International Outreach Program

St. Francis Hospital

Katete, Zambia

August 7-August 30, 2009

Partnership:

American Burn Association (ABA)

Children's Burn Foundation (CBF)

St. Francis Hospital (SFH); Katete, Zambia

Team members:

Barbara Latenser, MD, FACS; University of Iowa Burn Treatment Center (BTC), Iowa City, IA

Bridget Burke, MSN, ACNP-BC; Mercy Hospital, Des Moines, IA

Maggie Dylewski, PhD, RD; Shriners Hospital for Children, Boston, MA

Katie Hollowed, RN; Washington Hospital Burn Center, Washington, DC

Jason Heard, pre-med student and research assistant, University of Iowa BTC, Iowa City, IA

Background

St. Francis Hospital in Katete is a 360 bed district mission hospital in the Eastern Province of Zambia. The immediate service area has a population of 250,000. SFH is the primary district hospital for the Eastern Province and provides primary and secondary medical care to a geographical area with a population of 1.4 million. The surgical wards admit ~80 burn patients annually. Burns are typically seasonal and occur primarily due to cooking (scalds) and/or open fires in the home (flame). Burns of > 20% total body surface area (TBSA) are considered life threatening.

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

The Executive Director is Shelagh Parkinson, MD, who has been at SFH since 1998. Dr. Parkinson, Mrs. Seya, RN, director of nursing services, and Mr. Rodwell Banda, senior anesthetist, have shown enthusiastic support for the burns training and education provided through this program. Currently there is no identifiable surgeon or chief surgeon. The burn team was invited to speak twice at the hospital's weekly clinical meeting, participate in ward rounds, provide lectures to nurses and nursing students, and participate in burn dressing changes, demonstrating dressing change techniques.

There were ample opportunities for educational experiences in the operating theatre. Prior trips in 2006, 2008, and June 2009 resulted in planning of the men's and women's burn units and subsequent opening of these units with the men's unit opening in May/June 2009.

Program Goals

The primary long term goal for the International Outreach Program at St. Francis Hospital is to improve burn care, 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 the SFH medical staff and improve the functional outcomes of burns of 10-24% TBSA. The secondary goal is to improve the survival rates and outcomes of burns up to 40% TBSA.

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	within life of project estimated	Surgical staff, nurses and nursing students at St. Francis provided

				ABA/CBF	at 3-5 years	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 August 2009 trip:

Increase knowledge of burn care management by providing burns education

Nursing

- Provide education on basic burn care to nursing students
- Demonstrate dressing application to nursing staff and clinical officers
- Observe dressing application by nursing staff/students
- Convey the importance of early and frequent ambulation
- Identify the importance of following doctors' orders regarding nutritional supplements and daily meals

- Identify the need for daily showering with soap and water
- Identify the importance of daily linen changes
- Discontinue the use of bed cradles in burn patients

Wound management

- Assess wounds with our without grafts
- Choose appropriate dressings/topical medications
- Daily shower with soap and water
- Identifying the presence of infection

Acute burn management

- Calculate TBSA burn for all burn admissions
- Identify depth of burn injury
- Accurate and appropriate fluid resuscitation
- Develop and implement basic tables on fluid resuscitation

Surgical Management

- Early excision of wounds that will not heal within 14 days
- Management of hypergranulation tissue
- Wound debridement
- Donor site harvesting

Pain management

- Understanding that pain medications must be given prior to every dressing change, every shower, and before physiotherapy.
- Provide medications before therapies as scheduled.
- Encourage patients and families to ask for pain medication.
- Implemente other modalities of pain management (distraction, family soothing)

Physiotherapy

- Educate patients, family and ward staff on the purpose of splinting and positioning (preserve function, protect grafts)

- Display splinting posters in Musaka, Kizito, and OPD as developed by the June 2009 team
- Encourage use of splinting techniques immediately upon admission to the burn wards
- Frequent assessment of ongoing physiotherapy needs
- Identify proper positioning following a burn injury
- Daily range of motion for the affected area
- Ambulate three to four times daily
- Contractures
- Identify the direct correlation between contractures and the lack of daily physio (splinting and ambulation) and daily ambulation

