

## AN AUDIT OF DEATHS IN THE EMERGENCY ROOM IN THE UNIVERSITY COLLEGE HOSPITAL IBADAN.

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### ABSTRACT

**Introduction:** Death rates in the accident and emergency department may be a reflection of the quality of care in the hospital. Trauma related mortality is a significant cause of preventable death.

**Method:** A retrospective study was conducted in the accident and emergency department of the University College Hospital Ibadan (Nigeria) using the hospital records to determine the pattern of mortality over one year.

**Result:** Five thousand one hundred patients attended the accident and emergency department in the year reviewed. One hundred and sixty eight (3.3%) mortalities were recorded. There were 97 males and 71 females with mean ages of 49+/-37.8 and 42+/-30.7 years respectively. 46% of the patients had medical (non-trauma non-surgical) related diagnoses. Trauma constituted 31% of the mortalities with an average probability of survival of 80% at presentation. Head injury and multiple long bone fracture were the commonest causes of trauma related mortalities.

**Conclusion:** Trauma is a preventable cause of death. The poor outcome of the trauma patients underscores the need to equip the attending doctors in the emergency room with basic skills in trauma care.

**Key Words:** Emergency, mortality

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### INTRODUCTION

The accident and emergency room (ER) is one of the major admission entry points into hospitals. The death rates in these emergency rooms (ER) may be a reflection of the quality of care in each health institution<sup>1</sup>. In the busy environment of the emergency room outcome of treatment can be sub-optimal<sup>2</sup>. Indices of such quality of care are:-

1. Professional competence of the staff.
2. Advanced resuscitation equipments
3. Availability of blood
4. Supportive care<sup>3</sup>.

A review of the literature shows a decline in ER mortality especially in trauma associated deaths in environments where the indices above are functional. Currently trauma associated death in the ER in developed countries has dropped from 23% in 1984<sup>4</sup> to 6% in 1998<sup>5</sup>. Information on the causes of death in the ER is important for the development of a national health policy. An audit of mortalities in the accident and emergency department of the University College Hospital Ibadan was conducted to analyse the pattern of mortalities, identify areas of improvement and make suggestions on improving the quality and outcome of resuscitation in the ER.

### MATERIALS AND METHODS

This was a retrospective study of deaths in the ER of the University College Hospital Ibadan over a one year period from January to December 2005. The data extracted from the casualty records included the biodata, the vital signs at presentation, the Glasgow coma score (GCS), the diagnosis at presentation and the time interval between presentation and death. The injury severity for trauma patients at presentation was computed from the vital signs at presentation and the probability of survival was calculated. There were two hundred and five different diagnoses which were narrowed down to four major categories; trauma related, surgical, medical and obstetrics and gynecological emergencies.

### RESULTS

There were 5100 (five thousand one hundred) visits to the ER in the University College Hospital Ibadan in the year under review. A total of 168 mortalities (3.3%) were recorded (97 males and 71 females) with mean ages of 49+/-37.8 years in the male and 42+/-30.7 years in the female. The distribution of the recorded cases was narrowed down to four major categories; trauma related, surgical, medical (internal medicine) and obstetrics and gynecological emergencies. (Fig 1).

Trauma associated deaths constituted 31% with an age range from 5 years to 70 years, a mean of 22+/-15.8 years and 32+/-20.4 years for female and males respectively. The age distribution for trauma related deaths showed a peak in the third decade (fig 2). Mortality associated with medical emergencies constituted 46% of the affected population with a biphasic peak in the third and seventh decades (fig 2) while surgery related (non-trauma) mortalities peaked in the third and fifth decades (fig 2). The injury severity based on the revised trauma score (RTS) was calculated for 43 of the 51 trauma patients with an average RTS score of 5.2 which was estimated as a probability of survival ( $P_s$ ) of 80%.

