



www.sign-post.org



SIGN patient Bethelehem lay in a body cast after a badly fractured hip. Dr. Zirkle & SIGN surgeons were able to evaluate her and give her the SIGN hip construct so she could walk again.

Black Lion Hospital

Addis Ababa, Ethiopia



The black lion represents youth and brings good luck. The Black Lion Hospital is a newer facility. It is home to fracture patients fighting through pain every day. With your help, SIGN will continue bringing good luck and good surgeries to those patients in need.

Ethiopia

- Life Expectancy—54 years
- 0.03 Physicians per 1,000 people
- Only 12% of population with adequate sanitation facilities
- 46% of population malnourished
- 40% living on less than \$1 per day



The Impact of Decisions

Jeanne Dillner

Patients are at the mercy of the medical system in developing countries. During our October visit to Ethiopia, we met Bethelehem, pictured below, 3 months after her accident. She had fallen three stories, where she lay frightened and in pain for 6 hours before she was found. Her family put her in the back of a taxi to transport her to the nearest hospital. The first hospital took an X-ray which revealed a hip fracture and placed a cast on her leg that ended at the level of the fracture. This cast only increased her pain. Her family then took her to a private hospital which had the implants to stabilize her hip. Un-

to me her fear when she thought of living in pain and disability for the rest of her life. She told me that she came to the Black Lion Hospital because she had heard of the excellent care and as a government hospital, the treatment would be affordable. SIGN surgeon, Dr. Woubalem, recognized the severity of the problem and presented her case at the SIGN clinic. Our prayer for these surgeries is that we do not ask that they be easy, but that they just be possible. One of our missions during this visit was to train the surgeons to use the new SIGN Hip Construct device. The timing of our visit was critical to Bethelehem.



Bethelehem relaxing with her mother after surgery.

One day after the SIGN Hip surgery performed by Drs. Biruk and Zirkle, she is recovering with her mother beside her. The pain is replaced with her sensation of a stable hip and femur and the hope of a brighter future.

fortunately, she could not afford the surgery so the doctors applied a body cast and sent her home. Her fracture did not heal. Normally a cheery person, her face tightened with emotion as she described

Discussions we have during all of our site visits illustrate that surgeons are inquisitive, enjoy in-depth research and revel when in the company of others who are as passionate as they about building and sharing their knowledge. The best teachers are open-minded, persistent, global thinkers, communicate often and well, and enjoy collaborating with others - no matter their age or experience. This was evident in the operating room as well as the discussions about patients during the outpatient clinics.

The AIC Kijabe Hospital - Kijabe, Kenya

Jeanne Dillner

Kijabe, a picturesque town located on the edge of the Great Rift Valley about 50 km from Nairobi, the capital of Kenya. Kijabe is Masai for "Place of the Wind". This small town was selected by medical missionaries to establish a hospital for visiting medical personnel because the altitude and wind are natural deterrents for the Anopheles mosquito which causes malaria. The original building was opened in 1915 and has since grown to become a leading referral hospital for south-central Kenya. In 1998, Scott Harrison, founder of CURE International, selected Kijabe as the site for CURE's first pediatric hospital. He positioned the CURE hospital next the Kijabe Hospital to allow the two facilities to combine resources, including the expertise of visiting and local medical personnel. Encouraging collaboration between a hospital that treats pediatric deformities and one that treats trauma is wise as these two conditions are prevalent in developing countries.

These dedicated medical workers get much of their training from volunteers who visit Kijabe for anywhere from 3 months to several years.



Dr. Timothy Mead with a pediatric patient from CURE.

The Kijabe hospitals attract volunteers from several U.S. universities, including Vanderbilt, who at the time of our visit, had sent a team of anesthesiologists to train qualified nurses to become nurse anesthetists. Lack of anesthesia is a contributing factor to the growing backlog of trauma patients. Training the nurses to give spinal and monitor the patients, under the direction of a physician, is a viable means to improving surgical turnaround in developing countries.

