International Outreach Program
CMC Ludhiana, India
November 6-19, 2010

Partnership:
American Burn Association
Children’s Burn Foundation
Christian Medical College, Ludhiana, India

Team:
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Katherine Parrish, RN, The Burn Center at Washington Hospital Center
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Background

Christian Medical Center (CMC) Ludhiana Hospital in Punjab, India is a 455 bed tertiary care hospital in northern India 150 km from Pakistan and 325 km from Delhi. The hospital, established in 1894, states its primary mission is to educate and train Christian men and women as healthcare professionals. The hospital’s immediate service area has a population of approximately 3 million people. The immediate area is also serviced by a Civil Hospital (strictly charity care), numerous small private fee-for-service hospitals, and several corporate hospitals focusing care on the newer parts of the city.

CMC is surrounded by a rural belt in a radius of more than 60 miles interspersed with small towns and villages. Beginning in 2003, they began providing rural health care and education through clinics and medical camps. The hospital’s Burn Research Unit receives approximately 300 inpatient burn admissions annually. All major burns are encountered in the Casualty Department and taken immediately to the Burn Resuscitation Room there. Primary and secondary treatment is performed in that location prior to admission to either the 6 bed burn ICU or the 8 bed minor burn ward. Patients requiring ventilatory support are transferred to the Surgical ICU. Burns to children and adults are primarily due to flame. Dowry burns to young women from acid or flame are a routine occurrence, as are industrial related burns. Patients with significant TBSA burns often survive but they experience prolonged hospitalization, significant morbidity, and significant out of pocket expenses.

CMC Ludhiana was identified as a suitable ABA/CBF Site for burns upon referral by Dr. Jacob Chacko from CMC Vellore. CMC Ludhiana staff is a dedicated group of healthcare providers committed to providing burn care to their local population. The Hospital Director, Professor A. B. Thomas, Professor Vijay Obed, Professor Deepak Bhatti, and Associate Professor Ajanayanthi Mala of the Department of Plastic Surgery showed enthusiastic support for the academic interaction provided by this International Outreach Program visit. The visiting medical team was invited to speak at the college of nursing, college of physiotherapy, and to the resident and staff components of the burn unit. The visiting medical team taught didactic lectures and demonstrated surgical techniques as well as provided hands-on teaching in the burn unit.
Program Mission

The goals of the November 2010 CMC Ludhiana visit included:

• Further evaluate the state of current burn care & rehabilitation
• Discuss with the CMC staff long term goals in the areas of:
  o Medical care
  o Surgical procedures
  o Nursing care
  o Physiotherapy

Reference points for the healthcare environment in which CMC operates.

• Poverty is an overlying commonality. Patients are provided medical care based upon their ability to pay, and may be referred back to the civil hospital (government hospital) if they have insufficient financial resources.
• Patients may be illiterate.
• Private hospitals are available in Ludhiana for those who can afford them. The lowest strata are the civil hospitals that provide free care. CMC is one of the best hospitals in Ludhiana but competes for fee-for-service patients in the corporate/private sector. Civil hospitals lack the resources needed to care for burn patients and therefore surgical intervention is nonexistent.
• It is not unusual for the power at the hospital to go out on a daily basis. The operating theater does continue to work during power outages but electronic tools including the electrocautery and ventilator are nonfunctioning during power failures.
• Dowry burning remains an epidemic for the middle and lower socioeconomic class women, including acid burns. Land disputes have also resulted in significant numbers of burns to males and children peripherally involved in these conflicts.
• Delays in seeking medical treatment at CMC are common as patients turn to untrained health care providers for treatment which may include months of nonoperative care.

The 2010 medical mission was helmed by Dr. James Jeng, MD, FACS, who provided didactic lectures and demonstrations to surgical and medical staff as well as interactive demonstrations during the operating theater. Katherine Parrish, RN, provided lectures to burn staff, and the college of nursing. In addition, she provided hands-on education in the burn research unit. Rebekah Allely, OTR/L, provided bedside rehab instruction/education with staff physiotherapists, patients/family members and members of the burn unit medical team.

Current Care in the Burn Research Unit (BRU)

The 6 bed burn research unit is under the direction of the department of plastic surgery. Burns comprise approximately 1/3 of the clinical practice of the two plastic surgeons who coordinate the care of the 6 bed ICU and any overflow burn patients on the 8 bed burn ward that is housed on an adjacent floor. Patients requiring ventilatory support are treated in the surgical ICU by intensivists. Outpatient burns and follow-up appointments are handled in the burn clinic held every Wednesday. The BRU is staffed by 2 assistant managers, 8 nurses, and 7 burn techs. The hospital’s physiotherapy department is comprised of 10 physios (PT) and 1 occupational
therapist (OT). Their interaction with burn patients is dependent upon a physician’s prescription and is not the standard of care. Nutritional assessment/management is done by the nursing staff.

