Message from the Chair

A warm welcome to you from our Department of Otolaryngology – Head and Neck Surgery at The Ohio State University College of Medicine and The Ohio State University Wexner Medical Center.

It has been a tremendous year for us. We are pleased and honored that our medical specialty was ranked seventh in the nation by U.S. News & World Report. This significant boost in our rankings brings us even closer to our stated goal of being a “Top 5 Department in 5 years” (three years ahead of schedule!). This progress is a testament to the talent and hard work of our entire team.

Our department has grown by 486 percent during the past 10 years and contains 41 full-time faculty members. Included in this year’s “recruiting class” are two facial plastic surgeons, including Division Director Leslie Kim, MD, MPH, who joins us after completing her fellowship at Johns Hopkins University Medical Center. In addition, our exceptional hearing program was bolstered by the addition of Irina Castellanos, PhD, from Indiana University. We have also created a state-of-the-art, multidisciplinary sinus and allergy center with the addition of five Internal Medicine trained allergists who joined our department in July.

This tremendous influx of academic talent has also allowed us to expand our research portfolio, which now includes 12 R01s, two K Awards and an R21, moving us into elite company in regard to NIH funding. As you will read in this newsletter, the vast majority of our research is translational and has led to several patents, spinoff biotechnology companies and the discovery of novel therapeutics for human papillomavirus-related cancer that have been licensed to Pharma.

It is an honor to serve as chair of this tremendous department. On behalf of all of us, I hope you enjoy our newsletter. I also invite you to visit beautiful Columbus to learn more about our great work.

Respectfully,

Theodoros Teknos, MD
Professor and Chair, Department of Otolaryngology – Head and Neck Surgery
The David E. Schuller, MD, and Carole Schuller Chair in Otolaryngology
Medical Director of Development, The James Campaign
The Ohio State University Wexner Medical Center
The James Cancer Hospital and Solove Research Institute
Thanks to a three-year, $240,000 grant from the American Otological Society, an Ohio State physician-scientist is one step closer to discovering why some adults who receive cochlear implants benefit more than others.

Aaron Moberly, MD, assistant professor at The Ohio State University Department of Otolaryngology – Head and Neck Surgery, is investigating whether certain patient attributes, including age and cognitive function, correlate to poor outcomes following cochlear implantation.

“Much of the research on outcome variability has focused on the device itself,” says Dr. Moberly, who explains that cochlear implants produce a degraded representation of speech that sounds quite different from natural speech. “Most studies have looked at the signal that comes through the device, to determine whether improving the signal produces clearer and more natural sound.”

Through his study titled “Variability in Speech Recognition for Adults with Cochlear Implants,” Dr. Moberly is taking a different approach. Instead of looking for ways to improve the device, he is focusing on the listeners — including their cognitive abilities, existing language skills, age and whether they participated in high-quality postoperative aural rehabilitation that helps them relearn hearing- and speech-processing skills.

“For most adults with a new cochlear implant, it takes one to two years before their performance begins to plateau,” says Dr. Moberly. “This suggests that outcomes are not just dependent on the signal coming through the device, but are impacted by practice and by things happening in the brain.”

To date, Dr. Moberly and his team have enrolled about 25 adult cochlear implant users along with a similar number of normal-hearing, age-matched peers. They are also enrolling younger normal-hearing adults to evaluate whether the natural aging process contributes to reduced performance.

Meanwhile, Dr. Moberly is working to secure NIH and industry-sponsored funding for additional research focusing on rehabilitation following cochlear implant surgery. He and Christin Ray, PhD, CCC-SLP, clinical assistant professor in The Ohio State University Department of Speech and Hearing Science, are building an aural rehabilitation program for adults with cochlear implants.

Dr. Moberly says previous studies suggest that rehabilitation plays a critical role in cochlear implant performance, particularly because it takes time for patients to learn how to adjust to the sounds coming through their new devices. However, most insurance companies, including Medicare, don’t cover many postoperative therapies for adults.

“By building our own rehab program here at Ohio State, which will be unique in the nation we can initiate research that otherwise couldn’t be done,” says Dr. Moberly. “We can then generate data likely to prove rehabilitation makes a big difference in how well people do with their implants.”

**OHIO STATE PHYSICIAN SECURES FUNDING FOR TRANSLATIONAL COCHLEAR IMPLANT RESEARCH**

Aaron Moberly, MD, aims to decrease outcome variability and improve rehabilitation protocols in adults with cochlear implants.
Ten years ago, Michael and Brooke Carnevale of West Jefferson, Ohio, received the wonderful news that they were expecting their first baby — after years of trying to conceive. A week later, they received much less welcome news: Michael was diagnosed with adenoid cystic carcinoma (ACC), a rare type of head and neck cancer.

As the years passed, the Carnevales reveled in the joys of parenting and suffered the trials of fighting cancer. Michael endured surgery and radiation therapy and lost sight in his right eye. The tumor kept coming back.

Family Seeks Hope From Researchers at Ohio State

In 2015, Michael came to The Ohio State University after learning that researchers in the Department of Otolaryngology – Head and Neck Surgery have been working to create a drug that may be a treatment for ACC. He became a patient of Theodoros Teknos, MD, professor and chair of the department.

“We’re taking advantage of technologies we’ve developed to disrupt the protein and keep it from causing the cancer to develop and grow,” says Dr. Teknos. “Our research team created a drug that would potentially inhibit that protein’s action on ACC cells.”

Since the fusion protein is present in 86 percent of adenoid cystic cancers, the drug could theoretically treat 86 percent of ACC patients.

Son Puts Dedication Into Action

Learning about Dr. Teknos’ research motivated the Carnevales’ son, Santino, now a fourth grader at Norwood Elementary School, to take action. In September 2015, he set up a lemonade stand at the West Jefferson Ox Roast Festival and raised $5,000 toward the ACC research in Dr. Teknos’ lab.

A year later, in September 2016, Santino returned to the Ox Roast Festival with lemonade and baked goods. Incredibly, he has raised over $24,000 to date and continues to fundraise for ACC research at Ohio State.

“He’s a wonderful, very smart boy who’s polite and a delight,” says Dr. Teknos. “Obviously, he cares about his family and wants us to expedite our discovery to help his dad. Santino is a walking testament to what’s possible if you put your mind to something.”
Ohio State’s Research
Rare in Nation

Adenoid cystic carcinoma is rare; only about 1,200 people are diagnosed with ACC in the United States each year. Ohio State is one of only a handful of centers around the country that is studying the disease and dedicating resources toward finding a cure.

Dr. Teknos says it’s people like Santino and his father who motivate him to do the work he does.

“It’s an inspiring story for us — something that really brings home how important research is, not only for the common diseases we treat every day, but the uncommon, no-less-devastating diseases that affect families like the Carnevales.”

