, stroke and infection prevention.

Thank you for your interest in Cleveland Clinic Outcomes books. We hope you will find them useful and informative.

Sincerely,

A handwritten signature in black ink, appearing to read "DMC".

Delos M. Cosgrove, MD
CEO and President

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Visit clevelandclinic.org/OutcomesOnline, and we'll remove you from the hard copy mailing list and email you when next year's books are online.

Chairman's Letter

The mission of the Head & Neck Institute is to be recognized as a world leader and innovator in the care of patients with disorders of the head and neck, exemplified by excellence in education, research and patient outcomes.

In an effort to improve patient care, we believe that transparency in publicly reporting our effectiveness and results is critical. The outcomes highlighted in this book showcase our excellence in several areas, as well as some opportunities for improvement. Only through this important self-evaluation and reflection can we continue to provide an excellent patient experience.

With an increase in head and neck cancer volume in the institute in 2010, we continue our focus on evaluating head and neck cancer survival rates. We also share an analysis of patients with cervical unknown primary squamous cell carcinoma by sex, stage, HPV status, tobacco/alcohol history and overall survival. We have a very strong free-tissue transfer reconstruction program and, as reported, our free flap success rates and reduced intraoperative times are national benchmarks. Our audiology section evaluates patient satisfaction of their unique, multidisciplinary tinnitus clinic and the hearing implant program measures the performance of unilateral vs. bilateral cochlear implants. Our section of vestibular and balance disorders looks at outcomes of Meniere's patients receiving intratympanic steroids. We report our evaluation of post-tonsillectomy bleeding rates, complication rates in revision sinus surgery, and the average voice handicap index and maximum phonation time before and after injection laryngoplasty and medialization thyroplasty, mostly with silastic. Oral and maxillofacial surgery highlights its implant success. Finally, our speech and language pathologists evaluate the benefit response, rating and side effect duration for spasmodic dysphonia patients receiving Botox treatment.



The institute continued to experience many positive changes in 2010. We successfully recruited 11 new members to our professional staff. They include: laryngologist Paul Bryson, MD; general otolaryngologist and vestibular physician Edward Cho, MD; head and neck cancer surgeon Mumtaz Khan, MD; pediatric otolaryngologist Prashant Malhotra, MD; audiologist Sarah Sydlowski, AuD, PhD; rhinologist and endoscopic skull base surgeon Raj Sindwani, MD; oral and maxillofacial surgeon Jill Weber, DDS; neurotologist and skull base surgeons Tom Haberkamp, MD, and Erika Woodson, MD; general dentist Betty Haberkamp, DDS; and head and neck cancer researcher Brian Gastman, MD. We have completed plans to build a state-of-the-art recording studio in our Voice Center, as well as to move into two brand-new outpatient clinic and surgical sites in the region. Lastly, we created a Center for Minimally Invasive Orbital Surgery in which we will use a two-surgeon team approach to do procedures such as endoscopic dacryocystorhinostomies (DCRs) and orbital surgery, without facial incisions or scars.

Please enjoy this 2010 Outcomes summary.

Michael S. Benninger, MD
Chairman, Head & Neck Institute

Institute Overview

In 2010, Cleveland Clinic's otolaryngology program was ranked No. 8 in the country by *U.S. News & World Report* in its 2010 "America's Best Hospitals" survey, the best ranking in Ohio.

The otolaryngology program is part of the Head & Neck Institute, a comprehensive, multidisciplinary institute that also includes general dentistry, oral and maxillofacial surgery, prosthodontics, periodontics, speech language pathology and audiology. More than 35 full-time faculty members combine their talents and expertise to achieve excellence in education, research and patient outcomes.

2010 Statistics

Total Patient Visits | 95,458

Total New Patients | 2,926

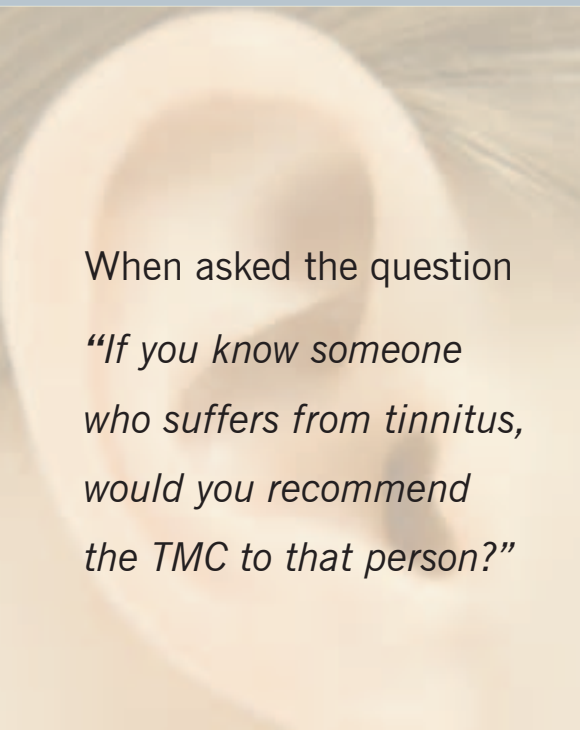
Primary Surgical Cases | 5,382

Admissions | 763

Average Relative Value Units (RVUs)
per one Full-Time Equivalent Physician | 6,505

Number of Days' Wait for a New Patient Appointment | 9

Operating Margin | 17.7%



When asked the question
*“If you know someone
who suffers from tinnitus,
would you recommend
the TMC to that person?”*

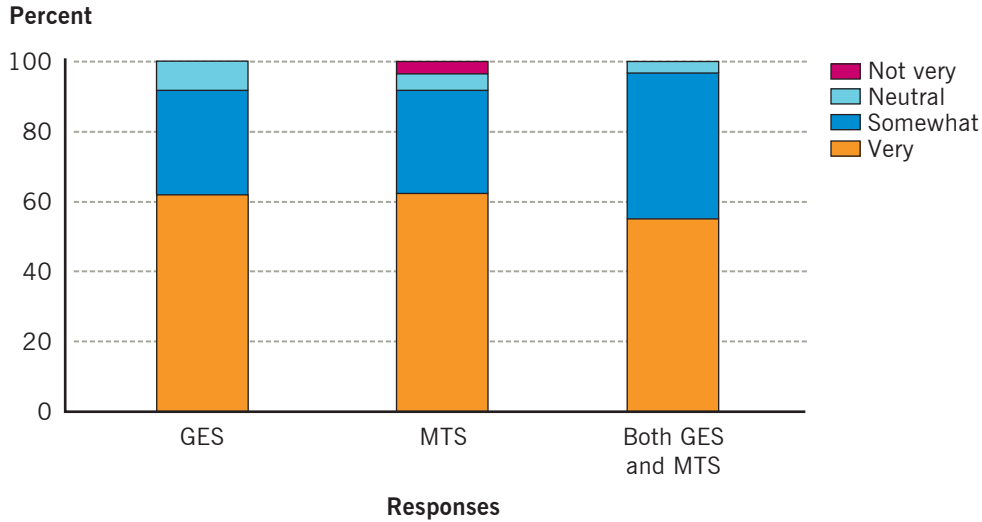
100% of the
respondents
(N = 37)
answered **yes.**

Tinnitus Management Clinic

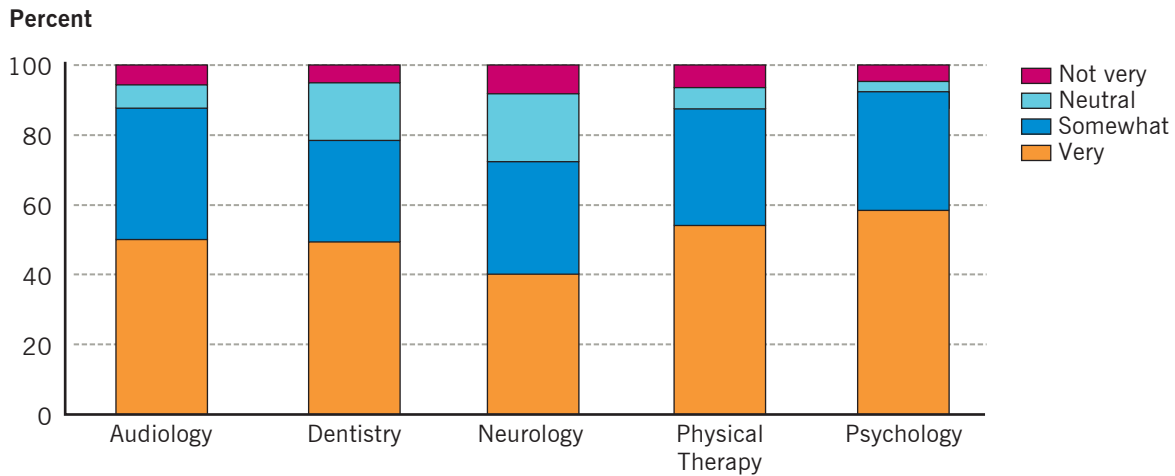
Patients who suffer from tinnitus are seen in the Tinnitus Management Clinic (TMC) following clearance from Otolaryngology. The TMC, directed by the Section of Audiology, includes a 1.5-hour Group Education Session (GES) followed by a 1.5-hour Multidisciplinary Team Screening (MTS). The team includes specialists from audiology, dentistry, neurology, physical therapy, and psychology.

