

Alumni Journal

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A photograph of two men standing outdoors in front of a green sign. The man on the left is older, with white hair and glasses, wearing a white shirt, a red patterned tie, and dark trousers. He is holding a cane. The man on the right is younger, with grey hair, glasses, and a goatee, wearing a white shirt and khaki trousers. The sign behind them is green with white text that reads "CALIFORNIA CRYOBANK" and "11915 La Grange Avenue".

CALIFORNIA
CRYOBANK

11915 La Grange Avenue

**Science and
Compassion**
Two Alums Offer Families
Fertility Solutions

also inside:

Graduation 2013: Keeping the Ball Rolling • Restoring Sight in Zambia: Dr. Janie Yoo '06 Pioneers Eye Health





Restoring Sight in Zambia

Dr. Janie Yoo '06 Pioneers Eye Health

By: Emily Star Wilkens

In the operating theatre of Lusaka Eye Hospital in Zambia's urban capital of Lusaka, **Dr. Janie Yoo '06** spins a circular trephine blade between her thumb and index finger on the surface of a young Zambian man's eye—a manual technique she learned at Harvard University. She rocks it back and forth until

an eight millimeter punch of scar-clouded corneal tissue can be removed in preparation for a transplant. "When I got to Zambia, I realized that there wasn't a single corneal surgeon in the country and there was tons of corneal blindness." Dr. Yoo inserts an eight and a half millimeter core of donor tissue—excess flown in from an eye bank in the United States— and completes the procedure by placing miniature sutures around the periphery of the site. When the patient's eye patch is removed the next day, images cascade in easily through his much-clearer cornea to the back of the eye where they can be processed. "I love my field," Dr. Yoo says. "God totally knew where I would thrive."

Dr. Yoo serves as one of 22 ophthalmologists and the only corneal surgeon in Zambia—a country of over 13 million people. She and her husband, Dr. Paul Yoo (Loma Linda University School of Dental alumnus '08), along with their six-month-old baby Jaycee are a year and a half into their six year commitment to serve as Loma Linda University Deferred Mission Appointees. "The DMA program is a big blessing because it's a way to do what we've always dreamed of doing," says Dr. Yoo. The DMA program supports Loma Linda University Medical

and Dental School graduates with loan amortization, a modest monthly stipend, and paid annual leave to visit their families during their service abroad.

After graduating from medical school, Dr. Yoo matched into the ophthalmology residency program at Loma Linda University. Ophthalmology allowed her to both perform surgeries as well as have continuity of care with patients. Although Dr. Yoo had planned to start her life-long dream of international service immediately after residency, she felt compelled to continue with a fellowship in corneal surgery. "I had no idea how it would be used in the bush," she said, but went ahead and interviewed at ten different programs anyway. However, when match day came, she didn't match anywhere. "I was devastated," she said. She immediately began researching programs with open slots and was surprised to find Harvard's program among them. When she called about an interview, the program director said that never in their history had the program gone unfilled. It was a surprising anomaly for Harvard and an incredible opportunity for Dr. Yoo. She interviewed for the slot and the next day was extended the invitation to study corneal and refractive surgery at Massachusetts Eye and Ear Infirmary. "As I was driving

back to the airport, I was thanking God and praising Him for His goodness—just the turn of events. I felt so undeserving of those opportunities.”

After Janie finished her fellowship, the Drs. Yoo moved to Lusaka where a dental clinic sat adjacent to Lusaka Eye Hospital—a perfect fit for the couple. “The first six months we had culture shock. We expected so much,” says Dr. Yoo. “We had no car, no friends—only each other. It was very difficult.”

The difficulty did not, however, stem from boredom. Dr. Yoo was immediately immersed in a population of endless need. A 2011 situational analysis of eye health care in Zambia reported that approximately 25 percent of the population suffers from eye diseases and visual impairment at any one time with cataracts as the leading cause of blindness, followed by glaucoma, corneal scarring and refractive errors. Amidst the great need for eye care, Dr. Yoo was forced to adapt to ways of treating patients that were completely foreign to her. Many procedures had been adapted for cost efficiency. “In the United States, we use balanced salt solution in the eye during cataract surgery. It’s expensive to buy a bottle here. So we use a lactate ringer.” Dr. Yoo says that the lactate ringer does not seem to be producing any increase in swelling or any ill effects. While in the United States ophthalmologists use a bipolar cautery system during surgery, in Lusaka they use a fire system. “You have a jar filled with purple alcohol—‘methylated spirit’ they call it—with a wick inside.” Instruments are heated over the flame and then pressed onto bleeding vessels on the sclera. These instruments can be autoclaved time after time, and there is no need for electricity. Dr. Yoo has been schooled by the process of adaptation. She says, “This whole experience has helped me as a surgeon, helped me know how to maneuver around the eye so that a surgery can be successful even if you are a beginner in a certain technique.”

