

Proposal

For

**Oxygen Concentration Plant for
ICU and Operation Theater**

At

**Tribhuvan University Teaching Hospital (TUTH),
Maharajgunj, Kathmandu, Nepal**

Proposal Submitted To:

America Nepal Medical Foundation

Proposal Submitted By:

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Proposal Narrative

Background:

Considering the need for medical education, the first medical college of the country, Institute of Medicine was established in 1972 and MBBS program was started in 1978 following which the Tribhuvan University Teaching Hospital for clinical training was started from 1983. Then after, Intensive Care Unit services was started from 1990, being the second ICU in the country after the first one started at Bir Hospital in 1973. The six-bed ICU at TU Teaching Hospital (TUTH ICU) created during 1990 with the support from Japanese government was upgraded to Eleven bed in 2012 and has been continuously serving the critically ill patient. Considering the need of specialty training in Critical Care Medicine, Institute of Medicine has also been the first institute of the country to start DM in Critical Care Medicine since 2013 and its running in its third year. The TUTH ICU at present is running its full capacity and serving 550 – 560 patients per year with an average mortality of 24% (2013/2014). The mortality rate for medical patients was 33% whereas it was only 15% (2013/2014) for surgical patients.

Considering the operation theaters, there are overall eight operating rooms at TUTH where six are dedicated for elective surgeries and there are two emergency Operating Rooms. TUTH Operating Room does many critical surgeries including Neurosurgery, Orthopedics and trauma and even Renal Transplant.

Considering our further extension plan, Orthopedic Department and ENT Department with about 80 bed capacity is shifting in the near future to Ganesh Man Singh Building and there will be a separate six bed Trauma ICU which will further require more oxygen supply.

2015 Earthquake and role of TU Teaching Hospital:

During the massive earthquake in April and May 2015, TU Teaching Hospital was the only hospital in Kathmandu to function in full capacity from the day of earthquake. TU Teaching Hospital was running four Operating Rooms immediately after the major earthquake and started Operating on Eight Operating Room from the same night of the earthquake and on the first 24 hours performed around 25 major surgeries and three intracranial surgeries for these earthquake victims. And till 15th May, TU Teaching Hospital treated 1723 earthquake victims and performed 478 major surgeries for the victims.

Considering the ICU Services, we were very limited by only 11 ICU beds. But, from the first day, we converted our postoperative ward into a Surgical/Trauma ICU and also started admitting critical patients there. We also converted our Post Anesthesia Care Unit / Recovery Room into a 10 bed post-operative ward for the first week. All the patients who needed ICU care were kept in these units while patients requiring routine post-operative care was admitted in the Recovery room. Overall, we treated 23 patients in main ICU and another 62 patients in the Trauma/Surgical ICU.

TU Teaching Hospital has proven now that this hospital is the largest in capacity and most efficient in handling massive disaster of this nature and hence is the most ideal hospital amongst the existing hospital in Nepal. And thus this hospital must be further strengthened and enhanced to cope any possible natural disaster in future.

Statement of the problem:

Even though TU Teaching Hospital is taking care of so many patients in the operating room and in the Intensive Care Unit, one of the basic but most important requirements for patient management, Medical Oxygen Supply is a huge problem in TU Teaching Hospital. The oxygen concentration plant of the hospital has not been functional since last few years and could not be repaired. Henceforth, hospital is supplying oxygen from Oxygen Cylinders bought from other place and connected to the manifold. This is in fact costing a lot of expense to the hospital. In an average, TU Teaching Hospital spends about Rs. 50 Lakhs per year in these medical oxygen cylinders.

But due to the problem in supply and pipelines, even when giving 100 % oxygen, the maximum output is only 70-80% of oxygen and we will need to connect a separate oxygen cylinder for those patients requiring higher oxygen concentration at the bedside. This has cause serious problem in our work and patient care also. Most of our mechanical ventilators are constantly alarming because of low Oxygen and we cannot do anything. We tried to solve this problem and even supplied oxygen to TUTH Operation Theatre and ICU separately with Oxygen cylinder and also by connecting this pipeline to a separate oxygen supply from the newly build Oxygen Plant at the adjacent Manmohan Cardiovascular Center, but because of leakage and diversion, this also did not work. So, at this stage we are working with low oxygen supply risking our patient's safety.

This has also been put into notice of the government and asked to replace the oxygen plant and requested to many authorities including Dean's office of the Institute of Medicine, Ministry of Health and also Tribhuvan University that will cost around Rs 5 Crore, but this has not been addressed. Even though TU Teaching

Hospital is a tertiary center, there are so many administrative and has to go through many steps and ladders which will take years.

Project Goals:

The main objectives of the proposal is to have a separate Oxygen Concentration Plant at TU Teaching Hospital which will provide oxygen to all the critical areas of the Hospital including the Operation Theater, Intensive Care Unit, Postoperative Ward. This will allow the remaining oxygen from the old plant to be diverted to remaining wards only and will also reduce the expenses on cylinder oxygen.

The tentative plan is to purchase an Oxygen Concentration Plant around 400 – 500 liters and will be based on the budget.

TU Teaching Hospital will provide space for the Oxygen Concentration Plant behind the hospital premises at the side of Manmohan Heart Center. ANMF will purchase the Oxygen Concentration Plant and install at the provided space and handover the plant to TU Teaching Hospital.

Final words:

This is a huge project and requires a lot of resources and effort in terms of financial backup but once this is started, this will be very fruitful and will ensure safety of patients in Operation Theater and Intensive Care Unit.

Budget Plan:

The estimated budget for the 500 liters Oxygen Concentration Plant is around NRs 90 – 100 Lakh rupees (USD 90 – 100,000)

Duration:

Once the proposal is approved, it will take around one month to do the field survey, make specifications of plant and oxygen pipelines. Then this will be purchased and installed which will take around one month and within three months the Oxygen Plant Could be connected to existing pipeline of OT and ICU and handed over to TU Teaching Hospital.

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