

**ST ELIZABETH CATHOLIC GENERAL HOSPITAL, SHISONG,**



**KUMBO, CAMEROON**

**IMPROVING THE MANAGEMENT OF CRITICALLY ILL PATIENTS  
PROJECT.**

**A REPORT FOR THE AAGB&I**

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**20<sup>th</sup> February 2009**

## ***Aim and Summary***

The aims of this report are (i) to inform the AAGB&I of the first phase of the project of 'Improving the management of critically ill patients', (ii) give the results of the ground work about mortality in critically ill patients in Shisong Hospital, (iii) inform of the recommendations and conclusions resulting from this work and (iv) propose how to design and implement the subsequent phases of the project.

## ***Acknowledgements***

I am grateful to the following people for their supportive help during the initial phase of this project:

My grateful thanks to Iain Wilson, who always was supportive and enthusiastic with this project and his book 'Care of the Critically Ill patient in the tropic' is being the inspiration of all the workers and teachers at Shisong Hospital, Mike Dobson for his help in the preparation of this project, Haydn Perndt for his friendship and networking, Ray Towey for his useful ideas, my local colleagues who have being passionate and the inspiration for this project, the Association of Anaesthetist of Great Britain and Ireland (AAGB&I) for supporting the development of the anaesthesia any where in the world and sharing its expertise, moral and material wealth, my husband Javier for his never-ending help, support and love and my children Ana and Marcos for their patience and love to me.

## ***Dedication***

To the Administration of Shisong Hospital for making possible the organisation of the course 'Improving the management of critically ill patients'.

To the dedicated teachers and doctors, who embraced enthusiastically their out of hours work.

To the AAGB&I for their moral and financial support for the organisation of the course.

Lately and most importantly to the dedicated nursing staff of Shisong Hospital who attended massively the classes after being working in the night or in the morning and always expressed their gratitude, enthusiasm and interest for the improvement of the patients' care, without complaining of the difficulties.

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## ***List of Abbreviations and Acronyms***

AAGB&I	Association of Anaesthetists of Great Britain and Ireland
AIDS	Adquired Immunodeficiency Syndrome
ALS	Advanced Life Support
BLS	Basic Life Support
CCOT	Critical Care Outreach Team
CPR	Cardiopulmonary Resuscitation
ED	Emergency Department
EWSS	Early Warning Score System
HIV	Human Immunodeficiency Virus
ICU	Intensive Care Unit
IS	Immuno Supresion
WHO	World Health Organisation

# **1 Introduction**

In most of the Sub Saharian African countries including Cameroon (1), there is a tremendous lack of professional health care (2)(3). Since only a few staff are properly trained to provide intensive care and emergency services, casualty levels of critically ill patients is very high. There is insufficient diagnosis, delayed onset of proper treatment and insufficient management and referral of these patients. As a result emergencies and critical conditions are not well attended.

## **1.1 About critically ill patient management in developing countries**

Prevention is a core value of any health system. Nonetheless, many health problems will continue to occur despite preventive services (4). A significant burden of diseases in developing countries is caused by time-sensitive illnesses and injuries, such as severe infections, hypoxia caused by respiratory infections, dehydration caused by diarrhoea, intentional and unintentional injuries, postpartum bleeding, acute myocardial infarction and postoperative complications.

There is a big gap in the management of critical care patients between developed and developing countries (5). In very few hospitals in developing countries there are facilities to manage critical cases (6). At Shisong Hospital no intensive care facilities are available nor emergency medical care. The reasons found for this reality are several: lack of models, inappropriate training foci, concerns about cost and sustainability of services.

However, access to medical care for urgent or life-threatening conditions is a key expectation in many communities. For Shisong Hospital the incorporation of a basic level of emergency medical care for critically ill patients could have a significant impact on the well-being of populations. Pilot programmes to manage critically ill patients and emergency cases are advise by the WHO.