All patients (N = 72) who participated in the TMC from June 2009 to November 2010, were sent a follow-up questionnaire within two weeks of their visit to the TMC. A total of 37 patients (return rate of 51%) responded.

How beneficial did you find the TMC? (N = 37)



How helpful did you find each TMC specialist? (N = 37)

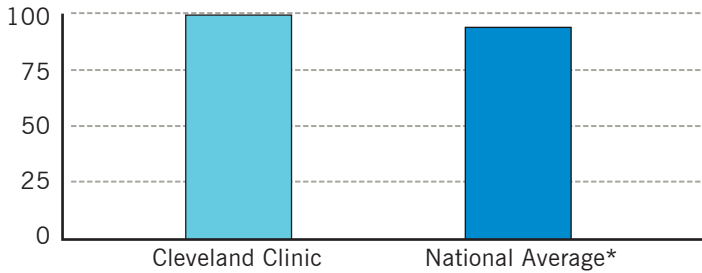


Facial Plastic and Reconstructive Surgery

Free Flap Survival (N = 421)

2001 – 2010

Percent



***National average based on the cumulative average of five major studies referenced below:**

Heinz TR, Cowper PA, Levin LS. Microsurgery costs and outcome. *Plast Reconstr Surg.* 1999 Jul;104(1):89-96.

Smeele LE, Goldstein D, Tsai V, Gullane PJ, Neligan P, Brown DH, Irish JC. Morbidity and cost differences between free flap reconstruction and pedicled flap reconstruction in oral and oropharyngeal cancer: Matched control study. *J Otolaryngol.* 2006 Apr;35(2):102-107.

Tsue TT, Desyatnikova SS, Deleyiannis FW, Futran ND, Stack BC Jr, Weymuller EA Jr, Glenn MG. Comparison of cost and function in reconstruction of the posterior oral cavity and oropharynx. Free vs pedicled soft tissue transfer. *Arch Otolaryngol Head Neck Surg.* 1997 Jul;123(7):731-737.

Singh B, Cordeiro PG, Santamaria E, Shaha AR, Pfister DG, Shah JP. Factors associated with complications in microvascular reconstruction of head and neck defects. *Plast Reconstr Surg.* 1999 Feb;103(2):403-411.

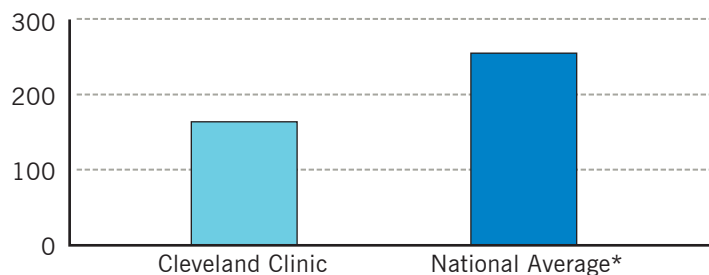
Hidalgo DA, Disa JJ, Cordeiro PG, Hu QY. A review of 716 consecutive free flaps for oncologic surgical defects: refinement in donor-site selection and technique. *Plast Reconstr Surg.* 1998 Sep;102(3):722-732.



Free Flap Operative Times (N = 399)

2003 – 2010

Flap Inset and Microvascular Anastomosis Time (Total Minutes Added to Planned Cancer Surgical Procedures)



***National average based on the cumulative average of five major studies referenced below:**

Heinz TR, Cowper PA, Levin LS. Microsurgery costs and outcome. *Plast Reconstr Surg.* 1999 Jul;104(1):89-96.

Smeele LE, Goldstein D, Tsai V, Gullane PJ, Neligan P, Brown DH, Irish JC. Morbidity and cost differences between free flap reconstruction and pedicled flap reconstruction in oral and oropharyngeal cancer: Matched control study. *J Otolaryngol.* 2006 Apr;35(2):102-107.

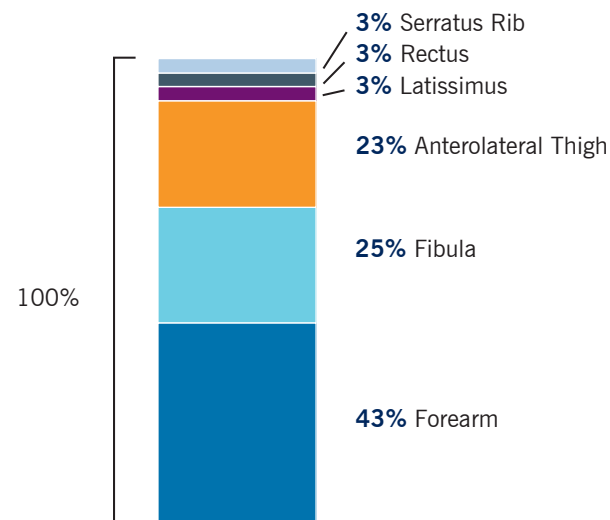
Tsue TT, Desyatnikova SS, Deleyiannis FW, Futran ND, Stack BC Jr, Weymuller EA Jr, Glenn MG. Comparison of cost and function in reconstruction of the posterior oral cavity and oropharynx. Free vs pedicled soft tissue transfer. *Arch Otolaryngol Head Neck Surg.* 1997 Jul;123(7):731-737.

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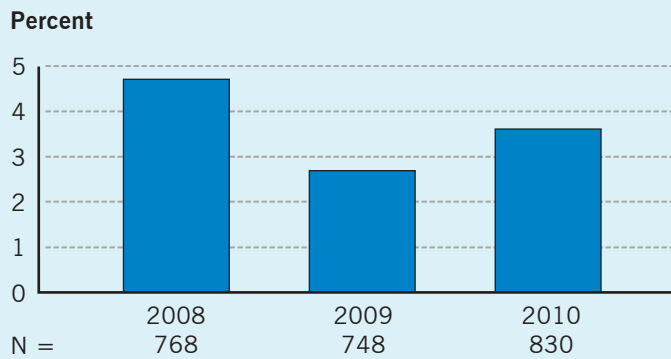
Hidalgo DA, Disa JJ, Cordeiro PG, Hu QY. A review of 716 consecutive free flaps for oncologic surgical defects: refinement in donor-site selection and technique. *Plast Reconstr Surg.* 1998 Sep;102(3):722-732.

Free Flap Distribution (N = 614)

2002 – 2010



Post-Tonsillectomy Bleeding Rate With or Without Adenoidectomy (Pediatric and Adult)



The above graph includes both pediatric (under 18) and adult patients.

Hearing Implant Program



Two cochlear implants (CI) may provide more benefit than a single CI or a CI and hearing aid for individuals with bilateral moderate to profound hearing loss. Benefits may include better sound localization and better speech recognition in both quiet and noise.

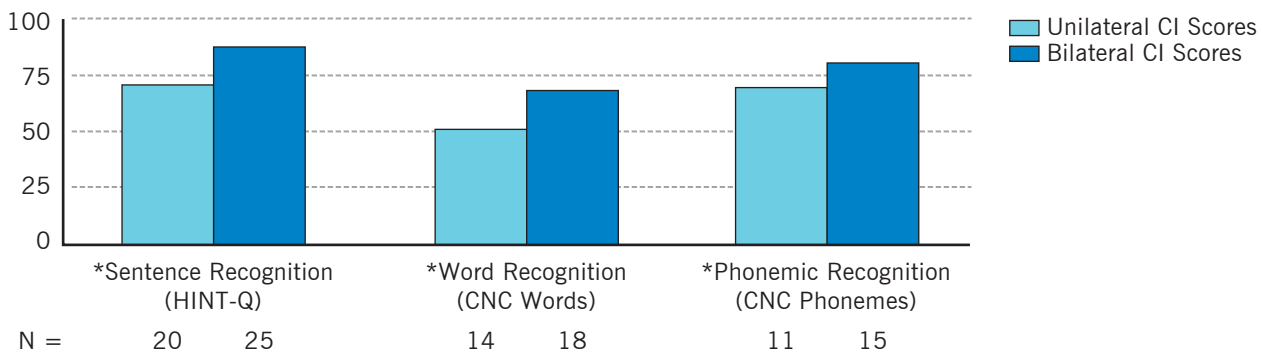
The graph below summarizes speech recognition scores in quiet for 26 sequential bilateral adult CI recipients (time between unilateral and bilateral evaluation: 1 month to 4.9 years, mean = 27.23 months).