<u>Nutritional needs</u>

- Identify available nutritional supplements
- Provide available nutritional supplements as ordered
- Identify increased nutritional needs for burn patients
- Educate family members who prepare food to provide appropriate food choices (high protein/calories)
- Identify food choices that are high in protein and calories
- Implement daily ambulation to prevent muscle atrophy, bone wasting, and preserve lean body mass

<u>General Environment</u>

- Poverty is an overlying commonality.
- Patients are provided medical care free of charge at SFH, including medical treatments and medications.
- The patient population represents a variety of languages and dialects as patients travel from throughout the Eastern Province as well as from the bordering countries of Malawi and Mozambique.
- Patients may be illiterate. It is not uncommon for a patient to not know his or her age; parents may not know their child's age.
- The availability of private hospitals is limited and available for those who can pay. There is no health insurance. The lowest strata are government hospitals that

provide medical care on a fee basis. University Teaching Hospital in the capital city of Lusaka is considered one the best public hospitals in the country; however the hospital lacks the supplies to sustain an operating theatre (operating room) and to perform surgery.

- It is not unusual to lose electrical power daily. The operating theatre is able to work on a generator for lighting and monitoring machines. All other electrical surgical tools, including the electrocautery and autoclave are nonfunctional during power failures.

- In June 2009, the Zambian Ministry of Health was accused of a fraud scam, resulting in international donors withholding funding. This reduced the government funding for SFH, which relies on funding from the Ministry, by 90%.

- Due to medical and annual leaves and trainee turnovers, staffing shortages are extreme, especially nursing, physiotherapy, and surgical services.

- Scald burns related to cooking and flame burns due to open fires are the primary cause of burns. In winter (June-August), the incidence of burns increases due to open fires used for warmth.

- Burns in patients with epilepsy are usually deep with a significant TBSA. Zambians will not help a seizing victim who falls into the fire because of the belief that epileptics are possessed by demons or evil spirits.

- Significant delays in seeking medical treatment are common. Patients often turn to the African bush doctor for treatment which may include herbal remedies, prayers, or spells.

August 7-30, 2009

There were five team members. Dr. Latenser served as the supervising surgeon. Most of her time was spent in the operating theatre and on burn rounds with the surgical resident or medical students. Bridget Burke and Katie Hollowed represented nursing. Bridget spent her time on burn and surgical ward rounds, operating theatre, burn ward demonstrations, and teaching at the School of Nursing. Katie spent her time on the men's and women's burn wards demonstrating dressing changes, proper wound care management, and teaching at the School of Nursing. Maggie Dylewski determined the nutritional needs of each patient and implemented available nutritional supplements to all burn patients as well as a few surgical patients. Maggie also helped in bathing and dressing changes on both burn wards. Jason Heard completed the data collection for the epidemiology study of burns 2002-2008 previously approved by SFH.

Nursing

We were invited by Ms. Seya to lecture at the School of Nursing. On August 13, Katie, Bridget and Maggie gave a lecture on wound assessment and management, pain management, physiotherapy, and nutrition. The lecture was given to 55 1st year students. The students appeared interested and asked insightful, intelligent questions.

Wound management

On our arrival, all of the patient's wounds were being dressed with saline or left open without bandages. Due to financial constraints SFH did not have any flamazine. Several days after arrival, a small supply of Silvo® (Silver sulphadiazine 1% + chlorhexidine gluconate 0.2%) was found. It was apparent that patients were not being showered or getting wound care daily. Due to time constraints, teaching one of the senior sisters how to bathe the patient and wash the wounds was difficult. Each senior sister is responsible for all 60 patients on the ward. SFH nursing students in their last semester of school were assigned to the burn wards and were fairly receptive to the teaching efforts. The need for washing the burn wounds daily with soap and water was explained. After several days of observation, the students started doing the bathing. Family members are an important part of the patient's care. With the help of the students as interpreters we began teaching the family members how to do the bathing. It was explained to the students and the senior sisters that the saline dressings needed to be re-wet every four hours. Silvo® supplies were limited so use was limited to wounds that appeared infected. Nursing staff learned how to make a "slurry" dressing which involves adding saline to the Silvo®, allowing it to go further.

The mothers of the children may have been cleaning the post-op wounds too vigorously. They were shown how to put a lot of soap on a wet wash cloth and squeeze the soapy water over the graft and then to rinse it the same way. Three or four grafts were lost due to overzealous washing.

