

**Consultation Report from the
American Burn Association
International Outreach Committee and the
Children's Burn Foundation**

**University Teaching Hospital
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Areas Identified for improvement:

- **There should be one general surgeon who is authorized by the hospital administration and by the Department of Surgery to function as the Director of Burn Services.**
- **Similarly, there should be one individual identified in the nursing staff who develops special knowledge and skills about burn patients, and who is authorized to direct nursing policies regarding burn patients.**
- **Written protocols for the care of acute burn patients should be created by the Director, should be approved by all surgical consultants, and should be distributed to registrars, nurses and therapists.**
- **The present audit method used by the registrars should be modified so that the information is entered onto a spreadsheet that can be used for reports and analysis.**
- **Morbidity and mortality conferences should be held with specialists other than burn surgeons in attendance; minutes should be kept of discussions.**
- **Policies for infection control should be established.**
- **A performance improvement program should be established under the authority of the Director of Burn Services.**
- **Outreach education programs should be established for other major provincial hospitals.**
- **The hospital's mass casualty plan should include specific contingencies for burn casualties.**
- **The Department of Surgery should continue to lobby the Minister of Health for attention to prehospital services in Lusaka.**
- **Coordination with existing nutrition services at UTH should be done to enhance the nutritional support of burn patients.**
- **There should be frequent communication between the physiotherapist assigned to the burn patients and the Director of Burn Services.**
- **A weekly multidisciplinary conference should be established for discussion of all in-patients on the burn service.**
- **A burn prevention program should be established.**

Strengths of the Current Program

- Support from the Department of Surgery for the Burn Service is admirable, starting with the Chairman of the Department, Dr. James Munthali, who has clearly committed personal and departmental resources to the success of this venture.
- The efforts of Dr. Munthali are greatly aided by key stakeholders in the Department, including Drs. John Kachimba and Goran Jovic. In addition, all General Surgery Consultants who are currently providing care to burn patients are similarly invested in improving the current program.
- Despite woefully inadequate numbers of nurse and physiotherapists to provide care throughout the surgical wards, there are clearly nurses and therapists who are significantly invested in the care of burn patients. Such individuals include the Chief of Physiotherapy, Mr. Peter Phiri, and the Nurse-in-Charge of G12, Ms. Cathi Banza Miti. Both confirm that there are many individuals on their staffs who are enthusiastic about providing burn care.
- Indeed, there is already in place a rudimentary Burn Service, with clearly understood protocols for the flow of burn patients from the Casualty Wards to the Side Rooms of the Surgical Wards. Education of the registrars and guidance by the Consultants is sufficient to ensure that the majority of burn patients are treated within the bounds of acceptable standards of care at UTH.
- Involvement of families in wound care, therapy and nutrition is key to the recovery of the burn patients. During this consultation visit, all pediatric patients were witnessed to have at least one family member present at all times, participating in critical aspects of care.
- The use of heaters in the Burn Rooms and the placement of blankets over cradles on pediatric patients insures that appropriate elevation of ambient temperature occurs to minimize the hypermetabolic response.
- Clinical research is encouraged among faculty, registrars and students.
- Caregivers and families alike are conscious of the need to provide burn patients with adequate calories and protein.
- Despite limitations of personnel and resources, health care professionals attending to burn patients at UTH have a strong sense of morale and optimism.

I. General Information

- a. The Burn Service at University Teaching Hospital (UTH) serves both adult and pediatric patients.
- b. This consultation visit was requested by the Department of Surgery. The purpose of the visit was to assist the Department Chairman in establishing priorities for fostering growth and development of the Burn Service.
- c. The Burn Service is considered a component of Trauma and Emergency Care at UTH, and is managed by General Surgeons.