Seventy-nine percent of recipients demonstrated improved sentence recognition (HINT-Q), 70 percent demonstrated improved word recognition (CNC Words), and 57 percent demonstrated improved phonemic recognition (CNC Phonemes) with bilateral CI as compared to unilateral CI. Average improvement in speech recognition was 24 percent (sentence materials), 28.9 percent (word materials), and 17 percent (phonemic materials).

Unilateral vs. Bilateral Cochlear Implant (CI) Performance (N = 26)

2010

Percent Correct



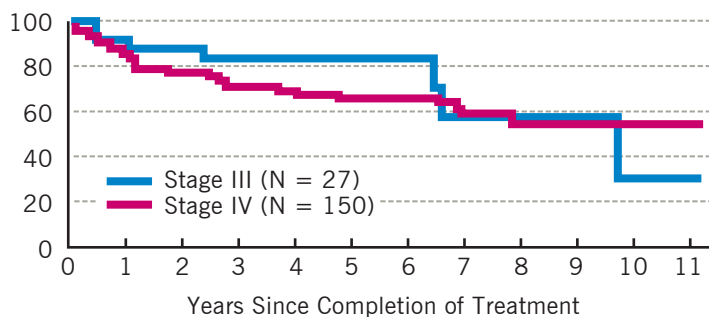
* Retrospective chart review performed and not all tests administered in all conditions.

Head and Neck Surgery and Oncology

Base of the Tongue Squamous Cell Carcinoma Overall Survival Rate, Stages III and IV (N = 177)

1997 – 2009

Percent Survival

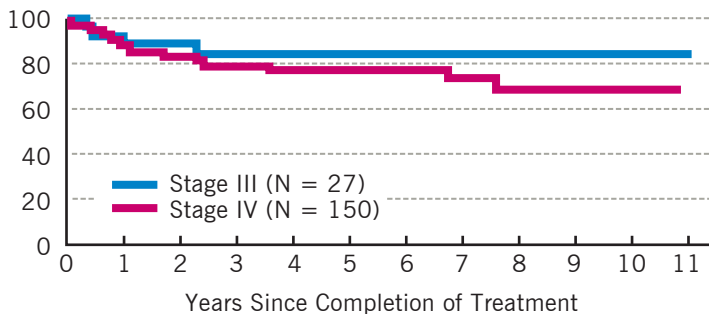


The Kaplan-Meier test for overall survival rate for BOT patients has log rank (Mantel-Haenszel) test P value of 0.36 and Wilcoxon test (Peto & Peto modification of the Gehan-Wilcoxon test) P value of 0.29, which means no significant association was found between stages and overall survival rate based on the BOT patients data in this study.

Base of the Tongue Squamous Cell Carcinoma Disease-Specific Survival Rate, Stages III and IV (N = 177)

1997 – 2009

Percent Survival

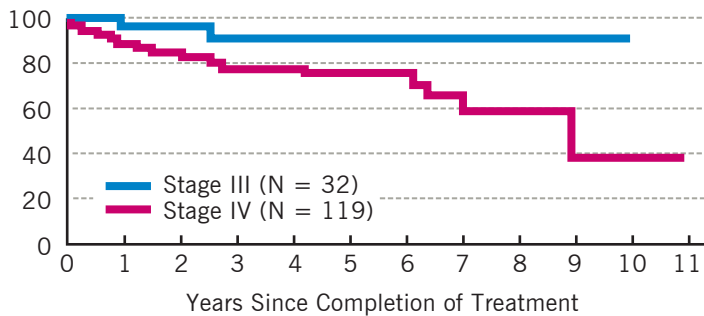


The Kaplan-Meier test for overall survival rate for BOT patients has log rank (Mantel-Haenszel) test P value of 0.34 and Wilcoxon test (Peto & Peto modification of the Gehan-Wilcoxon test) P value of 0.36, which means no significant association was found between stages and disease-specific survival rate based on the BOT patients data in this study.

Tonsil Squamous Cell Carcinoma Overall Survival Rate, Stages III and IV (N = 151)

1997 – 2009

Percent Survival

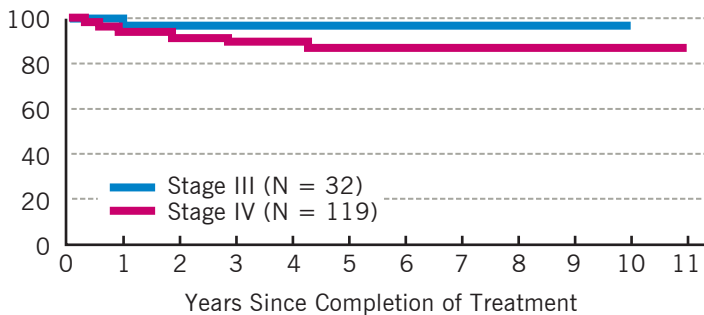


The Kaplan-Meier test for overall survival rate for tonsil patients has log rank (Mantel-Haenszel) test P value of 0.03 and Wilcoxon test (Peto & Peto modification of the Gehan-Wilcoxon test) P value of 0.03, which means significant association was found between stages and overall survival rate based on the tonsil patients data in this study.

Tonsil Squamous Cell Carcinoma Disease-Specific Survival Rate, Stages III and IV (N = 151)

1997 – 2009

Percent Survival



The Kaplan-Meier test for overall survival rate for tonsil patients has log rank (Mantel-Haenszel) test P value of 0.22 and Wilcoxon test (Peto & Peto modification of the Gehan-Wilcoxon test) P value of 0.22, which means no significant association was found between stages and disease-specific survival rate based on the tonsil patients data in this study.

Head and Neck Surgery and Oncology

Cervical Unknown Primary Squamous Cell Carcinoma Patient Analysis (N = 95)

1996 – 2010

Distribution	%
Male	81
Female	19
Stage III	75
Stage IV	25
HPV Positive	71
HPV Negative	29
Tobacco History	41
Tobacco & Alcohol	35
Neither	24

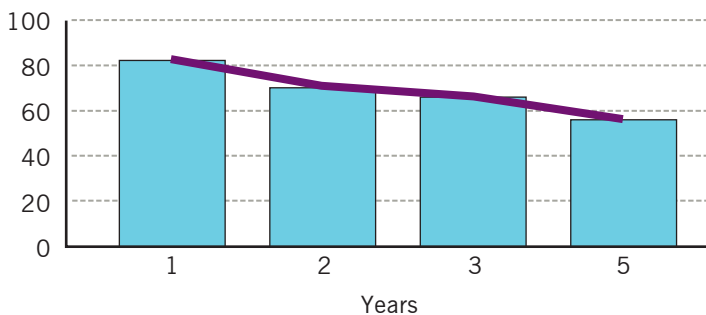
This patient population presents with metastatic squamous cell carcinoma in the neck without a detectable primary site even after radiographic scans, endoscopy and directed biopsies.

Although cervical unknown primary squamous cell carcinoma composes < 5% of head and neck cancers, these patients are a particularly difficult subset to treat. We analyzed our database of 95 patients over the last 14 years.

Cervical Unknown Primary Squamous Cell Carcinoma Overall Patient Survival (N = 95)

1996 – 2010

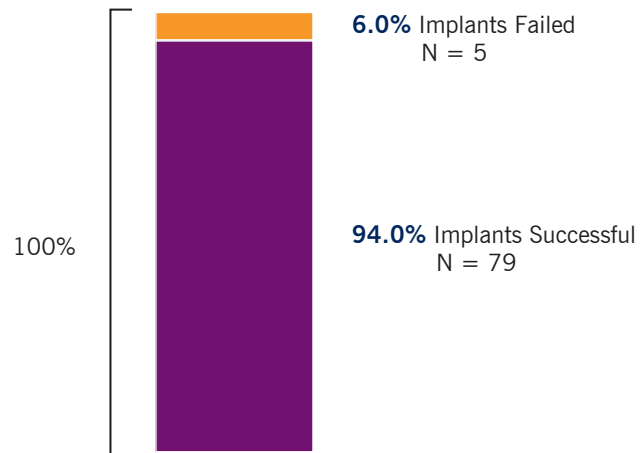
Percent Survival



Oral and Maxillofacial Surgery

Dental Implant Success Rate (N = 84)

2010



Dental implants are routinely placed in the jaw bones to replace missing teeth or provide greater retention for removable prostheses (dentures, partials, etc.). Many of our patients are undergoing rehabilitation from cancer or tumors of the oral cavity.

Our success rates continue to be above 90 percent for patients with a history of head and neck radiation as well as severely compromising medical conditions.

