

International Outreach Program
Zambia
June 2009
June 5 – June 20, 2009

Partnership:

American Burn Association (ABA)
Children's Burn Foundation (CBF)
St. Francis Hospital; Katete, Zambia

Team:

Nathan Kemalyan, MD, FACS; Oregon Burn Center, Oregon
Kristin Koch, OTR; formerly UCSD Burn Center, California
Keely Quinn, Program Director; Children's Burn Foundation

Background

St. Francis Hospital in Katete, Zambia is a 360 bed district mission hospital in Eastern Province. The hospital's immediate service area has a population of approximately 200,000 people. St. Francis is the primary district hospital in the Eastern Province and therefore provides secondary care to a geographic area with a population of 1.4 million. The hospital's surgical ward receives approximately 80 inpatient burn admissions annually. Burns are primarily seasonal and occur to children and adults primarily due to cooking (scalds) or open fires in their home (flame). Burns of greater than 20% Total Body Surface Area (TBSA) are considered life threatening; the threshold for most developing countries is usually 40% TBSA. In the U.S., people often survive burns of more than 80% TBSA.

St. Francis was identified as a site through the ABA/CBF/Health Volunteers Overseas International Outreach burns education program after an initial assessment was conducted in 2005. The hospital is run by the African Anglican and Catholic dioceses and features a nursing college and medical volunteer opportunities including an elective for medical students from abroad.

St. Francis is led by the Executive Director, Dr. Shelagh Parkinson, who has been at the hospital since 1998. Dr. Parkinson, the chief surgeon of the surgical ward, the director of nursing and the senior anesthetist have shown enthusiastic support for the burns training and education provided through the program. During the June 2009 medical mission, the visiting team was invited to speak at the hospital's clinical meeting, participate in grand rounds and provide lectures to nurses and nursing students while providing instructive demonstrations to the physical therapist and in the operating theater.

Prior trips in 2006 and 2008 resulted in the planning of the men's and women's burn units as well as the opening of the women's burn unit.

Program Goals

The long-term goal for the International Outreach Program at St. Francis is to improve burn care to patients thereby reducing mortality and morbidity. (See Figure 1) Over the next 3-5 years, the program

will provide burns education teaching , sustainable translatable burn care that will prepare St. Francis medical staff and improve the functional outcomes of burns with 10-25% TBSA. Secondly, to improve survival rates of burns up to 40% TBSA with successful outcomes as to functionality and quality of life.

Figure 1

Zambia Outreach Program Long Term Goals

Final Goal	Result	What: Description	Caused by Whom	Claimed by Whom	Time-Frame	Examples of objective by level
Final Goal	Impact	Improve burn care to patients at St. Francis Mission Hospital	Prepared medical staff and nurses of St. Francis	Educational teams from ABA/CBF	3-5 years	Reduce mortality and morbidity/ improve survival rate to burns of 40% TBSA or greater.
Intermediate Goal	Effect	Increase knowledge of burn care/management by medical staff and nurses at St. Francis	Medical staff and nurses of St. Francis	Sustainable education from ABA/CBF	within life of project estimated at 3-5 years	Medical staff and nurses demonstrate competence and understanding of burn care/management in all areas (wound care, surgery, physical/occupational therapy, nutrition)
Output	Output	Knowledge of Assessing burn severity	Educational teams from ABA/CBF	Sustainable education from ABA/CBF	within life of project estimated at 3-5 years	Surgical staff, nurses and nursing students at St. Francis provided burns education
Output	Output	Knowledge of Special Types of Burn Injury	Educational teams from ABA/CBF	Sustainable education from ABA/CBF	within life of project estimated at 3-5 years	Surgical staff, nurses and nursing students at St. Francis provided burns education
Output	Output	Knowledge of Fluid Resuscitation	Educational teams from ABA/CBF	Sustainable education from ABA/CBF	within life of project estimated at 3-5 years	Surgical staff, nurses and nursing students at St. Francis provided burns education
Output	Output	Knowledge of Skin Grafting	Educational teams from ABA/CBF	Sustainable education from ABA/CBF	within life of project estimated at 3-5 years	Surgical staff, nurses and nursing students at St. Francis provided burns education
Output	Output	Knowledge of Pain Management	Educational teams from ABA/CBF	Sustainable education from ABA/CBF	within life of project estimated at 3-5 years	Surgical staff, nurses and nursing students at St. Francis provided burns education
Output	Output	Knowledge of Wound Care/Infection Control	Educational teams from ABA/CBF	Sustainable education from ABA/CBF	within life of project estimated at 3-5 years	Surgical staff, nurses and nursing students at St. Francis provided burns education
Output	Output	Knowledge of Minimizing Contracture and Promoting Range of Motion	Educational teams from ABA/CBF	Sustainable education from ABA/CBF	within life of project estimated at 3-5 years	Surgical staff, nurses and nursing students at St. Francis provided burns education

