

ADVANCES IN OPHTHALMOLOGY



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Precision Ophthalmology 2017 Fighting Childhood Blindness: From Bench to Bedside

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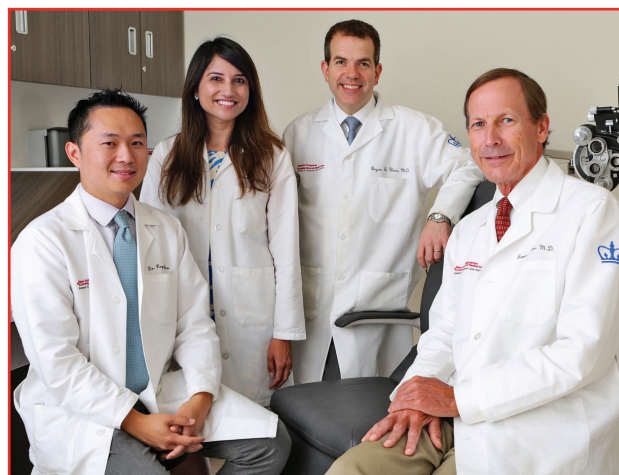
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Ophthalmology Residency Program: Transforming Eye Care in an Underserved Community

A new era of collaboration in vision science has emerged in upper Manhattan linking the ophthalmology departments of NewYork-Presbyterian/Columbia University Medical Center and Harlem Hospital Center (HHC).

For nearly two years discussions had been underway to develop a new teaching site for Columbia's residency program and an expanded care platform for patients within the HHC system. This past year, the relationship was further strengthened with the appointment of Columbia ophthalmologist **James D. Auran, MD**, as the new Chief of Ophthalmology at Harlem Hospital Center.

The timing was ideal for forging a closer partnership between the two programs. **Robert L. Farris, MD**, HHC's Chief of Ophthalmology, had planned to retire after four decades of service. "With the expansion of our residency program and the opportunity to bring our programs close together, we felt that Dr. Auran



Dr. Royce W.S. Chen, Dr. Aakriti Garg, Dr. Bryan J. Winn, and Dr. James D. Auran

would be the perfect leader for the future," says **George A. Cioffi, MD**, Ophthalmologist-in-Chief at NewYork-Presbyterian/Columbia.

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Pediatric Cataracts: Management Challenges and Treatment Approaches

Cataracts in children cause more visual impairment than any other form of treatable blindness and, according to the American Association for Pediatric Ophthalmology and Strabismus, infantile and childhood cataracts affect approximately 3 out of 10,000

"Most of my young patients will never remember my help, but I feel good knowing that my efforts can benefit them for a lifetime."
— Dr. Erica L. Oltra

children. "Children's eye conditions present a unique set of challenges," says **Erica L. Oltra, MD**, a pediatric ophthalmologist in the Department of Ophthalmology at NewYork-Presbyterian/Weill Cornell Medical

Center. Those challenges – particularly in the surgical management of pediatric cataracts and anterior segment eye disease – are what attracted Dr. Oltra to the specialty.

"I became interested in ophthalmology because I found the microsurgical techniques to be so elegant and precise, and I enjoyed seeing immediate results after surgery," says Dr. Oltra, who completed her ophthalmology residency at the Illinois Eye and Ear Infirmary, where she served as Chief Resident. After residency, she pursued a fellowship in pediatric ophthalmology and adult strabismus at the Jules Stein Eye Institute at UCLA. "Importantly, pediatric ophthalmology requires early diagnosis and accurate management to get the best long-term results and

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Ophthalmology Residency Program: Transforming Eye Care in an Underserved Community *(continued from page 1)*



In 2013, Harlem Hospital Center completed a major modernization of its facilities. The 286-bed institution, a member of NYC Health + Hospitals, is the only hospital in Harlem providing healthcare to its diverse community of cultures.

The two institutions agreed to establish a permanent rotation of Columbia ophthalmology residents at HHC and to bring on a new Chief of Ophthalmology who, in addition to overseeing administrative functions, would develop mechanisms for community outreach, faculty and staff recruitment, and expansion of the resident educational program. The relationship increases the number of Columbia residents from nine to 12, with one resident from each year on site at HHC at all times, and significantly broadens the Columbia resident experience with exposure to a different hospital system and a broad variety of patients and ocular disease.

