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BRIEF COMMUNICATION

DEVELOPING A BURN UNIT: OUR EXPERIENCE AT ALEX EKWUEME FEDERAL UNIVERSITY TEACHING HOSPITAL ABAKALIKI, SOUTHEAST NIGERIA

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ABSTRACT

***Background**: The burden of burn injuries in developing countries overwhelms the few regional burn centers. Tertiary institutions are involved hugely in the management of extensive burn injuries despite the lack of specialized burn units. This necessitates setting up a burn unit in our tertiary center. We aim to share our experience to stimulate our colleagues in different tertiary institutions to commence the process of setting up a Burn Unit in their respective institutions.*

***Methods and Results**: The development of the Burn unit in Alex Ekwueme Federal University Teaching Hospital Abakaliki took approximately 7.5 years from September 2013 to March 2021. It started as a Burn Facility and smoothly developed into a Burn Unit with a distinct leadership and resulted in a more effective and smooth running of the unit with an improved capacity and a promising outcome.*

***Conclusion**: A strong commitment is required from the plastic surgeons to drive the process of setting up a Burn Unit through a rigorous transition from a burn facility smoothened by the ability to make a case for expansion of an existing unit. The argument is to ensure that Burn Unit takes its rightful place like Emergency and In-*

INTRODUCTION

Burn injuries require an urgent attention within the shortest possible time. Because of the need to give patients immediate attention it is necessary to have facilities patient would be able to access within an hour of injury to minimize metabolic response to injury of which a mode of transport most suitable is chosen[1]. In Nigeria where there are thirty-six federating states and the federal capital territory, there is a need to have burn unit in each state and the federal capital territory, and the burn centers in each of the six geopolitical zones. This would help to ensure comprehensive burn care coverage in the federation.

Burn burden is largest in the low and middle income countries where the burn care facilities and the expertise are also suboptimal [2]. In Nigeria for instance where there are about two hundred million citizens, there are less than two hundred plastic surgeons who are saddled with the responsibility of managing burn victims in the region [3]. The distribution of the plastic surgeons is also skewed such that most plastic surgeons practice in the more urbanized States and mostly in the federal government owned hospitals. The patient in rural areas of which most of the Ebonyi state regions fall under, do not have access to intra-state burn units.

Although there are no published works on the number of burn facilities/units/centers in the country, the Nigeria Burn Injury Society have documented that 22 institutions in the country provide various burn services. In the Southeast specifically where there are 10 tertiary health institutions involved in burn care, there are only 2 burn units and one regional burn centre. Others run either burn facilities or nothing and could benefit from our experience to transit to burn units.

The level of burn care provided in health institutions have been stratified into three which are Burn facilities, Burn Units and Burn Centers[4]. The Burn facilities are a level of burn care which is for management of non-complex burn injuries. It is just same as a standard plastic surgical ward. The Burn Unit is at the second tier of care. It has a separately staffed ward with distinct headship from the plastic ward. The Burn Center is a geographically distinct institution fully equipped for managing most complex burn. It is usually a referral center receiving patients from different burn units[4].

Most teaching hospitals in Nigeria manage burn victims. The major constraint to burn management in these institutions is dearth of manpower and infrastructure for burn care. However in a few tertiary institutions the manpower capacity to run either Burn Facilities or Burn Units is readily available, but the major setbacks are infrastructure and institutional support.

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A burn Unit is supposed to manage burn victims of intermediate injury usually less than 30%[4]. But in practice burn of much higher severity are managed in the tertiary institution with mostly burn facility due to capacity constraint in the Burn centers. This strongly necessitates setting up a burn unit in the tertiary hospitals which exist in each of the thirty six federating units and the federal capital territory as either university teaching hospitals or federal medical centers.

We are therefore constrained to share our experience in a federal university teaching hospital which is barely 10 years old but has evolved from running a burn facility to running an established ultra-modern Burn Unit in a resource constrained environment. It is hoped that be sharing our experience, we would stimulate our colleagues in different tertiary health institution to commence the process of setting up a Burn Unit in their respective institutions. This would reduce the pressure on the limited bed spaces and human resources in the regional Burn Centers in the developing countries[5].

Method

Alex Ekwueme Federal University Teaching Hospital Abakaliki (AEFUTHA) was established as Federal Teaching Hospital Abakaliki (FETHA) in December 2011 by Upgrade of the Federal Medical Center Abakaliki with absorption of the personnel and facilities of the Ebonyi State University Teaching hospital Abakaliki. This gifted the new hospital with two facilities which led to streamlining services in the two facilities with one running maternal and child health services with other supporting units. The other runs surgical and adult medical services. Neither of the facilities at the time of the merger had a plastic surgeon nor a Burn facility. Burn patients were largely referred to the Regional burn center at National Orthopaedic Hospital Enugu which is less than 100km away from both facilities.