Postscript:

As this article was completed, we learned that Santino’s father, Michael Carnevale, passed away after his 10-year battle with adenoid cystic carcinoma. Our hearts go out to Brooke, Santino and the entire Carnevale family. Stories like Mr. Carnevale’s are what inspire us to continue pursuing a cure for this disease.
Ohio State Researchers Use 3-D Modeling to Evaluate Nasal Airflow Before and After Sinus Surgery

Study shows promise in providing first-of-its-kind data about "empty nose syndrome"

A team of seven researchers at The Ohio State University Wexner Medical Center has leveraged its unique mix of research and clinical experience to better understand nasal obstruction and discover why some patients continue to report debilitating breathing problems even after sinus surgery. Using computer models that generate precise 3-D renderings of a patient’s nasal anatomy before and after surgery, the team is studying how surgical treatments affect nasal airflow distribution and why outcomes may be different from one person to the next.

A Puzzling Phenomenon

An estimated 30 percent of adults in the United States suffer from chronic sinus problems that affect their ability to breathe, smell, taste and sleep. But even when the cause of their sinusitis seems clear — for example, polyps that obstruct the nasal passageway or structural defects such as a deviated or perforated septum — patients who undergo surgical treatment are sometimes still plagued by symptoms.

“There is a misconception that patients with symptoms of nasal blockage must have a physical obstruction that needs to be removed.”
—Kai Zhao, PhD

However, a small number of people who have undergone sinus surgery feel like they can’t breathe, even though postsurgical imaging tests show their nose is open with ample room to move air.”

Dr. Zhao, whose bioengineering background includes a focus on respiratory biofluid mechanics, explains that this paradox is known as “empty nose syndrome (ENS).” While it is a rare condition, it results in a poor quality of life with no known treatment.

Understanding the Disease Process

ENS has long baffled the medical community because no one has figured out what causes it. Physicians have relied solely on subjective reports from patients who insist their breathing is obstructed, with no objective clinical data to validate their symptoms.

“As we are using 3-D modeling to assess sinus surgery outcomes across the board, we are honing in on factors that cause a subset of those patients to develop ENS,” says fellow researcher Alexander Farag, MD, an assistant professor in the Department of Otolaryngology – Head and Neck Surgery whose areas of expertise include minimally invasive skull base and orbital surgeries for sinonasal disease.
“Our preliminary findings show that people with ENS have a redistribution of airflow through the nose following surgery,” Dr. Farag explains. “If we can figure out how to reverse that, for example by augmenting the nasal cavity or shaping airflow using an implant, perhaps we can cure the disease process.”

Next Steps
To date, the research team led by Dr. Zhao has enrolled six people — the first study of its kind examining both nasal aerodynamics and sensory factors in patients with ENS.

“Broadly speaking, 3-D modeling has the potential to improve precision and outcomes for anyone who needs delicate sinus surgery,” says Dr. Zhao. “And if we can also learn how to prevent ENS, or at least figure out how to correct it, we could dramatically improve many lives.”
2016 AWARDS AND RECOGNITIONS

Oliver Adunka, MD
• Received the 2016 American Academy of Otolaryngology – Head and Neck Surgery Honor Award
• Appointed to the Children’s Tumor Foundation Clinical Care Advisory Board
• Served as assistant editor of the journal Otology & Neurotology
• Joint Committee on Infant Hearing for the American Speech-Language-Hearing Association and representative of the American Academy of Otolaryngology – Head and Neck Surgery
• Inducted as an active member, American Otological Society (AOS)
• Invited speaker, 22nd Temporal Bone Surgical Dissection Course, University of Pennsylvania Perelman School of Medicine, Department of Otorhinolaryngology – Head and Neck Surgery, Philadelphia, Pa., Sept. 23–24, 2016
• Invited speaker, Virginia Commonwealth University Temporal Bone Dissection Course, Department of Otolaryngology – Head and Neck Surgery, Richmond, Va., Nov. 4–5, 2016

Lauren Bakaletz, PhD
• U.S. patent issued April 12, 2016
  Title: “Haemophilus influenzae type IV pili”
  Patent Number: 9,309,294

Ricardo Carrau, MD
• Invited lecturer and course instructor at the first Advanced FESS and Basic Endoscopy Skull Base Course, Prince Sultan Military Medical City, Saudi Arabia, Jan. 11-13, 2016
• Co-scientific director of EndoChicago 2016 (largest skull base course in North America, with over 650 registrants and over 60 countries represented)

Kris Jatana, MD
• Received the 2016 Seymour R. Cohen Award from the American Broncho-Esophagological Association for best original paper in either basic research or clinical investigation pertaining to pediatric laryngology and bronchoesophagology
• Awarded U.S. patent for Tracheostomy Tube Collar: 9,358,357
• Appointed to lead national pediatric tracheostomy module, American College of Surgeons: National Surgical Quality Improvement Program – Pediatric
• Appointed chair, Underwriters Laboratories (UL) Non-Lithium Batteries Standards Task Group

Meredith Lind, MD
• Named Nationwide Children’s Hospital Physician of the Year, awarded Jan. 30, 2016

Prashant Malhotra, MD
• Pediatric Advisory Board, Med-El Corporation: invited adviser, inaugural member, 2016

Matthew Old, MD
• Elected to the General Committee of the NRG Oncology Head and Neck Core Committee

Quintin Pan, PhD
• Appointed co-director of the OSUCCC – James Translational Therapeutics Program
• Patent and licensing agreement for novel therapeutic OHM-1
• Licensed two patents on p53 reactivation therapeutics platforms for Inthera Bioscience
James Rocco, MD, PhD
• Named the 2016 translational co-chair for the American Head and Neck Society (AHNS) 9th International Conference on Head and Neck Cancer
• Elected co-chair of the National Cancer Institute (NCI) Metastatic/Recurrent Head and Neck Cancer Task Force in October 2016
• Elected to NRG Oncology’s Head and Neck Core Committee
• Invited lecturer and moderator at the Multidisciplinary Head and Neck Cancer Symposium, Scottsdale, Ariz., Feb. 18-20, 2016
• Keynote speaker at the 3rd annual Henry Ford Health System Multidisciplinary Head and Neck Cancer Symposium, Detroit, Mich., June 10, 2016

Theodoros Teknos, MD
• Appointed secretary/treasurer of Ohio State University Physicians, Inc./The Ohio State University Faculty Group Practice
• Elected to the General Committee of the NRG Oncology Head and Neck Core Committee
• Ohio State Voice and Swallowing Disorders Clinic
• Awarded the BRAVO Patient Satisfaction Award for top performing medical center clinic for the last three quarters of the 2015-2016 academic year

Residency Program
Ranked the No. 7 program in the country by Doximity
### ACTIVE RESEARCH FUNDING