## **1.2 About the hospital**

The WHO classifies hospitals in three levels depending of number of beds, activity facilities and surgical activity (7): Level 1, equivalent to health centres; Level 2, to district hospital with no intensive care facility; and Level 3, equivalent to referral

hospital with ICU. Shisong Hospital is currently a level 2 facility that will progress to a level 3 referral centre with the opening of the new Cardiac Centre. The hospital staff provides health care to a floating population of 200000 people. Current bed capacity is 300, but the building of the new cardiac center will increase this number to 362 beds, where the future postoperative ICU will have a capacity of 12 beds. The opening of the cardiac centre is planned for middle of 2009 and it is part of a project to reduce the burden of curable/operable cardiac diseases in the rest of Cameroon and neighbouring countries.

Shisong Hospital is a private catholic hospital run by the Tertiary Sisters of Saint Francis. Currently offers general services, surgical, paediatric, gynaecological, obstetric, family planning, dental care, eye unit, TB unit and infectious care department, X ray department, laboratory, anti-retroviral treatment clinic and a clinic for prevention and treatment of HIV/AIDS transmission; the primary health care clinic carries out vaccination programmes, antenatal care, HIV programme, malaria prevention and a programme to eradicate onchocerciasis. The Cardiac Centre will be located in a separate facility, but it will share general services with the existing Hospital. Currently the general hospital has four general practitioners, one gynaecologist, one urologist, one paediatrician and one expatriate physician anaesthetist (8).

The hospital is situated in Kumbo Town, in the Bui Division, in the Northwest Province of Cameroon (Picture 1). Access to the hospital is usually by poorly maintained dirt roads.

Shisong Hospital Administration realises the tremendous challenge implied for the general hospital with the opening of the cardiac centre.

Becoming a referral hospital entails the arrival of many new patients coming for cardiac treatment, but also additional patients with life-threatening conditions, both expecting high quality medical care.

Any drop in the quality of care could jeopardise the future of the new Cardiac Centre. Shisong Hospital staff needs to keep raising the standards of health care in a developing country. Additionally raising the quality of care will attract more

patients and the hospital staff can proudly proclaim being the older brother of the new Cardiac Centre.



Picture 1: Map of Cameroon. In red location of Shisong

### 1.3 Justification for the project

Shisong Hospital has a high number of patients with critical conditions. However, as a large institution with a projected expansion, it currently does not have the infrastructure nor the capability to address the needs of the critically ill or emergency patients. The critically ill patients are poorly managed, not only because of lack of resources and the deficiency in the way resources are organised but also regarding the insufficient training and lack of triage skills by the current staff.

Anaesthetists are the health professionals that worldwide organise and manage the care of the critically ill patients. At this time, and beneficially for the hospital, the current expatriated physician has been enthusiastic and willing to train the nursing staff in the management of the critically ill patient.

Shisong Catholic Private School of Nursing and Midwifery, it has a good reputation and is a very well known nursing School all over Cameroon. It is also

run by the Tertiary Sisters of Saint Francis; and it is located few metres from Shisong Hospital. The faculty of the school has been involved in continuing professional education of the hospital staff and has leant support to participate in the project to improve the management of the critically ill patient.

## 1.4 About the project

The project planned to train medical and nursing staff of Shisong Hospital regarding the assessment, management and treatment of the critically ill patient.

The goals of the project are:

- Implement an **early warning score system (EWSS)** which alert of arrival of critical situations, including the design of a set of protocols to manage these cases.
- Increase **knowledge and capabilities** of the staff of Shisong Hospital.
- **Organise the resources available** to give the best care to critical cases with the existing equipment.

As mentioned above this project is jointly prepared by St Elizabeth Catholic General Hospital and faculty nursing from the neighbouring Shisong Catholic Private School of Nursing and Midwifery.

The first phase of the project was funded by the AAGB&I. Funding allowed for the purchase of a 17” Toshiba laptop specifically for educational purposes by hospital staff. Additionally funding was used for handouts, ward protocols, writing materials, and folders for attendants and teachers. One copy donations of “Management of the Critically Ill Patient in the Tropics” were provided to each ward in the hospital and the teachers of the course.

## 2 Structure of the project

The project has the following structure in phases:

- The first phase was a two week course for all clinical nursing staff. Week one reviewed critical ill conditions consistent with the patients cared for at Shisong Hospital. Week one was approximately 21 hours of theory. Week two reviewed practical applications for the nursing staff regarding airway

management and cardiopulmonary resuscitation. Week two was in a skills workshop format. This phase is finished.

