IMPROVEMENT IN INTENSIVE CARE UNIT OUTCOME AT A TERTIARY INSTITUTION: CAUSES AND EFFECTS

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INTRODUCTION

• The Lagos University Teaching Hospital-
• Created for Undergraduate and postgraduate medical training
• An 800 bedded government funded hospital.
• It is equipped with a functional 8 bedded intensive care unit (ICU) before June 2012
• Lagos is the economic capital of Nigeria with a
• Population of over 20 million. Early in 2012 the ICU Coordinator and a nurse intensivists were sponsored to 1 month ICU training in Germany.
• The coordinator –submitted that the current staffing and availability of equipment and consumables will not sustain improvement in the ICU.
• The following measures were introduced into the ICU. 5 bedded, 50,000 naira (200 dollars) to 250,000 naira (1,000 dollars), 3 ventilators were returned to the UK for repairs.
INTRODUCTION

• Two (2) new ventilators
• Multiparameter monitors, suction machine
• Consumable pack system.
• Water bed or air bed ,2 Arterial blood gases monitoring machines.
• Increase in Icu fees
• This study therefore compared the ICU outcome before and following the improvements made in the ICU.
METHODS

- This was a retrospective study.
- The study was approved by the Hospital Research and Ethics Committee.
- A proforma designed for this study –
- Statistical analysis- statistical programme for the social sciences (SPSS® 17 Inc. Chicago Illinois) and the EPI-INFO 7.0 where appropriate.
- Analyzed data - presented as Mean±SD or percentages
- As well as tables and graphical representation.
- Patient’s demographic data was analyzed - by 2x2 test of significance, student’s t test, and Pearson’s Chi square tests with Yates correction.
- Probability value less than 0.05. was considered significant
<table>
<thead>
<tr>
<th>UNIT</th>
<th>ADMISSIONS IN JUNE 2011-MAY 2012</th>
<th>Percentage of admissions (%)</th>
<th>ADMISSIONS IN JUNE 2012–MAY 2013</th>
<th>Percentage of admissions (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurosurgery</td>
<td>53</td>
<td>31.1</td>
<td>32</td>
<td>29.9</td>
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<tr>
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<td>27</td>
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<td>12</td>
<td>11.2</td>
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<td>15.3</td>
<td>16</td>
<td>14.9</td>
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<tr>
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<td>8.2</td>
<td>8</td>
<td>7.5</td>
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<td>Internal medicine</td>
<td>17</td>
<td>10</td>
<td>22</td>
<td>20.6</td>
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<td>General (Sepsis)</td>
<td>18</td>
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<td>4</td>
<td>3.7</td>
</tr>
<tr>
<td>Burns</td>
<td>8</td>
<td>4.7</td>
<td>5</td>
<td>4.7</td>
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<td>4.7</td>
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<td>0</td>
<td>-</td>
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<tr>
<td>Ear Nose and Throat surgery</td>
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<td>0.6</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>Paediatric surgery</td>
<td>3</td>
<td>1.8</td>
<td>2</td>
<td>1.9</td>
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<td>Total</td>
<td>170</td>
<td></td>
<td>107</td>
<td></td>
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<table>
<thead>
<tr>
<th>Year</th>
<th>Discharged dead</th>
<th>Discharged alive</th>
<th>Mortality %</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 2011-May 2012</td>
<td>118</td>
<td>52</td>
<td>69.4</td>
</tr>
<tr>
<td>June 2012 -May 2013</td>
<td>59</td>
<td>48</td>
<td>55.1</td>
</tr>
</tbody>
</table>

P value 0.02
Admissions into LUTH ICU between June 2011 and May 2013

- **Neurosurgery**: 53
- **Obstetrics and Gynaecology**: 32
- **General Surgery**: 27
- **Cardiothoracic**: 26
- **Internal Medicine**: 16
- **Sepsis**: 14
- **Burns**: 8
- **Paediatrics**: 17
- **Malignant Medical Unit (MFU)**: 18
- **ENT**: 4
- **PSU**: 8

Units admission into ICU:
- **June 2011 - May 2011**
- **June 2012 - May 2013**
FIG 2