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Last year a generous organization donated a phaco-emulsification machine, and since that time, the hospital has been able to provide a cutting edge cataract removal service. Dr. Yoo has also mastered the manual technique used in much of the developing world called small-incision cataract surgery. During its pioneer years, the extracapsular cataract extraction method terrified ophthalmologists because the external incision was large and prone to infection. However, Dr. Yoo says that ophthalmologists in India have greatly refined the technique. Today, a five to six millimeter external entry cut opens into a ten millimeter

interior cut allowing a surgeon to slip the entire cataract outside of the eye without breaking the lens apart. The self-healing wound eliminates the need for sutures and the outcomes are good. Both phaco-emulsification and small-incision cataract surgery are offered as excellent options for patients.

Although eye care has improved in Zambia over the last couple of decades, the country still struggles to make treatments readily available. The 2011 situational analysis of eye health care in Zambia pointed out that, “Although most facilities in rural areas report to offer refraction, cataract surgery, trichiasis surgery and glaucoma surgery, these services are not usually provided by resident staff with the facilities’ own equipment. In the majority of cases, these procedures are offered once every few months through visiting outreach teams from larger, usually urban eye units.” Dr. Yoo and her team at Lusaka Eye Hospital serve as one of those outward-reaching entities.

On a dark four a.m. morning, Dr. Yoo’s staff and a group of visiting volunteers meet outside the hospital to load the teal-colored outreach bus with everything necessary for carrying out an “eye camp” at rural Yuka Adventist Hospital. After an eight hour drive the team arrives at a port on the Zambezi River—a well-traveled highway of the region serving as the only feasible route to Yuka during the rainy season. Operating microscopes, IV poles, chairs and surgical instruments are loaded onto a narrow dugout boat. While hospital staff and volunteers take a speedboat and make the trip in three hours, the dugout and supplies don’t arrive until the early hours of morning—eight hours later.

The next day the team sets up the operating room and screens patients to determine which cases are operable. Some patients have traveled days to get to Yuka. As Dr. Yoo moves from bed to bed, she is presented with cases that engage all facets of her training. “Out here in Yuka, we find a lot of trachomatous trichiasis,” she says referring to one woman’s symptoms. She explains the way that the disease—born out of a chlamydial infection—has turned the woman’s eye lids inward, causing the lashes to scrape against the surface of the eye. This can cause the cornea to break down and the individual to go blind. Cases of trachomatous trichiasis are among those that the World Health Organization and the VISION 2020 initiative in Zambia have been working to eliminate—cases of preventable blindness. Although the surgical procedure to reverse the effects of trachoma is considered an oculoplastics procedure, Dr. Yoo says it is a bread and butter skill in Zambia. “Everybody does it because they are so common.” The next day the woman goes to surgery. A small incision releases the eyelid from its inward-facing orientation and a few sutures ensure proper healing. “It’s



▲ Pediatric eye surgery is often a gift of 50 plus years of sight.

◀ Drs. Janie and Paul Yoo visit rural Yuka Adventist Hospital.

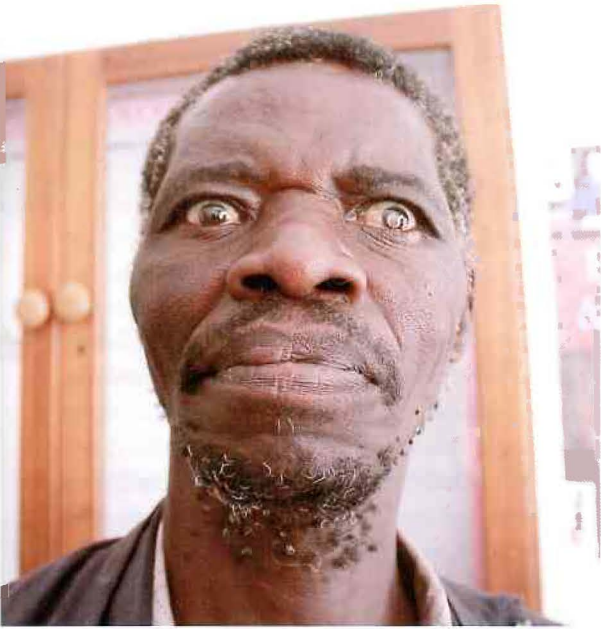
▶ A cataract and glaucoma patient wipes his ever-weeping eye.



◀ Cloudy vision disables men and women from leading normal lives.

▶ Those in rural regions face many challenges.

▲ A 20-30 minute surgery provides sight to the blind.



