

Proposal to America Nepal Medical Foundation

For Improvement in Burn Care at Nepal Cleft & Burn Center, Kirtipur Hospital, Kathmandu, Nepal

Introduction:

According to WHO, 95% of 11 million people who sustain burn injuries every year globally are from lower and middle income countries. Just as many women in the world sustain moderate and severe burn injuries every year as they are diagnosed with HIV and AIDS. Fire burns alone kills 320,000 people every year worldwide. More than 50% of these people who die are from South East Asia alone. This is why WHO considers South East Asia as the epicenter of burn injuries.

Government of Nepal, Ministry of Health and Population has reported in 2008 that over 55,000 people sustained burn injuries in a year in Nepal. These injuries were fatal in 2100 people. Thus, together with the high incidence of burn injuries, burn mortality is also found to be higher in the lower and middle income countries including Nepal.

In Nepal, treatment of burn patients is not well organized. There are very few plastic surgeons in the country and even fewer working in hospitals out of Kathmandu valley. The number of beds available for admitting patients with burn injuries even in the capital city of Kathmandu is very small. The Nepal Cleft and Burn Center in Kirtipur Hospital is the sole burn center with dedicated burn ICU and dedicated operating rooms for the care of these unfortunate patients in the whole country of Nepal.

Situation in Nepal:

Just like in most low and middle income countries, the outcome of acute burn care in Nepal is very poor. There are many reasons for this e.g. late arrival of burn patients in the treatment center, poor economic conditions of patients and very expensive burn treatment, lack of proper physical infrastructure for taking care of acute burn patients, lack of trained human resource and lack of access to proper technologies which are mostly too expensive for poor and middle income countries. The number of burn patients is also very high in these countries while the resource is very little. In Nepal Cleft and Burn Center of Kirtipur Hospital, run by Public Health Concern Trust-NEPAL (pfect-NEPAL), the number of patients admitted for the care of acute burn injury has been increasing every year but our resources have not. The number has increased not because of the increasing incidence of burn injury but because more patients are being referred to this burn center

which is the only center with dedicated Burn ICU with 7 beds and two dedicated operating rooms for burn patients. In year 2019, patients came from 73 out of 77 districts of Nepal in addition to some patients from India; 92% of all the admitted patients came from outside of Kathmandu. The center also has the largest number of plastic surgeons and plastic surgery residents in the country. This is the reason why this hospital has been able to take care of acute burn patients.

Year	Number of admitted patients	Mortality (percentage)	Remarks
2014	90	18 (20%)	
2015	194	46 (24%)	More than double of previous year
2016	373	85 (23%)	Almost double of previous year
2017	495	121 (24%)	
2018	608	132 (22%)	Surpassed the 600 landmark
2019	623	128 (21%)	119 admitted in the month of January alone
2020	519	103 (20%)	COVID19 pandemic
2021	622	136 (22%)	
2022	661	57 (9%)	
Total	4185	826 (20%)	

Analyzing the mortality data of our patients, we were shocked to find out that in 2014 (the first year of establishment of acute burn care service), we were not able to save anybody with 40% and more total body surface area (TBSA) burns in our center. One of the reasons was the lack of skin substitutes eg allografts (from another human) or xenografts (from other animal species e.g. pigs, fish) since the patient's unburnt skin is not enough to resurface the burnt areas as we cannot harvest skin from many parts of the body e.g. face, neck, axilla, groins, perinium, joints, etc. In 2015 and onwards, we were able to save few patients with 40% TBSA burns by using skin from the patients' live relatives and cadaveric skins but the largest TBSA burn victim so far saved in our center is only one case of 55% TBSA burn who received skin donations from three of his relatives. In developed countries, almost half of the patients with as much as 90% TBSA burns survive but at a very high cost- around \$ 1 million for one such patient. It is also very expensive in resource scarce countries like ours. Victims have to pay out of pocket and most of the time it is not affordable. There is very little investment in the development of burn care and also limited or no support to the burn victims for treatment from the state.

Every winter, we see a surge of acute burn patients since many elderly women and post delivery women try to warm themselves in open fire during which their clothes catch fire

and they sustain severe burn injuries leading to death of many. The last winter in November-December, 2019 and January-February, 2020 the surge was of an epidemic proportion- five times more than the usual number of patients had been admitted in the burn center. We were admitting as many as eleven patients of burn injuries in a day. There were 50 to 65 burn patients getting treatment the ward at any time during those four months in a general hospital which has a total bed capacity of only 100. With inadequate instrument and supplies, it is very difficult to provide a quality service to these poor and unfortunate victims of burn injuries. We have seen some encouraging improvement in outcome last year with continued effort. One out of three burn victims with 40% TBSA burn have started to survive; and mortality has dropped to 9% from over 20% in the previous years. But this is far from satisfactory.

Proposal for equipping the burn center:

Any medical facility needs adequate and proper medical and surgical equipments for delivering a standard of care.

The burn care facility at Nepal Cleft and Burn Center, Kirtipur Hospital could provide better care with some improvements in the equipments and supplies. A request is made to consider in acquiring the following items for the burn center.