HHC's patient base frequently includes patients who need the most care, but have the least means to obtain it. Many patients have systemic health problems that complicate their ophthalmic conditions, while others have suffered severe ocular trauma. HHC is one of the few trauma centers throughout New York City, which expands the Columbia residents' exposure to traumatic injuries.

"Our residents now have exposure to a Level 1 trauma center and an inner city public hospital experience that we believe is very valuable," says **Bryan J. Winn, MD**, former Residency Program Director and Director of Medical Student Education, who helped to develop the new curriculum and broker the collaboration.

"The rotation at HHC gives our residents a greater clinical and surgical experience as well," adds Dr. Winn. "It is a win-win for both institutions. HHC wanted to have expanded ophthalmology coverage and we wanted to provide our residents with exposure to a greater diversity of patients and disease. This is a population that is woefully underserved. Many are uninsured and have not had access to healthcare before. We see a lot of severe, end-stage disease. Through this collaboration, the patients at Harlem Hospital receive the same high level of cutting edge care that our patients at Columbia receive."

"The expanded training curriculum made possible through our relationship with HHC is an important component of the residency program," says **Royce W.S. Chen, MD**, the new ophthalmology Residency Program Director at Columbia. "It encompasses a diverse experience with patients from a variety of backgrounds, many who present with a level of ocular disease not typically seen, making the program attractive to residency candidates."

A Mutually Beneficial Partnership

The opportunity to join Harlem Hospital Center in a senior administrative position very much appealed to Dr. Auran, who has high praise for the HHC Ophthalmology Department. "This is a wonderful staff of physicians. None of them has to be here. They're here because they want to serve the underserved."

Dr. Auran has begun adopting many of Columbia's methodologies and protocols to help increase patient volume and flow at HHC, and he has introduced new treatment modalities to ensure that patients are receiving the highest quality care. "This has been an extraordinary turn of events for our residency program and for HHC," says Dr. Auran.

Since his arrival, Dr. Auran also has been upgrading much of the Department's equipment. "We recently added a laser optical biometer, a selective laser trabeculoplasty, and a Pentacam – a new corneal measurement system that will allow us for the first time in Harlem to make cataract surgery refractive surgery," he says. "This is a major step forward for what we can offer this community."

"HHC is a large city hospital, situated in an extremely vulnerable neighborhood. There is an incredible mix of ethnicities and socioeconomic classes and range of illnesses and disease."

— Dr. James D. Auran

Dr. Auran is equally impressed with the ophthalmology residents who have been accepted into the program. "The level of one extraordinary physician after another is amazing," he says. "Two of our senior residents have won awards for best poster and presentation at the American Glaucoma Society and the American Society of Cataract and Refractive Surgery."

Third-year resident **Aakriti Garg, MD**, earned her medical degree at Columbia University College of Physicians and Surgeons, where she had an interest in pursuing a number of specialties, but chose ophthalmology for several reasons. "I knew that I wanted to do surgery, but I also wanted to be able to follow my patients for a long time and really guide them through their illness," says Dr. Garg. "I found that ophthalmology offered the best combination of surgery and medicine. Most of what we do is microsurgery, which requires a high level of precision. The surgeries that we do tend to have a great impact on peoples' lives."

Dr. Garg notes that many of her patients at HHC are seeing an ophthalmologist for the first time. "We start from the very beginning to understand the patient's situation. We then put on our diagnostic hats, keep our minds open, and determine the diagnosis. Again, we're often the first doctors that they see. We feel very lucky to be a part of their lives."

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Pediatric Cataracts: Management Challenges and Treatment Approaches *(continued from page 1)*

the best vision for patients. If you don't catch these eye conditions in time, they can result in adults with poorer vision than they could have had if the condition had been addressed sooner."

Cataracts in children can be classified using a number of methods, including age of onset, etiology, and morphology. Congenital cataracts are responsible for 10 percent of all visual loss in children worldwide. They can be isolated or associated with systemic conditions, including chromosomal abnormalities, or with other ocular anomalies, for example, persistent fetal vasculature, coloboma, anterior segment dysgenesis, and aniridia. Even despite a complete systemic workup for those without a family history, it is often difficult to identify the cause. Infantile cataracts may be present at birth or develop afterwards. The prognosis, says Dr. Oltra, is better if the cataract is not dense in the first three months of life.