Acute burn management

There were few patients admitted with fresh burns requiring fluid resuscitation. The nursing and medical teams learned the modified Parkland formula for burn resuscitation. A chart was made with the rate of IV fluid to infuse based on patient weight and %TBSA burn. These were posted on the wall in both burn wards. The patients were not being debrided on admission. The burn team was able to teach how to debride the wounds during the initial bath. Nurses and the medical team learned about the burn diagram and the need to have one completed for each patient.

Surgical Management

Age	Mechanism	TBSA	DOB	DOA	DOD	Location	OT
2y	porridge	01	06.07	06.13	08.20	R foot	08.14
3y 6m	dress caught fire	31	07.27	08.02	inpt	R arm, R leg, butt	
							OT 08.08 sloughectomy
							OT 08.10 sloughectomy
							OT 08.17 sloughectomy, SSG RFA, MUA, POP

						OT 08.21	SSG RUE above elbow, MUA, splint
4 yo	hot H2O	10	07.27	07.27	08.21	RUE, RLE, buttocks. R thigh.	
10 mo	Flame frnds ran awy	20	08.08	08.09	inpt	R foot, entire RLE, buttocks, ant torso.	
						OT 08.19	sloughectomy
						OT 08.21	sloughectomy, MUA
						OT 08.24	SSG
24 yo	Mlt candles flr wax	18	07.26	DOA	08.14	Breast, ant torso	None
2 yo	Dress caught fire	07	DOB	08.05	08.16	L arm circumferential, L hand, L thigh.	
						OT 08.05	Sloughectomy
						OT	STSG refused by mother. Absconded.
22 yo	Sz fell in fire	07	07.17	07.18	inpt	BLE anterior surfaces (+) sz	
						OT 07.24	sloughectomy
						OT 08.17	sloughectomy, SSG
17 yo	Flame	06	05.23	07.21	08.22	Back and buttocks.	
						OT 08.01	Sloughectomy
						OT 08.12	SSG
4 yo	Flame	03	07.21	07.22	inpt	R wrist and hand	
						OT 07.29	Sloughectomy
						OT 08.12	Sloughectomy, MUA, splint
						OT 08.19	Sloughectomy, SSG, MUA, POP
26 yo	RTA/radiator fluid	07	02.26	07.03	inpt	BLE ant surfaces, untreated fracture dislocation L ankle with exposed tendons & foot drop	

							OT	08.01 Sloughectomy
							OT	08.14 Sloughectomy, MUA, POP
							OT	08.19 Sloughectomy, MUA, SSG, POP
35 yo	Woke in fire	15	07.28	07.28	inpt	Face, ear, entire LUE, axilla, and torso		
							OT	08.07 Sloughectomy
							OT	08.14 Sloughectomy
							OT	08.19 Sloughectomy, MUA, SSG neck, L arm, airplane splint
							OT	08.21 Sloughectomy, MUA, SSG L arm, L torso, airplane splint
39 yo	Unk	04	07.27	08.10	08.21	L lateral foot (+) sz	No OT	
20 yo	Sz fell fire	20	07.26	07.27	inpt	BLE (+) sz		
							OT	07.31 Sloughectomy
							OT	08.05 Sloughectomy
							OT	08.10 Sloughectomy
							OT	08.14 Sloughectomy, MUA, SSG LLE
							OT	08.19 Sloughectomy, MUA, SSG RLE, splint
48y	Unk	04	07.25	08.12	inpt		OT	08.14 Sloughectomy
							OT	08.19 SSG
2y4m	Hot water	26	08.09	08.10	08.18	LUE, B thigh, B buttocks.		
							OT	08.17 IV hydration and dressing change. Died overnight.

10 yo	Unk	03	07.07	08.18	inpt	R hand/wrist (+) sz			
							OT	08.19	Sloughectomy, MUA, splint
							OT	08.21	SSG, MUA, POP
62y	Sz fell fire	01	07.17	08.17	inpt	Anterior right leg (+) sz			
							OT	08.19	Sloughectomy
							OT	08.21	SSG
67y	Found in fire	07	08.16	08.21	inpt	BLE down to dead bone			
							OT	08.24	Bilateral BKA
4y	Hot milk on table	20	08.19	08.19	inpt	RUE, torso, entire R lat leg			
70y	Ulcerated lipoma	NA							

Pain Management

Pethidine and paracetamol are most often used for the burn patients. In some cases valium was also used. The need for pain medication at least 30 minutes before the dressing changes/baths as well as prior to significant physiotherapy was stressed. The need for pain medication before dressing changes, physio, and during the evening and bedtime hours was reinforced but was difficult to implement; on-going resistance to administering pain medication was noted.