- The second phase assisted the clinic staff with the implementation, monitoring and reinforcement of the EWSS and the protocols produced during the course. This phase is being done in each ward. Additionally during this phase the staff will organise resuscitation resources in the various wards. This is an ongoing phase that will be continued.
- This phase will develop, activate and implement a Critical Care Outreach Team (CCOT) within the clinical staff. This team will assist in emergency situations and with critically ill patients.

### **3 Preparation for the first phase of the project: the course**

As part of the first phase of the project I reviewed the literature for reducing in-patient mortality in developing countries, reports of similar projects in African countries, solutions to improve management in critical cases and lastly strategies to implement changes in the health environment (9)(10)(11)(12)(13).

Recent studies reveal that 37-52% of adverse events are preventable by:

- Establishing and sustaining clinical nursing support systems to enhance the delivery of patient care, such as implementation of an Early Warning Score System.
- Strengthen collaborative relationships among nurses and physicians.
- Good ratio registered nurses/patients and physicians/patients (14).

With the current resources, Shisong Hospital could intervene without extra cost on the first and second points above mentioned and improve its outcome in critical patients.

Appropriate training and education in the management of critically ill patients is also found as a determinant factor to contribute to the positive outcome of these cases (15).

Based on these findings, a course was designed to give theoretical management and practical training to all the clinical nurses of Shisong Hospital, in the care of critically ill patients.

The syllabus of the course focused on the specific problems that staff in the hospital faces when managing patients with serious conditions.

A needs assessment was performed following the information of specific questionnaires posed to nursing staff (Appendix 1), questionnaires to doctors and teachers of the course (Appendix 2), questionnaires to foreign staff working at that time at Shisong Hospital (Appendix 3), and a questionnaire to the Administration of the hospital (Appendix 4).

Also the cause of mortality in Shisong hospital was analysed exhaustively for the first ten months of 2008.

### **3.1 The questionnaires**

The purpose of the questionnaires was multi-focal:

- Assess staff management style regarding the critically ill patient.
- Analyse staff management of the critically ill patient.
- Review poor and good practices.
- Analyse physicians and faculty views on practice patterns for the critically ill patient.
- Assess the baseline needs of staff regarding the theory and skills needed to work with the critically ill patient.
- External observers view of developing world critical care practice.
- Inform and communicate the project to the staff.
- Assess hospital administration's views and objectives for the project.

#### **3.1.1 Nursing staff questionnaire**

See questionnaire in the appendix. The questionnaire was returned by 93% of the nurses.

Table 1 contains nurses questionnaire results for theory topic they wanted for class. Table 2 which contains the cases they found difficult.

<b>THEORY</b>	
CARDIAC FAILURE	25,7%
ICU NURSING TECHNIQUES	21.2%
COMA	13.6%
SEPTICAEMIA	13.6%
PREVENTION OF CRISIS	12.1%
HIV	11,2%
ONCOLOGICAL CASES	9.1%
ACUTE ABDOMEN	9%
RESPIRATORY FAILURE	7%
TRAUMA	3%

*Table 1: Nurses questionnaire results. Theory topics chosen by staff*

<b>DIFFICULTIES</b>	
SICK LAPAROTOMY	26.5%
MENINGITIS	25.8%
ONCOLOGICAL CASES	24.2%
HIV	21.2%
RESPIRATORY FAILURE	21%
NEUROLOGICAL CASES	19.7%
TRAUMA/BURNS	18.2%
CARDIAC FAILURE	15.2%
COMA	13.6%
DIABETES MELLITUS	7.6%

*Table 2: Critical cases that nurses find difficult to manage*

Table 3 staff identified learning outcomes.

<b>LEARNING OUTCOME</b>
IMPROVEMENT ICU TECHNIQUES
PROTOCOLS
REINFORCEMENT
SET EDUCATIONAL MEETINGS
BETTER TRIAGE/DIAGNOSIS TECHNIQUES

*Table 3: Nursing staff's learning outcome expectations*

Additional significant comments of the staff included:

- No protocols were in place for the management of these cases.
- Oxygen and equipment for resuscitation was not widely available.
- Needs of continuous education and refresher courses for hospital staff.