<table>
<thead>
<tr>
<th>Name</th>
<th>Start/End</th>
<th>Funding Source/Program</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lauren Bakaletz, PhD</td>
<td>1/1/16 – 12/31/18</td>
<td>Australian Government National Health and Medical Research Council</td>
<td>Novel Epigenetic Regulatory Mechanisms in <em>Moraxella Catarrhalis</em> and Non-Typeable <em>Haemophilus Influenzae</em>: Impact on Vaccine Development and Role in Pathobiology  APP1099279</td>
</tr>
<tr>
<td>Tendy Chiang, MD</td>
<td>5/1/16 – 4/30/17</td>
<td>The Ohio State University Center for Clinical and Translational Science Davis Bremer Pre-K Award</td>
<td>Clinical Translation of Novel Bioartificial Tissue Engineered Tracheal Grafts</td>
</tr>
<tr>
<td>Tendy Chiang, MD</td>
<td>12/1/15 – 11/30/16</td>
<td>The Ohio State University Center for Clinical and Translational Science Longitudinal Pilot Award</td>
<td>Multidisciplinary Approach for Characterization of Novel Bioartificial Tissue Engineered Tracheal Grafts</td>
</tr>
<tr>
<td>Kris Jatana, MD</td>
<td>2/15 – Present</td>
<td>Technology Development Fund Grant</td>
<td>Development of New Surgical Safety Devices</td>
</tr>
<tr>
<td>Kris Jatana, MD</td>
<td>4/25/11 – Present</td>
<td>Technology Development Fund Grant</td>
<td>Improving the Tracheostomy Tube Care</td>
</tr>
<tr>
<td>Pawan Kumar, PhD</td>
<td>12/18/13 – 12/17/17</td>
<td>NCCN Clinical Trial</td>
<td>Phase I/II Clinical Trial of Sorafenib in Combination With Cisplatin and Docetaxel in Patients With Recurrent/ Metastatic Squamous Cell Carcinoma of the Head and Neck</td>
</tr>
<tr>
<td>Aaron Moberly, MD</td>
<td>2016</td>
<td>American Otological Society Clinician-Scientist Award</td>
<td>Variability in Speech Recognition for Adults With Cochlear Implants</td>
</tr>
<tr>
<td>Aaron Moberly, MD</td>
<td>8/1/14 – 7/31/16</td>
<td>Triological Society Career Development Award</td>
<td>Personalizing Aural Rehabilitation for Adults With Cochlear Implants</td>
</tr>
<tr>
<td>Aaron Moberly, MD</td>
<td>2014 – Present</td>
<td>Triological Society Career Development Award, AAO-HNS CORE Grant</td>
<td>Personalizing Aural Rehabilitation for Adults With Cochlear Implants</td>
</tr>
<tr>
<td>Matthew Old, MD</td>
<td>1/13 – Present</td>
<td>OSUCCC Viral Oncology Program Research Award</td>
<td>Enhancement of Oncolytic Herpes Virus (34.5ENVE) Activity in Head and Neck Squamous Cell Carcinoma With Bortezomib</td>
</tr>
</tbody>
</table>

### PENDING RESEARCH

<table>
<thead>
<tr>
<th>Name</th>
<th>Funding Source/Program</th>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irina Castellanos, PhD</td>
<td>NIH R21</td>
<td>Psychosocial Outcomes in Deaf Children With Cochlear Implants</td>
</tr>
<tr>
<td>Pawan Kumar, PhD</td>
<td>NIH/NCI R01CA215497-01</td>
<td>Novel Role of Myoferlin in IL-6 Signaling and Chemoresistance</td>
</tr>
<tr>
<td>Pawan Kumar, PhD</td>
<td>NIH/NCI R01CA204883-A1</td>
<td>IL-6, Nuclear Import of Key Mediators, and Aggressive and Metastatic Phenotype</td>
</tr>
<tr>
<td>James Lang, PhD</td>
<td>NIH/NCI R01CA211611-01</td>
<td>Secondary Chemoprevention of Oral Cancer by Locally Delivered Agents</td>
</tr>
<tr>
<td>Quintin Pan, PhD</td>
<td>NIH/NIDCR R01DE025239</td>
<td>Nanog and Oral Squamous Cell Carcinoma</td>
</tr>
</tbody>
</table>
Leslie Kim, MD, MPH, has returned to Ohio State after completing fellowship training at Johns Hopkins, one of the top academic training programs in the nation for facial plastic surgery. For Dr. Kim, who completed a five-year residency in Otolaryngology – Head and Neck Surgery at The Ohio State University Wexner Medical Center in 2015, it was an easy decision.

“I decided to return because I loved my training, the faculty, the residents and the focus on exceptional and compassionate patient care,” says Dr. Kim, who serves as division director of Facial Plastic and Reconstructive Surgery in the Department of Otolaryngology – Head and Neck Surgery.

Dr. Kim received undergraduate and medical degrees through the Honors Program in Medical Education at Northwestern University — an accelerated, seven-year BA/MD program — where she also earned her MPH.

During her residency, she treated patients with facial paralysis. Seeing the devastating effects of paralysis compelled her to pursue a fellowship at Johns Hopkins to learn about restoring facial movement and improving outcomes for these patients.

“I wanted to train at Hopkins because I believe they have the most comprehensive program for both facial aesthetic and reconstructive surgery,” says Dr. Kim. “I believe that performing aesthetic surgeries makes me a better reconstructive surgeon and vice versa — they’re complementary. The most valuable part of my training was the mentorship I received from some of the most well-regarded people in the field.”

Dr. Kim has received several research awards and grants, including the Leslie Bernstein Resident Research Grant — an honor given to only two residents each year by the American Academy of Facial Plastic and Reconstructive Surgery.

**Looking Toward the Future**

Dr. Kim plans to create a multidisciplinary facial nerve center at Ohio State Wexner Medical Center. The facial nerve center will combine the expertise of plastic surgeons, head and neck surgeons, skull base surgeons, neurosurgeons and neurologists, oculoplastic surgeons and facial therapists to improve the quality of life for those with facial paralysis.

Additionally, as the only female fellowship trained in facial plastic surgery in central Ohio, Dr. Kim is dedicated to women’s health. She plans to partner with the Ohio State Center for Women’s Health to offer facial aesthetic and reconstructive services under a comprehensive women’s health model.

Dr. Kim is also passionate about caring for the medically underserved and considers it to be one of the most gratifying areas of her work. In 2015, she performed cleft lip and palate repair during a medical mission in Nicaragua. This year, she’ll travel to Pune, India, to perform cleft lip and palate repairs and facial reconstruction.

“Our face is how we present ourselves to the world, and I feel very humbled and fortunate to be able to work in this area,” says Dr. Kim. “My primary focus is to provide exceptional care to my patients and help them achieve their goals.”

---

“Our face is how we present ourselves to the world, and I feel very humbled and fortunate to be able to work in this area.”