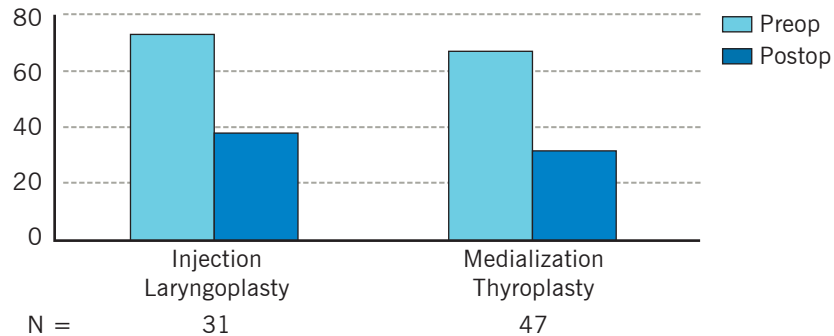


Laryngotracheal Reconstruction

Average Voice Handicap Index (VHI) Before and After Injection Laryngoplasty with Radiesse® and Medialization Thyroplasty (N = 78)

2010

VHI Score*



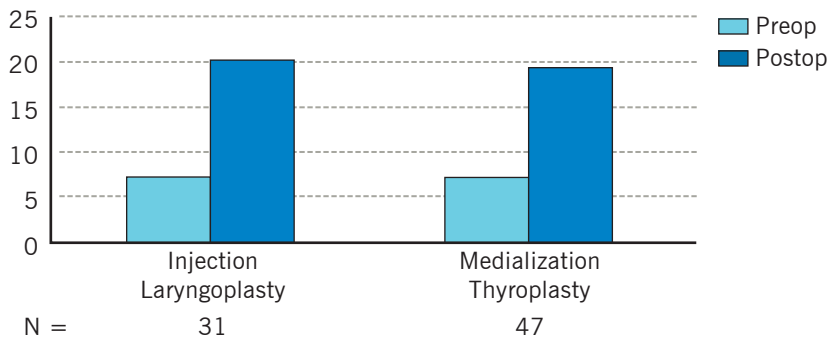
*VHI score range is 0 – 120

The Voice Handicap Index (VHI) is a validated self-reported quality of life instrument that measures the physical, functional and emotional impact of a voice problem on the patient's overall perception of life quality. A lower score suggests a better voice-related quality of life with a score change after treatment of 18 or greater being a statistically significant change.

Average Maximum Phonation Time (MPT) Before and After Injection Laryngoplasty with Radiesse® and Medialization Thyroplasty (N = 78)

2010

MPT Score (Seconds)



Maximum phonation time (MPT) is a measure of the amount of time a patient can sustain a prolonged vocalization of a vowel at low volumes. The more lateralized the vocal fold and the larger the glottal gap, the shorter the MPT. A good measure of the success of treatment to improve closure and strengthen the voice is an increase in the MPT.

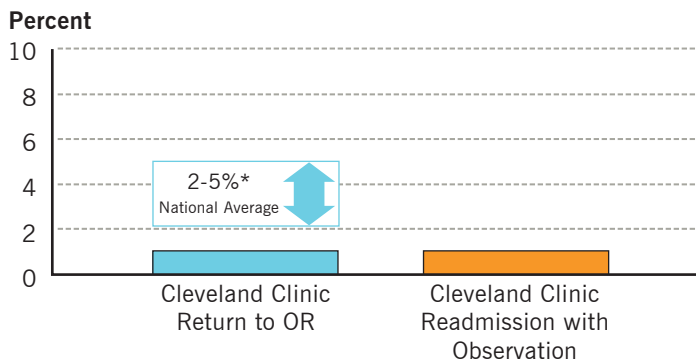
Seventy-eight consecutive patients with an immobile vocal fold who elected to proceed with surgical therapy were evaluated with an MPT and a VHI before and at an average of three months after surgery. The surgical procedures performed were a medialization laryngoplasty with silastic (47 patients) or a vocal fold injection (31 patients) with Radiesse®. The individual and combined scores of these two interventions before and after treatment are noted in the graphs to the left revealing an improvement in MPT and VHI scores. Since the injectables are not permanent in most patients, many of those patients will eventually go on to another procedure, such as a medialization with silastic, in the future.



Pediatric Otolaryngology

Pediatric Post-Tonsillectomy Bleeding Rate with or without Adenoidectomy (N = 2,301)

2003 – 2010

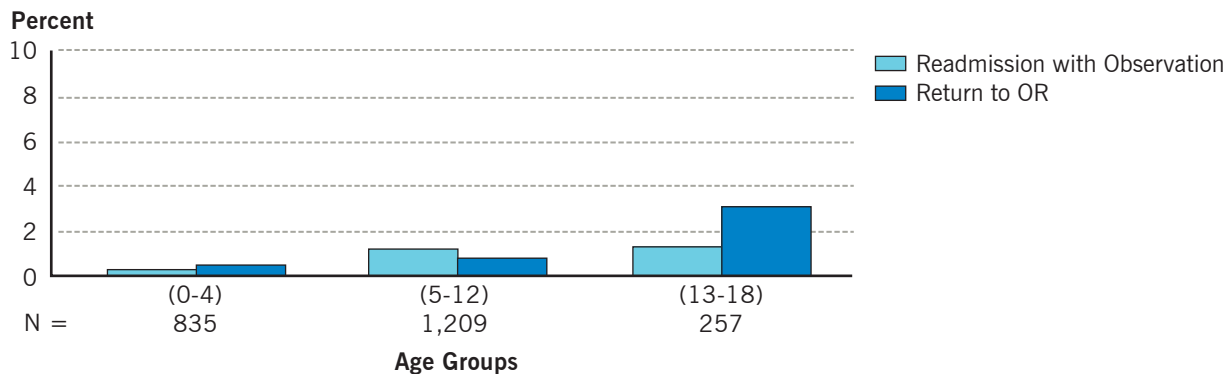


* National average range for returning to OR is 2–5 percent.

Audit NP. Impact of NICE guidance on rates of hemorrhage after tonsillectomy: an evaluation of guidance issued during an ongoing national tonsillectomy audit. *Qual Saf Health Care*. 2008 Aug;17(4):264-268.

Pediatric Post-Tonsillectomy Bleeding Rate with or without Adenoidectomy by Age Group (N = 2,301)

2003 – 2010



Rhinology, Sinus and Skull Base Surgery

Surgical Outcomes and Complications of Revision Endoscopic Sinus Surgery

2010

Patient demographics	N	%
Mean age	51	
Number of patients	145	
Female	78	54
Male	67	46
Image guidance	126	87
Outpatient surgery	118	81

In 2010, Cleveland Clinic rhinologists managed a wide variety of patients requiring revision endoscopic sinus surgery. Despite the unique and complex nature of our practice, the large majority of our patients were successfully treated using image-guided, endoscopic techniques on an outpatient basis.

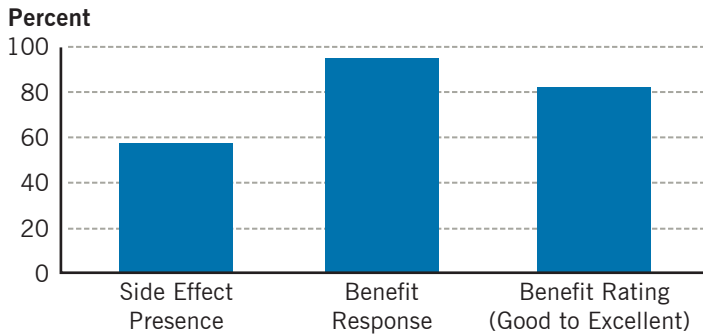
Innovative surgical techniques and state-of-the-art technology resulted in a very low rate of complications for our patients.

Complication	N	%	Long-Term Sequelae
Intracranial injury	0	0.0	0
Orbital injury (major)	0	0.0	0
Orbital injury (minor)	0	0.0	0
Mucocele	0	0.0	0
Epistaxis (major)	0	0.0	0
Epistaxis (minor)	2	1.4	0
Synchia, requiring repeat OR	0	0.0	0
Postoperative pain syndrome	0	0.0	0
Anesthetic complication	1	0.7	0

Speech Language Pathology

Botox Injection Benefit Response, Rating and Side Effect Presence (N = 80)

2006 – 2010

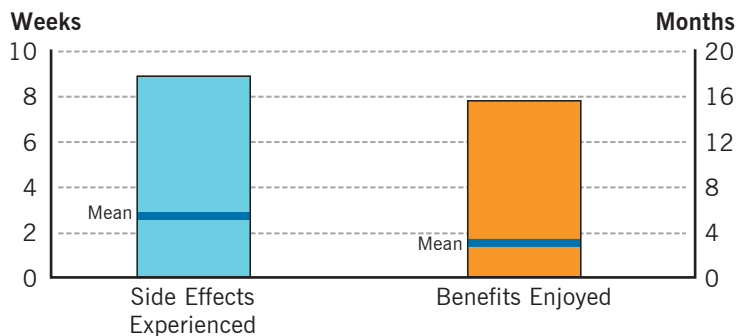


Due to a lack of factual information about Botox injection effects, generic patient patterns are the current basis for counseling. Accurate information would allow patients to make more informed choices about their care.