II. Hospital Description *

- a. UTH is a public hospital funded by the Zambian government. It is the major medical center in the Province of Lusaka.
- b. UTH has training programs in surgery. Post-graduate training lasts four years.
- c. There are 1254 beds at UTH, 403 of which are designated for Surgery.
 - i. There are 78,446 admissions a year to UTH; 20,023 go to Surgery Wards.
- d. UTH clinics are attended by 275,286 patient-visits a year. 95,835 are seen in Surgery Clinics.
 - i. 1276 visits are for burn injuries.
- e. Overall hospital mortality at UTH is 11%; within the Surgery Services it is less than 5%.
 - i. Approximately one-third of deaths occur within 48 hours of admission.
- f. Average daily census at UTH is 1066 patients, including 328 patients in Surgery Wards.
- g. Average length of stay is five to six days.
- h. Bed occupancy rate runs at 85%.
- i. A total of 17,476 major and minor surgical procedures are performed annually.
- j. The number one cause of death on the Surgery Services is accidents caused by fires, accounting for 27% of Surgery fatalities. The next most common cause of mortality is road traffic accidents, which account for 20% of Surgery deaths.

* Based on UTH Annual Report 2008.

III. Pre-Hospital and Emergency Care

- a. Aside from ambulances designated for Maternal and Child Health, there is no organized pre-hospital care in Zambia.
- b. Burn victims are rescued and transported to the nearest hospital by family members and bystanders.
 - i. Appropriate stabilization and treatment in the field are unusual. Often the well-meaning rescuers cause harm to the injured.
- c. UTH does not have written guidelines for the triage, treatment, and transfer of burn patients from other facilities, nor does it have formal transfer agreements.
- d. Emergency care of burn patients is provided by the Surgery Firm that is on call that day, according to the following schedule:
 - Blue—Monday admissions
 - Green—Tuesday admissions
 - Yellow—Wednesday admissions
 - White—Thursday admissions
 - Red—Friday admissions
 - Weekends are shared by Blue/Yellow, Green/White, and Red/Urology.
- e. UTH has a mass casualty plan. However, there are no specifics for the triage and treatment of those burned in a multiple casualty incident.

IV. Regional Coverage

- a. The geographic coverage provided by UTH is Lusaka City, Lusaka Province, and nearby districts. (See Appendix 1.)
- b. The nearest burn centers are in South Africa and in Blantyre, Malawi.

V. Organizational Structure

- a. There is firm administrative commitment to Burn Services at UTH from the Department of Surgery. Verification of similar commitment from Hospital Administration is not evident at this time.
- b. Within the hospital structure the Burn Service is an identifiable section within General Surgery and Trauma.
- c. There is an organizational flow chart that relates the Department of Surgery to the Hospital and describes the supervisory structure of members of the Department. Revision of the organizational chart will be done to reflect the flow of authority and supervision of the Burn Service.

VI. Burn Admissions[†]

- a. Review of the UTH Male and Female Surgical Admission Ward records and Mortality and Morbidity Surgical Audits over a period of 12 months, between January 1 and December 31, 2007, showed that 851 burn patients were admitted to the Female and Male Surgical Wards out of a total of 12,746 admissions (6.6%).
- b. 492 (58%) of these patients were below 5 years of age, 168 (20%) were between 5 and 14 years of age, and 191 (22%) were above 14 years of age.
- c. Of these, 723 (85%) were discharged and 128 (15%) died.

VII. Mortality by age and percent burn

The matrix below is based on audits from the Red Firm in June and the White Firm in July, 2009:

	≤ 10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	≥ 81%	Sub total
≤ 10 yrs	1/8 (13%)	4/12 (33%)	1/5 (20%)							6/25 (24%)
11-20 yrs		0/1								0/1 (0%)
21-30 yrs										
31-40 yrs		0/2								0/2 (0%)
41-50 yrs										
51-60 yrs										
61-70 yrs			1/1 (100%)							1/1 (100%)
≥ 71 yrs										
Sub totals	1/8 (13%)	4/15 (27%)	2/6 (33%)							7/21 (33%)

[†] Sheyo M. A prospective study of the clinical outcome of burns in HIV positive paediatric patients at University Teaching Hospital, Lusaka, Zambia.

VIII. Burn Diagram

- a. The Burn Service at UTH currently uses the Rule of Nines to estimate burn size.
- b. During this consultation visit, the members of the Burn Service expressed interest in converting to use of the Lund-Browder chart to estimate burn size more accurately.

