

# STROKE: CRITICAL APPRAISSAL OF INTENSIVE CARE MANAGEMENT

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## ABSTRACT

### BACKGROUND

Stroke is a common medical condition in the medical units. Stroke patients are usually managed on the medical wards while some that needs organ support are admitted into the intensive care unit. However there is conflicting data on the benefits or otherwise of admitting stroke patients into the intensive care unit. This necessitated this study to know how much benefit is derived from admitting stroke patients into the intensive care unit.

### AIM AND OBJECTIVE

The study aims at the benefits of admitting stroke patients into the intensive care unit. The objective included studying the prognostic factors that determines the outcome of stroke patients admitted into the intensive care unit.

### METHODOLOGY

The case files of all patients admitted and managed in the intensive care unit of LAUTECH teaching hospital between 2002 and 2014 were retrieved and were analysed. The factors used in analyzing included the type of stroke, the age of the patients, the Glasgow Coma scale at admission, the need for intubation and mechanical ventilation as well as the percentage mortality in each subsets.

### RESULTS

A total of 48 patients were admitted over the study period of which 19 were males and 29 were females. The percentage mortality in females was 78.95 while mortality in males was 62.5%. The higher the age the worse the prognosis, the higher the GCS the better the prognosis. Patients that were intubated and ventilated had percentage mortality of 68.8% and better than non ventilated patients. The hemorrhagic strokes also carries worse prognosis.

### CONCLUSION

The admission of stroke patients to the intensive care unit should be individualized considering the above mentioned prognostic factors. However patients that are likely to benefit from intensive care unit should be admitted early for them to derive the maximum benefits.

**KEYWORDS:** Stroke, Intensive care unit, prognosis, benefits

NigerJMed2015: 307-309

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## INTRODUCTION

**C**erebrovascular stroke has been defined as acute loss of cerebral functions; the symptoms lasting for more than 24 hours or leading to death and with no apparent cause other than vascular origin<sup>1</sup>. Stroke is the third leading cause of death after ischemic heart disease and cancer in many developed countries. It is one of the most important causes of long hospital admission and long term disability in the most industrialized populations. It causes a

major financial burden on medical health care; it also causes prolonged functional disability and usually associated with mortality<sup>2</sup>. The main types of stroke are ischemic and haemorrhagic. Some stroke units are able to provide an intermediate level of care, but some patients require admission to a critical care setting for more intensive monitoring or treatment.

Patient and family values must be considered before the decision is made to admit a patient to the intensive care unit (ICU). Considering the limited resources in the intensive care unit and the overwhelming number of patients that needs intensive care admission the stroke

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patients that needs ICU admission must be individualized and the need and benefit must be considered.

There is paucity of studies on the effectiveness or the outcome of intensive care admissions of stroke patients.

## METHODOLOGY

The study was carried out at the Intensive Care unit (ICU) of LAUTECH Teaching Hospital (LTH) Osogbo. The hospital has seven beds in its intensive care units with four functioning ventilators, pipeline oxygen sources, sunctioning machines, defibrillators, ICU nurses, four consultants and seven residents.

All the case files of all stroke patients managed in the intensive care units from 2003-2014. After approval from the hospital ethical committee all the case files of all stroke patients managed in the intensive care units from 2003-2014. The data recorded included the age, sex, the diagnosis, and the date of admission, need for cardiovascular or renal support and the need for intubation with or without mechanical ventilation were noted. The CT scan and neurological examination including the Glasgow coma scale as well as the outcome of care were recorded.

## RESULTS

TABLE 1

Types of stroke and percentage Mortality

Type	No Admitted	No Dead	Percentage Mortality
Ischaemic	17	9	52.94
Haemorrhagic	31	20	64.52

Haemorrhagic stroke had 64.52% mortality as against 52.94% of the Ischaemic strokes.

TABLE 2

GCS at ICU admission and percentage mortality

GCS	No admitted	No Dead	Percentage Mortality
3-5	24	16	66.67
6-8	08	02	25
9-12	10	01	10
> 12	6	0	0

Half of the total patients admitted had GCS of 3-6 while only 12.5% admitted has GCS > 12.

\* All patients with GCS < 8 making a total of 32 patients were mechanically ventilated. The highest mortality 66.7% was in patients with GCS between 3 and 5 while the lowest mortality was in patients with GCS 9-12. All patients with GCS > 12 were managed and discharged to the ward.