The graphs to the left provide Cleveland Clinic patient experience data for the last five years regarding presence and duration of side effects and vocal benefits plus patient benefit rating. Relative to informal, generic patient patterns, our patients experience less frequent and less lengthy side effects and more benefits. The average duration of benefits seems slightly shorter, but our duration range is longer. Future patient counseling about Botox injections will now be based on these documented outcomes.

Side Effect and Benefit Duration

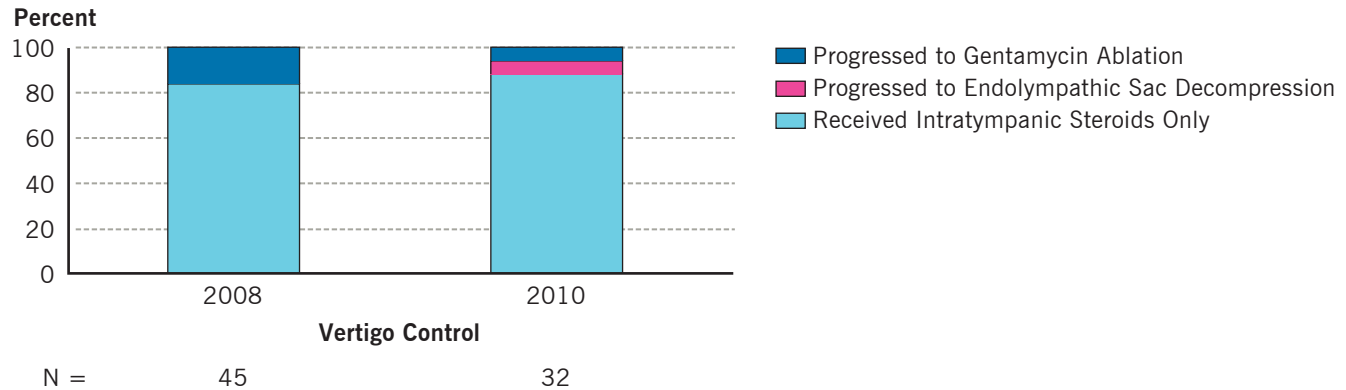
2006 – 2010



Vestibular and Balance Disorders

Comparison of Vertigo Control for Meniere's Disease With Intratympanic Steroids

2008 and 2010



Reporting follows the most recent guidelines of the Academy of Otolaryngology-Head and Neck Surgery Committee on Hearing and Equilibrium (OHNS 113(3):181-185, 1995). Only patients with “definite” Meniere’s disease are reported: two or more definitive spontaneous episodes of vertigo lasting 20 minutes or longer, audiometrically documented sensorineural hearing loss on at least one occasion, tinnitus or aural fullness in the treated ear, and other causes excluded.

The graph above shows a comparison of data from 2010 and 2008. Overall improvement in success of intratympanic steroids is evidenced by 88 percent effective control of vertigo in 2010 vs. 84 percent effective control in 2008. Furthermore, if intratympanic steroids and endolymphatic sac decompression are considered together, the success rate in 2010 was 94 percent. No patients progressed to ablative surgery.

Surgical Quality Improvement

National Surgical Quality Improvement Program

The American College of Surgeons' National Surgical Quality Improvement Program (NSQIP) is a national program that objectively measures and reports risk-adjusted surgical outcomes based on a defined sampling and abstraction methodology. Cleveland Clinic has participated in multispecialty NSQIP since May 2008, and the outcome data below and on the opposite page reflect our surgical cases between July 1, 2009, and June 30, 2010.

Overall Multispecialty 30-Day Mortality (N = 4,518)

July 2009 – June 2010

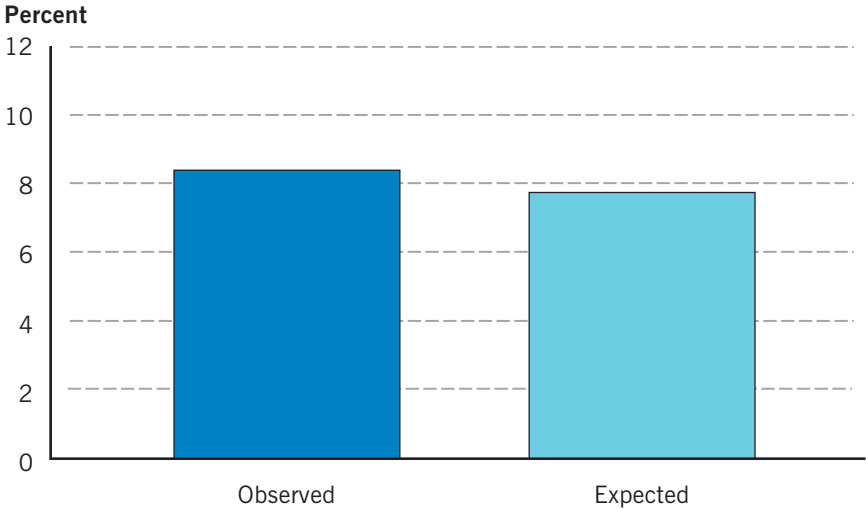


Overall multispecialty mortality was lower than expected; however the difference was not statistically significant.



Otolaryngology 30-Day Morbidity (N = 250)

July 2009 – June 2010



Otolaryngology surgery morbidity was higher than expected; however, the difference was not statistically significant.

Patient Experience

“Patients First” is the guiding principle of Cleveland Clinic. Patient experience is a key component of Cleveland Clinic’s strategic plan to achieve a coordinated delivery model that integrates patient- and family-centered care with clinical outcomes, quality, safety and employee experience.

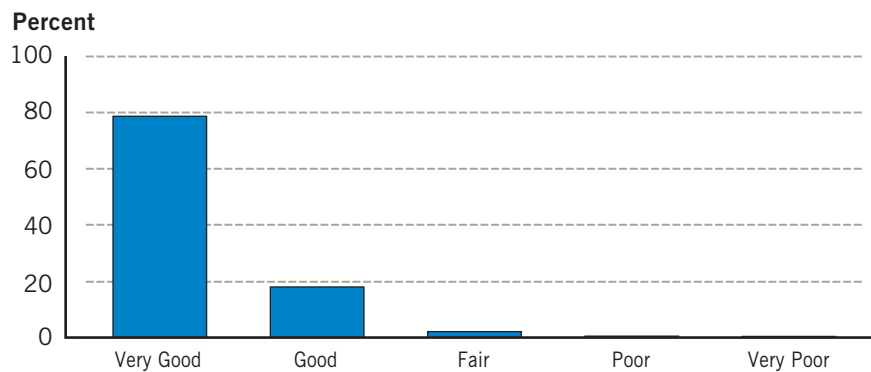
The Office of Patient Experience’s mission is to ensure consistent, patient-centered care by partnering with caregivers to exceed the expectations of patients and families. Programs and services include:

- Expertise for critical initiatives throughout the organization to ensure the consistent delivery of patient-centered care
- Patient satisfaction data analysis, HCAHPS education and resources
- Identification and sharing of sustainable best practices
- Support of employee experience and recognition initiatives

- Customer service education programs, including the Respond with H.E.A.R.T.® service recovery program, to positively impact the Cleveland Clinic culture and support caregivers in providing outstanding service to patients, families and colleagues
- Personalized, holistic Healing Services for patients, families and employees including light massage, Reiki, Healing Touch™, reflexology, personal aromatherapy, guided imagery, spiritual support, Code Lavender first-response holistic care service and others
- Health literacy education and solutions
- Voice of the Patient Advisory Councils, an advisory resource that empowers patients and families to take an active role in improving the patient experience by providing real-time feedback and creative solutions to specific challenges
- Ombudsman Office, which serves as a centralized complaint center

Outpatient – Head & Neck Institute

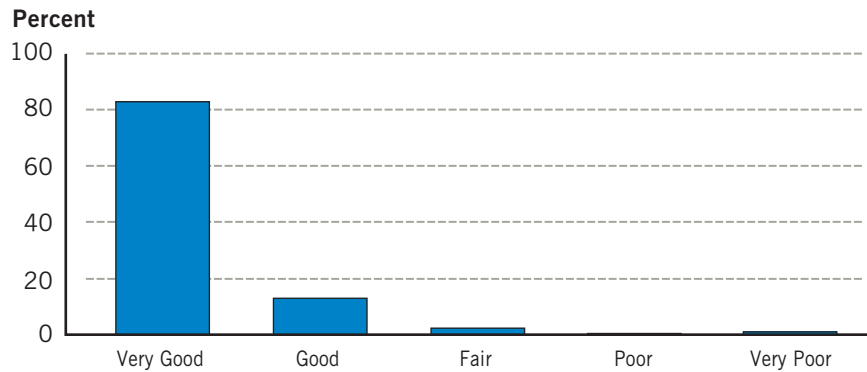
Overall Rating of Outpatient Care and Services During Outpatient Visit (N = 965)
2010