In 2013, following employment of two consultant plastic surgeons a 20 bedded plastic ward was created in which burn and non-burn patients were managed without a separation. Some burnpatients were also managed in both General surgical and Orthopaedic wards due to insufficient bed space in the plastic surgery ward. In 2015 however, an 8-bedded Burn Facility was created out of the Plastic Surgery Ward leaving the latter with only a 12 bed capacity. The burn facility essentially took care of the acute burn cases while the chronic burn wounds which are burn incidents greater than 3 weeks were managed either in the Plastic ward or in the Orthopaedic and General Surgery Wards. This arrangement was utilized till March 2021 when a Burn Unit was established in the new trauma center of the hospital. The floor plan encompasses a dirty zone for changing of outdoor wears to duty scrubs. The next zone is the transition zone which accommodates the nursing station and entrances leading to the last zone, the acute zone which is divided into the intensive care section and the high dependence section, has male and female subunits respectively. The painting was done with the antibacterial paints and the unit is fully air conditioned. Hydrotherapy is achieved with overhead showers to reduce cross-infection of using burn bath. The Burn Unit comprised a 4 bedded Intensive Care Unit with a single colt, and an 8 bedded High Dependence Unit with a colt. It has a distinct headship from the Plastic Surgical Ward and runs in a multidisciplinary and interdisciplinary manner with intensivists, microbiologist, hematologist and other relevant specialties collaborating with the plastic surgeons.

Fig 1: Transition zone

Results

In the period under study the Burn and plastic division has evolved from running a 20 bedded unit of which 8 beds were dedicated to burn patients, to a 12 bedded burn unit with both intensive care and high dependence sections (Figures 1&2).

Figure 2: A bed unit in the Burn Intensive care unit showing a ventilator and a nebulizer

This increase in capacity and capability has translated to a better outcome with the few patients so far managed in the new burn unit. We have been able to achieve survival in an 85% flame burn with significant inhalation burn following gas explosion [Data for this is not included in this paper].

The human capacity has also increased from only four specialty nurses trained in Burn and Plastic Post-basic Nursing to 20 of them who now work with non-specialized nurses as assistants. There are now 6 consultant plastic surgeons and 5 senior registrars in plastic surgery involved in the running of Burn Unit. Other support staffs who work as orderlies, potters, and administrative personnel have also been employed. There has also been a huge improvement in the residency training programme with a full accreditation by both National Postgraduate medical College of Nigeria and the West African college of Surgeons.

DISCUSSION

The establishment of Burn Units in Tertiary institutions has become inevitable owing to the increasing national population and attendant parallel rise in especially flame burn events[6].Also, the available Regional Burn Center is not sufficient to handle all the victims especially when there is a major disaster. However such projects could be very challenging due to lack of adequate manpower and infrastructure, as well as poor institutional support.

As the burn burden continues to increase in especially poor resource countries, the plastic surgeon that is often saddled with the burn care task[7], is confronted with the need to work with the institution to set up a burn unit. It is often not easy to start with a burn unit due to lack budgetary allocation to fund such projects. It therefore requires, in such constraining settings, starting first with a burn facility in a plastic surgery or even a general surgical department. It is easier to start this with just a minimum upgrade of the standard ward facilities. The need to start up with a burn facility is so that the management of burn victims could be commenced and audited to have a basis for further expansion of infrastructure and upgrade of man power component of burn care. And for tertiary hospitals who already run burn facilities, it necessary to upgrade to burn unit to improve outcomes.

This is even more so since auditing burn care settings is known to independently affect outcomes.[8]

A major challenge to our progressing from the burn facility to burn unit was the failure of the key players in the different level of management to appreciate the need for a distinct burn unit without considering it an undue favour to plastic division which is a mere unit of the department of Surgery. Burn unit should be seen in the same pedestal as Accident and Emergency Unit, Intensive Care Unit and Theatre Unit. Even though it is run by the plastic surgeons due to the need to prevent and manage most of the post-burn sequalae, it is a distinct unit that is very crucial to the society at large.

Burn trauma is very devastating and requires a distinct unit with specialized personnel[9].It could be argued that having an intensive care unit may obviate the need for a burn unit. A study however has shown that when such patients are managed in the conventional intensive care unit that the outcome was not goodenough.[10]

The main responsibility the plastic surgeon in ensuring a smooth transition from burn facility to burn unit is to convince the institution of the relevance of a burn unit to the institution and the society at large. In part an audit of the Burn facility would equip the plastic surgeon with facts to make a strong case for a Burn unit[11]. Burn Awareness creation could also attract the attention of both governmental and non-governmental organizations to assist with infrastructural support and other forms of assistance[12]. Our transition was made possible by a construction of a new trauma center arguably the largest in the country by the state government which has a sufficient space for the burn unit. The second factor was the involvement of one of the consultants in the top management of the hospital. The final factor was engagement of a very senior colleague with view to obtainment of accreditation. This further facilitated the commitment of the management to ensuring the accreditation for Fellowship training was secured for the two colleges.

CONCLUSION

The will-power of the plastic surgeon drives the process of starting up a burn facility and transiting smoothly to a befitting burn unit in a tertiary health care facility. When this is tactfully done, the resultant increase in burn care capacity snowballs to an improved outcome in the burn care.

Conflict of Interest: There is no conflict of interest.

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