

# MORTALITY IN THE ACCIDENT AND EMERGENCY UNIT OF Nnamdi AZIKIWE UNIVERSITY TEACHING HOSPITAL, NNEWI: PATTERNS AND FACTORS INVOLVED

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## SUMMARY

Mortality in the Accident and Emergency (A&E) department is a good indicator of the quality of care as well as facilities available.

Between 1<sup>st</sup> of July 1996 and 30<sup>th</sup> of June 2000 a total of 3583 patients were registered at the accident and emergency unit of Nnamdi Azikiwe University Teaching Hospital Nnewi. Three hundred and thirty eight (338) died within 24 hrs.

The case files of these were reviewed with a view to ascertaining the causes and factors involved in the deaths of these patients. The analysis revealed that of the total number of deaths, 225 were males while 113 were females. Medical causes of death accounted for 203 cases while surgical causes accounted for 135 cases.

Cardiovascular accident due to hypertension is the commonest single medical cause of death while head injury from road traffic accident is the commonest single surgical cause of death. The highest incidence (when medical and surgical causes are combined) occurred between the 5<sup>th</sup> and 6<sup>th</sup> decades while the lowest was in the 9<sup>th</sup> decade.

The interval between presentation at the A & E department and death range from 30mins to 17hrs 30mins. Death from medical causes in our A & E department is due to late arrivals sequel to patronage of prayer houses and traditional healers while those from surgical causes are mainly due to delay in transportation and lack of facilities. Emphasis should therefore be laid on a mass enlightenment campaign and improvement of facilities.

**KEY WORDS-** *Accident and Emergency, Mortality.*

## INTRODUCTION

Mortality at accident and emergency (A&E) department has been used as performance indicator<sup>1</sup> as well as to assess quality of care and facilities<sup>2</sup> of the particular institution.

Various factors<sup>3,4</sup> have been suggested as affecting the mortality in the accident and emergency department. These include: the wounding agent, organ of wounding and associated injuries for trauma cases and the pre morbid state of the patient in the medical cases. Studies done at Enugu<sup>5</sup> also showed that mortality is higher among mass casualty victims. Other studies<sup>6</sup> also indicate that the initial treatment given to a patient influences mortality at the A&E department.

Nnamdi Azikiwe University Teaching Hospital being the only tertiary institution in Anambra State services a population of over 3 million people. Consequently the A&E department is a very busy one recording an average of 900 cases yearly:

This study aims to use the mortality pattern in this busy A&E unit to study the factors involved in such mortality with the sole purpose of finding out if such factors could be eliminated or improved upon so that we have a better structured A&E and hence improved quality of care.

## STUDY BACKGROUND

Nnamdi Azikiwe University Teaching Hospital is a relatively young institution. No studies have been done to assess the facilities on ground vis-a-vis the needs of the target population. Mortality pattern being a good index of facilities (human and material) available is used here to determine areas of need. The findings are discussed and honest suggestions made.

## MATERIALS AND METHODS

This is a retrospective study spanning over a four year period from 1<sup>st</sup> July 1996 to 30<sup>th</sup> June 2000.

The records of all the deaths that occurred within 24hrs in the accident and emergency unit of Nnamdi Azikiwe University Teaching Hospital {N. A. U. T. H.} form the basis of this study.

The total number of patients registered in the A & E unit within the period under review was retrieved from the medical records department. These were critically reviewed in terms of age, sex, cause of death, time interval between arrival in the A&E department and death. The results were displayed in comparative percentages and analyzed using the "Chi Square".

## RESULTS

In the four years under review, 3583 patients were registered

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in the A&E unit of N. A. U. T. H. out of which there were 338 deaths giving a mortality rate of 9.4%.