The benefits of having long term volunteers from developed countries provide ongoing training is reflected throughout

the hospital. The operating room is where their influence is most apparent to us. The operating rooms were well equipped, good sterile technique was practiced, the nurses knew the surgical instruments and could anticipate the surgeon's next move, and the anesthesia was timely. All these factors contributed to reduced surgical time for the patient, and quicker turnaround times in-between patients allowing for more patients to be treated.



SIGN surgeons Dr. Otieno (L) and Dr. Henri (R) listen carefully as Dr. Zirkle explains the SIGN Hip Construct.

The African orthopaedic patients are in good hands with the current and future leaders in orthopaedics.

The leaders of these two hospitals have created an environment of continuous improvement. This was demonstrated to me very early one morning at the Kijabe Hospital when 40 nurses and medical technicians asked me to teach them how to use the SIGN IM Nail System. They wanted to know what each instrument was used for and the order in which they were used. I was very impressed with their questions and encouraged that they wanted to know how to maintain the system as well. Good maintenance protocol is atypical for most developing countries.

The orthopaedic leaders at Kijabe include Tim Mead MD, CURE orthopaedic surgeon and Tobias Otieno MD. They are mentors to the CURE orthopaedic residency program which serves both hospitals. Dr. Mead is enthusiastic about teaching the residents and helping them to formulate a vision for the future of orthopaedics in Kenya and surrounding countries. Under his leadership, the residents are learning excellent surgical skills, a sound foundation of orthopaedic knowledge and the confidence to use their skills to build orthopaedic teaching programs throughout

the region.

Running an orthopaedic program also requires the development of good management skills. All SIGN programs must report their cases onto the surgical database in order to receive replacement implants and instruments. These reports should be made soon after the surgery or the information will get lost. Like most programs, Kijabe residents were assigned the task of entering the cases. For a time, the residents fell behind in this duty, so their supply of implants dwindled. Dr. Otieno realized that reporting the cases needed to be done by someone who was given the time and training to accomplish this task each day. He has trained Ann, a nurse assistant, to record all of the cases, including pre and post operative x-rays. With her help, the cases are now reported within 48 hours of surgery. As a result, their supply of implants and instruments are no longer at risk.

Each teaching program is different but there are many common features.

These include leaders who are good surgeons and good teachers, orthopaedic residents who are creative and want to learn the principles of orthopaedic surgery, and access to a ready supply of orthopaedic implants and instruments so they can implement their skills.

Double your gift today!
You can change
2 lives with just \$100

A special fund has been set up at the Seattle Foundation which will match all donations made to SIGN by December 31, 2010.

Please mail your donations to
SIGN or Donate online at
www.sign-post.org



The Seattle
Foundation

Black Lion Hospital - Addis Ababa, Ethiopia

Jeanne Dillner



SIGN CEO Jeanne Dillner (L) with SIGN surgeons Dr. Woubalem (C) and Dr. Biruk (R).

Until 18 months ago, the orthopaedic department of Black Lion Hospital was known for its low morale and poor infection control. For several years the surgeons had requested that a SIGN program be started at their hospital. Due to these negative reports, their requests were turned down. When Dr. Zewde Woubalem became chair of the department, she started to write more pointedly about the need for a SIGN program. She mentioned the numbers of patients they were receiving, the discouragement of their residents at the few options they could offer their patients, and the extremely crowded wards which contributed to the high infection

rate. Each email she sent told a story about the improvements they were making in the hospital. The speed at which the changes were taking place revealed the caliber of leadership that was in place. In fact, Black Lion is the first East African hospital to obtain IRB accreditation. Her stories made it clear that we should give the surgeons at Black Lion the chance to prove themselves.

With more than 200 hospitals using SIGN, Dr. Zirkle and I now reserve our travel time for disaster relief or to visit the sites that qualify to participate in pilot studies of new instruments and implants such as the SIGN Hip Construct and Pediatric nail. Thanks to Dr. Woubalem's leadership, Black Lion became one of the best programs in reporting and has the highest follow-up percentages. Dr. L.W. Biruk, who is a fine surgeon and teacher, learned the SIGN technique well and has passed on his enthusiasm and that training to the residents. Their cases reflect excellent surgical skills. For these reasons we decided to start a pilot program for the SIGN Hip Construct at their hospital.