– Leslie Kim, MD, MPH


NEW HOUSE STAFF: Fellows

**Allergy and Immunology**

**Megan Goebel, MD**  
Hometown: Cincinnati  
Undergrad School: Denison University  
Medical School: Rush Medical College  
Residency: University of Cincinnati

**Kathleen Grisanti, MD**  
Hometown: Lexington, KY  
Undergrad School: Transylvania University  
Medical School: University of Kentucky College of Medicine  
Residency: University of Alabama Birmingham

**Lisa Martorano, DO**  
Hometown: Dublin, OH  
Undergrad School: Wittenberg University  
Medical School: Ohio University Heritage College of Osteopathic Medicine  
Residency: Akron Children’s Hospital  
Hobbies/Interests: Traveling, being outdoors, painting, spending time with friends and family

**Deepa Patadia, MD**  
Hometown: Olmsted Falls, OH  
Undergrad School: Kent State University  
Medical School: Northeast Ohio Medical University  
Residency: Medical College of Wisconsin  
Hobbies/Interests: Reading

**Head and Neck Oncologic Surgery**

**Antoine Eskander, MD**  
Hometown: Toronto, Ontario, Canada  
Undergrad School: University of Toronto Faculty of Medicine  
Medical School: University of Toronto  
Grad School: Harvard School of Public Health  
Residency: University of Toronto Faculty of Medicine  
Hobbies/Interests: Blue Jays baseball, tennis, running, cycling

**Pediatric Otolaryngology**

**Kristen Honsinger, MD**  
Hometown: Camarillo, CA  
Undergrad School: University of California, San Diego  
Medical School: Chicago Medical School  
Residency: West Virginia University  
Hobbies/Interests: Running, snorkeling, cooking, being outdoors

**Facial Plastic and Reconstructive Surgery**

**Stephen Nogan, MD**  
Hometown: Redmond, WA  
Undergrad School: Grove City College  
Medical School: Penn State University College of Medicine  
Residency: The Ohio State University College of Medicine  
Hobbies/Interests: Friends, family, travel, guitar, basketball, mountain biking, Pittsburgh sports
NEW HOUSE STAFF: Residents

International Head and Neck Oncologic Surgery

Naomi Rabinovics, MD
Hometown: Tel Aviv, Israel
Undergrad School: The Hebrew University Hadassah Medical School
Medical School: The Hebrew University Hadassah Medical School
Residency: Rabin Medical Center, Israel
Hobbies/Interests: Tennis, skiing, scuba diving, traveling and exploring other cultures, reading

Skull Base Surgery

Somasundaram Subramaniam, MD
Hometown: Singapore
Medical School: Royal College of Surgeons in Ireland
Grad School: National University of Singapore
Residency: National University of Singapore
Hobbies/Interests: Badminton, golf, music, photography

Otolaryngology PGY-1 Residents

Chen Lin, MD
Hometown: Roanoke, Va.
Undergrad School: University of Virginia
Medical School: The Ohio State University
Hobbies/Interests: Golf, tennis, biking, movies

Eric Mason, MD
Undergrad School: University of Tennessee, Knoxville
Medical School: Medical College of Georgia at Augusta University
Hobbies/Interests: Mountain biking, snowboarding, live music, golf

Dustin Silverman, MD
Hometown: Topeka, Kan.
Undergrad School: Indiana University
Medical School: University of Kansas School of Medicine
Hobbies/Interests: Writing music, karate, cooking, movies, reading, family

Kevin Zhan, MD
Hometown: Fairfax, Va.
Undergrad School: Virginia Tech, Literature and Biochemistry
Medical School: University of Virginia
Hobbies: Reading, coffee cupping, photojournalism, NBA, other cultures and languages, violin, impersonations, research
The Ohio State University Wexner Medical Center and Nationwide Children’s Hospital, two medical institutions widely respected for their hearing loss programs, have teamed up to improve care for patients with hearing disorders throughout Ohio and beyond.

The new Buckeye Center for Hearing and Development brings together renowned clinicians and researchers in a shared space on the Ohio State campus. Together they intend to set new standards for how research and clinical care are integrated and to establish Ohio as a national leader in addressing hearing impairment among people of all ages.

**Stronger Together**

Oliver Adunka, MD, co-director of the new hearing center, says the partnership is a natural fit because Ohio State and Nationwide Children’s Hospital (NCH) already have a working relationship to build on. As director of Neurotology at Ohio State’s Department of Otolaryngology – Head and Neck Surgery and director of Pediatric Otology at NCH, Dr. Adunka is one of many physicians who share faculty appointments or privileges between the two organizations.

"However, despite this existing relationship, there was a natural separation between the two facilities," says Dr. Adunka. "Not only are we geographically spread out, but Ohio State has historically cared for adult patients while Nationwide Children’s exclusively sees children."

To that end, both organizations recognized a need to formally blend some key staff and services under one roof for the mutual benefit of clinicians and patients—including patients who require ongoing care for their hearing impairment as they transition from childhood and adolescence into adulthood.

"This collaboration is rooted in a shared belief that we can treat hearing loss from a much broader perspective, from birth to advanced age," explains Derek Houston, PhD, the hearing center’s other co-director and associate professor in the Department of Otolaryngology – Head and Neck Surgery. "Not only are we treating and studying cognitive, linguistic and social development in infancy and early childhood, we are also caring for elderly patients whose gradual hearing loss and cognitive decline are impairing their ability to hear and understand speech."

"Through this framework, we’re also improving collaboration among disciplines across the Ohio State campus," adds Dr. Houston. "Together with the departments of Speech and Hearing Science, Linguistics and Psychology, we’re submitting grants, writing papers and ultimately creating unparalleled opportunities for research."

**Game-Changing Translational Research**

For patients and their families, the Buckeye Center for Hearing and Development provides a convenient way to meet their medical needs and participate in research. And for clinicians and scientists, this model creates invaluable opportunities for staff to apply their research findings to clinical practice—and vice versa.

"Within the scientific and medical communities, there is often a surprising disconnect between research and clinical practice, where the path for research findings to make their way down to patient care can be long and convoluted," says Dr. Houston.

“We want to close this gap, while simultaneously allowing clinicians to report what they are seeing on the front line so their observations help guide our research.”

Some research efforts supported by the hearing center are already having a measurable impact on patient care. With a focus on hearing preservation during cochlear implantation, Dr. Adunka is developing electrophysiologic technology that can evaluate inner ear function, real-time, during pediatric and adult surgeries.

With a focus on hearing preservation during cochlear implantation, Dr. Adunka is developing electrophysiologic technology that can evaluate inner ear function, real-time, during pediatric and adult surgeries.
is developing electrophysiologic technology that can evaluate inner ear function, real-time, during pediatric and adult surgeries.

“Any time we go into the ear, whether it’s to perform a cochlear implant or another type of surgery, there is risk of surgical complications including trauma to the inner ear and subsequent hearing loss,” shares Dr. Adunka. “Some people who receive a cochlear implant still have some degree of hearing. While it’s not perfect hearing, we want to preserve what hearing they do have.”

Through previous studies, Dr. Adunka and his colleagues demonstrated that certain properties of cochlear implant electrodes, combined with specific insertion techniques, cause less intracochlear damage. Today, he’s using electrophysiologic measures to monitor placement of the cochlear implant—for example, to detect whether the device bumps into delicate structures that it shouldn’t—and to measure whether any trauma inflicted during surgery led to additional hearing loss.