TABLE 3

Percentage mortality with respect to age, type, ventilator assistance sex

Age	No Admitted	No Dead	Percentage Mortality
40-49	5	1	20
50-59	12	6	50
60-69	20	18	90
> 70	11	11	100

	No Involved	No Dead	Percentage Mortality
Ventilated	32	22	68.8
Non Ventilated	16	14	87.5
Total	48	36	75.0

SEX	No Admitted	No Dead	Percentage Mortality
Male	29	18	62.10
Female	19	15	78.25
Total	48	33	68.13

## DISCUSSION

Stroke is the third most common cause of death in the United States, after heart disease and cancer. Approximately 175, 000 patients die from this disease each year<sup>2</sup>. Stroke patients are usually managed on the medical ward however they are sometimes admitted into the intensive care unit for organ support majorly respiratory. In the 1970's it was demonstrated that management of stroke in intensive care unit did not significantly reduce mortality(5-7). The study showed mortality rate of stroke patients managed in the intensive care unit to be 68.75%. This mortality rate is in the range of other studies that reported mortality rate of 78, 92% (17). Marik et al<sup>3</sup> found mortality rate to be 28% while Burtin in France reported a higher rate of 73%<sup>4</sup>. A study by Tobih<sup>5</sup> in University of Benin Teaching Hospital found mortality rate as high as 78% in patients admitted into the intensive care unit and it was concluded that stroke patients admitted into the intensive care unit have a times chance of mortality compared to patients managed on the ward. One of the factors responsible for high mortality of stroke patients

in the intensive care unit is the worsening patients condition before admission. Before admission some of these patients would have suffered various degree of morbidity before they are admitted into the intensive care unit. This calls to question the benefits or otherwise of early intensive care admission before patients starts having morbidity before intensive care admission.

The mortality rate was higher in the females when compared to the males (78.95vs 62.10%).There is paucity of studies comparing mortality in male to female in stroke patients.

A lot of interventions are usually instituted in the intensive care unit to improve the patients outcome; one of those measures includes intubation and mechanical ventilation. In this study the percentage mortality in patients that were intubated and ventilated was 68.8%.Usually they are intubated for airway protection when GCS is less than 9 but ventilated to improve outcome and reduce intracranial pressure to reduce incidence of conning. It has been shown that patients with stroke acutely comatose at presentation and needing mechanical ventilation in the intensive care unit usually have a worse prognosis than those non comatose without need for intubation and mechanical ventilation<sup>6,7</sup>. In a study the probability of death at 2months was more than 2.5times greater in patients who were intubated because of neurological deterioration than in that group of patients that were electively ventilated<sup>8</sup>. In this study the ventilated patients had a better prognosis than the non ventilated patients (percentage mortality 68.8 vs. 87.5) which is in keeping with another study that found survival rate to be 40% in patients that wee intubation and ventilated<sup>8</sup>.

Other prognostic factors in these study includes the GCS at inception at the ICU; it was found out that the lower the GCS the higher the mortality while the ones with GCS more than 11 they all survived and were discharged from the ICU. A study found survival rate in patients with GCS > 7 to be 33%<sup>9</sup> while this study found mortality rate in those with GCS 6-8 to be 25% while those with GCS 3-5 was 66.67%.The older the patients were the worse the outcome while all patients older than 70 died with non surviving; this is in tune with other studies that found increasing age a bad prognostic factor for stroke outcome in ICU.Hemorrhagic stroke appears to be the commonest presentation and carries the worst prognosis , this is in keeping with other studies that found heamorrhagic stroke to have a poorer prognosis<sup>4,10</sup>while females also had a higher mortality rate compared to males(78.95 vs. 62.5%).Thorsten<sup>8</sup> et al in their study also found GCS <10, Ischemic stroke, intubation and mechanical ventilation, age <65 good prognostic factors in stroke patients managed in the intensive care unit.

## CONCLUSION

The decision to admit a patient into the intensive care unit should be individualized for every patient considering the prognostic factors mentioned in this study. It is of no advantage to admit a patient with combination of worse prognostic factors to intensive care unit raising the hope of relations of a better outcome only for patient to die after incurring a huge debt of hospital care. However in those with favorable prognostic factors early Intensive care admission and early airway and surgical intervention will go a long way in improving outcome of care.

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