IX. Medical Personnel

- a. The five Surgery Firms are headed by the following Consultants:
 - Blue Firm—Zulu & Desai
 - Green Firm—Odimba
 - Yellow Firm—Akhtaev
 - White Firm—Ngwisha
 - Red Firm--Tembo

- i. These five Firms provide all care for burn patients at UTH.
 - ii. Appointments are made by the Chairman of the Department of Surgery.
- b. The position of Director of Burn Services is a position to be created by the Chairman of the Department of Surgery, and has not yet been filled.
- c. Coverage for emergencies, admissions and surgical care is available 24 hours a day, seven days a week. Registrars are present in the hospital at all times.
- d. Surgical support is available from Anesthesiology, ENT, Neurologic Surgery, Obstetrics & Gynecology, Ophthalmology, Orthopedics, Plastic Surgery, and Urology.
 - i. There is also support from Pediatrics and Radiology.

X. Nursing Personnel, Wound Care and Pain Management

- a. There are six Surgery Wards which provide care for burn patients.
 - i. Each of these Wards has only one registered nurse per shift.
 - ii. The remainder of the care is delivered by aides and family members.
- b. Wound care is done at 0700 and 1400 each day in a room with a bathtub down the hall from the burn beds.
 - i. Scrubbing of the wounds is done by the nurse attendant and by the families.
 - ii. Dressings are reapplied three or four times a day, and moistened throughout the day by family members.
 - 1. The topical antimicrobial used is dilute sodium hypochlorite (Dakin's solution), made from an over-the-counter cleaning preparation, JIK[®] (3.5% m/v) mixed in saline.
- c. The Zambian Drug Enforcement Commission has several regulations about storage and administration of narcotics. Essentially, two registered nurses are required to be in attendance for removal of the narcotic from the safe box and for confirmation of the count in the records.
 - i. Because only one nurse works in each ward, this mandates that he or she obtains assistance from a nurse on another ward, who has to leave his or her responsibilities to help.
 - 1. This makes it very difficult for nurses to administer narcotics to burn patients.

- ii. Meperidine (Pethidine[®]) is used typically for only two to three days after admission, because of nursing concerns about inducing addiction.

XI. Rehabilitation Services

- a. The Physiotherapy Department is located in the center of the hospital complex, and has facilities for both in- and out-patient therapy sessions.
 - i. There are seven PT's for UTH, covering all 78,446 admissions a year.
 1. One PT (usually Mr. Chongo) visits the burn patients every day.
 2. PT rounds are made before the Consultant begins rounds (around 0900) because the physiotherapist has to be in clinic from 0800 to 1000.
 - ii. There are three OT assistants, who work primarily in the therapy rooms in the Physiotherapy Department; they do not routinely see burn patients on the wards.
- b. Chief of Physiotherapy Services at UTH is Mr. Peter Phiri, PT.

XII. Performance Improvement

- a. Burn complications and deaths are presented at Department of Surgery Morbidity and Mortality conferences.
 - i. Often little discussion is given to patients with burns greater than 30% TBSA because of the expected likelihood of death.
- b. Monthly audit reports (see below) also include sections on burn deaths.

XIII. Audits

- a. Audits are kept by the Registrars on each Firm, and are expected to be completed for each month. Within each monthly audit there are subsections for burn patients.
 - i. Data collected include name, hospital ID number, date of admission, date of discharge/death, length of stay, percentage burn, and disposition (lived/died).
 - ii. Audits are kept in Microsoft Works Database format.

XIV. Research

- a. There are currently two research projects proposed by post-graduate students:

- i. Mwinga Sheyo. A prospective study of the clinical outcome of burns in HIV positive paediatric patients at University Teaching Hospital, Lusaka, Zambia.
- ii. Miriam Maimbo (supervisors Goran Jovic and Odimba). A comparative study of early-delayed skin grafting and late or non-grafting of deep partial thickness burns at the University Teaching Hospital.

XV. Configuration and Equipment

- a. There are six Surgery Wards that house burn patients:
- b. Burn patients are housed in side rooms on each ward.
 - G01—Adult males, Red Firm
 - G02—Adult females and children, Red Firm
 - G11—Adult males, White & Blue Firms
 - G12—Adult females and children, White & Blue Firms
 - G21—Adult males, Yellow & Green Firms
 - G22—Adult females and children, Yellow & Green Firms
 - i. This is an attempt to reduce cross-contamination with bacteria from other patients.
 - ii. Side rooms have two to six beds.
 - iii. Electric heaters are present in the side rooms.
 - iv. There is a room with a tub for bathing just down the hall from the side rooms on each floor.
- c. It is rare for burn patients to be admitted to the Intensive Care Unit.
 - i. ICU is managed by Anaesthesiologists.
 - ii. Concern about bacterial cross-contamination is high.