Output	Output	Knowledge of Nutritional Needs	Educational teams from ABA/CBF	Sustainable education from ABA/CBF	within life of project estimated at 3-5 years	Surgical staff, nurses and nursing students at St. Francis provided burns education
Output	Output	Implementation of early wound excision & grafting	Educational teams from ABA/CBF	Sustainable education from ABA/CBF	2 years	Surgical staff, nurses and nursing students at St. Francis provided burns education
Output	Output	Hand washing is common practice by medical staff and visitors	Educational teams from ABA/CBF	Sustainable education from ABA/CBF	2 years	Surgical staff, nurses and nursing students at St. Francis provided burns education
Output	Output	Increased access to supplies as noted on supply list	International Outreach Committee - ABA	International Outreach	1-2 years	Equipment/supplies procured
Output	Output	Compilation of minimal database set for burn consistent with WHO	Program management staff - CBF	International Outreach	12 months	Database delivered and maintained
Activity	Process	Sustainable education	Educational teams from ABA/CBF	Sustainable education from ABA/CBF	3-5 years	Didactic lectures on burn topics and hands on demonstrations on twice yearly missions to St. Francis
Activity	Process	Open men's burns ward	St. Francis Hospital	St. Francis Hospital	Assessed in 12 months	Male burns patients admitted to burns ward
Activity	Process	Implement burn protocols	Educational teams from ABA/CBF	Sustainable education from ABA/CBF	1-2 years	Deliver burn protocol posters and flip books for the wards
Activity	Process	Incorporate supplemental burns education within the nursing school curriculum	Educational teams from ABA/CBF	Sustainable education from ABA/CBF	1-2 years	Didactic lectures on burn topics and hands on demonstrations on twice yearly missions to St. Francis
Activity	Process	Evaluate feasibility of prevention through schools	Educational teams from ABA/CBF	Sustainable education from ABA/CBF	1-2 years	Meetings with Department of Public Education and Tikodane to identify partnership opportunities
Inputs	Input	Educational Burns teams	Educational teams from ABA/CBF	Sustainable education from ABA/CBF	3-5 years	Medical personnel deliver expert education on burns
Inputs	Input	Needed supplies	International Outreach Committee - ABA	International Outreach Committee - ABA	1-2 years	Assist with contacts and procuring donations of needed supplies where possible.

Goals for the 2009 June Mission included:

- Assess the men's burn ward
- Increase knowledge of burn care/ management by providing burns education in
 - Wound management
 - Surgical procedures
 - Physical and occupational therapy
 - Positioning
 - Ranging
 - Mobility

General Environment

Prior to reviewing the results of the International Outreach Program, it is useful to have some basic reference points for the current healthcare environment in which St. Francis operates.

- Poverty is an overlying commonality, and patients are provided medical care (treatment and medication) free of charge.
- The patient population represents a variety of languages and dialects as patients travel from throughout the Eastern Province as well as from neighboring countries Malawi and Mozambique.
- Patients may be illiterate; it is not uncommon for a patient not to know his or her age. Parents may not know their child's age.
- Private hospitals are limitedly available in Zambia for those who can afford them. There is no health insurance available. The lowest strata are government hospitals that provide care on a fee basis. UTH in the capital city of Lusaka is considered one of the best public hospitals in the country; however the hospital lacks the supplies necessary to perform surgery.
- It is not unusual for the power at the hospital to go out on a daily basis. The operating theater does work on a generator for lighting and vital statistics monitoring machines. All other electrical surgical tools including the cauterizing machine and the autoclave for sterilizing instruments are nonfunctioning during power failures.
- In June, 2009 the Zambian Ministry of Health was accused of a million dollar fraud scam which has caused many international donors to withhold funding. This has reduced the funding for St. Francis, which relies on funding from the ministry, by 90%.
- Due to medical and annual leaves as well as trainee turnovers, staffing shortages were extreme, particularly in nursing and physical therapy.
- Scald burns related to cooking and flame burns due to open fires are the primary cause of burns to children and adults. In the winter months, the incidence of burns increases due to open fires in huts for warmth.
- Burns to epileptics are an issue in Zambia and throughout Africa. These burns are usually quite deep and extensive because people will not help a seizing victim who falls into the fire because of local beliefs that epileptics are possessed by demons/evil spirits.
- Delays in seeking medical treatment are common. Patients often turn to the tribal bush doctor for treatment which may include herbal or home remedies, prayers and/or spells.