The residents are eager to do rounds in the emergency room because they know they can offer their fracture patients a better result.

Our first day at Black Lion was affirming and humbling. Dr. Woubalem, Dr. Biruk and the other professors passionately described their discouragement prior to becoming a SIGN program and contrasted that with the positive impact that SIGN has had on their teaching program and patients.

Dr. Biruk told us about the vast numbers of injuries caused by the increase in motorbikes and the poorly trained taxi and bus drivers. Dr. Woubalem spoke of the breadwinners who had lain in traction for months unable to return to work to fend

for their families. Their colleagues told us that the residents used to dread going to the emergency room because they knew they had little to offer the patients but traction. Without the implants and instruments needed to fix these fractures, they could not offer their residents complete training and their patients suffered.

The significance of our decision to start a program at Black Lion was enlightening and humbling. We chose to entrust them with a starter kit based on the sincerity and persistence of Dr. Woubalem's emails. Our decision to trust these surgeons impacted the morale of the leadership which spread to the residency program and has benefited hundreds of patients and their families.

The Black Lion Hospital is the only official residency program in Ethiopia. Each resident is sponsored by a hospital located in a rural part of Ethiopia. They are obligated to serve at the sponsoring hospital for two years before taking a post at a larger government or a private hospital. Drs. Woubalem and Biruk have developed a culture of open exchange of ideas which encourages and develops the residents' thirst for knowledge. This daily exchange not only develops their medical knowledge and skills, but it also develops a habit of collaboration which they can continue via phone or email while in the rural location and for the remainder of their careers.

As a result of our decision, the orthopaedic leadership is energized. Dr. Woubalem has turned her persuasive energy towards obtaining a dedicated orthopaedic operating suite. Dr. Biruk, who enjoys research and surgery, is engaging the residents in several interesting studies.



First year residents show off their skills during a SIGN surgery.



Decision Making in Developing Countries



Lewis G. Zirkle, MD
President & Founder

[This article is stimulated by my contemplations about how to be an effective teacher.]

SIGN is an educational organization that manufactures and donates the orthopaedic instruments and implants to implement the education received. Patient results depend on the problem solving ability of the surgeon as well as the quality of our instruments and implants. We must therefore evaluate the process of information exchange between surgeons. Evaluation of surgical results is done on a daily basis by reviewing reports including x-rays on the SIGN surgical database. This evaluation is objective. Evaluating the quality of education and how decisions are made is more subjective

I had a chance recently to observe and participate in developing the problem-solving abilities of myself as well as the resident orthopaedic surgeons in Ethiopia and Kenya. The enthusiasm of residents discussing orthopaedic subjects and anticipated patient results was contagious. Each SIGN program has a different process for determining the patient care for each patient. Every program has developed its own conventional wisdom. Examples include use of external fixation versus intramedullary nail for stabilization of open fractures, treatment of infection and timing of weight bearing after surgery.

O orthopaedics is a specialty with many alternative methods of treatment plans to guide a fresh fracture to a healed fracture. These choices account for the plethora of orthopaedic devices available in United States to treat different types of fractures. The SIGN system uses the principles we all must follow but the system is used without C-arm or consistent electrical supply. It has now become the conventional treatment in many developing countries. There is a danger that we could become complacent. This

complacency is quickly shattered by discussions with residents in training who ask very probing questions. Complacency must also be avoided in our interaction with surgeons

shortly after in the Cuban missile crisis. I remembered this as the residents, staff and I learned together in conferences and in surgery.



Simultaneous femur operations performed in Kijabe Hospital



Pre-operative x-ray.



Post-operative x-ray.

in training.