Physician care: The residents arrive before 0700 daily and evaluate their patients. The attending(s) round with the residents before dividing the workload of OR, clinic, or writing patient notes. Wound rounds are attended by the entire team. Operating room cases are plentiful. The most senior resident takes the lead position in a case and if a more senior resident scrubs in, the junior resident moves to an assistant role. Level of attending supervision varies with the complexity of the case and the level of the resident. The most complex cases are done by the staff with resident assist.

Nursing care in the BRU: The assistant nurse manager arrives at 0700 daily. She reviews the nursing record for each patient and ensures that all ordered patient cares have been completed. The entire burn team then joins the staff of the female surgical unit in a 15” morning prayer session. After the night shift gives a nursing report, the 3-4 day techs begin preparing dressing carts while the assistant nurse manager and the 2 staff nurses make bedside rounds.

Dressing changes are routinely done in the patient’s bed and are primarily done by the techs. Pain medication, if administered, is given at the end of the dressing change. Nurses spend the remainder of the day providing IV antibiotics and doing charting. The techs see to the daily hygiene of the patients.

Physio care in the BRU: If prescribed by the physician, the physio will do a general assessment and treatment if time permits. The clinical workload throughout the hospital precludes having a dedicated burn therapist whose presence is more than perfunctory. There is one physiatrist for the hospital but he does not interact with in-patient burn patients. Stretching, positioning, therapeutic exercise, mobility, functional activity and patient/family education are not part of the daily routine. There are cases in which the surgeons provide post-op positioning and/or splinting which is then monitored by the burn techs.

Resuscitation: The residents and staff use a slightly hypertonic physiologic saline with dextrose for acute burn resuscitation. Fluid management is administered by central line inserted at the time of admission and kept in place until the time of discharge. Fluid administration rate modifications are loosely based upon urine output and blood pressure. Full thickness circumferential extremity burns are treated by escharotomy at the time of admission. Systemic antibiotics are also started routinely at the time of admission and continued ad infinitum.

Temperature management: There is no attempt at warming the patient or the environment in either Casualty Department or Operating Theater. Fluids are administered without warmers, and forced air warmers are rarely utilized. The BRU is warmer than the rest of the hospital (which is unheated) but felt cooler than optimal for burn patients. There is no heating system available for the hydrotherapy room.

Infection control: Access to the BRU is tightly controlled through the changing rooms. Health care providers wear hats, masks, scrubs, and communal flip flops to enter the unit. Hand washing is done but there is one centrally located staff-designated sink. A communal towel is provided for
hand drying. Bandages are removed using sterile gloves, and all products touching the patient are sterile, including the bed linen. Wound care involves beta dine dabbed on the wounds, SSD applied to the patient, followed by bulky cotton dressings. Patients do receive a bath.

**Nutrition:** Patients are weighed weekly but we did not see evidence of monitoring. Nutritional laboratory studies are not performed. Meals are provided by the hospital but are low in protein. Vitamins B, C, and folate are routinely provided in IV form. Families are encouraged to provide high protein food and there is an attempt at daily calorie counts. Calorie needs are routinely underestimated based upon current burn care in developed countries. Clinical malnutrition and hypoproteinemia contribute to generalized edema and markedly decreased activity tolerance, even in young patients.

**Pain management:** Pain management is very different because it seems that the inherent pain tolerance of the patients is quite extraordinary. There is opportunity for conscious sedation but both processes are physician dependent.

**Wound care:** Begins on admission and is then performed daily by burn techs until surgical intervention. Nurses and physicians have little direct involvement in wound care. Post-operative wound care is suspended until the first dressing change, usually post-operative day #5. Early surgical intervention is not practiced. Eschar is allowed to separate and only then are wounds deemed ready for skin grafting. Stretching, positioning, therapeutic exercise, and functional mobility are not part of the daily dressing change routine. There is little attempt made to educate or involve the patient/family regarding post-discharge management.

**Burn supplies & care:** Upon admission, the nursing staff estimates the cost of the dressing materials that will be needed for the entire hospital stay. Based upon the daily needs, an auxiliary nurse procures the dressings from central sterilizing. Physio is based upon a fee-for-service system, and splinting is out-sourced and must be paid in advance. Medical care may be provided at no- or much reduced costs at the discretion of the surgeon. Patients unable to pay for their cares are discharged to the civil hospital.

**Psychosocial support:** There is a wall-mounted television in each room and patients are encouraged to watch TV. There is no daily schedule for the patients, and they are not encouraged to leave their room, sit in a chair, or participate in any activity throughout the day. Burn techs are empathetic towards patients’ well being and do spend significant non-dressing care time talking with patients and providing emotional support. Otherwise, there is no attention from the medical or nursing perspective, to the patient’s mental health. There are no reintegration programs, and out-patient follow up is erratic. Non-accidental burns are common to the middle and lower classes. Although there is acknowledgement that this is problematic, there is little in place to help the patient or their family.