Physiotherapy

Jason, Katie, and Maggie hung the posters that were made by the June 2009 team, one each in Mukasa and Kizito burn wards and one in the outpatient treatment area. This poster was later moved to the main ward in Kizito, providing two in the mens ward. The lead physiotherapist, Lenard Banda, was not at SFH during the visit. The other physiotherapist, Anderson, was present during the second week of the burn team visit. He applied plaster of paris (POP) to several burn patients and assisted in constructing splints. None of the patients in either burn ward was receiving physiotherapy. All patients were in bed, lying in positions of comfort with fixed ulnar deviation, wrist and palmer flexion, bent elbows and knees and immobile shoulders. Passive range of motion was attempted on some patients but was difficult and painful.

Patients were not splinted until the time of OT. Bridget performed passive range of motion in the OT prior to the sloughectomy and/or graft placement. Upon completion of surgery a splint was placed if indicated. For patients with foot drop or foot inversion the POP splint was not removed until the first post-op dressing change. A knee immobilizer was used for a patient who was reluctant to straighten his leg. Dr. Latenser and Bridget searched supply closets for supplies to make splints. The man that makes crutches

provided a large, thick piece of rubber that is ordinarily used for the bottom of the crutches. Splints were made for each patient and they were cut by the crutch maker. Some of the nurses and family members learned the importance of splinting and positioning. One of the fathers frequently did active and passive range of motion with his daughter after her baths and prior to splint reapplication.

Patients were encouraged to ambulate 3-4 times daily. The patients in Kizito were skeptical but by the end of the burns team visit, all Kizito patients were ambulating outside of the ward several times daily. Patients were seen sitting together outside the ward. In Mukasa there was resistance to ambulating. Two of the patients were able to walk without issue but none of the other patients would ambulate. One 22 year old women was carried everywhere by her mother.

Nutritional Needs

Malnutrition remains prevalent among the burn patients at SFH. Contemporary tools used to assess malnutrition (current weight, growth charts, lab values) are either not available or not utilized. Identification of malnutrition relies on the clinical judgment of the clinician based on the physical appearance of the patient. A malnourished protocol is available and utilized on the pediatric ward, but is not used in the burns units. Four (22%) of the burn patients were classified as severely malnourished by the burns team. None of them had been identified as malnourished by the SFH staff. Additional education is needed to assist the staff at SFH to identify malnutrition.

Meals at St. Francis

Prior to the economic crisis, three meals were provided to patients daily. Beans were provided at lunch, and chicken was provided once a week at dinner. Since the economic crisis, meals are provided in the morning and at 3 pm. Breakfast is porridge (made with cornmeal) with groundnuts. Dinner is nshima with rape (collard greens) or cabbage (cooked with oil). Once weekly patients get nshima with beans (cooked with oil) for dinner. Meals are prepared in the kitchen and hospital workers transport large pots to the ward and serve the patients. Each patient provides his own plates/utensils. The quality of the food provided at SFH is deficient, particularly for burn patients. Protein, a key nutrient during burn injuries, is not abundant in the primary staples (nshima, rape, cabbage), making it impossible for patients to consume adequate nutrition via hospital meals. Some families purchase foods from nearby markets. There are two small stores on hospital campus that sells snacks, toilet paper, etc. The only high protein food offered is eggs @20 cents each. Most patients/families report that they cannot afford extra food.