- More than 75% of the nurses requested training in airway management, cardiopulmonary resuscitation and trauma life support in that order.
- Requested by a third of the nursing staff was additional training for urinary catheterisation, thoracocentesis, abdominocentesis and lumbar puncture.
- Malaria, typhoid and meningitis were considered the pathologies worst managed in the hospital.
- Trauma and acute abdomen were well managed.

Nonetheless malaria and typhoid were not chosen as critical conditions for the theoretical course, although malaria was included in the syllabus for its relevance in the mortality of the hospital.

### **3.1.2 Doctors and teachers' questionnaire**

Refer Appendix 2 for the questionnaire. The questionnaire was answered by 50% of the teachers. The main issues highlighted regarding the management of critically ill patients were:

- Late call to the doctors, when little or nothing could be done for the patient.
- Lack of recognition of critical situations.
- Lack of Intensive care unit for critical patients and lack of team to manage these cases.
- Late arrival of patients to hospital.
- Lack of resources and bad organisation of the ones existing.

### **3.1.3 Foreign staff questionnaire**

At the time of the needs assessment there were nine volunteers who answered in full the questionnaire. Refer Appendix 3 for that questionnaire. In order of importance they highlighted these problems in the management of critical cases.

**EXTERNAL ASSESSMENT**  
 LACK OF DIAGNOSIS  
 LACK OF PROTOCOLS  
 LACK OF ORGANISATION  
 ACUTE ABDOMENT MANAGEMENT  
 TRAUMA MANAGEMENT

*Table 4 Problems in the management of critically ill patients found for Shisong volunteers*

They also mentioned the proper management of patients with malaria and the warm and caring approach to the patients from the nurses.

### **3.2 The study of mortality in the hospital**

In Table 5 are the results of the mortality in Shisong hospital per ward and globally for first 10 months of 2008 . In table 6 are the causes of hospital mortality. It is important to note the source used was the register book of admissions and discharges in each ward. In each registry book contained a significant number of patients in which the cause of death was not documented, hence ‘unknown’ is the fourth cause of death at Shisong Hospital.

Ward	Admission	c Death	%	d Lost
Men	1077	64	5.94	221
Female	924	64	6.93	69
Surgical I	575	7	1.22	0
Maternity	950	3	0.32	59
Surgical II	112	14	12.5	0
Cardiac Center	502	55	10.96	0
Children	557	33	5.92	65
General Ward	168	13	7.74	16
	4865	253	5.2	

Table 5 Percentage of mortality in the different wards and globally

Comments regarding mortality at Shisong Hospital:

- The diagnose of malaria as cause of death is extremely high in relation with other hospitals in the tropics. It is suggested that an investigation be undertaken to clarify the diagnosis and/or study of malaria management.

- Of significant to note patients that died from septicaemia are not IS patients. It is strongly recommended that an antibiotic policy is put in place and that a team work to develop and implement a “fight against infection resistance campaign”. See WHO Patient Safety goal (16).
- Significant efforts be made to reduce the cause of mortality in the cardiac centre ward before the opening of the new cardiac centre.
- It is recommended that staff complete documentation as to the cause of death patients. Unknown cause of death for a hospitalised patient is unacceptable.
- In six months it is recommended that a new analysis of mortality rate be undertaken. The analysis would assess the impact of the new protocols and the implementation of the EWSS.
- Documentation of the time of the death in the register book is recommended to know whether determine distribution needs of staff.

<b>MORTALITY</b>	
HIV INMUNO	19.1%
RESPIRATORY FAILURE	15.6%
CARDIOLOGICAL	13.6%
UNKNOWN	11.2%
MALARIA	8.8%
SEPTICAEMIA	8.2%
ACUTE ABDOMEN	6.4%
SHOCK	6%
NEOPLASIAS	5.2%
MALNUTRITION	1.6%
POSTOP COMPLICATIONS	1.6%
TRAUMA/FIRE BURNS	0.8%

*Table 6 Causes of death in our hospital*

### **3.3 The final syllabus for the course**

Based on the previous needs assessment tools the syllabus of the course was completed. See Appendix 5 for the programme of the course.