After discussions with these residents in Ethiopia and Kenya I realized that the process of decision-making was more important than the actual decisions made in a teaching program. There is an inadequate supply of orthopaedic surgeons in Africa so these young surgeons will rapidly become the leaders of orthopaedics in Africa. They are already developing methods of expressing their views.

The importance of studying the process of problem-solving was reinforced by reading how President Kennedy made a poor decision regarding the Bay of Pigs invasion of Cuba. Fortunately he had the insight to examine the reasons for this decision. He consulted former President Eisenhower who informed Kennedy that he should examine the process of how the decision was made rather than the decision itself. Kennedy's decision-making process proved successful

A big factor in conferences is how the older surgeons respect young orthopaedic surgeons. Who makes the decisions? In many programs the pre-op decisions are dictated by the chief who may not be the most capable person. In Ethiopia and Kenya the young surgeon's opinion was valued. The leaders had enough confidence to listen and seriously consider the young surgeon's ideas. I watched the interaction between the residents and the teaching staff. The issues were discussed on a cognitive rather than an emotional basis. I could see the combination and sometimes conflict resulting from using examples from the orthopaedic literature combined with intuition of personal experience. We cited other disciplines such as engineering, chemistry and biology, which are all involved with fracture healing.

In developing countries the surgeons must rely on creativity to achieve equivalent results for patients in the United States.

Surgeons in developing countries are not limited by lack of equipment such as C-arms in the operating room. An example occurred in Kijabe, Kenya involving a 37-year-old lady that we helped unload from the car that had taken her to the hospital. She was one of 9 people in a mini bus that had run off the road and tumbled down a cliff killing 4 people. She did not complain of pain as we lifted her from the car to the gurney. She had bilateral fractured femurs. Later in the week we operated on these femurs simultaneously. On one side a closed reduction of the distal femur fracture was done without C-arm. For the other side a very minimal incision was made to guide the reamers and the nail into the proximal fragment. This technique was not described in the SIGN technique manual. The surgeons were not limited by past experience or conventional wisdom.

Continued on page 5...

Decision Making continued...

Another example of their skill involved a missionary who had a large infected bone defect in her femur after being shot with an AK-47. The bone defect was being replaced with bone by a bone transport system which was equivalent to bone transport systems in United States. Donated Orthofix systems which had been given to attendees of the SIGN conference were used. I was very impressed with the result.

This two-week period of orthopaedic immersion with many surgeons seeking knowledge to improve the orthopaedic care of their patients was exhilarating. They stimulated me to think about the decision making process. In United States we talk about using evidence-based medicine and use meta-analysis studies to make decisions. This makes the decision-making process passive because it is being done by someone else who summarized in the literature. Is this optimal? This is but one of the methods orthopaedic surgeons can use to develop treatment plans. The evaluation of our decision-making process should be a lifetime goal. We can learn much by observing outstanding residents learn problem solving in orthopaedics

The difference between an expert and a creator in orthopaedics is cogent to this discussion. The expert knows the facts



Dr. Zirkle and SIGN surgeons learn by lectures as well as by hands on surgery for the best means of fracture treatment.

and can implement these facts in surgery as well as other treatments of the patient. The creator knows as much as the expert but lives in constant discontent with the status quo.

I introduced our new hip fixation device enthusiastically 18 months ago in Kenya and was surprised when the chief of orthopaedics at Kijabe told me that he was skeptical when he first heard about this new concept during our previous trip to Kenya. I was delighted because he was honest and open to new ideas. We discussed this in our conference. After using the SIGN SHC to stabilize hip fractures, he became an

advocate for its use and wants to do studies comparing the different treatments of hip fractures with SIGN SHC because they have access to a C-arm.

In the operating room the decision-making process must be different from discussions during a conference. Decisions in a conference can be made in a leisurely fashion as in playing golf but decisions in surgery must be made quickly as in playing soccer. There must be a definite hierarchy and a chief surgeon who will make the decisions.