MORTALITY IN LUTH ICU

No of Patients

118 (69.4%)
52
59 (55.1%)
48

2 year admission into ICU

JUNE 2011 - MAY 2012
JUNE 2012 - MAY 2013

DISCHARGED DEAD
DISCHARGED ALIVE
TABLE 3 SHOWS THE AVERAGE NO. OF DAYS IN ICU AND MORTALITY RATE BY UNIT

<table>
<thead>
<tr>
<th>UNITS</th>
<th>No of admission</th>
<th>Percentage of admission (%)</th>
<th>No of deaths</th>
<th>No alive</th>
<th>Mortality rate (%)</th>
<th>No of days on admission</th>
<th>Range(days)</th>
<th>Mortality (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurosurgery</td>
<td>85</td>
<td>30.6</td>
<td>55</td>
<td>30</td>
<td>64.7</td>
<td>7.9</td>
<td>1-37</td>
<td>0.001</td>
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<tr>
<td>Obstetrics and gynaecology</td>
<td>39</td>
<td>14.1</td>
<td>22</td>
<td>17</td>
<td>56.4</td>
<td>6.6</td>
<td>1-21</td>
<td>0.09</td>
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<tr>
<td>General surgery</td>
<td>42</td>
<td>15.2</td>
<td>24</td>
<td>18</td>
<td>57.1</td>
<td>5.9</td>
<td>1-27</td>
<td>0.08</td>
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<tr>
<td>Cardiothoracic surgery</td>
<td>22</td>
<td>7.9</td>
<td>9</td>
<td>13</td>
<td>40.9</td>
<td>6.9</td>
<td>1-28</td>
<td>0.83</td>
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<tr>
<td>Internal medicine</td>
<td>39</td>
<td>14.1</td>
<td>29</td>
<td>10</td>
<td>74.4</td>
<td>4.7</td>
<td>1-17</td>
<td>0.20</td>
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<tr>
<td>General(sepsis)</td>
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<td>7.9</td>
<td>19</td>
<td>3</td>
<td>86.4</td>
<td>6.5</td>
<td>1-24</td>
<td>0.57</td>
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<tr>
<td>Burns</td>
<td>13</td>
<td>4.7</td>
<td>10</td>
<td>3</td>
<td>76.9</td>
<td>6.9</td>
<td>1-26</td>
<td>0.04</td>
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<tr>
<td>Paediatrics</td>
<td>6</td>
<td>2.2</td>
<td>4</td>
<td>2</td>
<td>66.7</td>
<td>3.3</td>
<td>1-7</td>
<td>0.07</td>
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<tr>
<td>Maxillofacial surgery</td>
<td>2</td>
<td>0.7</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>1-3</td>
<td>0.16</td>
</tr>
<tr>
<td>ENT</td>
<td>2</td>
<td>0.7</td>
<td>1</td>
<td>1</td>
<td>50</td>
<td>1</td>
<td>0-1</td>
<td>0.15</td>
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<tr>
<td>Paediatric surgery</td>
<td>5</td>
<td>1.8</td>
<td>4</td>
<td>1</td>
<td>80</td>
<td>0</td>
<td>1-13</td>
<td>0.0002</td>
</tr>
</tbody>
</table>
FIG 3

average no of days/range

Units Admitting into ICU

- Neurosurgery: 1-37
- General surgery: 6.6(1-21)
- Cardiac surgery: 5.9(1-27)
- Internal medicine: 6.9(1-28)
- General (sepsis): 4.7(1-17)
- Burns: 6.5(1-24)
- Paediatrics: 6.9(1-26)
- Maxillofacial surgery: 3.3(1-7)
- ENT: 3(1-3)
- Ophthalmic surgery: 1(0-1)

NO OF DAYS IN ICU

0 1 2 3 4 5 6 7 8 9

Average no of days/range
FIG 4

PERCENTAGE MORTALITY OF UNITS ADMITTING INTO ICU

UNIT S ADMITTING PATIENTS INTO ICU

mortality rate

- Neurosurgery: 64.70%
- Obstetrics and gynaecology: 56.40%
- General surgery: 57.10%
- Cardiothoracic surgery: 40.90%
- Internal medicine: 74.40%
- General (sepsis): 86.40%
- Burns: 76.90%
- Paediatrics: 66.70%
- Maxillofacial surgery: 0%
- ENT: 50%
- Paediatric surgery: 80%
DISCUSSION

• The Change

• The admissions: The total no of admission reduced by 39.5% in 2012/2013 review year as the available beds reduced were reduced by 37.5%.

• Reduction in ICU mortality. Jack E. Zimmerman et al, Lassen H. E et al and Kluger MI alluded to the role of ICU and Improved quality of care to outcome in ICU.

• Michelle M emphasised the role of a multidisciplinary team in the outcome of ICU care.

• Length of stay – worst among septic patients with reasons.
CONCLUSION

• Lack of proper exposure to intensive care training.
• An exchange programme with the developed institutions and hands on experiences will improve care and further reduce the high mortality rates.
• Rosenbaum et al observed that Mechanical ventilation, haemodialysis, plasmapheresis and extracorporeal membrane oxygenation are necessary in our ICUs to reduce mortality.
• Need for more intensive care units
Recommendation

- Training of intensivists should be made a priority for physician staff, Nurses and ICU technicians.
- The hospital should create more ICU beds and High dependency units to care for those who may require less intensive care.
- The cost of care is exorbitant government and private organizations can support the intensive care units as part of their corporate social responsibility.
- Maintenance of ICU equipment commensurate compensation and attendance at conferences.
Summary

- A little improvement in training, provision of equipment for patients support and monitoring contributed to a reduction in ICU mortality in our institution.
THANK YOU

LUTH ICU WINS GOLD MERIT AWARD

Sherifat Folashade Jaji, Professor Lasun, Department of Nursing, Babcock University.

At the Award ceremony, the Chief Medical Officer represented by Dr. Daramola (DCMAC) and the Coordinator of Intensive Care Unit (LUTH) were among the attendees. The Assistant Directors of Nursing, the Chief Nursing Officer, the CNO of the ICU, and a host of other nurses were present.

The LUTH Intensive Care Unit is a 5-6 bed unit well equipped for critical care at the highest level. The ICU is staffed by 11 Consultant Anesthetists and doctors at various levels of training. There are 30 nurses, 5 of whom are trained and seasoned in critical care.

The nursing team of the Lagos University Teaching Hospital Intensive Care Unit has won this year’s 2015 Gold merit award for excellence and quality practice.

The West African College of Nursing, an agency of West African health Organizations (WAHO) at its 3 day scientific conference presented the award to LUTH ICU on the 11th of June, 2015 at the Lagos State University Teaching Hospital under the Chairmanship of Mrs. Efele Ayodele Shoyomi Abudo FWACN. Other dignitaries in attendance were the Head of Service Lagos state, Mrs.