Encouraging Innovation

By Lewis G. Zirkle, MD

The model for the activities of SIGN includes education, combined with donation of appropriate implants to implement the education, to treat the poor. SIGN education occurs during trips to visit programs, such as in Haiti, as well as the annual SIGN Conference in Richland, Washington. The SIGN Conference is an opportunity for SIGN Surgeons throughout the world to discuss their surgery and their innovative ideas.

In this newsletter, we’ve included an article by three surgeons from Haiti who have benefited from the SIGN Model. Pierre Woolley is currently learning pelvic and acetabular fracture treatment at Regions Hospital in Minneapolis. Prior to this training, he organized a mobile SIGN Unit in which he took the SIGN Instruments and Implants to different hospitals in Haiti. Following his training, SIGN will provide him with the instruments and implants to do pelvic and acetabular fracture surgery in different hospitals throughout Haiti.

It is a joy for SIGN to work with innovative surgeons like the three surgeons who wrote this article for The Journal of Bone and Joint Surgery. Their goal is to help the poor patients in Haiti with up-to-date orthopaedic care for their fractures.
2019 SIGN INTERNATIONAL ORTHOPAEDIC CONFERENCE

Workshops

Hands-on workshops are a critical element of the conference because they provide tactile experiences to help the surgeons learn and remember. Orthopaedic surgeons from the US and around the world lead these sessions, providing expertise and guidance for difficult procedures. Each participant shares what they learn with their colleagues at home, exponentially increasing knowledge and the level of orthopaedic care in the developing world.

PELVIC
The Pelvic breakout session used Sawbones and FX Plates to model these complex injuries.

DEFORMITY
Dr. Richard Gellman led a two-day course on correcting limb deformities with external frames.

PONSETI
Dr. Norgrove Penny teaches the Ponseti method for correcting clubfoot deformities.

LECTURES
SIGN Surgeons present research about their surgeries and issues that affect them in the developing world. By learning from each surgeon’s unique expertise, we raise the level of knowledge and the level of care each surgeon can provide.

ENGINEERING
SIGN Engineers demonstrate new and existing products for efficient and effective surgery.

SIGN is grateful to Integra Foundation and AO Alliance Foundation for being sponsors of the 2019 SIGN Conference.
Each surgeon had the opportunity to participate in the Bioskills Lab, learning and practicing a new surgical technique on human tissue, which is the closest analog to performing surgery on a live person. Expert surgeons from the US and around the world demonstrated the procedures, then gave feedback as each surgeon practiced.

*Thank you to Surgical Training Institute, Science Care, Acumed, and Freight Services whose donations and support made the Bioskills Lab possible.*

**ANKLE**

Dr. Yoon (right) shows SIGN Surgeons methods to repair ankle and heel fractures.

**ELBOW**

Dr. Shawn O’Driscoll (below) guides surgeons through elbow procedures.

**FLAPS**

Dr. Trent Morton (below left) and Dr. Aaron Berhanu (below right), from the University of Washington, lectured about how to use muscle flaps to cover serious injuries, then demonstrated the procedure in the lab.

**PELVIC**

Dr. Sami Hailu and Dr. Geletaw Tessema, from Ethiopia, along with Dr. Anthony Brown and Dr. Paul Whiting, from the USA, led a lab course and additional lectures on caring for patients with pelvic fractures.

**HIPS**

Dr. Marc Swiontkowski (left) and Pierre Woolley (below, with no mask) lead the session on treating hip fractures with implants and plates.
Before the 2010 earthquake in Haiti, a country known for its severely limited resources, the total number of orthopaedic surgeons in the country was estimated to be 67 according to a survey by the Haitian Orthopaedic and Trauma Society (SHOT). Most of these surgeons had been trained primarily in general orthopaedic surgery, with very few receiving subspecialty training. Despite their best efforts and willingness to respond to the various musculoskeletal injuries of a rapidly growing population (which now stands at 11 million) and because of a lack of available implants, many orthopaedic problems (especially complex ones such as pelvic and acetabular fractures and spine injuries) were left untreated, and patients suffered. Not only was the number of orthopaedic surgeons in the country insufficient for the thousands of injured who needed care, but many of the 67 surgeons lacked the necessary technical skills to properly handle the day-to-day musculoskeletal needs of the population. After the 2010 earthquake, which has been described as the “largest urban disaster in modern history,” the need for experts in spine, trauma, foot and ankle, sports medicine, upper extremity, and arthroplasty remains mostly unmet, and the burden of trauma keeps growing.