Managing Pediatric Cataracts: Delicate Decisions

The management of congenital cataracts is very different from the traditional treatment of age-related cataracts, notes Dr. Oltra. "Timing of surgery is critical. We usually don't perform surgery until a child is at least one month old because we could be putting that child at a higher risk for developing glaucoma and intraoperative complications. We also don't want to wait too long because there may be some irreversible amblyopia that can occur."

"The visual connection between the eye and the brain must be maintained from a very young age in order to develop good vision," says Dr. Oltra. "Deciding when to perform surgery for a baby born with cataracts is a balance between the risk of amblyopia and the risk of glaucoma. Generally, the right time is about four to six weeks of age with a unilateral cataract and six to eight weeks for bilateral cataracts."

Trauma continues to be a major cause of cataracts in children. The disruption of the lens capsule forms cortical changes that may remain focal if they are small or progress to total cortical opacification. "After a trauma, or if a child has Marfan's syndrome, for example, there may not be a lot of support to hold an intraocular lens," says Dr. Oltra. "What we can do is suture a lens into the eye, which is done often in adults. The problem in a child is that after many years, those sutures can erode through the sclera or break, putting the child at risk for endophthalmitis and lens dislocation."

Dr. Oltra points to iris fixation of an intraocular lens, specifically the Artisan lens, currently under study in clinical trials as a treatment for pediatric aphakia when there is insufficient capsular support. "Studies show that it's safe and effective in children and it may last longer and have greater durability than a sutured lens."

According to Dr. Oltra, other advancements in microsurgical technology and techniques over the last decade have helped to refine pediatric cataract surgery. "Our tools are getting smaller and smaller, which is very important because you're putting them into a newborn's eye which is already very, very small," says Dr. Oltra. "Since infant corneas are very prone to collapsing during surgery, the smaller we can make the incisions and the more watertight they are, the more stable the surgery is."

Dr. Oltra uses the same phacoemulsification machine in pediatric surgery that is used in adult cataract surgery, adjusting the settings to accommodate a child's cataract, which is much softer and tends to aspirate easily. "One complication common in children is secondary membrane formation," says Dr. Oltra. "Children will have a lot of



Dr. Erica L. Oltra

inflammation in the eye postoperatively. If you don't get it under control with injected or topical steroids, a membrane can form over the visual axis, possibly requiring another surgery to remove it. Control of inflammation after surgery in children is extremely important."

The long-term refractive outcome is variable, says Dr. Oltra, and the physician must use available information at the time of surgery to predict future refraction. "We are trying to better understand how performing surgery on a baby's eye will affect the way that it grows and then decide the power of the lens to implant so that the eye will be as close to emmetropic as possible when the child's eye stops growing," she says. "It's very hard to predict."

Postoperative Care and Rehabilitation

Since uncorrected refractive error in early childhood can lead to amblyopia, attention to appropriate refractive correction after cataract surgery is critical in obtaining good final visual acuity. Dr. Oltra's refractive management includes:

- Aphakic contact lenses within 1 to 2 weeks
- Glasses or contact lenses if pseudophakic
- Overplus to leave the child slightly myopic
- Bifocal segment for children over 3 years old

For unilateral aphakia, Dr. Oltra prefers contact lenses because of the distortion that comes from glasses. "Glasses can be an option and the child should have a backup pair even if he or she is wearing contact lenses," she says.

Visual rehabilitation for amblyopia includes patching. "You have to patch the better eye to treat and prevent amblyopia," says Dr. Oltra. "It won't matter that you caught the cataract early and did a perfect surgery if you don't have proper visual rehabilitation afterwards."

Dr. Oltra considers parents key partners in achieving a good visual outcome. "We tell parents that we're forming a long-term relationship with them. The surgery is actually the easy part. It's the aftercare that's the hardest and the most important. It generally involves years of doctor visits, ongoing patching, and continual updating of contact lenses and glasses. Most of my young patients will never remember my help, but I feel good knowing that my efforts can benefit them for a lifetime."

For More Information

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