There were 225 males and 133 females in the mortality cases giving a ratio of 2:1 {Table 2}. Medical causes of deaths accounted for 203{60%} of deaths while surgical causes accounted for 135{40%} of deaths. {Table 1}

Table 1: Distribution by Age for the Causes of Death

Age range	Medical causes (%)	Surgical Causes (%)
11yr-20yr	20(5.9)	14(4.1)
21yr-30 yr	31(9.2)	18(5.3)
31 yr-40 yr	27(8)	27(8.0)
41 yrs -50 yr	27(8)	16(4.7)
51 yr - 60 yr	40(11.8)	25(7.4)
61 yr - 70 yrs	25(7.4)	10(3.0)
71 yr - 80 yr	19(5.6)	12(3.6)
81 yr - 90 yr	8(5.6)	5(1.5)
91 yr - 100 yr	6(1.8)	8(2.4)
Total	203(60.1)	135(39.9)

Table 2: Distribution by Age and Sex of the Mortality

Age range	Male (%)	Female (%)
11yr-20yr	23(6.8)	11(3.3)
21yr-30 yr	20(8.9)	19(5.6)
31 yr-40 yr	36(10.7)	18(5.3)
41 yrs -50 yr	32(9.5)	11(3.3)
51 yr - 60 yr	43(12.7)	22(6.5)
61 yr - 70 yrs	23(6.8)	12(3.6)
71 yr - 80 yr	21(6.2)	10(3)
81 yr - 90 yr	8(2.4)	5(1.5)
91 yr - 100 yr	9(2.7)	5(1.5)
Total	225(66.4)	113(33.6)

The commonest medical cause of death was cardiovascular accident due to hypertension 36{10.7%} while head injury due to road traffic accident is the commonest surgical cause of death accounting for 40{11.8%} of the total deaths. {Figs1&2}

The combined highest age incidence is between the 5<sup>th</sup> and 6<sup>th</sup> decades while the lowest occurred in the 9<sup>th</sup> decade.

The interval between arrival at the A&E unit and death range from 30mins to 17hrs 30 mins. {Average 2hrs 48mins}.

Three incidents of mass casualty were recorded with a mortality of 44.7%.

## DISCUSSIONS

Our analysis shows that we recorded more medical mortality than surgical mortalities in our A&E in the ratio of 3:2

From our study a lot of extraneous factors, some patient related others hospital related influence mortality at the A&E department. Some of the patient-related factors are late arrival sequel to patronage of native doctors and prayer houses and the pre-morbid state of the patient while the hospital related factors

Fig 1: Medical Causes of Death at Accident and Emergency Unit of Nauth

S. No	Cause of Death	No of Deaths	% Total No
1.	CVA due to hypertension	36	10.7
2.	H.I.V/AIDS related complications	23	6.8
3.	Hypoglycaemia due to Diabetes mellitus	18	5.3
4.	Congestive cardiac failure	17	5
5.	Liver Diseases	16	4.7
6.	C.V.A due to other causes	15	4.4
7.	Anaemia ? Cause	15	4.4
8.	Meningitis	14	4.1
9.	Acute asthmatic attack	13	3.8
10.	Renal Failure	13	3.8
11.	Koch's	9	2.7
12.	Cerebral malaria	7	2.1
13.	Lobar pneumonia	7	2.1
	Total	203	59.9

Fig 2: Surgical Causes of Death at Accident and Emergency Unit of N.A.U.T.H.

S.No	Causes of Death	No of Deaths	% Total No
1.	Head injury due to RTA	40	11.8
2.	Endotoxic shock from sepsis	12	3.6
3.	Injuries to other systems from RTA (eg blunt trauma to Respiratory System, GIT)	11	3.3
4.	Gunshot injuries	11	3.3
5.	Injuries from fall from height	10	3
6.	Head injury with other associated injuries from RTA	10	3
7.	Peritonitis	5	1.5
8.	Intestinal obstruction	4	1.2
9.	Hypovolemia from gastroenteritis	4	1.2
10.	Intra-abdominal malignancy	4	1.2
11.	Hepatoma	4	1.2
12.	Liver failure from cirrhosis	4	1.2
13.	Uraemia from Benign prostatic hyperplasia	4	1.2
14.	Perforated typhoid	3	0.9
15.	Anaemia from carcinoma of the stomach	3	0.9
16.	Metastasis from carcinoma of the colon	3	0.9
17.	Cardiovascular complication of obesity	3	0.9
	Total	135	40.1

are mainly lack of proper personnel and facilities. This agrees with other studies at Port-Harcourt by (Eke et al)<sup>7</sup> and in Ibadan by Oyamade et al<sup>8</sup> and Adeloye et al<sup>9</sup> and in Enugu by Ozoemena et. al<sup>10</sup>