Nutrition Support

Utilization of nasogatric feeding tubes in the burn unit is nonexistent. This may be due to the fact that burn patients are not considered malnourished. Another obstacle is the belief that feeding tubes suffocate the child. When the burns team arrived at SFH, no burn patients were receiving nutritional supplements. Two supplements (Plumpynut and F100) are donated to SFH by UNICEF in quantities sufficient for all malnourished

patients. Plumpynut is a high kilocalorie (approximately 550 kcal/packet), high protein (14g Protein/packet) supplement with the consistency and taste of peanut butter. F100 is a milk-based supplement that can be administered orally or via feeding tube. This supplement has 1 kcal/mL and is high in protein (12% of kcals). F100 is prepared in the pediatric ward and delivered daily to the surgical floor. Nurses on the surgical floor must fill out a form requesting this supplement daily. Pediatric patients with malnutrition or burns > 5% TBSA would benefit from both PlumpyNut and F100. Plumpynut is a more nutrient dense supplement while F100 also provides hydration. This is important due to the fact that IV fluid was often not administered during the acute burn period.

The burn team ordered Plumpynut for most (n = 14) of the burn patients. This supplement was well tolerated by most of the patients; only one 6 year old male did not like it. Provision of F100 was a challenge. F100 was ordered for 10 patients on the first day (8/10/09) but was not delivered to the women's ward until 8/17/09 and was never delivered to the men's ward. On 8/12/09 we asked a clinical officer why the F100 had not been delivered. He replied that since they were using Plumpynut, they did not need F100. Maggie explained the importance of both supplements, emphasizing the importance of hydration for children. One nurse told us that she does not give patients F100 because it causes diarrhea. Once the F100 was provided to the women's ward, it was well tolerated by the patients without complaint or new cases of diarrhea.

Staff Education

A lecture covering wound assessment, pain management, physiotherapy, and nutrition was provided at the School of Nursing on August 13 by Katie, Bridget, and Maggie to 55 1st year nursing students. The students appeared interested and asked intelligent questions. A similar lecture was provided to all members of the medical staff. All members of the burn team provided on-going bedside education to nurses, clinical officers, and nursing students. The importance of nutrition during burn injuries was emphasized, including hydration, high kcal and high protein diet, and mobilization to reduce muscle atrophy.

Katie and Maggie made mini posters for both burns units to provide a tool for doctors, nurses, and clinical officers. The first poster contained information in a table format to assist with fluid resuscitation. The table provided the amount of fluid needed per unit of weight. The second poster (Table 1) contained information to assist the staff with recommending appropriate nutrition supplements.

Table 1. Supplement Guide

Weight	Plumpy Nut (packages per day)	F100 (amount per day)	Total Supplemental Protein
10 - 15 kg	2	300 mL bd	35.4 g (2.4 – 3.5g/kg)
16 - 20 kg	3	300 mL tds	49.8 g (2.5 - 3.1g/kg)
21 – 30	3	400 mL tds	52.8 g (1.8 - 2.5 g/kg)

kg			
31 - 40 kg	3	500 mL tds	56 g (1.4 – 1.8 g/kg)
41 - 60 kg	3	0	41 g (0.7 – 1 g/kg)
≥ 60 kg	3	0	41 g

- provides ~ 80% of protein needs for ≤ 20 kg
- provides ~ 70% of protein needs for 21 - 30 kg
- provides ~ 65% of protein needs for 31 – 40 kg
- provides ~ 25 – 40% of protein needs for ≥ 41 kg

Patient and Family Education

The burn team provided nutrition education to patients and family members on a daily basis. The importance of consuming Plumpynut and F100 was emphasized. Patients/families were encouraged to buy high protein foods (eggs, beans, chicken, fish) at local markets but most patients/families could not afford to do so. The burn team did not witness the consumption of "junk foods" (chips, soda) by patients, something witnessed by the June 2009 burn team. To remind the patients/families to consume Plumpynut, Katie and Maggie made signs in English and the native language that said "Plumpy Nut will help your wounds heal" and "Eat Plumpy Nut everyday". A sign was posted in both the women's and men's burn wards featuring a Plumpynut wrapper.

Research

The research project started in 2008 was completed by Jason Heard. Jason obtained demographics on an additional 300 burn patients bringing the total number of records to 523 admitted burn patients July 2002-June 2009. Preliminary analysis has been completed and will be presented at the 2010 ABA meeting.

Challenges

The challenges faced with nursing staff are similar to the challenges noted by previous burn teams. Attempts were made to engage the ward sisters in showers/baths, dressing changes, and ward rounds. While they were present for ward rounds much of the time, and assisted with translating, ward sisters did not seem interested to learn about dressing changes or others aspect of burn care. On new admissions we discussed the importance of fluid resuscitation, proper dressings and nutrition. We received conflicting advice on how to order the appropriate fluids. Most of the time the fluids were either not hung or were only hung for a small amount of time. None of the new admissions received fluid resuscitation despite specific doctor and frequent, non-intrusive visits from the burns team.