“We are now working with cochlear implant manufacturers to build this technology directly into their products and have tested the enhanced devices during about 15 cochlear implant surgeries,” says Dr. Adunka. “So far the results are promising. As we continue to study the data and refine the software, we anticipate being able to make cochlear implantation available for even more patients in the U.S.”

Looking Ahead

Dr. Adunka is already working on the next phase of his research: applying the data from his cochlear implant studies to improve the safety and efficacy of other kinds of ear surgeries.

“We’re now using electrophysiology to measure timing of complete hearing loss during destructive ear surgeries, such as labyrinthectomies to treat patients with Meniere’s disease or resection for acoustic neuromas,” explains Dr. Adunka.

Meanwhile, Dr. Houston and his colleagues have several other research initiatives under way, including an NIH-funded effort to study how children with hearing loss develop the ability to learn words (R01DC008581).

In early 2017, the Buckeye Center for Hearing and Development will formally celebrate its debut with an open house and professional conference on the topic of early intervention for children with hearing loss.

OHIO STATE APPOINTS NEW RESEARCH FACULTY

Dr. Findlen engages in clinical practice and research endeavors related to all areas of pediatric rehabilitative audiology

Ursula Findlen, PhD, is the research director in the Division of Clinical Therapies – Department of Audiology at Nationwide Children’s Hospital and an assistant professor at The Ohio State University College of Medicine Department of Otolaryngology – Head and Neck Surgery. She earned her master’s and PhD degrees in Speech and Hearing Science from The Ohio State University. She worked clinically at several hospitals in the Boston area and coordinated the Hearing Implant Program at UMass Memorial Medical Center prior to returning to Ohio in 2016. Dr. Findlen engages in clinical practice and research endeavors related to all areas of pediatric rehabilitative audiology. She has a particular interest in infant diagnostics and outcomes of children with cochlear implants.
MICROVASCULAR “BOOT CAMP” ATTRACTS INTERNATIONAL AUDIENCE

Novel training course teaches the latest free-flap head and neck reconstruction techniques

For microvascular surgery fellows interested in head and neck reconstruction, Dayton was the place to be in September 2016. A two-day course in common and emerging free-flap procedures drew attendees from across North America, exposing them to sophisticated techniques crucial for rebuilding bone and tissue following head and neck cancer treatment.

The course was developed and hosted by Matthew Old, MD, from The Ohio State University Department of Otolaryngology – Head and Neck Surgery and The Ohio State University Comprehensive Cancer Center – Arthur G. James Cancer Hospital and Richard J. Solove Research Institute, and Chad Zender, MD, from Case Western Reserve University and University Hospitals. Together with physicians from all over the United States, Drs. Old and Zender helped create a unique, hands-on experience for fellows seeking exposure to the latest microvascular free-flap procedures.

**A Growing Need for Refined Reconstruction**

During the last decade, the number of people seeking treatment for HPV-positive head and neck cancers has risen dramatically. And for many patients with head and neck cancer, the side effects of treatment—including a disfigured appearance, trouble speaking or trouble swallowing—can be devastating.

Fortunately, many functional and cosmetic impairments can be addressed through microvascular free-flap surgery, a variety of techniques that allow surgeons to rebuild portions of the head and

“Our goal is to expose the fellows to the latest techniques in a high-impact and novel teaching environment with remarkable educators from all over the United States.”

—Matthew Old, MD
neck using bone, blood vessels and soft tissue removed from another part of the body.

“The head and neck cancer reconstructive community is relatively small, but as the incidence of head and neck cancer continues to grow, there is a greater need for physicians who are adept at rebuilding parts of the jaw, tongue and throat,” says Dr. Old. “Our goal is to expose the fellows to the latest techniques in a high-impact and novel teaching environment with remarkable educators from all over the United States.”

A Distinctive Experience
Throughout the weekend of Sept. 10, attendees participated in lectures and lab work on a variety of topics, including bone flap harvests, mandibular defects and reconstruction, soft tissue defects, bone inset and plating.

“What is novel about our course is that we have fresh cadavers and a one to two faculty-per-participant ratio, which offers a high-quality training experience,” explains Dr. Old. “We used a defect-oriented approach, meaning participants had to identify the missing tissue, choose what bone or tissue to harvest from elsewhere in the body, then perform the actual reconstruction. And the course is fully funded and supported.”

Participants also benefit from the boot camp’s online component. It offers access to reading material prior to the course, as well as continued access to a growing library of reference material including edited videos of the dissections.

Dr. Old says the course was well received, with the majority of fellows indicating they would recommend the program to others or attend it again in the future.

The course evaluations contained many notable comments, including, “This was an extremely high-yield, invaluable experience that made a significant difference in my training.”

A second reviewer agreed, stating, “This was an incredible course – a game changer for fellows at this point in our training.”

Save the Date
“We’re pleased that attendance continues to grow,” says Dr. Old. “We are now planning the 2017 course and beyond, with an eye toward refining our electronic library and choosing exceptional faculty who are leaders in the field.”

The 2017 Microvascular Fellow Boot Camp will take place Sept. 22-24 at Wright State University’s Boonshoft School of Medicine in Dayton. It will include room for 30 participants with 16 training stations.

For more information about this program, please contact Dr. Old at matthew.old@osumc.edu or visit ent.osu.edu/education/continuing-medical-education/microvascular-bootcamp/index.cfm.
### ACTIVE NIH FUNDING