Alumni Who Have Served in Zambia

- Donald Ashley '77-A
- Shirley Ashley '78-A
- Roy V. Berglund '54
- Robert E. Cossentine '42
- Ray Foster '59
- Elvin C. Gaines '61
- Alfred E. Gilbert '30
- Gary Gilbert '80-A
- Richard A. Gingrich '56
- Kenneth W. Hart '69
- John B. Hoehn '71
- Theodore W. Hoehn '79-B
- Luther V. Hofgaarden '41
- Dean H. Hoiland '44-B
- Robert Johnson '61
- Howard B. Johnson '44-A
- James T. Ladd '54
- Richard H. Lukens '73-A
- George Marcus '25
- Percy S. Marsa '53-A
- Sharon L. Simpson Mason '70
- Arthur C. Miller '42
- Bradley W. Nelson '68
- Alex J. Norzow '65
- Thomas O. Pellow '51
- Oliver J. Pogue '53-B
- Leonard W. Ramey '36
- John R. Rogers '74
- Russell J. Rogers '74
- Allen E. Jr. Shepherd '73-A
- Sherry T. Read Shrestha '74
- George T. Jr. II Simpson '73-A
- James D. Simpson '70
- Nancy Wonderly Simpson '70
- Melinda S. Skau '82
- Randell S. Skau '82
- Kenneth H. Sturdevant '31
- Ingrid Trenkle '73-A
- Steven James Trenkle '73-A
- Lorna J. Lukens Turner '72
- Ernest A. Wagner '34
- Raymond E. Westermeyer '75
- Richard J. Westermeyer '83
- Charles L. Wical '60
- Bryce Jr. Young '57
- Erhardt Zinke '44-A

really important for us to have prayer before each and every operation." Dr. Yoo says that only God knows how these patients can do so well after surgery in such primitive conditions and with such limited resources. The Lusaka Eye Hospital team stays for five days before returning home to Lusaka.

In March, authorities intercepted the package, asking, "What authority do you have to bring human tissue into Zambia?" Dr. Yoo bargained for the package to be released, saying that there were patients waiting for surgery and that if too much time passed the tissues would expire.

Wednesdays back at the hospital are reserved for donor sponsored pediatric eye surgery. "It costs \$200-\$300 for one child to have cataract surgery on one eye," says Dr. Yoo. While that seems like a small price to pay for restored eye sight, two thirds of the population in Zambia lives on less than a dollar a day and only 500,000 of the 13 million people are employed by the formal sector.

Bwenzu's family was part of those two thirds. While visiting a church 20 minutes from Lusaka, Paul noticed Bwenzu and whispered to Janie, "You see that kid?" Bwenzu's eyes were severely crossed—a disease called strabismus. While correcting strabismus in adults is largely cosmetic as the damage to visual development has often already been done, in children, access to the surgery can improve vision for life. Gone untreated, strabismus causes a child to favor one eye and consequently shut the other off. "Even if you correct it later in life, you may not ever get the vision back in the amblyopic eye, and you won't have stereo vision," says Dr. Yoo. After church Paul and Janie found the boy and his

mother and told them about the sponsorship program. Bwenzu's mother brought him to Lusaka, and Dr. Yoo was able to reattach the eye muscles in the proper position resulting in restored vision for Bwenzu and freedom from a strong social stigma.

On average, \$1,600 sufficiently covers the costs of an entire day of pediatric eye surgery. For donors, the experience of receiving a picture of the children whose sight has been restored as a result of their contribution is profoundly tangible and moving. Dr. Yoo continues to look for donors to partner with her in this way.

A physician's impact on a surgical and clinical level abroad is often easy to see—the tangible, often immediate results of patients getting better is rewarding. However, other forms of impact are not so quick to come to fruition. Along with Dr. Yoo's early realization that there was no corneal surgeon in Zambia came the realization that there was also no eye bank. Seeing the incredible need for donor tissues, she went to work contacting eye banks that might be interested in partnering with her. Soon several eye banks had generously agreed to ship tissues that were approaching expiration over to Zambia. "I received five corneas in January, five in February and five in March," she said. The U.S. eye banks packed the tissues in ice in order to preserve them on the two day journey. Passing through London or South Africa, the tissues made it to Lusaka, and Dr. Yoo was able to perform corneal transplants successfully—until that third shipment.

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Dr. Yoo uses an alternative cautery system, pressing a hot metal tip onto vessels to stop bleeding during surgery.

Ministry of Health. “In this country,” Dr. Yoo says, “there are no laws for importing human tissue because they don’t have those services.” Even in America, it was cornea transplants that led the way in the field of transplant surgery because the cornea is considered an immune-privileged site. Unlike heart, kidney, or lung transplants, corneas don’t pose such a high risk of rejection.

Today, Dr. Yoo continues to pursue the proper permissions needed to do corneal transplants. But the road has not been easy. The government must develop a protocol for importing human tissue as well as laws and ethical standards surrounding the advancement. Essentially, these strides in eye care are leading the way for all organ transplants in the country—a significant impact on the healthcare in Zambia.

Practicing in Zambia is not what one would envision for a couple like the Yoos, consisting of a dentist and an ophthalmologist, who could potentially live quite comfortably in the United States. And yet Yoos felt they were being called to something else. “My God has done so much for me,” Janie says. With all the confirmation in her calling, Dr. Yoo says there is no way she could run the other direction. She says this is the least she can do to give back to God. But it’s not just about giving back. Her choice to serve in Zambia has also been about putting herself in a position where she can be blessed. For when a patient, previously blind and stoic, takes off the eye patch after surgery and lights up with a smile saying, “I can see your face,” Dr. Yoo finds meaning and fulfillment. She wouldn’t trade that for anything. ■

Watch a video interview with Dr. Yoo at www.llusmaa.org/yoo.