Our medical mortalities showed a peak age incidence in the 5<sup>th</sup> to 6<sup>th</sup> decade which is explained by the fact that medical causes of death are chronic problems which have cumulative effects

that manifest later in life. In contrast, our surgical mortalities which are mainly from trauma have peak age incidence between the 3<sup>rd</sup> and 4<sup>th</sup> decades which is the young and vibrant age that are up and about. This finding is similar to that of Ndiaye et-al in Senegal<sup>2</sup> and those of Ozoemna et al<sup>10</sup> and Osuigwe A.N. et al<sup>5</sup> from Enugu.

Studies done in USA by Vernon et al<sup>4</sup> have shown that the caliber of doctors that man the A&E unit affect both the response to emergency and mortality. They were able to show from their studies that mortality in the pediatric emergency unit was reduced by the establishment of pediatric trauma response team and emergency care doctors. This is in contrast to what we have in our A&E where doctors are in the rank of Senior House Officers without any special training in trauma or emergency care.

It also follows that most of our trauma deaths result from head injury because we neither have this trauma response team nor a neurosurgical unit in the back up hospital (N.A.U.T.H).

We recorded three cases of mass casualty in our studies in which 47 victims were involved and there were 21 deaths (mortality of 44.7%). This high mortality was due to overwhelming of the facilities at the A&E department. Studies at Enugu<sup>5</sup> have confirmed that high mortality is recorded with mass casualty.

Other factors that affected mortality in our trauma series were anatomical location of injury, severity of injury and number of organs affected at the same time. Various studies at Senegal<sup>2</sup> and Enugu<sup>5,10</sup> and that by Baker et-al<sup>11</sup> not only confirm that these parameters affect mortality in the A&E department but have been used in evaluating emergency care by use of injury severity score (ISS).

Our overall mortality rate of 9.4% when compared with the 19% recorded by White and Guly<sup>1</sup> appears low but may not represent the true picture. The reason is that our A&E unit records all cases that come outside the official working hours. During this period, both the general out patient department and the medical and surgical out patient departments are closed. Consequent on this, trivial cases are registered as emergency and these were all used in calculating our mortality rate. This definitely contributed in bringing down our overall mortality rate.

In the light of the above findings we therefore suggest that:

#### SUGGESTIONS:

Our A & E dept should be re-structured to handle accidents and emergencies so that one could actually get the true picture of the mortality. In this regard we suggest that two registers should be kept one for the real emergencies and the other for the evening GOP.

The hospital should also come out with a definite manpower development policy. Doctors who man the A & E should be from the rank of registrars drawn from the three main departments of Surgery, Medicine, Obstetrics & Gynaecology since there is a different emergency care section for children. Training and employment of trauma specialists and neurosurgeons should be given utmost priority attention.

A deliberate attempt should be made by the hospital to provide basic life support systems in the A & E Dept. These include functional suction machines, oxygen cylinders, respirators, defibrillators etc. Most importantly, there should be a good back up intensive care unit to the A&E.

Establishment of a mass casualty management group will also help to bring down the mortality.

Government should provide basic amenities like good communication network and transportation system so that accident victims get to the area of help early enough to benefit from such help. Also a mass enlightenment campaign should be mounted by government to discourage people from patronizing quacks and prayer houses.

Finally there should be a legislative procedure banning quacks and native doctors from using the electronic media to advertise their activities. The Medical and Dental Council should also be given enough biting powers to deal with unscrupulous elements in the society that bastardize medical practice.

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