<table>
<thead>
<tr>
<th>Name</th>
<th>Dates</th>
<th>Agency</th>
<th>Project Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lauren Bakaletz, PhD</td>
<td>09/30/99-07/31/20</td>
<td>NIH/NIDCD</td>
<td>Determinants of H.influenzae Virulence in Otitis Media</td>
</tr>
<tr>
<td>Lauren Bakaletz, PhD</td>
<td>07/20/11-8/31/21</td>
<td>NIH/NIDCD</td>
<td>Novel immunotherapeutics for the management of otitis media due to H.influenzae</td>
</tr>
<tr>
<td>Lauren Bakaletz, PhD</td>
<td>08/01/16-07/31/21</td>
<td>NIH/NIDCD</td>
<td>Otitis Media: Role of Epigenetic Regulation on NTHI Pathogenesis and Optimal Vaccine Design</td>
</tr>
<tr>
<td>Derek Houston, PhD</td>
<td>2010 - 2016</td>
<td>NIH</td>
<td>Language Processing in Children with Cochlear Implants</td>
</tr>
<tr>
<td>Derek Houston, PhD</td>
<td>12/1/15-06/30/20</td>
<td>NIH/NIDCD</td>
<td>Infant-directed Speech and Language Development in Infants with Hearing Loss</td>
</tr>
<tr>
<td>Pawan Kumar, MS, PhD</td>
<td>07/01/14-07/31/17</td>
<td>NIH/NCI</td>
<td>Role of tumor-associated endothelial cells in chaperoning tumor cells</td>
</tr>
<tr>
<td>Quintin Pan, PhD</td>
<td>04/08/15-03/31/20</td>
<td>NIH/NCI</td>
<td>Cancer Initiating Cells and Treatment Resistance</td>
</tr>
<tr>
<td>Quintin Pan, PhD</td>
<td>05/06/15-04/30/20</td>
<td>NIH/NIDCR</td>
<td>Role of P300 in HPV-Positive Head and Neck Cancer</td>
</tr>
<tr>
<td>Quintin Pan, PhD</td>
<td>02/01/16-01/31/20</td>
<td>NIH/NIGMS</td>
<td>p53/Rb Reactivation Modulators for HPV-positive Head and Neck Cancer</td>
</tr>
<tr>
<td>James Rocco, MD, PhD</td>
<td>07/01/11-04/30/16</td>
<td>NIDCR/NCI</td>
<td>BCL-2 as a Biomarker for Prognosis and Therapy of Head and Neck Cancer</td>
</tr>
<tr>
<td>James Rocco, MD, PhD</td>
<td>2013-2016</td>
<td>NIH</td>
<td>Intra-tumor Heterogeneity as a Biomarker of Clinical Outcome in Head and Neck Squamous Cell Carcinoma</td>
</tr>
<tr>
<td>Gregory Wiet, MD</td>
<td>08/05/11-07/31/16</td>
<td>NIH/NIDCD</td>
<td>Virtual Temporal Bone Surgery: Defining and Translating Standardized Metrics</td>
</tr>
<tr>
<td>Kai Zhao, PhD</td>
<td>12/1/14-11/31/18</td>
<td>NIH/NIDCD</td>
<td>Objective Evaluation of Conductive Olfactory Losses &amp; Nasal Obstruction Symptoms</td>
</tr>
</tbody>
</table>
For Irina Castellanos, PhD, the study of hearing loss is more than an ear issue, it’s a brain issue. Dr. Castellanos joined the Department of Otolaryngology – Head and Neck Surgery at The Ohio State University College of Medicine in March 2016. After earning a bachelor’s degree in Psychology from Florida International University, Dr. Castellanos continued her training in multisensory perception at the university, earning a master’s degree and a PhD in Developmental Science.

Her research, which she began during a postdoctoral fellowship at Indiana University School of Medicine, focuses on understanding the neurocognitive development of children with cochlear implants. “There’s a cascading effect that hearing loss can have on a child’s neurocognitive development that goes beyond language skills,” says Dr. Castellanos. “Our research explores how executive function—cognitive skills for mental control and self-regulation—may affect outcomes. We’re also exploring the role of parent-child communicative interactions. We’re working to discover early predictors of neurocognitive outcomes so we can improve the lives of children who may be at risk for poor outcomes following cochlear implantation.”

What drew Dr. Castellanos to Ohio State was the collaborative research and vast resources available to researchers. The university’s partnership with Nationwide Children’s Hospital provides access to pediatric patients and medical specialists and brings research and clinical staff together to address all the changes that occur with hearing loss. “What I love about our department is how everyone shares their knowledge and expertise,” she shares. “I started collaborating with a neurotologist within my first week—we already have three manuscripts under review. I knew immediately I was in the perfect place.”

Currently, Dr. Castellanos is co-investigator on a study that examines parent-child interactions during language learning. Using two sets of head-mounted cameras and eye trackers—one for the child and one for the parent—researchers can see precisely where the child and the parent are looking and what they’re touching during the interaction. Until now, it wasn’t possible to measure parent-child interactions with this level of detail and precision. “When a child without a hearing impairment holds a ball, the parent is likely to also look at the ball and label it,” says Dr. Castellanos. “The act of looking at the same object at the same time is called joint attention, and we know this facilitates children’s word learning. Now we’re examining how prelingual hearing loss affects joint attention during parent-child interactions.”

In another study, Dr. Castellanos is exploring psychosocial outcomes in children with cochlear implants—a real-world functional outcome that has received little attention. Her pilot research indicates that children with implants are at a higher risk for depression and hyperactivity. To further explore this area, Dr. Castellanos and her team wrote a grant to investigate how language and executive functions affect psychosocial behaviors in children with implants.

All the research Dr. Castellanos is pursuing will help clarify how cognitive and emotional function and the social environment affect children with cochlear implants. “Before the advent of cochlear implants, these kids didn’t have access to sound,” she explains. “Now, kids can talk and interact in a hearing world; implants have opened their lives. We’ve expanded our focus beyond the ear to the brain and the social environment to ensure these children lead full lives. The field has grown to emphasize the whole child—it makes my job incredibly rewarding.”
For many years, physicians referring patients with allergies to specialists at Ohio State had to choose where to send them. The Ohio State University Wexner Medical Center had allergy programs in two different divisions — the Internal Medicine Division of Allergy and Immunology and the Division of Sinus and Allergy in the Department of Otolaryngology–Head and Neck Surgery.

Now, there’s a better option. In July 2016, the programs joined forces to become The Ohio State University Center for Sinus and Allergy.

**OHIO STATE CENTER FOR SINUS AND ALLERGY OFFERS COMPREHENSIVE CARE**

The new center combines multidisciplinary care and cutting-edge research for superior patient care.

For patients with sinus, asthma, allergy and upper-airway conditions, the new center is a game changer. It offers access to both Internal Medicine-trained and Otolaryngology-trained allergists, including immunology specialists, and fellowship-trained rhinologists to provide a full spectrum of care for patients.

“Because asthma, allergies and sinus diseases are closely related and involve multidisciplinary treatment, being able to provide this in a single setting is a better model of care for these patients,” says Theodoros Teknos, MD, professor and chair of the Department of Otolaryngology–Head and Neck Surgery.

To accommodate the multidisciplinary team, The Ohio State University Wexner Medical Center Eye and Ear Institute is expanding its clinical footprint. In March, a new, state-of-the-art, multidisciplinary allergy clinic is scheduled to open on the fourth floor.

“The center brings together six allergy physicians and two rhinology physicians — all fellowship trained — to provide more timely, better coordinated care to sinus and allergy patients,” says Mark Inman, chief operating officer and administrator in the Department of Otolaryngology–Head and Neck Surgery.

Partnering for Better Patient Care

Bringing allergy and sinus physicians together in the same location not only makes it more convenient for patients — who often see both otolaryngology and allergy physicians — it allows physicians to coordinate care frequently and learn from each other. That means better care for patients.

“Being in the same location naturally leads to discussion among providers, and that makes us all better at what we do,” says Bradley Otto, MD, director of Rhinology in the Department of Otolaryngology–Head and Neck Surgery. “We learn the nuances of each other’s specialties and that allows us to provide patients with answers more quickly and begin treatment right away. We’re not just focused on patient throughput; we’re working together to find new treatment algorithms that are most clinically effective and cost efficient — this is particularly important with insurance changes.”

Additionally, the multispecialty environment offers educational benefits to residents and fellows. The comprehensive allergy curriculum from both otolaryngologists and medical allergists makes them better prepared when they begin their own practice.