### **3.4 About the teachers**

Sixteen teachers were invited to impart the classes. The criteria for being a teacher in the class included:

- Attending physicians at the hospital. They are the most knowledgeable in the hospital regarding management of the critically ill patient. They can assist with protocol formation in their area of expertise and can facilitate communication with nursing staff.
- Faculty members of the nursing school. They act as role model for the nursing staff in the hospital, provided recommended nursing practices for critical conditions. Provided the nursing framework for care of the critically ill patient.
- Selected nurses in the hospital who have special and recognised knowledge and skills in critical cases.

The promoter of the project was Dr Teresa Leiva, a expatriate physician anaesthetist. She is the director, co-ordinator, teacher and supervisor of the project, with the inestimable help and support of Mr Donatus Ndiyun and the team already acknowledged at the beginning of this report.

The team of teachers met three weeks before the first group course. During the preparatory meeting the teachers were given clarification and explained the aim of the project, objectives of the course and reviewed the EWS System and the production of action protocols.

## 4 First phase: The course

The date for the courses were as follow:

First group of nurses	From 24 <sup>th</sup> November 2008	28 attendees
Second group of nurses	From 12 <sup>th</sup> January 2009	28 attendees
Third group of nurses	From 26 <sup>th</sup> January 2009	34 attendees

The venue was in the Nursing School Hall.

Each course ran for a two weeks period.

### 4.1 Theory week



*Picture 2: In the ward explaining about the book 'Care of the Critically ill patient in the tropics'*

The first week was a total of 21 hours of theoretical classes, imparted in the afternoon, 4 hours from Monday to Saturday. Many of the staff and teachers had worked in the morning or night shifts. Classes consisted of lecture regarding the major topics, development of protocols and didactic interaction with the teachers. The nurses also had the opportunity to share views, problems, difficulties regarding care of the critically ill patients. During each class the participants practised the

EWS (Appendix 6 for EWS Shisong chart) . Additionally interactive teaching games were used to help the staff understand the importance of working in a team. Every course finished on Saturday after three hours of class, with a joint lunch. A sense of camaraderie between teachers and staff was developed during the week and the participants evaluation of the course was: Excellent.

One evaluation of knowledge is been passed to the nurses and when they have returned it, attestation certificate of the attendance of the course is been expedited by the hospital. Eighty per cent of the nurses have returned the evaluation test.

One feedback evaluation sheet was given to nurses to express views, changes for improvement in next courses and rating of the overall course value.

One folder with the handout of the course, the protocols and literature reviews was produced for each nurse and each ward. Distribution and explanation of them was done to each ward by the Superintendent nurse and the director of the course. EWS was encouraged to start on the patients from the admission from the compound office.

***Testimonial:***

Excellent

Madame Leonarda, theatre nurse

***Testimonial:***

When are we having the next course?

Madame Serophine, nurse

***Testimonial***

I feel enlighten after this course. It is necessary to continue with this type of courses.

Paul Fai, compound nurse

***Testimonial:***

It is the first time that Shisong is having a course like this. We feel really enriched with this experience.

Mdame Ita, teacher and Nurse Superintendent

## 4.2 Practical week: the workshop



*Picture 3: Group of nurses during the workshop*

The second week of the course was dedicated to the practical skills workshop. Skills included airway management, CPR and ALS in baby, child and adult mannequins, and also the use of the defibrillator. The number of attendants was limited to 6 per group. This small group ensured that every nurse had plenty of opportunity to practice and develop confidence with their skills.

Paediatric and adult CPR in pictures (Appendix 8) is been produced, plastified and allocated to each ward board, also with BLS and ALS algorithms.

## 4.3 Expenditures

The AAGB&I has contributed greatly to the development of this project, with continuous encouragement and support to the director. The following is an accounting of their funding for the project.

Donation of 28 books of the 'Care of the Critically Ill patient in the tropics'.

*TABLE 7 EXPENDITURES OF THE COURSE*

EXPENSE	AMOUNT (F CFA)
Laptop	400,000
Refreshments	197,000
Stationary	152,300
Photocopies	278,760
Teacher's appreciation	160,000
<b>TOTAL</b>	<b>1,188,060</b>

## **5 Second phase: The follow-up**

Monitoring the implementation of changes introduced in any organisation, is essential for the reinforcement of the practice. Without follow up of newly implemented changes and understanding the reluctant of staff to make the changes, the implementation of the new practices will be a fiasco (12).