There was a great deal of resistance to pre-medicating patients with pain medication prior to dressing removal or shower. Several nurses stated "just go ahead and take the dressings off" or "they won't care if you do it without pain medicine." Despite multiple

discussions, the attitude regarding pain medication did not change. Some ward sisters realized that the burn team would not remove dressings nor shower the patients without pain medication. In some cases, the patients were showered by the mothers before the burn team arrived on the ward at 0800. The mothers stated the patients got their pain medication, but the records indicated they did not. It was also reported that pain medications were withheld due to fear of over sedation. We did hear one story of a patient several years ago who received too much pain medication and went into respiratory failure/arrest.

There also seemed to be significant differences between the nurses on the Mukasa and Kizito wards. It appeared that the Kizito ward nurses were more interested in learning about burn care. They involved the student nurses in learning the physio as well as dressing changes, shower, and washing wounds. Student nurses were less interested and fewer on the Mukasa ward. One ward sister told us that she did not have time to help us because she was the only nurse in the ward, responsible for 70 patients. She barely had time to provide minimum nursing care and did not feel the burn patients were a high priority.

Surgical challenges remain abundant. The attending surgeon, Dr Jaap van Bruggen, has retired due to health issues, leaving one registrar and several clinical officers, who self-reported they are afraid of burn cases. The Zambian registrar was absent during the burn team visit, leaving several clinical officers to learn burn care. They attended lectures and the OT and learned how to perform simple debridement/excision (sloughectomy) and skin grafting, but had no interest in patient care on the burn wards. Wound examination, attending to resuscitation, nutritional needs, and physiotherapy was not a high priority; the clinical officers were usually absent from this portion of the learning opportunity. The most interested surgical trainee was a registrar from the UK, Dr. Adam Stearns, who participated at every opportunity. The rotating medical students were keenly interested to learn all facets of burn care and participated in all phases of burn care. It is anticipated that a volunteer attending surgeon will arrive at SFH late in 2009 for a two year commitment.

The lead physiotherapist, Lenard, was not at SFH during the burn team visit. The second in charge, Anderson, was available during the second week the burn team was at SFH. The burn team found the need for a physiotherapist in the burns units almost more pressing than the need for surgical wound care. None of the patients were wearing splints, ambulating, or doing any range of motion. It is not clear if physio is not being ordered by the physicians or because physio lacks the manpower to care for the burn patients. Although there was not a physio in the burn team, post-operative splinting was undertaken by Dr. Latenser and Bridget. Although SFH does not have designated splinting materials, the available materials were adequate. Splinting options were discussed with Dr. Stearns in the hopes that he could pass the information to the next surgeon. It is highly recommended that a physio be included on upcoming trips.

The challenges faced by nutrition were similar to those faced by nursing. Staff nurses did not appear to be aware of the importance of nutrition for burn patients and did not appear interested in learning. After a week of education and encouragement, F100 was provided to the women’s ward; F100 was never provided to the men’s ward.

One frustration was that the nurses did not follow the doctor's orders especially regarding IV fluids, F100, and blood products. Speaking with other international volunteers at SFH, this behavior was seen throughout the hospital. There was no repercussion for not following physician orders.

The research effort was time consuming but successful. Jason was faced with dealing with other staff schedules; sometimes it was difficult obtaining records from medical records staff. While it appears that the record system is becoming more organized, records from earlier years are kept in a storage trailer in a random manner, making it difficult to obtain the necessary medical records. Medical records are filed according to the patient's first name as there are only ~6 last names for residents in the Eastern Province.

The next steps

St. Francis Hospital, Katete, Zambia: The burn team feels that continued trips may be successful at SFH. The ideal team includes a surgeon, two nurses, a nutritionist, a physiotherapist, and a researcher. If the above mentioned team is available at each visit, all of the needed areas will be addressed.