Figure 1: Pattern of Distribution of Specialties of Diagnosis

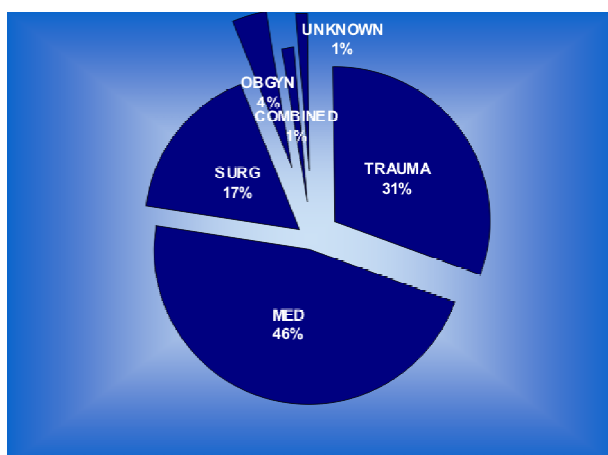
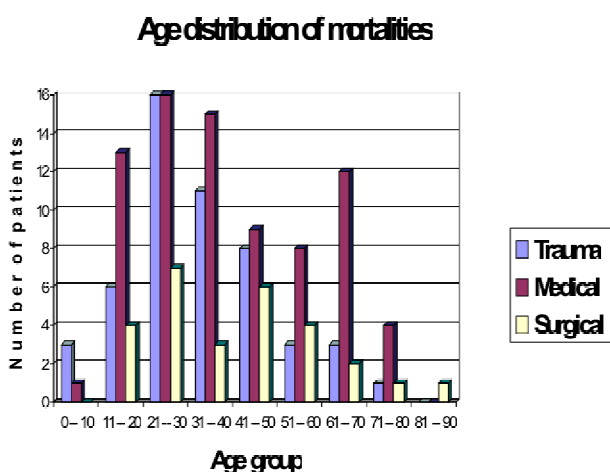


Figure 2:



## DISCUSSION

The ER in most hospitals in Nigeria attends to patients in all specialties (medicine, surgery, obstetrics and gynaecology). The distribution of mortalities in this study showed that the highest proportion of deaths in the ER presented as medical emergencies 46% (fig1). The first peak in medical mortalities was dominated by sepsis related and renal diseases while the second peak was predominantly due to cerebrovascular accidents. While the predominance of medical associated death is similarly demonstrated in this study the commonest cause of death was not cardiac as in similar publications<sup>4</sup>. The second most common cause of death in the ER was trauma which constituted a third (31%) of the mortality. The mean ages for these trauma victims were 22 years and 32 years respectively for female and male. This was a presumably healthy population prior to the onset of injury. A consideration of trauma patients as inclusive in surgically related mortality revealed that trauma related deaths constituted 60% of surgically related deaths. Previous studies on mortalities in the ER in Nigeria have been based only on surgically related deaths which excluded mortalities in other specialties. While an initial study revealed that eighty percent of surgical mortality was trauma related<sup>6</sup> a more recent study suggested a reduction in the proportion of trauma related mortality<sup>7</sup>. The predominant cause of trauma related death is road traffic accidents (75%) which constitute 10.1% of the total number of deaths. This level of reduction in the proportion of trauma associated surgical deaths is not demonstrated in our study. This discrepancy may be explained by a review of the trimodal pattern of trauma associated death<sup>8</sup>.

The first peak of “immediate death” is caused by untreatable injuries. The second peak of “early death” occurs within the first twenty-four hours after the injury while the third peak of late “trauma associated death” occurs after several days as a result of sepsis and organ dysfunction. The nonexistence of emergency medical services in Nigeria excludes most members of the population in the first peak discussed above. A better retrieval system for trauma victims translates to the arrival of more severely injured patients to the ER thus allowing for early intervention. This may however also translate to a higher absolute figure of trauma related deaths in the ER. The mortality in these physiologically compensated and relatively stable patients may be attributed to delayed or inadequate resuscitation. This is reflected in the dismal outcome of treatment when compared with the predicted outcome using the revised trauma score (RTS). The average RTS score was computed as 5.2 with a probability of survival of 80%<sup>9</sup>.

This implies that 80% of these patients should not have died which may be a reflection of the quality of care<sup>10</sup>.

The commonest organ systems involved in trauma associated deaths were head and multiple long bone injuries which is corroborated in previous studies<sup>7,11</sup>. Six of these patients were classified as poly traumatized patients. Other surgical related deaths exclusive of trauma (40%) also demonstrated a biphasic pattern. The first peak was in the third decade while the second was in the fifth decade. Both peaks were largely sepsis related. Peritonitis probably secondary to ruptured appendix or perforated typhoid ileitis was the diagnosis in the first peak while perforated duodenal or gastric ulcers were the commonest diagnosis in the fifth decade. Peritonitis as the leading cause of non-trauma related surgical mortality is demonstrated in a similar study<sup>12</sup> but the number of mortalities due to terminal malignancies in our ER extremely low. Obstetrics and gynaecology recorded the least number of mortalities.

### CONCLUSION

The peak age group of mortalities in the ER is in the third and fourth decades. Medical emergencies constituted the commonest cause of death in the ER. Trauma is the second most common cause of deaths in the ER. The predominant proportion of trauma patients is in the third and fourth decades and grossly impact on our socioeconomic life. Despite a probability of survival above 80% in a significant proportion of trauma patients the outcome of care is poor. Subsequent studies need to be conducted to determine factors which will improve the outcome of care in the ER.

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