XVI. Operating Theatres

- a. The operating theatres are located close in proximity to the G Surgery Wards.
 - i. Currently the operating theatres are running at half capacity because four rooms are shut down for repairs to the roof. This condition will continue for the next few months.
- b. The Burn Service does not have block time. Each Surgery Firm, on the other hand, does have block time in the operating theatre.
 - i. Plans are being made to have a Trauma Theatre available 24/7.

- c. Banked blood is not always available for transfusion. The main contributors are university students, so the supply is less when they are on holiday.

XVII. Xenograft Usage

- a. There is a tissue bank in close proximity to the operating theatres and is next to the offices of the Department of Surgery.
- b. Allograft is not used in Zambia.
- c. Xenograft (pigskin) has been used in the past, but its use was discontinued.
 - i. Some patients are reluctant to have animal skin placed on their wounds.
 - ii. The cost of purchase of the pigs is high.

Report written by:

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Appendix I: University Teaching Hospital, Lusaka, Zambia

University Teaching Hospital.—The University Teaching Hospital (UTH) in Lusaka is the biggest hospital in Zambia. It is located in the capital city Lusaka, approximately 2.5 miles east of the city center. UTH is the principle medical training institution in the country for medical students, interns, and postgraduate doctors (residents). It also trains nurses through the Nursing School located within the hospital grounds, as well as Clinical Officers (roughly equivalent to Physicians' Assistants) through their college located at Chainama Hills College Hospital. UTH provides a full range of primary, secondary, and tertiary health and medical services on both an inpatient and outpatient basis. In addition it serves as the country's specialist center, receiving referrals from all over the country.

Lusaka.--Lusaka, the capital of Zambia, had a population of approximately 3,100,000. Being centrally located, it is the hub of most of the political and socio-economic activities of the country. It also serves as the focal transport route both for national and international travel. Lusaka is also the largest city of Zambia. The two main languages spoken in Lusaka are English and Nyanja. It is located in the southern part of the central plateau of the country, at an elevation of 4200 feet. It is a commercial center as well as centre of government, and the four main highways of Zambia radiate north, south, east and west from it.

Zambia[‡].—The population of Zambia is 11,862,740. Life expectancy at birth is 39 years, and 45% of the population is under 15 years of age. Infant mortality rate is the ninth highest in the world, and the overall death rate is fifth highest. HIV/AIDS prevalence in adults is 15%, seventh highest in the world. The risk of major infectious diseases is very high, including bacterial and protozoan diarrhea, hepatitis A, typhoid fever, malaria, schistosomiasis, and rabies. Just over one-third of the population lives in cities, and Zambians are leaving rural settings at an annual rate of 2.3%. African groups in the population include Bemba, Tonga, Chewa, Lozi, Nsenga, Tumbuka, Ngoni, Lala, Kaonde, and Lunda. Over 80% of the population is literate, and the average time in school is seven years.

Zambia's economy has experienced strong growth in recent years, with real GDP growth in 2005-08 about 6% per year. Privatization of government-owned copper mines in the 1990s relieved the government from covering mammoth losses generated by the industry and greatly improved the chances for copper mining to return to profitability and spur economic growth. Copper output has increased steadily since 2004, due to higher copper prices and foreign investment. In 2005, Zambia qualified for debt relief under the Highly Indebted Poor Country Initiative, consisting of approximately USD 6 billion in debt relief. Zambia experienced a bumper harvest in 2007, which helped to boost GDP and agricultural exports and contain inflation. Although poverty continues to be significant problem in Zambia, its economy has strengthened, featuring single-digit inflation, a relatively stable currency, decreasing interest rates, and increasing levels of trade.

[‡] Central Intelligence Agency: The World Fact Book. <https://www.cia.gov/library/publications/the-world-factbook/geos/za.html>, accessed 25 January, 2010.