2009 Mission

The 2009 mission occurred June 5 – 21 with 10 days of burns education occurring at St. Francis.

The mission was helmed by Dr. Nathan Kemalyan of the Portland Burn Center who provided didactic lectures and demonstrations to surgical and medical staff as well as lectures presented to nurses and nursing students. Dr. Kemalyan worked extensively with the registrar on surgical cases. Kristin Koch, previously of the UCSD Burn Center, is a licensed occupational therapist and provided educational support to the Physio Department including positioning, range of motion exercises and splinting. She also spent time in the burn wards providing hands-on demonstration and instruction to nursing, patients and family members. Children's Burn Foundation staff member Keely Quinn accompanied the team to arrange lecture sessions, assist with teaching opportunities and assist the team with logistics both in

country and at the hospital (board and day-to-day operations). She also collected data through observation and interview to document the site's progress in burn care.

Assessment of the Men's Burn Ward

The men's burn ward opened immediately prior to the visit of the medical team. The 6 bed unit met basic needs as outlined by the previous visiting team's recommendations. Needs included: heating in the room, access to water, bathing facilities, sheets and blankets. Special requests for Silver Sulfadiazine were per doctors written orders, but the SSD was not stored in the burn ward. A review of basic needs in the wards included the following observations:

Electric wall heaters – Effectively heated the room

Access to water – A hand sink is in the ward and sinks are in the shower room. The sink in the ward was not working when the team arrived; however, after reporting the problem to the hospital administrator, all water taps worked.

Bathing facilities – The showers and sinks worked in the shower room.

Sheets and blankets – Sheets and blankets were available for each bed that was in use. Sheets unless soiled were not changed on a daily basis. Washing of sheets and blankets is not regularly scheduled.

Mosquito nets – Mosquito nets are not currently used in the burn ward.

Dedicated supplies for the unit - Currently supplies are shared between the surgical and burn wards. It appears to be unrealistic to have dedicated supplies for the ward. The supplies that the visiting team brought were given to the physio for distribution as there was concern as to whether items would be used for patients or not.

Increase Knowledge of Burn Care/Management

There were several challenges that impacted the medical team's ability to increase the knowledge of burn care at St. Francis that will be discussed in detail later. Surgical procedures and physical therapy demonstrations were provided to relevant staff, i.e. the surgeon and physio, and formal lectures were provided to the hospital staff, nursing students and nurses. The burn team also attended clinical rounds on the men and women's surgical wards.

Essential Concepts in Burn Care was presented at the hospital clinical meeting:
June 16 – 22 in attendance

Burn Care for the Nurse Practitioner was presented to senior nursing students:
June 12 – 33 in attendance

Essential Concepts in Burn Care was presented to nurses:
June 16 – 7 in attendance
June 18 – 3 in attendance

Impact on Patient Care

Perhaps the most effective interaction of the June, 2009 mission was in the physio department. Kristin Koch worked extensively with Leonard Banda who at the time was the sole physiotherapist working at the hospital. His colleagues were out due to illness and maternity leave. Mr. Banda was provided with a comprehensive protocol book which outlines positioning and exercises for the burn patient. He was also able to contribute to the team's efforts to involve nurses and family members with proper positioning of patients to prevent burn contractures. Together with Ms. Koch and Ms. Quinn, a poster of proper positioning was developed and will be presented for use during the mission in August. A brief survey of nurses indicated that the majority of nursing staff in the surgical wards did not understand the importance of positioning a burn patient and could not identify the best positions for each joint area.

Dr. Kemalyan produced a draft document for burn admission orders which should be reviewed by Dr. Yapp and the hospital administration during the August mission. This document should help in setting a basic standard for inpatient care. Current admission orders are extremely variable, due to the variable knowledge and training of the licentiates, or medical officers.

Observations & Changes at St. Francis as a Result of On-site Education

These observations are documented in Figure 2.

