

## Burn Disaster Acute Care Management in a Nigerian Hospital: any change 10years after?

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### SUMMARY:

This study is derived from retrospective data from the management of a fire disaster involving nine students managed in the institution following a fire disaster at the female students' hostel.

The average length of stay was 19 days. The total cost was \$47.74 per day per patient.

**KEY WORDS:** Burn care costs, injury, Nigeria

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### INTRODUCTION

Nigerian reports on burn injury abound, and infer outcomes for burn care are poor, with high costs.1-4 Whilst reports from part of Nigeria and other regions are available,3-5 reports from the south east including costs are largely unavailable. Burn costs have been largely under reported.6

### MATERIALS AND METHODS

A retrospective study of nine patients brought in simultaneously for major flame burn injuries and managed from the resuscitation phase to discharge or death at the National Orthopaedic Hospital, Enugu in 2001 was done. The disaster involved students who sustained injury following a gas explosion in the female hostel. The building was not purpose built, and had a narrow passage way, without fire extinguishers. Students there also cooked on kerosene stoves.

That day a gas cylinder ignited and the whole building became engulfed. Those with minor injuries were managed at the university hospital. Those with major injuries were transferred during resuscitation. Information about impending transfer was made by the sending institution to the recipient Medical Director and Head of trauma. In preparation for them the emergency room as well as the temporary burn facility was evacuated. The burn injury ranged from 30% to 95% body-surface-area. The patients were distributed among the four consultant units, the day's unit-on-take took three. One senior resident oversaw all patients.

Twice daily ward rounds were conducted with a consultant. Daily haematological and twice weekly electrolyte investigations were ordered. Other investigations were done ad hoc. The average length of stay was 19 days. There was (and still is) no functional Intensive Therapy Unit or ventilator. Ceftriaxone was

commenced from the time of admission for 72hours, thereafter based on the clinical status of patients antibiotic cover was offered.

1% silver sulfadiazine was the choice for dressings. Gentamicin cream was used for facial burns occasionally. A few patients had a combination of dressing materials at various periods.

Tangential excision or early skin grafting was excluded. Skin banking was (and is) unavailable. The frequency of dressing was influenced by manpower considerations. The burn unit had and has no dedicated theatre.

Records from the internal revenue, laboratory and medical records departments were obtained. Simple arithmetic analysis was used in the study.

### RESULTS

There was one male and eight females. The first mortality was a female with 30% burns following acute renal shutdown and persistent pigmented urine. All those with extensive injuries (above 40%) died within two weeks from Disseminated Intravascular Coagulation, respiratory failure and Multiple Organ Dysfunction Syndrome.

Laboratory investigations cost \$941.67; haematology tests accounted for 157 requests and cost \$535.73 (table 1). Medicament cost \$4467.97; antibiotics (the costliest single heading) accounting for more than half [\$2416.03]. The total cost was \$8162.90; with an average of 19days stay for 9 persons the cost was \$47.74 per day. Antibiotics accounted for 30% of the total cost.

All patients presenting to the unit and requiring surgery had to be operated on a single weekly list. Survivors had split skin grafting and were discharged with skin dyschromia for which one sought treatment overseas. Funds promised by the State government to cater for the injuries are still being awaited.

Table 1: summary of costs for 9 medical students

✍	Haematologic tests and blood transfusion 157 tests: N80,360 [\$ 535.73]
✍	Microbiology 24 tests 6,490 [\$ 43.27]
✍	Clinical chemistry 54,400 [\$ 362.67]
✍	Antibiotics 362,405 [\$2416.03]
✍	Other medicament including oxygen 307,791 [\$2051.94]
✍	Other Hospital bills 412,989.60 [\$2753.26]

✍ Total N1, 224,435.60 (\$8162.90)

## DISCUSSION

Nigerian burn care is such that the cost is usually entirely borne by the patient. Insurance does not cater for burn injury, and payments are made at the point of need. It is associated with the most profound metabolic response, and the treatment costs may also exceed that for other injuries. Even though the reported incident exceeds ten years it is instructive that little has changed in the period in terms of facilities. Pre hospital care remains largely undeveloped here.<sup>7</sup>

The sex distribution noted in the study is incidental. The incident occurred in the female hostel; the male involved attempted rescue. Fire is the commonest cause of burn admissions in the country.<sup>3</sup>

Our preference of 1% silver sulphadiazine differs from other Nigerian centres.<sup>2</sup> It is however the first choice in dressing acute partial thickness burn injuries.<sup>8-9</sup>

In developed centres ward rounds, haematological investigations as complete-blood-count, and wound cultures are done daily.<sup>9-10</sup> Our frequency differs with previous work done here,<sup>10</sup> and may reflect an attempt at giving standard care. Media covered incidents may not reflect the true care given by institutions. Burn wound biopsy which is more specific and sensitive was not used, as previously noted.<sup>10</sup> The early prophylactic antibiotic use may be owing to concerns about contamination of the burn wound during transit, and indiscriminate trolley use for all trauma cases including gangrene. Nosocomial infections contribute to the high degree of resistance by isolates to commonly used antibiotics and may result in use of very expensive antibiotics.<sup>10</sup> Deaths within the first two weeks following extensive burn injury are common.

The first mortality may have had undetected crush injuries during the stampede. The cost in this study is much more than that reported from north central Nigeria.<sup>4</sup> This may be as a result of an existing subsidy there as in south-western Nigeria.<sup>3</sup> This is all the more likely given that antibiotics in our study accounted for 30% of the total cost as against 84% in Ilorin; and the expense on antibiotics in our setting was over three times theirs. Our centre may have used different classes of antibiotics and/or there may be wide variations in costs within the country from regional inflation.

Major burn injuries most frequently affect the low socioeconomic group, over 85% of major burn victims earn about \$5 a day in Nigeria.<sup>2, 10</sup> In Spain the mean cost per patient was \$95,551;<sup>5</sup> 1,966 times the Nigerian cost. Can one hope for state-of-the-art burn management in Nigeria soon? Prevention is the best treatment.

Programmes to reduce burns using various media reaching the communities, and enforcement of existing legislation are urgent. Government should increase funding to improve Burn care. Ten years on no functional intensive therapy room or ventilator exists in the centre and the aid from the government is still awaited.

## CONCLUSION

Burn care in eastern Nigeria appears costly and inadequate.

## ACKNOWLEDGEMENTS

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