University Teaching Hospital, Lusaka, Zambia: On August 27, the burn team met with Dr. John Kachimba, urologist/traumatologist, Dr. Laston Chikoya, neurosurgeon, Mwinga Tolosi, School of Nursing, as well as the head nurse for the surgical wards, and a few other School of Nursing faculty. It became apparent that the entire group was very interested in whatever services the burn team could provide. It was also apparent that it would be impossible to do everything that was asked of the burn team on this visit. Dr. Kachimba stressed that a burn treatment protocol was a must for the Department of Surgery. He volunteered that patients cared for "on protocol" would now have their surgical services paid by the department of surgery.

The School of Nursing faculty requested lectures including fluid resuscitation, burn size calculation, determination of depth of burn, preoperative and post-operative care, pain management, physiotherapy and nutrition. After the meeting, the burn team toured the surgical wards in the G-block and each of the side burn wards. The tour included the casualty area (emergency room) where patients are first seen and admitted overnight.

On August 28, Katie, Bridget, and Maggie gave a lecture on the requested topics to 55 second year nursing students. The lecture was repeated for 76 third year nurses and qualified nurses. Dr. Latenser gave grand rounds on burn management, fluid resuscitation, calculating burn size, and surgical intervention to 20 surgical registrars and attending physicians from the Department of Surgery. On August 29, Dr. Goran Jovic, the country's only plastic surgeon, provided a tour of the surgical ward and one burn patient, a 25 year old male with a 15% burn on July 2, after having a seizure and falling into a fire. The patient presented to UTH the same day as the burn. He underwent grafting of the right thigh with a left thigh donor one week ago. He had significant hypergranulation tissue to right hip, perineal area and lower abdomen. His dressings were covered with pseudomonas and had not been changed since his surgery. The surgeon changes the first dressing because of concerns of inappropriate

dressing removal and graft loss, and the dressings were scheduled to be removed the day of our visit. As a result of the burn injury, he had a left hand amputation and a suprapubic foley catheter due to penis burns. This patient had no sheets on his bed and could not remember the last time he had been out of bed.

The burn team visited one of the female side burn wards with one of the registrars. The first patient was a one month old female with a 3% TBSA burn to the left leg on August 12. There was no burn diagram; the burn was 6% TBSA. SSD dressings were ordered but not done because the mother had not purchased the SSD. Saline soaks three times a day were being done. Surgery was going to be scheduled the following week. The burns team discussed nutrition in this baby, and a way to monitor urine output by weighing diapers. The child was breast feeding but no supplemental formula was offered. The next patient was a 4 year old female with 20% full thickness burns to the chest and bilateral legs from hot water. She was admitted on August 23. She was given 1 liter IV fluids for resuscitation. No burn diagram was found. Saline soaks were being used for dressings; there were no plans for grafting. The last patient was a teenage female with a 13% TBSA partial thickness burn to the chest and arm from blankets catching fire. She sustained her injury on August 19. Epithelial budding was present and there did not appear to be any signs of a wound infection. She had poor range of motion in her wrist, elbow, and shoulder. This patient had no physiotherapy and had not been out of bed since her injury.

According to the ward sister, pain medications were not typically given before dressing changes. There was a great deal of discussion regarding transmission of infections, especially pseudomonas. Every three months each of the wards is cleaned with carbolic acid; microbiology has swabbed each of the burn wards which have grown out pseudomonas each time. The burns team discussed the need for daily washing of the burn patients and the use of antimicrobial dressings to decrease the likelihood of infection. The roles of Dakins' solution and Acetic acid and how to make each solution were discussed. The understanding of nutrition in burns seemed variable. Some said that porridge was the only food offered to all patients. Some said that nshima and beans were offered each day as well as chicken and beef. Plumpynut and F 100 were available in the pediatric wards, but not in the adult surgical wards, despite the many pediatric patients in the womens wards. Post operative dressings were only removed by the physician, usually a week after surgery.

Based on the conversations with Dr. Kachimba and other Department of Surgery physicians, the burns team recommends that this could serve as the site visit for UTH, which should be a new site separate from St. Francis Hospital. The Department of Surgery and the School of Nursing representatives were excited to have us in the hospital giving lectures and participating in ward rounds. There was a strong interest in nursing and the kind of teaching that we would be able to provide on the wards and at the School of Nursing. There was also a clear need for the development of a burn protocol and the implementation of early excision. In the past, there was limited OT availability for the burns but it appears that might change.