Source: Press Ganey, a national hospital survey vendor

Rating of Outpatient Care Provider (N = 965)

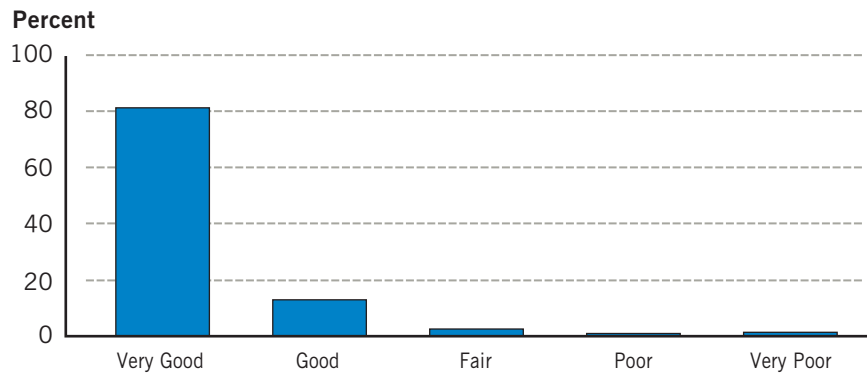
2010



Source: Press Ganey, a national hospital survey vendor

Likelihood of Recommending Outpatient Care Provider (N = 965)

2010



Source: Press Ganey, a national hospital survey vendor

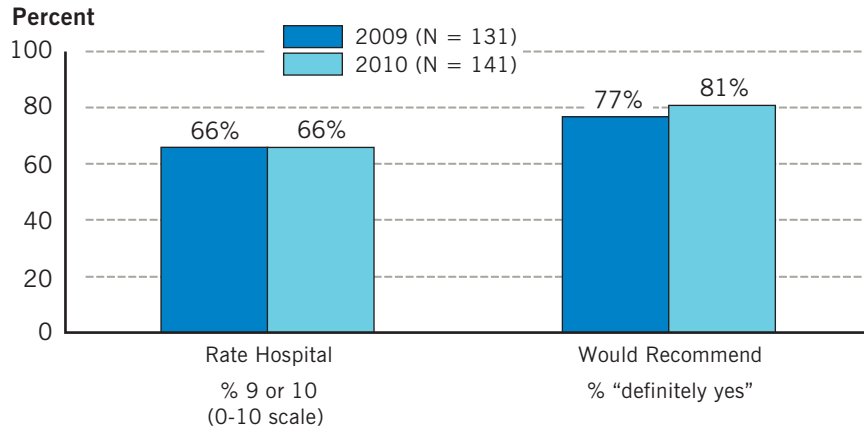
Patient Experience

Inpatient – Head & Neck Institute

With the support of the Centers for Medicare & Medicaid Services (CMS) and its partner organizations, the first national standard patient experience hospital survey (HCAHPS) was implemented in late 2006. Results collected for reporting are available at hospitalcompare.hhs.gov.

HCAHPS Overall Assessment

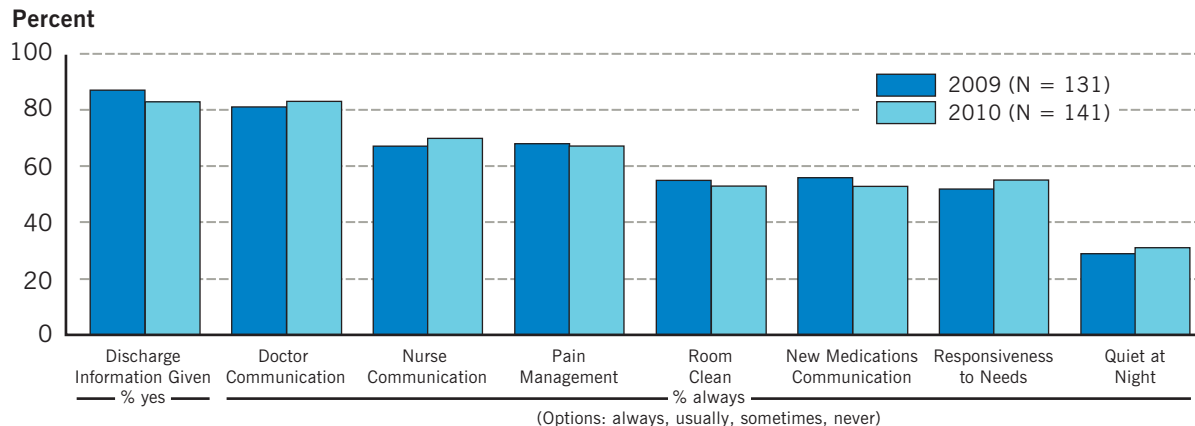
2009 – 2010



Source: Press Ganey, a national hospital survey vendor

HCAHPS Domains of Care

2009 – 2010



Source: Press Ganey, a national hospital survey vendor



Cleveland Clinic Experience — Our Mission, Vision and Values

In 2010, the Office of Patient Experience worked in collaboration with several departments, including the Office of Learning and Performance Development, to introduce “Cleveland Clinic Experience” to every employee across the organization. Cleveland Clinic Experience is an initiative designed to enhance and transform the culture at Cleveland Clinic by integrating exceptional employee and patient experiences. Interactive learning sessions taught caregivers the Cleveland Clinic expected service behaviors, how to positively respond to patient and family concerns, and what it means to live the Cleveland Clinic mission, vision and values on the job every day.

Selected Publications

Abelson TI. The electronic medical record: Learning to swim. *Cleve Clin J Med*. 2010 Jul;77(7):415-419.

Alexander AJ, Alam DS, Gullane PJ, Lengele BG, Adamson PA. Arguing the ethics of facial transplantation. *Arch Facial Plast Surg*. 2010 Jan;12(1):60-63.

Anne S, Borland LM, Haibeck L, Dohar JE. A conscious sedation protocol for videolaryngostroboscopy in pediatric patients. *Int J Otolaryngol*. 2010;2010:643123.

Bennett KL, Lee W, Lamarre E, Zhang X, Seth R, Scharpf J, Hunt J, Eng C. HPV status-independent association of alcohol and tobacco exposure or prior radiation therapy with promoter methylation of FUSSEL18, EBF3, IRX1, and SEPT9, but not SLC5A8, in head and neck squamous cell carcinomas. *Genes Chromosomes Cancer*. 2010 Apr;49(4):319-326.

Benninger M, Farrar JR, Blaiss M, Chipps B, Ferguson B, Krouse J, Marple B, Storms W, Kaliner M. Evaluating approved medications to treat allergic rhinitis in the United States: an evidence-based review of efficacy for nasal symptoms by class. *Ann Allergy Asthma Immunol*. 2010 Jan;104(1):13-29.

Benninger M, Farrar J, Kaliner M. Author response [Evaluating the effectiveness of medications in the treatment of allergic rhinitis]. *Ann Allergy Asthma Immunol*. 2010 Aug;105(2):189.

Benninger MS. Phonosurgery for benign lesions of the larynx. *Onsei Gengo Igaku Japan Journal of Logopedics and Phoniatics*. 2010;51(2):156-161.

Benninger MS, McFarlin K, Hamilton DR, Rubinfeld I, Sargsyan AE, Melton SL, Moyhi M, McLaren PJ, Dulchavsky SA. Ultrasonographic evaluation of sinusitis during microgravity in a novel animal model. *Arch Otolaryngol Head Neck Surg*. 2010 Nov;136(11):1094-1098.

Benninger MS. The human voice: evolution and performance. *Music and Medicine*. 2010 Apr;2(2):104-108.

Benninger MS, Manz R. The impact of vaccination on rhinosinusitis and otitis media. *Curr Allergy Asthma Rep*. 2010 Nov;10(6):411-418.

Benninger MS, Khalid AN, Benninger RM, Smith TL. Surgery for chronic rhinosinusitis may improve sleep and sexual function. *Laryngoscope*. 2010 Aug;120(8):1696-1700.

Cannady SB, Seth R, Fritz MA, Alam DS, Wax MK. Total parotidectomy defect reconstruction using the buried free flap. *Otolaryngol Head Neck Surg*. 2010 Nov;143(5):637-643.

Cannady SB, Lee WT, Scharpf J, Lorenz RR, Wood BG, Strome M, Lavertu P, Esclamado RM, Saxton JP, Adelstein DJ. Extent of neck dissection required after concurrent chemoradiation for stage IV head and neck squamous cell carcinoma. *Head Neck*. 2010 Mar;32(3):348-356.