Date of Mission	Prior to Outreach Program	Desired Change	Status	Impact	Method of Measurement
2006	Sterilized, bulky dressings	Clean, thin dressings	Beginning to implement	Improved patient comfort & mobility.	Observation & Interview
2008			Beginning to implement	Improved patient comfort & mobility.	Observation & Interview
June, 2009			Wounds were left open, covered with minimal dry dressings, treated with NS soaks.	Patients often lose dressings or are uncomfortable due to open wounds.	Observation & Interview
2006	Use of saline soaks for dressings/No topical antimicrobial	Use of Silver Sulfadiazine	Beginning to implement	Reduced infection/improved comfort.	Observation & Interview
2008			Beginning to implement with visiting team's presence.	Wounds were infected and smelly prior to change	Observation & Interview
June, 2009			Saline soaks. If doctor ordered there would be limited use of silver sulfadiazine. Pharmacy indicated supply was available.	Bandages were often dry and wounds would be painful when trying to remove bandages.	Observation & Interview
2006	Cleaning of wounds at the bedside	Daily showers & dressing changes	Beginning to implement	Decrease in infection and improved graft results.	Observation
2008			Beginning to implement with visiting team's presence.	Decrease in infection and improved graft results.	Observation & interview

Date of Mission	Prior to Outreach Program	Desired Change	Status	Impact	Method of Measurement
June, 2009			Not occurring. Nurses reported that there was insufficient water pressure for showers and that baths were better, however they did not have time to give patients baths. Hospital administration encouraged showers and said water pressure had been addressed. While no showers, visiting team did notice that wounds had been washed, cleaned and were free of eschar.	Infection appeared to be less than previous missions. Patients overall were unclean.	Observation & interview
2006	Betadine for cleaning wounds	Simple soap	Beginning to implement	Improved comfort, better for wound and no increase in infection rate.	Observation & interview
2008			Beginning to implement with visiting team's presence.		Observation
June, 2009			Inconsistent occurring	Wounds are clean, but soap is less caustic to the wound.	Observation
2006	Use of bed cradles	Eliminate bed cradles	Resistant	Improved patient mobility.	Observation
2008			Resistant		Observation

Date of Mission	Prior to Outreach Program	Desired Change	Status	Impact	Method of Measurement
June, 2009			Resistant: nurses explained that the cradles keep the sheets off the wounds and prevent soiling of sheets. Hospital cannot replace sheets on regular basis, so they keep them as clean as possible with bed cradle use.	The goal of eliminating bed cradles should be revised or eliminated based on the current information.	Interview
2006	Nutrition now well monitored	Regular monitoring of patient's nutritional intake; nutritional protocol used and use of NG tube when needed.	Occurs seldom	Poor nutrition/health of patient	Observation & Interview
2008			Occurs seldom	Patients may receive nutritional supplement through a powdered milk formula. It was observed that many patients refused to drink it.	Observation

Date of Mission	Prior to Outreach Program	Desired Change	Status	Impact	Method of Measurement
June, 2009			Occurs seldom	Discussion with hospital administration led to suggestion of using nutritional supplement Plumpy'net which is easily available. Budget constraints led to hospital providing only 2 meals daily. Patients depend on family for food. Often times the food was observed to be junk food such as sodas and cookies.	Observation & Interview
2006	Delay surgery - sloughectomy/graft after granulation tissue	Early surgery/single stage excision & grafting	Occurs rarely	Decrease in infection and improved graft results.	Self reported
2008			Occurs rarely		Interview
June, 2009			Occurs rarely	Patients have extreme delays before surgery occurs	Observation & Interview
2006	Cool temperature in operating theater	Monitoring and proactive heating of patient	Occurs never	Puts patient at risk	Observation
2008			Occurs never		Observation
June, 2009			Occurs never		Observation
2006	No established protocol of burn management for nurses	Written protocol at nurses station		Improved patient care	Observation
2008			To be provided by ABA/CBF		
June, 2009			Not yet completed		

Date of Mission	Prior to Outreach Program	Desired Change	Status	Impact	Method of Measurement
2006	Pain management not addressed in dressing changes and physical therapy.	Pain management prescribed for dressing changes and physical therapy.	Occurs never	Pain, discomfort and distress for the patient	Observation
2008			Occurs rarely		Observation & Interview
June, 2009			Occurs rarely	Staff including physio is hesitant in providing care because they don't want to cause the patient pain. Nurses do not want to disturb patients and get them out of bed because they are in pain if they move. Discussions with hospital administration confirmed that oral morphine is readily available but not often used.	Interview
2006	Physical therapy incorporated in burn management	Patient & family display knowledge of basic physical therapy exercises and positioning.	Need to begin	Improved functional outcome and less taxing on physio department.	Observation, interview and self reported
2008			Need to begin		Observation & interview
June, 2009		Incorporate physical therapy as part of the healing regimen for burn patients	Occurs sometimes	Staffing shortages have resulted in physio not have the time to visit the burn wards. Physio is not being prescribed to patients. Contractures and loss of function occur as a result.	Observation, interview and self reported

Challenges

The June, 2009 visiting team's failure to identify, target and interact with key long-term staff members in surgery and nursing to achieve sustainable improvement in burn care limited outreach effectiveness. The attending surgeon was away on leave due to health concerns, and several of the key nursing staff were either on leave or overwhelmed due to the hospital's immediate shortage of nurses. Also difficult was the constant turnover of trainee staff who carry out much of the work within the hospital.