**Education Provided**

**Hospital-wide Guest Lecture**
11.16.10  100 in attendance. Topic: Acute Burn Management
**Lectures for Physicians**
Several lectures for the resident staff were done in an informal fashion each day of the visits concerning topics relevant to the clinical scenario being witnessed.

**Lectures/Hands on Demonstrations for Nurses**
Katherine Parrish had opportunity to lecture the nurses formally at the nursing college, and informally at the bedside. She also co-presented a lecture and hands-on demonstration to the nurses and burn techs on the role of nursing and rehab with the burn patient. Specific demonstration was made of a burn dressing to the hand with fingers individually wrapped to allow for increase motion and functional use.

**Education/Hands on Demonstrations for Physios**
Rebekah Allely had the opportunity to meet at length with the Director of Physiotherapy. She was able to co-treat with several of the physiotherapists and students while providing education on wound healing, skin care, scar control, demonstrations of active assistive range of motion exercises, bed mobility and ambulation. She co-presented a lecture and hands on demonstration as noted above with Katherine Parrish. Exercise, mobility, functional activity, scar control, prevention of contractures and patient/family education were the topics covered with the nursing staff and the burn techs. All information appeared to be very well received.

**Hands-on Teaching/Demonstrations**
These were done nearly daily on the wards, in the ICU, and in the outpatient clinic.

**Opportunities**

- Physician staff is enthusiastic about the mission and hopeful for change while recognizing barriers.

- Nursing staff & nursing students’ outlook is very traditional/passive. No protocols exist for nursing care. BRU nurses rotate approximately every 3 months; there is no dedicated BRU nurses/team. Nurse Manager and assistant managers demonstrate compassion and dedication to patients and hospital mission, and open to new ideas.

- Burn Technicians lack up-to-date training but are eager to learn new techniques, and new technicians are being trained up to replace many who are soon to retire. Development of Burn Tech training in collaboration with medical, nursing and physiotherapy staff would greatly improve patient outcomes and reduce morbidity. Protocols could be developed by the medical officer, Division of Plastic Surgery and nursing staff to enhance communication and reduce redundancy. Clinical instructors are eager to enhance their nursing practice and become more involved in addressing the psychosocial needs of the patients and families.

- The physiotherapists have a limited understanding of burn rehabilitation and they do not consistently have the opportunity to apply it clinically. They are understaffed and support the entire hospital. Splinting materials designated to the burn unit are non-existent and expensively outsourced. Written patient/patient family education is absent.
• Equipment:
  o Site needs a new dermatome and mesher
  o Educational tools: any burn textbooks (acute medical/surgical/nursing/physio or rehab) needed for all burn team members. Patient education materials absent.

Next Steps

There are many opportunities for education. Long term goals for the site can include:
  o Goal 1: To establish up to date written burn care protocols.
    o Objectives:
      ▪ Emphasize team approach to treatment
      ▪ Early nutrition assessment and intervention
      ▪ Discontinue use of IV antibiotics
      ▪ Implement early excision and grafting for full thickness burn wounds
      ▪ Discharge planning

Goal 2: To integrate burn rehab therapy into the burn care protocol

Goal 3: To provide education for the development of dedicated burn nursing staff

Goal 4: To provide formal education for burn technicians

Goal 5: To assist in the development of a burns database

Goal 6: To assist in the development of appropriate teaching tools for family and patients

Goal 7: Provide psychosocial and burn prevention information to burn staff for consideration of program development

The CMC Ludhiana site has requested return visits as often as we are able. The 3 team member approach seems to be appropriate for this site but a burn prevention specialist could play a significant role in the future. Peak burn season is during the winter months and future site visits should avoid the humid summer months when temperatures exceed 48°C. The ideal length of time for future site visits is 2-3 weeks. Communication with the site can be marked by delays from Ludhiana as email is not as routinely used as in the US. However, arrangements once made proved the site is clearly set up to accommodate international visitors.

This second visit by the ABA International Outreach Committee concurred with the vast majority of the first team’s survey. However, there were important differences in the final impression that we left with and a somewhat different outlook on the “big picture” approach to aide and abet their future course. American practices of burn care might not neatly translate to the realities CMC Ludhiana is facing, and that the actual burn injury biology might be fundamentally different in the Indian Subcontinent. Therefore, we think that an amalgamation of American and Indian burn care practices might be the “sweet spot” for what to work towards.
There are strategic opportunities at CMC Ludhiana to be grasped that might be a game-changer above and beyond the brass tacks of burn care and delivery. There is great and accelerating wealth in Punjab but no effective corporate largesse being bestowed onto marquis programs at CMC. We propose having CMC Ludhiana being in the vanguard of international burn centers to apply for international verification through a modified program of the ABA Verification Committee, perhaps in conjunction with the ISBI as partners. With this type of imprimatur, our host facility could likely garner corporate largesse; armed with that universal lubricant—financial resources—the sky is the limit with what can be done at CMC Ludhiana BRU. The third team to visit should have this firmly in mind.