Champagne JP, Antisdell JL, Woodard TD, Kountakis SE. Epidemiologic factors affect surgical outcomes in allergic fungal sinusitis. *Laryngoscope*. 2010 Nov;120(11):2322-2324.

Chung CH, Aulino J, Muldowney NJ, Hatakeyama H, Baumann J, Burkey B, Netterville J, Sinard R, Yarbrough WG, Cmelak AJ, Slebos RJ, Shyr Y, Parker J, Gilbert J, Murphy BA. Nuclear factor-kappa B pathway and response in a phase II trial of bortezomib and docetaxel in patients with recurrent and/or metastatic head and neck squamous cell carcinoma. *Ann Oncol*. 2010 Apr;21(4):864-870.

Cillo JE, Jr., Theodotou N, Samuels M, Krajekian J. The tent pole splint: a bone-supported stereolithographic surgical splint for the soft tissue matrix expansion graft procedure. *J Oral Maxillofac Surg*. 2010 Jun;68(6):1365-1370.

Costa DJ, Sanford T, Janney C, Cooper M, Sindwani R. Radiographic and anatomic characterization of the nasal septal swell body. *Arch Otolaryngol Head Neck Surg*. 2010 Nov;136(11):1107-1110.

Gifford RH, Dorman MF, Shallop JK, Sydlowski SA. Negative effect of deep cochlear implant electrode insertion on speech perception. *Cochlear Implants Int*. 2010 Dec;11(4):233-240.

Gifford RH, Dorman MF, Shallop JK, Sydlowski SA. Evidence for the expansion of adult cochlear implant candidacy. *Ear Hear*. 2010 Apr;31(2):186-194.

Goldberg DM, Dickson CL, Flexer C. AG Bell Academy certification program for listening and spoken language specialists: Meeting a world-wide need for qualified professionals. *Volta Rev*. 2010 Summer;110(2):129-143.

Gurgel RK, Woodson EA, Lenkowski PW, Gubbels SP, Hansen MR. Zygomatic root abscess: a rare complication of otitis media. *Otol Neurotol*. 2010 Jul;31(5):856-857.

Hicks CW, Krakovitz PR, Reid JR, Rome ES. Facial asymmetry involving the parotid gland of an infant. *Clin Pediatr (Phila)*. 2010 Sep;49(9):904-906.

Kusuma S, Skarupa DJ, Ely KA, Cmelak AJ, Burkey BB. Synovial sarcoma of the head and neck: a review of its diagnosis and management and a report of a rare case of orbital involvement. *Ear Nose Throat J*. 2010 Jun;89(6):280-283.

Kwak PE, Friedman AD, Lamarre ED, Lorenz RR. Selective reinnervation of the posterior cricoarytenoid and interarytenoid muscles: An anatomical study. *Laryngoscope*. 2010 Mar;120(3):463-467.

Lee WT, Rizzi M, Scharpf J, Lorenz RR, Saxton JP, Adelstein DJ, Esclamado RM. Impact of preepiglottic space tumor involvement on concurrent chemoradiation therapy. *Am J Otolaryngol*. 2010 May-Jun;31(3):185-188.



Head & Neck Institute
staff authored
54 publications
in 2010.

For a complete list, go to
clevelandclinic.org/quality/outcomes.

Selected Publications

- Lott D, Krakovitz P. In response to squamous cell carcinoma associated with intralesional injection of cidofovir for recurrent respiratory papillomatosis. *Laryngoscope*. 2010 Mar;120(3):651.
- Lott DG, Shipchandler TZ, Dan O, Lorenz RR, Strome M. A new mouse laryngeal transplantation rejection grading system. *Laryngoscope*. 2010 Jan;120(1):39-43.
- Lott DG, Manz R, Koch C, Lorenz RR. Aggressive behavior of nonmelanotic skin cancers in solid organ transplant recipients. *Transplantation*. 2010 Sep 27;90(6):683-687.
- Meltzer NE, Alam DS. Facial paralysis rehabilitation: state of the art. *Curr Opin Otolaryngol Head Neck Surg*. 2010 Aug;18(4):232-237.
- Meslemani D, Benninger MS. Coblation removal of laryngeal Teflon granulomas. *Laryngoscope*. 2010 Oct;120(10):2018-2021.
- Murphy BA, Dietrich MS, Wells N, Dwyer K, Ridner SH, Silver HJ, Gilbert J, Chung CH, Cmelak A, Burkey B, Yarbrough WG, Sinard R, Netterville J. Reliability and validity of the Vanderbilt Head and Neck Symptom Survey: a tool to assess symptom burden in patients treated with chemoradiation. *Head Neck*. 2010 Jan;32(1):26-37.
- Newman CW, Sandridge SA, Oswald LM. Relationship between expectations and satisfaction for Baha implant system in patients with single-sided deafness. *Semin Hear*. 2010;31(1):15-27.
- Paradis C, Siemionow M, Papay F, Lohman R, Kodish E, Gordon C, Djohan R, Coffman K, Bernard S, Alam D. Ethical considerations in the first American face transplant. *Plast Reconstr Surg*. 2010 Sep;126(3):896-901.
- Rajasekaran K, Seth R, Abelson A, Batra PS. Prevalence of metabolic bone disease among chronic rhinosinusitis patients treated with oral glucocorticoids. *Am J Rhinol Allergy*. 2010 May;24(3):215-219.
- Rizzi MD, Weil RJ, Lorenz RR. Severe transient hypertension after greater palatine foramen block in a patient taking midodrine. *Am J Otolaryngol*. 2010 Jan-Feb;31(1):67-69.
- Roberts LE, Eggermont JJ, Caspary DM, Shore SE, Melcher JR, Kaltenbach JA. Ringing ears: the neuroscience of tinnitus. *J Neurosci*. 2010 Nov 10;30(45):14972-14979.
- Seth R, Rajasekaran K, Benninger MS, Batra PS. The utility of intrathecal fluorescein in cerebrospinal fluid leak repair. *Otolaryngol Head Neck Surg*. 2010 Nov;143(5):626-632.
- Seth R, Futran ND, Alam DS, Knott PD. Outcomes of vascularized bone graft reconstruction of the mandible in bisphosphonate-related osteonecrosis of the jaws. *Laryngoscope*. 2010 Nov;120(11):2165-2171.
- Seth R, Rajasekaran K, Luong A, Benninger MS, Batra PS. Spontaneous CSF leaks: Factors predictive of additional interventions. *Laryngoscope*. 2010 Nov;120(11):2141-2146.
- Seth R, Nabili V, Fritz MA, Alam DS, Knott PD. Volume-directed facial soft tissue deficit reconstruction. *Facial Plast Surg*. 2010 Dec;26(6):494-503.
- Siemionow MZ, Papay F, Djohan R, Bernard S, Gordon CR, Alam D, Hendrickson M, Lohman R, Eghtesad B, Fung J. First U.S. near-total human face transplantation: a paradigm shift for massive complex injuries. *Plast Reconstr Surg*. 2010 Jan;125(1):111-122.
- Sindwani R, Marino M. The sphenoid-ostio-choanal polyp: a rare and curious entity. *Arch Otolaryngol Head Neck Surg*. 2010 Aug;136(8):834-835.

Soler ZM, Sindwani R, Metson R. Endoscopic sphenoid nasalization for the treatment of advanced sphenoid disease. *Otolaryngol Head Neck Surg.* 2010 Sep;143(3):456-458.

Stephen JK, Chen KM, Shah V, Schweitzer VG, Gardner G, Benninger MS, Worsham MJ. Consistent DNA hypermethylation patterns in laryngeal papillomas. *Int J Head Neck Surg.* 2010 May;1(2):69-77.

Stephen JK, Chen KM, Shah V, Havard S, Kapke A, Lu M, Benninger MS, Worsham MJ. DNA hypermethylation markers of poor outcome in laryngeal cancer. *Clin Epigenetics.* 2010 Sep 1;1(1-2):61-69.

Swibel-Rosenthal LH, Benninger MS, Stone CH, Zacharek MA. Wound healing in the paranasal sinuses after Coblation, Part II: Evaluation for endoscopic sinus surgery using a sheep model. *Am J Rhinol Allergy.* 2010 Nov;24(6):464-466.

Tammemagi CM, Davis RM, Benninger MS, Holm AL, Krajenta R. Secondhand smoke as a potential cause of chronic rhinosinusitis: a case-control study. *Arch Otolaryngol Head Neck Surg.* 2010 Apr;136(4):327-334.

Woodson EA, Reiss LAJ, Turner CW, Gfeller K, Gantz BJ. The hybrid cochlear implant: a review. *Adv Otorhinolaryngol.* 2010;67:125-134.