Surgery:

The surgical case list was driven by emergencies, urgencies and the interest and skill level of the registrar, as well as a constant flow of patients who had been booked for admission from the clinic without listing them for elective surgery. Many of these individuals came from far away, so re-scheduling their admission was very problematic. As such, much of the available surgical schedule was filled and it was difficult to get existing burn patients into the OR. Several opportunities to teach surgical burn care were missed due to logistical issues in the operating room, intervening emergencies or the perceived higher priority of acute orthopedic cases and other non-emergent surgeries.

Physician Care:

Much of the medical care in the hospital is supported by visiting Zambian and western medical trainees who rotate through the hospital on a seasonal basis; at the time of the June mission there was a sizable collection of medical students, medical residents, nurse midwives and other practitioners from Ireland, England and New Zealand. These workers are all temporary, staying for as little as a few weeks up to 1 year or more. Their contributions have less chance of creating durable improvements in the standard of care delivered by local health care workers.

Much of the bedside care is also provided by local Zambian trainees, including nursing students, registrars from the University of Zambia and by licentiate and licentiate trainees, who become the frontline healthcare workers in rural hospitals and clinics throughout Zambia. They are roughly the equivalent of physicians assistants, and they make up the majority of the practitioner staff on the surgical units. During the June mission, all five of these individuals were leaving for permanent positions within 1-2 weeks. Their level of knowledge and skill in patient care is quite variable, although they appear willing to learn. They were not effectively deployed by the registrar, whose expectations of them led them to be intimidated, and they often disappeared when she was making rounds on the surgical units.

Nursing Care:

The staffing levels within nursing are at a bare minimum to carry out anything more than delivering medications and taking vital signs. Staffing is impacted by budgetary constraints, medical leave and annual leave which occurred during the June visit as well as the constant arrival and departure of nursing trainees who deliver a portion of the nursing care on the wards.

Physical Therapy Care:

The hospital therapy staff is currently limited to a single physiotherapist due to a medical leave and maternity leave by the other two staff members. Leonard Banda, the remaining therapist, is knowledgeable and interested, but has an overwhelming workload between clinics, production of crutches and walkers on demand, and attention to all of the inpatient units of the hospital. It is unreasonable to expect that he can devote much focused time to acute care therapy for burn patients, given the preponderance of orthopedic trauma and other ailments demanding therapy time.

The June mission emphasized the importance of regular outreach visits to promote changes in care. Any gains achieved during an outreach mission must be supported by an adequate frequency of visits from burn experts to reinforce practice standards and training. Otherwise, practice reverts back to a non-expert baseline due to multiple factors identified above.

Next Steps

The next mission to St. Francis is in August, 2009. The visiting team will meet the multidisciplinary needs of burn care including surgery, nursing, and nutrition as well as therapy support.

Children's Burn Foundation staff will work with the team leader to schedule prior to the team's arrival the lecture sessions in order to allow local staff to plan accordingly to attend these lectures. It is also recommended that hospital administration and the surgical department prioritize burn care during the time of the visiting team. Bedside rounds would benefit from the attendance of all disciplines: nursing, therapy, surgical and OR staff.

A draft document of burn admissions is attached to this report. This document should be supplied to hospital administration and the attending surgeon for review and, if approved, adopted by staff.

Posters of the correct positioning of burn patients will also accompany the team in August. The physical therapist Leonard will present this poster, with the endorsement and support of the visiting burn team, to the nurses in both burn wards. During dressing changes and rounds with nurses and medical staff, the visiting team will refer to these posters to encourage correct positioning to prevent contractures. The medical researcher accompanying the visiting team will interview St. Francis nurses at the end of the mission to determine if knowledge was improved in this area.

Dates for the 2010 visits are currently being discussed.

Conclusion

The resulting challenges faced during the June outreach mission serve to emphasize the critical need for visiting teams to have the ability to focus on and interact with all disciplines of the local staff in order to be effective. There is a critical need to focus on nursing care as the center of inpatient care. All aspects of inpatient care, outside of burn surgery, can be primarily carried out by nursing staff. However this requires adequate staffing, interest and motivation to raise the level of practice. Current nursing to patient ratios fluctuated between 1:12 to 1:40 due to staffing issues at St. Francis. Further discussion with the St. Francis surgical staff is necessary to determine how best to support the efforts of nursing while facilitating improvements in burn care.