Comprehensive Care Backed by Research

Patients will also benefit from groundbreaking research being conducted at the center — the only facility in the area that combines clinical care and research. The center will conduct both basic research and clinical trials, offering patients access to the latest treatments.
The center’s nasal research is well under way. Kai Zhao, PhD, assistant professor in the Department of Otolaryngology–Head and Neck Surgery, is using computer modeling to answer questions about nasal airflow, the sense of smell and how these are affected after surgery and other modalities. Ultimately, this information and other findings will allow physicians to predict what treatments will offer the best outcomes for patients.

“Another emerging area of research is the impact that allergy and sinus disorders have on asthma and laryngeal disorders,” says Dr. Teknos. “Having an allergy team and otolaryngologists has created numerous clinical and research opportunities for our group to explore.”

Greater Alternatives, Access and Convenience for Patients

Many people with allergies and sinus conditions aren’t aware of all their options. Allergy sufferers may think their choices are limited to over-the-counter remedies, while people with sinus conditions may believe their only option is surgery. The Ohio State University Center for Sinus and Allergy’s wide range of services lets patients know that there are a number of treatment options available.

“It’s important for patients to know that they can see a fellowship-trained otolaryngologist or allergist/immunologist and get streamlined, coordinated care at the center — it’s one-stop shopping,” says Princess Ogbogu, MD, director of the Allergy/Immunology Division in the Department of Otolaryngology–Head and Neck Surgery. “We take care of many types of allergies — environmental, food and drug — as well as asthma, eczema, hives and immune deficiencies. And, most importantly, we educate patients about their condition, how to manage it, and the latest treatments so they can make informed choices.”

The new allergy clinic is designed to be a customer service-oriented practice that makes it easy for patients to get in and out quickly. The clinic’s goal is to schedule patients within a week, ideally within a day or two. For those patients who need to see both sinus and allergy physicians, combined clinics will be offered.

“In the past, it could take time for patients to see a specialist,” says Dr. Ogbogu. “Currently we’re able to see people right away, and we intend to continue to do so at the new clinic. We’ve added more clinics to our schedule, and we have plans to expand other locations to ensure we maintain greater access for patients.”

The Ohio State Center for Sinus and Allergy offers a novel model that’s unique in the field.

“We may be the only department of otolaryngology in the nation that has incorporated Internal Medicine-trained allergists into their clinical practice,” adds Dr. Teknos. “I believe it’s a model that will become more popular once we illustrate its success.”

“We take care of many types of allergies — environmental, food and drug — as well as asthma, eczema, hives and immune deficiencies. And, most importantly, we educate patients about their condition, how to manage it, and the latest treatments so they can make informed choices.”

—Princess Ogbogu, MD
HEAD AND NECK CANCER RESEARCHER NAMED CO-LEADER OF OHIO STATE’S TRANSLATIONAL THERAPEUTICS PROGRAM

Dr. Quintin Pan is known for his pioneering work with anti-cancer therapeutics

“I was at a point in my career where I wanted to take the next step and gain leadership experience in a comprehensive cancer center matrix, and I was offered an amazing opportunity to work with and learn from a seasoned cancer researcher with experience forming and guiding scientific collaborations across disciplines.”

—Quintin Pan, PhD

If anyone deserved time off in 2016, it was Quintin Pan, PhD, professor, vice chair of research and director of the Head and Neck Oncology Research Program at The Ohio State University Comprehensive Cancer Center–Arthur G. James Cancer Hospital and Richard J. Solove Research Institute (OSUCCC–James). In 2015 alone, Dr. Pan’s tireless efforts to find new treatments for head and neck cancers secured him three R01 grants from the National Institutes of Health (NIH).

But his long history of success has earned him more than just a vacation — in April 2016 he was named co-leader of the Translational Therapeutics Program (TTP) at OSUCCC–James. This new role has further energized Dr. Pan to help Ohio State become a national leader in developing cancer drugs.

Meaningful Translational Research

The TTP is one of five trans-disciplinary research programs at the OSUCCC–James. Its focus is solid tumor research, from pre-clinical development to clinical studies.

“I was at a point in my career where I wanted to take the next step and gain leadership experience in a comprehensive cancer center matrix, and I was offered an amazing opportunity to work with and learn from a seasoned cancer researcher with experience forming and guiding scientific collaborations across disciplines,” says Dr. Pan, referring to his colleague David Carbone, MD, PhD, the other co-leader of the TTP. “And I’m equally excited to help the TTP build a more robust internal drug development pipeline.”

Not only does Dr. Pan have a wealth of experience in drug discovery research, he is determined to move Ohio State to the forefront in cancer drug development — an area historically dominated by pharmaceutical companies.

“Through cross-campus collaborations, the TTP helps accelerate high-impact science and tangible discoveries in cancer treatment,” says Michael Caligiuri, MD, CEO of the OSUCCC – James. “Because our goal is to move research findings from the lab to the patient’s bedside, we
were looking for a leader who realizes the value of translational research. Dr. Pan is a talented scientist who has an unusually good understanding of how science impacts patient care.”

The End of an Epidemic?
One of Dr. Pan’s own initiatives illustrates the power of scientific research and its potential to change clinical standards of care.

Through an NIH-funded study on human papillomavirus (HPV)-related head and neck cancers, Dr. Pan and his team (including a group of New York University synthetic chemistry researchers led by Paramjit Arora, PhD) made several important discoveries resulting in two worldwide patents that are now licensed to a Swiss biotech company.

“We found that when an HPV-16 gene called E6 interacts with a protein called p300, the p53 tumor suppressor gene becomes inactivated,” explains Dr. Pan. “We received our first patent when we identified the specific domain within p300 where the interaction takes place, and the second patent for a drug we designed that can block the p300-E6 interaction.”

That drug, OHM1, reactivates the anti-cancer p53 gene in mice and kills abnormally functioning cells. In 2015, OHM1 was licensed to Inthera Bioscience. The company is investing $10 million in drug development and hopes to begin clinical trials in humans in early 2018.

Estimates show the incidence of HPV-related head and neck cancers has grown by more than 70 percent during the last 10-20 years — a rapidly growing epidemic with no screening strategy to catch it early.

“Even though OHM1 is still in pre-clinical development, if it works and comes to market it has the potential to be a game-changer for anyone with HPV-related cancer, including cervical cancer,” says James Rocco, MD, PhD, director of the Division of Head and Neck Oncology and holder of the Mary E. and John W. Alford Research Chair in Head and Neck Cancer. “Not only could this drug be an easy way to cure patients without the long-term side effects of traditional treatments like surgery, it could prevent people infected with HPV from getting cancer in the first place.”

Building Momentum
As someone who has been active with the TTP for several years, Dr. Pan looks forward to continuing his own investigative work — while simultaneously developing a campuswide, programmatic research program for various solid tumors.