Many factors play a role in the decisions a surgeon must make quickly. Intuition must be balanced by analysis. Analogy plays a role as we all remember past experience and past surgery. We must recognize patterns as well as what is different about the present surgery. What worked in the past?. Is this personal or vicarious analogy? Remember that fracture healing is a complex process with many variables. Case methods and the literature provide us with vicarious experience in different situations. Decision making is not linear. We must sort out conflicting signals and understand the connections and act promptly. This is true in product development and other aspects of our lives.

Searching for Excellence

SIGN's growth depends on finding programs which are filled with excellent teachers who can ignite a passion for orthopaedics in their students. We met such teachers and students while visiting Black Lion Hospital in Ethiopia and Kijabe Hospital in Kenya.

Without access to appropriate equipment, practicing orthopaedic surgery in a busy trauma hospital is like trying to mass produce clothing without a sewing machine. The factory is hard pressed to find enough employees who will agree to hand stitch the clothing when they know the factory next door has modern sewing machines which produce clothing faster and with more consistent quality. Likewise, with inadequate tools to perform surgery, residency programs in developing countries cannot attract the quantity nor the quality of young medical students needed to build the orthopaedic capability required to treat the growing number of road traffic injuries that occur each day. These young men and women need to be in a program that will give them the opportunity to gain the knowledge and develop the skills required to treat their patients with good results. Successful leaders in the orthopaedic departments of these hospitals persistently seek creative ways to gain access to the equipment, operating rooms and teaching opportunities desired by the best residents.



(L-R: Resident Dr. Hailu, Dr. Biruk, Bethlehem, Dr. Zirkle)

Patients like Bethlehem and residents like Samuel Hailu learn from enthusiastic teachers such as Dr. Biruk and Dr. Zirkle.

My father used to say,

“You can spend a lot of time making money. The tough time comes when you have to give it away properly.”

How to give something back, that's the tough part in life. — Lee Iacocca



Families Helping Families

Jeanne Dillner

This is the time of year that people focus on giving. Whether it be gifts for family and friends or donations to their charities of choice, millions of families are making decisions to give. The season of giving has made me curious about the impact that parents have on the propensity of altruism in their children. Two books helped to answer that question. *Showing Up for Life* by Bill Gates Sr. and *The Power of Half* by Keven Salwan and his daughter, Hannah Salwan describe how the culture of giving back was modeled for their children through the actions of their parents. The parents' actions imbedded in their children a sense of responsibility to serve the less fortunate. While these two families' resources were vastly dissimilar, the parents of both families support their children's wish to give back in a more powerful way. It's public knowledge how Bill Gates Sr. supports his son and how their family is improving the health of millions. In the less well known story, Kevin Salwan describes how their daughter Hannah, a teenager, awakens the entire family to the knowledge that their relative opulence could be used to the benefit of poor families in Africa. The book tells the story of how her parents guide she and brother through the decision to give up their home to support Hannah's dream of building a better future for families in an African village. It's intriguing that a teenager would think of giving up comforts of her middle class life to help families that she had never met and encouraging to see how her parents nurtured that dream. Both books are worth a read.

During a recent fund raiser for SIGN, I was deeply impressed by the generosity of our long term and new supporters. One donor joked that his gift would come out of his son's inheritance, and that his son had already approved of the gift. This statement made me realize that the room was filled with families who made the decision to give a healing hand to families across the globe. The benefactors of these impoverished families will never meet the recipient or receive a thank you note from them, yet they gave enough money to start a new program which will benefit hundreds of families worldwide. We thank you on behalf of the 19,000 families that have benefited from SIGN surgeries in 2010.

Every \$100 provides a healing surgery that impacts a family of five.

Will you give a healing hand today?

DONATE TODAY

Your support is essential to restoring mobility in patients and reuniting families across the globe.



How you can help

Show your support for SIGN today...

1. **With a safe, secure online donation.** Make your gift to SIGN by using PayPal which protects your financial information. Go to www.sign-post.org and click on **Donate**.
2. **With a matching donation.** Ask your employer if your donation can be doubled with a matching gift from your company.
3. **With a holiday gift.** Give a donation in honor of a friend or family member and know that your gift will provide happiness for someone else around the world.