SN	Items/Equipment	Requested Numbers/Pieces X Estimated cost per item	Total estimated Cost (NRs)	Remarks
1.	Patient monitor with NIBP, pulse oxymeter, ECG, RR, Temperature	12 X 101,135	1,213,620	For monitoring of patient's conditions in the ICU
2.	Patient monitor with IBP, pulse oxymeter, ECG, RR, Temperatur	6X 178,730	1,072,380	For more invasive and continuous monitoring of patients conditions (includes arterial blood pressure) for critically ill burn patients
3.	Mechanical Ventilator	3 X 1,879,500	5,638,500	Some patients need support in their breathing mechanically especially in the ICU
4.	ICU beds	10x 210,000	2,100,000	For burn ICU patients
5.	Patient trolley	2x250,000	500,000	To transfer patients
6.	OR table	1x487,676	487,676	

7.	Anesthesia machine with vaporizer	1x1,663,579	1,663,579	
Total			12,675,755	=98,262 USD
	Administrative cost	1000 USD		99,262 USD

Project name/title: Burn care improvement project Kirtipur Hospital

Amount of funding requested from ANMF in US \$ 100,000

Section 1: Project Description, Goals and Objectives

1. Problem identification and justification for the project. Explain the following

- a. **The particular problems to be addressed:** To improve the quality of acute burn care in Nepal through provision of equipment and instruments in resource limited set up.
- b. **Detailed reasons and justification for the project:** According to World Health Organization (WHO), 95% of 11 million people who sustain burn injuries every year globally are from lower and middle income countries. Just as many women in the world sustain moderate and severe burn injuries every year as they are diagnosed with HIV and AIDS. Fire burns alone kills 250,000 people every year. More than 50% of these people who die are from South East Asia alone. This is why WHO considers South East Asia as the epicenter of burn injuries.

Government of Nepal, Ministry of Health has reported in 2008 that over 55,000 people sustained burn injuries in a year in Nepal. These injuries were fatal in 2100 people. Thus, together with the high incidence of burn injuries, burn mortality is also found to be higher in the lower and middle income countries including Nepal.

In Nepal, treatment of burn patients is not well organized. There are very few plastic surgeons in the country and even fewer working in hospitals out of Kathmandu valley. The number of beds available for admitting patients with burn injuries even in the capital city of Kathmandu is very small. The Nepal Cleft and Burn Center in Kirtipur is the sole burn center

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Analyzing the mortality data of our patients, we were shocked to find out that in 2014, we were not able to save anybody with 40% and more total body surface area (TBSA) burns in our center. One of the reasons was the lack of skin substitutes eg allografts (from another human) or xenografts (from other animal species e.g. pigs, fish) since the patient's unburnt skin is not enough to resurface the burnt areas as we cannot harvest skin from many parts of the body e.g. face, neck, axilla, groins, perinium, joints, etc. In 2015 and onwards, we were able to save few patients with 40% TBSA burns by using skin from the patients' live relatives and cadaveric skins but the largest TBSA burn victim so far saved in our center is only one case of 55% TBSA burn who received skin donations from three of his relatives. In developed countries, almost half of the patients with as much as 90% TBSA burns survive but at a very high cost- around \$ 1 million for one such patient. We, in Nepal, always thought that there is no way to save our patients with major burns.

Every winter, we see a surge of acute burn patients since many elderly women and post delivery women try to warm themselves in open fire during which their clothes catch fire and they sustain severe burn injuries leading to death of many. The last winter in November-December, 2019 and January-February, 2020 the surge was of an epidemic

proportion- five times more than the usual number of patients had been admitted in the burn center. We were admitting as many as eleven patients of burn injuries in a day. There were 50 to 65 burn patients getting treatment the ward at any time during those four months in a general hospital which has a total bed capacity of only 100. With inadequate instrument and supplies, it is very difficult to provide a quality service to these poor and unfortunate victims of burn injuries.

- c. **Goals and objectives to be achieved:** The project aims to drastically improve the standard of care of acute burns in Nepal. As mentioned earlier any deep burn more than 40% TBSA have difficulty surviving while many other smaller burns also die with an overall hospital mortality of around 20% as per the Kirtipur Hospital data which has not changed over last seven years. As there are many reasons for this unacceptably high death rate, these can be largely prevented through multi-pronged approach. One of them is improving the quality of care in the hospital through equipping the facility with better equipment.
- d. **Geographical area and communities that will be served including socio-economic data:** Kirtipur Hospital receives more than 90% of the burn patients from outside of Kathmandu. They had come from 72 out of 77 districts according to 2019 data. Most of these patients are from lower socioeconomic stratum. Burn care is very much resource intensive and expensive especially for the poor patients who constitute the highest proportion of burn patients.
- e. **Number of people who will directly benefit from the project on annual basis:** Looking at the data, more than 600 burn patients get admitted in Kirtipur Hospital. All of these will be benefited from these projects. With improved service delivery, we expect the number to rise significantly as there is no other facility to take care of burns effectively.

2. **Project strategy and plan of action. Provide the following information:**

- a. **Detailed plan for this project, indicating how the objectives will be reached:** Our hospital has adequate number of surgeons trained to take care of burns (6 fully qualified plastic surgeons) beside nurses, physiotherapists, nutritionists to name a few). Only thing that is lacking is the supplies and equipment to furnish our burn ICU and OT. Furnishing our burn ICU an OT is going to improve the quality of care hence improve the

- a. **Outline plans for ANMF's continued participation afterwards.** Regular supervision by local ANMF to see the condition of the instruments, interacting with the patients on a regular basis.
 - b. **Indicate how this project will be identified and promoted as ANMF supported project:** We will put a plaque indicating that this project was supported by ANMF. The plaque will also acknowledge America Nepal Medical Foundation for supporting.
5. **Include an itemized budget for the entire project using the format below:**
- a. Income must equal expenses
 - b. Indicate which currency is being used and the exchange rate to US dollars.
 - c. In the income section, list all the funding sources separately and specify the amount each is contributing.
 - d. Clarify the status of each income source as pledged, collected or anticipated. For pledged and anticipated amounts, indicate the date by which the funds will be readily available for the project.