

## Magic in Medicine; Shields & Shields

Most people would agree that magic and medicine are not inextricably tied together. While it is true that both disciplines are based upon hard work, talent, patience, trust, research, and great training, magic relies on deception and trickery. Medicine, on the other hand, embraces full disclosure. The difference is enormous, but it is important to realize that through the power and effectiveness of therapies and techniques, magic just happens in medicine. A perfect example of “magic in medicine” is the power couple, Dr. Carol Shields, M.D. and Dr. Jerry Shields, M.D., co-chairs of the Department of Ocular Oncology at Wills Eye Hospital. Through their leadership, both nationally and internationally, the Shields have propelled eye cancer research forward, creating and pioneering innovative ideas and popularizing new treatment options for patients.

In the mid- 1970’s, Dr. Jerry Shields established an ocular oncology service at Wills Eye, a unique service where he only treated patients with rare eye tumors, like choroidal melanoma (3000 cases are diagnosed annually in the U.S. and 50% develop metastases). Often, removal of the eye was the best option. A decade later, treatment of intraocular tumors underwent a huge transformation, and Dr. Jerry Shields became one of the first pioneers to use radiotherapy. Now, a plaque placed on the surface of the eye could treat the tumor underneath with radiation and save a patient’s eye. A game changer; a creation, as if by magic! And as he moved forward professionally, magic morphed into Dr. Jerry Shields’ personal life as well. He fell in love with an ophthalmology resident, Dr. Carol Lally. In time, she became Dr. Carol Shields. Soon, with their shared passion, they chose to master and grow the subspecialty together.

The magic proliferated as referrals flowed in from general ophthalmologists who needed assistance in identifying tumors. With time, ophthalmologists requested that their tumor patients go to Wills Eye for treatment, not just a diagnosis. Many patients chose to remain at Wills Eye because of the Shields’ expertise in many therapies and surgical procedures. And as they lectured all over the world, published more and more research, and adopted new techniques and technologies, more patients from the U.S as well as internationally sought them out.

They wanted to make sure that other residents and fellows were trained properly so they could gain the opportunity to open their own ocular oncology centers. So, the Shields began training residents and fellows for both U.S. and international centers. They have trained more than 100 international fellows and residents in the past forty years who now practice ocular oncology in more than 40 countries. Also, recently, they developed an online service for patients with known intraocular tumors who cannot travel to Wills Eye. The Ocular Oncology Reading Center of America (OORCA), allows patients to send in their case by uploading it to the website and they will receive an evaluation for choroidal melanoma and other diagnoses, HIPAA protected.

Shields & Shields has navigated their patients through the darkest days of their lives, helped to save their vision, and saved countless lives as well. They thrive under high pressure where every move is important to ensure a patient’s survival. In the past twenty years, Dr. Carol Shields has made humongous strides in the field of retinoblastoma, a rare cancer found in young children. She pioneered the use of intravenous chemoreduction, intra-arterial chemotherapy, subtenon’s chemotherapy, and intravitreal chemotherapy. Originally, thirty percent of patients required removal of the eye, now with

intra-arterial chemotherapy applied directly to the eye, approximately 5-10% will lose an eye. Not only are children's lives saved, but in many cases, they are able preserve their vision even though they had to undergo cancer treatment.

In April 2017, they began a first phase-1 clinical trial to test a new, light-activated AU-011 drug that is designed to selectively destroy cancer cells without harming healthy issue. The hope is to find a new option for targeting an early-stage eye melanoma tumor and treating ocular melanoma. By blending art and science, they have created change and solutions as well as magical moments for over 50,000 patients. They continue to spread their magic, constantly fighting a ticking clock and melanoma metastases. Their magic is not the kind that results in surprise or entertainment, rather one that is strong, intense, and lasts a lifetime, and beyond.