“Ohio State, and the OSUCCC – James in particular, are strong advocates of research,” says Dr. Pan. “They have made investments not only in the head and neck oncology program, but in me personally, and I’m looking forward to this next phase of my career.”
Pediatric otolaryngology surgeons at Nationwide Children’s Hospital and The Ohio State University have developed a new team-based protocol to improve safety for pediatric tracheostomy patients and reduce pressure-related injuries. Our several years of effort have resulted in the invention and patent of a new tracheostomy collar, now being marketed by Marpac, Inc., as the “Comfort Collar.”

The new device was created by Charles Elmaraghy, MD, and Kris Jatana, MD. Dr. Elmaraghy is director of the Department of Pediatric Otolaryngology at Nationwide Children’s Hospital (NCH) and associate professor in The Ohio State University Department of Otolaryngology. Dr. Jatana serves as director of Pediatric Otolaryngology Quality Improvement at NCH and associate professor in the Department of Otolaryngology at Ohio State.

A Preventable Complication

During the postoperative period, pediatric tracheostomy patients are most at risk for developing pressure-related wounds where the tube contacts the neck. This was historically the greatest risk during the immediate postoperative period due to care providers’ concern about accidentally dislodging the fresh tracheostomy tube. It has been reported that up to 29 percent of pediatric patients develop pressure-related tracheostomy wounds.

A common practice is to place a piece of gauze under the flange of the tracheostomy tube to prevent skin contact and reduce pressure injury. In the past, the protocol at Nationwide Children’s after performing a tracheostomy was to leave initial dressings untouched for the first five to seven days to prevent accidentally dislodging the tracheostomy tube. But leaving the dressing in place allows pressure wounds to form and worsen if there’s no assessment or intervention.

“At that time, it was an accepted complication that some patients may get ulcers,” says Dr. Elmaraghy. “But when we looked at it, we thought, ‘We can do better.’”

The resulting quality improvement initiative for reducing tracheostomy-related pressure injuries consisted of two solutions: (1) developing a new tracheostomy collar designed to help prevent pressure wounds from forming in the first place, and 2) a safer postoperative protocol to diagnose and treat early-stage wounds before they become advanced.

The Marpac Comfort Collar

In 2011, Drs. Elmaraghy and Jatana received a $25,000 Technology Development Fund grant through the Nationwide Children’s Hospital Research Institute to create a better tracheostomy collar. After developing a prototype, they reached out to industry leader Marpac, Inc., to manufacture it. In June 2016, the U.S. patent was awarded, and the device is currently available to pediatric and adult patients on the Marpac website.

The Marpac Comfort Collar is a two-piece design that adjusts in the back and allows a custom fit. It features soft Velcro ties and built-in flange-protection padding made of neoprene. The padding helps prevent the plastic flange from coming in direct contact with a patient’s skin. There are also improvements in the Velcro attachment design to allow for more security in infants due to their smaller neck circumference.

“No other collars on the market address the area of contact by the tube,” explains Dr. Elmaraghy. “Our collar is all-inclusive, so there’s no gauze needed.”

This reduces the cost of the care regimen because it eliminates the expense of additional dressings, while at the same time helping to prevent pressure wound formation. The one-time-use collar can be used by children and adults in both inpatient and outpatient settings.
“We’re getting great feedback from parents and staff regarding the Marpac Comfort Collar,” says Sarah Begue, MSN, RN, CPNP-AC, a pediatric nurse practitioner at NCH who trains other nurses, staff and parents on all aspects of tracheostomy care.

“The comfort of the materials and the advanced design are the most frequently reported praises of the Comfort Collar. Also, while it is marginally more expensive when compared to standard trach tie options, it is much cheaper than the care that goes into wound treatment,” Begue adds.

“My overall goal in providing care to a child is to promote positive outcomes and improve their quality of life,” Begue says. “If something as simple as a better trach tie can improve outcomes and increase a patient’s comfort while also reducing healthcare costs, then I am so happy to be able to offer it to our families,” shares Begue.

Challenging the Standard Protocol

The new postoperative protocol for pediatric tracheostomy patients included the formation of a multidisciplinary team dedicated to wound prevention through close observation. The team includes an otolaryngology surgical resident or fellow, a certified wound care specialist who is a nurse practitioner, a respiratory therapist and the patient’s bedside nurse.

In September 2012, the team began making daily rounds to patients following tracheostomy tube placement.

“It’s important for hospitals to create an environment during the postoperative period that makes it comfortable for all members of the care team to look for wounds in these patients,” says Dr. Jatana. “If we don’t look for wounds, we won’t identify them early enough. We need to remove the anxiety of dealing with a fresh trach by having all the personnel there together to prevent or be able to deal with an event of accidental decannulation.”

Surgical staff make sure the tracheostomy tube stays in place during the process of taking the dressing down. The team examines the neck for injury, cleans the skin and reapplies the dressing and collar. Team members show the bedside nurse how to ensure the patient is properly positioned with the ventilation circuit and appropriately sedated.

“With the new protocol, there’s immediate, direct communication among everyone involved,” says Dr. Jatana.

Successful Outcomes Data

At Nationwide Children’s Hospital, the new protocol has eliminated all postoperative advanced-stage pediatric tracheostomy-related wounds — from a baseline of 6.8 percent of pediatric patients to 0 percent. It has reduced early-stage wounds from 15.5 percent to 9.9 percent. There have been no cases of accidental tracheostomy tube decannulation since the new protocol was initiated.

Wounds are graded by depth of injury: Stages 1 and 2 are considered early stage, and stages 3 and 4 (and unstageable) are considered advanced. In advanced-stage wounds, the skin tissue breaks down to expose muscle or bone. Advanced-stage ulcers are mandated for reporting and are listed as a serious safety event for hospitals.

“Preventing patient injury is of the utmost importance,” explains Dr. Jatana. “Secondary to that, hospitals are responsible for the cost, since advanced-stage hospital-acquired pressure injuries aren’t reimbursed by Medicaid or Medicare.”

Thinking Outside the Box Pays Off

The surgeons say the tracheostomy care quality improvement initiative has proven that wounds once thought inevitable are actually preventable.

“One part of the problem we had before the new protocol was we weren’t looking for the wounds,” says Dr. Jatana. “Now we can intervene and prevent them from becoming advanced stage. The new Marpac Comfort Collar has been part of the solution.”

“We challenged the whole dogma,” adds Dr. Elmaraghy. “We can safely manipulate fresh trach tubes. We can change the dressing every day. We can change outcomes by implementing a simple solution. At Nationwide Children’s, the goal is zero patient harm. That’s the only acceptable rate.”
The Ohio State University Wexner Medical Center
Department of Otolaryngology –
Head and Neck Surgery

Eye and Ear Institute
915 Olentangy River Road, Fourth Floor
Columbus, OH 43212
614-366-3687

ent.osu.edu

The Ohio State University
Department of Otolaryngology –
Head and Neck Surgery
Ranked No. 7 in the country
and No. 1 in Ohio by
U.S. News & World Report