How can health-care practitioners in Haiti remediate this seemingly insurmountable issue in order to have truly sustainable care in our developing country? The answer is actually simple and feasible: we need a transfer of knowledge from health-care practitioners from industrialized countries to local surgeons. It is the same concept as people receiving more long-term benefit from learning how to fish rather than being given a fish.

Seeking Sustainability

Long before 2010, Haitians were accustomed to numerous “medical missions” coming into the country on a regular basis to provide random and short-term medical and surgical care. Most of these individuals and groups arrived with truly good intentions. But as they came and went, Haitians still faced the many day-to-day burdens of trauma. Without a clear, organized, and long-term goal to educate local orthopaedic surgeons and build local capacity, the medical-mission model is not sustainable.

(Continued on next page.)
What is often referred to as “medical tourism” by the general public describes patients traveling outside their home countries to receive ostensibly better or less expensive medical services; however, in Haiti, we use that expression to describe the groups that simply operate and go home. If no postoperative complications develop, the patients who are treated during these mission trips certainly benefit from expertly performed surgeries, but the 11 million people who need ongoing day-to-day musculoskeletal care do not. Medical missions can be a win-win situation only if visiting surgeons—whether they are individuals interested in global orthopaedic care or large groups—focus on transferring knowledge and building bridges with local residency programs and universities in Haiti. The greatest good for the greatest number will come when our visiting colleagues help create a strong, uniform orthopaedic curriculum for the whole country and help standardize care by teaching those of us who will perform the surgeries on a regular basis. By teaching us “how to fish,” time, resources, and lives will be saved, and sustainability will be achieved.

Exemplary Teachers

One excellent example of the “learning how to fish” concept was enacted by Dr. Robert W. Jackson, who brought the practice of arthroscopy to North America from Japan. In 1964, Dr. Jackson traveled with the Canadian Olympic team to Japan where he met Masaki Watanabe, MD, and learned about arthroscopy, the 30-year-old surgical procedure that had previously been used to investigate arthritis in the elderly. Upon returning home to Toronto, Dr. Jackson practiced the technique he had learned from Dr. Watanabe and soon became the world’s foremost expert on arthroscopy. He then taught arthroscopy to countless others.

This same principle should be applied by the many organized groups from all over the world who come to Haiti and other developing countries. We believe that their intentions are always good, but the outcomes often are not. That is especially true for patients who develop postoperative complications after the visiting surgeon has departed. If local staff have not been taught about the techniques, approaches, and protocols that were used, they cannot help patients with postoperative complications. Visiting surgeons must help local surgeons perform proper surgeries rather than perform the surgeries themselves. Some groups bring their own staff and residents to perform procedures on Haitian patients, leaving Haitian residents to observe from the sidelines. Teaching local surgeons the tools and techniques is the only way forward.

When outside groups offer continuous educational support and engage us with a spirit of inclusiveness, the results are phenomenal and patient care is optimal. The SIGN (Surgical Implantation Generation Network) Fracture Care project is a perfect example. At the beginning of SIGN’s involvement in Haiti, Dr. Lewis Zirkle came every year to teach a new generation of orthopaedic residents how to fix long-bone fractures with his specially designed SIGN nail, which did not require the use of C-arm radiography. Thanks to that 1 surgeon with 1 device and 1 technique, >1,000 nails have been implanted, mostly by young Haitian surgeons who learned to master the technique from Dr. Zirkle and his cadre of volunteers and are now able not only to treat patients, but to pass on their knowledge.

Ultimately, when we talk about sustainability in global health care—especially in orthopaedics—we must talk first and foremost about education and knowledge transfer. Otherwise, all of the good intentions and “guest surgeries” are futile. Teaching us how to fish is what is important for long-term sustainable orthopaedic care in developing countries such as Haiti. That is the only way forward.
A few thank yous from surgeons who attended the 2019 SIGN Conference.

To meet all those like-minded people working at a grass-roots level was a real privilege. I am loaded up with ortho gear, ideas, and enthusiasm. Thank you very much!
—Dr. David Friend, Zambia

I was very grateful to be in the SIGN Conference this year. I have learned a lot of pearls of wisdom, and have had the pleasure of discussing great ideas with you and the engineers of SIGN.
—Dr. Kim Jingco, Philippines

Thank you very much for inviting me to the SIGN Conference this year. It is really helpful to gather and upgrade the knowledge of the individual.
—Dr. Kamruzzaman Monta, Bangladesh

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Thank you to everyone who attended and supported the Portland WINE & DINE for SIGN Benefit in September. Your donations from the evening will be matched to provide healing care for people in the world’s poorest places!

Thank you to our Portland Benefit Benefactors & Sponsors!

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