Woodson EA, Dempewolf RD, Gubbels SP, Porter AT, Oleson JJ, Hansen MR, Gantz BJ. Long-term hearing preservation after microsurgical excision of vestibular schwannoma. *Otol Neurotol.* 2010 Sep;31(7):1144-1152.

Worsham MJ, Chen KM, Stephen JK, Havard S, Benninger MS. Novel approaches to global mining of aberrantly methylated promoter sites in squamous head and neck cancer. *Otolaryngol Head Neck Surg.* 2010 Jul;143(1):116-121.e19.

Some physicians

may practice in multiple locations. For a detailed list including staff photos, please visit clevelandclinic.org/staff.



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Institute Vice Chairman

Brian Burkey, MD

Institute Quality Improvement Officer

Raj Sindwani, MD

Institute Patient Experience Officer

Troy Woodard, MD

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Craig Newman, PhD
Section Head

Donald Goldberg, PhD

Sharon Sandridge, PhD
Director, Audiology Clinical Services

Sarah Sydlowski, PhD
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Dentistry Section

Michael Matheis, DDS

Section Head

Todd Coy, DMD

Residency Program Director

Betty Haberkamp, DDS

Richard Harper, DMD

Michael Huband, DDS

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Howard Synenberg, DDS

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Daniel Alam, MD

Section Head

Michael Fritz, MD

P. Daniel Knott, MD

General/Regional Otolaryngology Section

Edward Fine, MD, PhD

Section Head

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Steven Ball, MD

Cristina Cabrera, MD

Edward Cho, MD

Richard Freeman, MD, PhD

Catherine Henry, MD

Robert Katz, MD

Alan Kominsky, MD

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Benjamin Wood, MD

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Paul Bryson, MD

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Mumtaz Khan, MD

Paul Krakovitz, MD

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Joseph Scharpf, MD

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Section Head

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Prashant Malhotra, MD

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Head, Auditory Neurobiology Laboratory*

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Todd Coy, MD

Alan Kominsky, MD

Joe Krajekian, DMD, MD

Jill Weber, DDS

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Claudio Milstein, PhD

The Voice Center

Douglas Hicks, PhD
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Michael S. Benninger, MD

Paul Bryson, MD

Richard Freeman, MD

Claudio Milstein, PhD

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Section Head

Edward Cho, MD

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Tatyana Kopyeva, MD

Mauricio Perilla, MD

Stacy Ritzman, MD



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General Patient Referral

24/7 hospital transfers or physician consults
800.553.5056

Head & Neck Institute Appointments/Referrals

216.444.6691 or 800.223.2273, ext. 46691

Dentistry Appointments/Referrals

216.444.6907 or 800.223.2273, ext. 46907

On the Web at clevelandclinic.org/headandneck

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216.444.2200

Hospital Patient Information

216.444.2000

General Patient Appointments

216.444.2273 or 800.223.2273

Referring Physician Center

For help with service issues, information about clinical specialists and services, details about CME opportunities and more

216.448.0900 or 888.637.0568, or email refdr@ccf.org

Request for Medical Records

216.444.2640 or 800.223.2273, ext. 42640

Medical Concierge

Complimentary assistance for out-of-state patients and families

800.223.2273, ext. 55580, or email medicalconcierge@ccf.org

Global Patient Services/International Center

Complimentary assistance for international patients and families

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About Cleveland Clinic

Overview

Cleveland Clinic is a nonprofit multispecialty academic medical center that integrates clinical and hospital care with research and education. Today, more than 2,500 Cleveland Clinic physicians and scientists practice in more than 100 medical specialties and subspecialties, annually recording more than 1.5 million physician visits and more than 70,000 surgeries. Cleveland Clinic currently has the highest CMS case-mix index in America. Patients come for treatment from every state and from more than 80 countries annually.

Cleveland Clinic's main campus, with 50 buildings on 180 acres in Cleveland, Ohio, includes a 1,300-bed hospital, outpatient clinic, specialty institutes and supporting labs and facilities. Cleveland Clinic also operates 16 family health centers, nine community hospitals, one affiliate hospital, a rehabilitation hospital for children, Cleveland Clinic Florida, the Lou Ruvo Center for Brain Health in Las Vegas, and Cleveland Clinic Canada. Cleveland Clinic Abu Dhabi (United Arab Emirates), a multispecialty care hospital and clinic, is scheduled to open in 2012. With 41,000 employees, Cleveland Clinic is the second largest employer in Ohio, and is responsible for an estimated \$9 billion of economic activity every year.

The Cleveland Clinic Model

Cleveland Clinic was founded in 1921 by four physicians who had served in World War One and hoped to replicate the organizational efficiency of military medicine. The organization has grown through the years by adhering to the model set forth by the founders. All Cleveland Clinic staff physicians receive a straight salary with no bonuses or other financial incentives. The hospital and physicians share a financial interest in controlling costs and profits are reinvested in research and education.

In 2007, Cleveland Clinic restructured its practice, bundling all clinical specialties into integrated practice units called institutes. An institute combines all the specialties surrounding a specific organ or disease system under a single roof. Each institute has a single leader and focuses the energies of multiple professionals onto the patient. From access and communication to billing and point-of-care service, institutes are improving the patient experience at Cleveland Clinic.

Cleveland Clinic Lerner Research Institute

At the Cleveland Clinic Lerner Research Institute, hundreds of principal investigators, project scientists, research associates and postdoctoral fellows are involved in laboratory-based, translational and clinical research. Total annual research expenditures exceed \$272 million from federal agencies, non-federal societies and associations, endowment funds and other sources.

Cleveland Clinic physicians, scientists, fellows, residents and other employees are involved in more than 3,000 human-subject research activities at any given time.

Cleveland Clinic Lerner College of Medicine

Now in its seventh year of existence, Cleveland Clinic Lerner College of Medicine of Case Western Reserve University offers all students full-tuition scholarships. The program graduated its first 29 students as physician-scientists in 2009.

U.S. News & World Report Ranking

Cleveland Clinic is consistently ranked among the top hospitals in America by *U.S. News & World Report*, and our heart and heart surgery program has been ranked No. 1 since 1995.

For more information about Cleveland Clinic, please visit clevelandclinic.org.

Referring Physician Center

For help with service-related issues, information about our clinical specialists and services, details about CME opportunities and more, contact the Referring Physician Center at refdr@ccf.org, or 216.448.0900 or 888.637.0568.

Critical Care Transport Worldwide

Cleveland Clinic's critical care transport team and fleet of mobile ICU vehicles, helicopters and fixed-wing aircraft serve critically ill and highly complex patients across the globe.

To arrange a transfer for STEMI (ST elevated myocardial infarction), acute stroke, ICH (intracerebral hemorrhage), SAH (subarachnoid hemorrhage) or aortic syndromes, call 877.379.CODE (2633).

For all other critical care transfers, call 216.444.8302 or 800.553.5056.

Request Medical Records

216.444.2640 or 800.223.2273, ext. 42640

Track Your Patient's Care Online

DrConnect offers referring physicians secure access to their patients' treatment progress while at Cleveland Clinic. To establish a **DrConnect** account, visit clevelandclinic.org/drconnect or email drconnect@ccf.org.

Medical Records Online

Cleveland Clinic continues to expand and improve electronic medical records (EMRs) to provide faster, more efficient and accurate care by sharing patient data through a highly secure network. Patients using MyChart can

renew prescriptions and review test results and medications from their own personal computer. MyChart offers a secure connection to Google™ Health, where users can securely share personal health information with Cleveland Clinic and record and share details of their Cleveland Clinic treatment with the physicians and healthcare providers of their choice. To establish a MyChart account, visit clevelandclinic.org/mychart.

Remote Consults

Online medical second opinions from Cleveland Clinic's MyConsult are particularly valuable for patients who wish to avoid the time and expense of travel. Cleveland Clinic offers online medical second opinions for more than 1,000 life-threatening and life-altering diagnoses. For more information, visit clevelandclinic.org/myconsult, email eclevelandclinic@ccf.org or call 800.223.2273, ext. 43223.

CME Opportunities: Live and Online

Cleveland Clinic's Center for Continuing Education operates one of the largest and most successful CME programs in the country. The center's website (ccfcme.com) is an educational resource for healthcare providers and the public. Available 24/7, it houses programs that cover topics in 30 areas — if not from A to Z, at least from Allergy to Wellness — with a worldwide reach. Among other resources, the website contains a virtual textbook of medicine (Disease Management Project), a medical newsfeed refreshed daily, and *myCME*, a system for physicians to manage their CME portfolios. Live courses, however, remain the backbone of the center's CME operation. Most live courses are held in Cleveland, but outreach plans are under way. In 2010, the center offered 11 simultaneous courses at Arab Health, a major world healthcare forum, in Dubai, United Arab Emirates.

This project would not have been possible without the commitment and expertise of a team led by Cynthia Cartellone, MHA.





Cleveland Clinic

Every life deserves world class care.