The monitoring of the implementation of the EWS in the hospital wards began Monday 9th February 2009. The monitoring consists of making sure each critical patient is placed on the designated register (Appendix 9 for the chart), reinforcing course protocols and adequate monitoring of patients with the EWS.

After three months it is expected that the EWS will be fully adopted by the staff. A new survey of mortality will be conducted to assess the impact on mortality.

Follow-up of the organisation of resources for management the critically patients and emergencies in the wards is essential and it will be pursued. The development of dedicated bed/s on each ward for use by the critically ill patient would assist with proper resource management and assist nursing staff to monitor these patient more closely.

It is recommended that each ward has a room with bed/s where resources are allocated for critically ill patients where the nurses could provide more intensive monitoring and care for these patients with critical conditions.

## **6 Third phase: Activation and implementation of Critical Care Outreach Team (CCOT)**

CCOT is a system approach that promotes early and appropriate intervention in the care of critically ill hospital patients. The benefits of the CCOT in terms of absolute in-patient mortality and cardiac arrest rates are well defined in the literature (17).

The CCOT does provide a potentially beneficial impact on many other aspects of patient care. These benefits include:

- Facilitating an integrated and co-ordinate approach to patient care across the hospital.
- Increasing awareness of at-risk patients.

- Encouraging early referral of seriously ill patients to clinicians with expertise in critical care and
- Providing a foundation for quality initiatives for hospital wide care of the seriously ill.

CCOT also empowers nursing staff and inexperienced medical staff to call for immediate assistance in cases where they are seriously concerned about a patient, but may not have the experience, knowledge, confidence or skills necessary to manage them appropriately.

CCOT is composed for a team of health professional workers who are trained to provide care to critically ill patients. They attend emergency and resuscitative cases where is needed. The objectives of this service is:

- Resuscitate patients, improve the quality of critically ill patients care , and reduce adverse clinical events.
- Enhance clinical staff confidence, competence and experience through training and the sharing of skills.
- Improve organisational agility and resilience by delivering comprehensive care across organisational and professional boundaries or locations.

It is highly recommended for Shisong Hospital to start a training programme to activate and implement a team that can provide care to critically ill patients , attend emergencies with proficiency and share skills with the nurses in the wards.

## **7 Recommendations and Conclusions**

### **7.1 Recommendations**

This is a summary of the recommendations made along this report:

- It is recommended that staff complete documentation as to the cause of death patients. Unknown cause of death for a hospitalised patient is unacceptable.
- Documentation of the time of the death in the register book is recommended to know whether determine distribution needs of staff.

- It is suggested that an investigation be undertaken to clarify the diagnosis and/or study of malaria management.
- It is strongly recommended that an antibiotic policy is put in place and that a working team develop and implement a “Tackling Antimicrobial Resistance” programme.
- Significant efforts be made to reduce the cause of mortality in the cardiac centre ward before the opening of the new cardiac centre.
- Regular performance of surveys on hospital mortality to assess hospital trends of practice and quality. Also in six months it is recommended that a new analysis of mortality rate be undertaken. The analysis would assess the impact of the new protocols and the implementation of the EWSS.
- It is recommended that each ward has a room with bed/s where resources are allocated for critically ill patients where the nurses could provide more intensive monitoring and care for these patients with critical conditions.
- Training, activation and implementation of a CCOT that can provide Emergency service. Suitable candidates should be elected by the Hospital Administration.
- Creation of working teams chosen by the administration which:
  - monitoring the implementation of the EWSS
  - follow up and reinforcement of existing protocols
  - organise resuscitation resources
- Mortality and Morbidity meetings with hospital modified verbal autopsy<sup>1</sup> sessions. Run by the doctors with the co-ordination of the Medical Director.
- Compulsory training and refresher courses for the hospital staff: doctors and nurses

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<sup>1</sup> A verbal autopsy is a method of finding out the cause of a death based on an interview with next of kin or other caregivers. It is proposed a modified method to be used for in-hospital deaths.

## 7.2 Conclusions

Failure to seek and provide appropriate and timely intervention to at-risk patients lead to sub-optimal care of the critically ill on the hospital.

Vital signs can identify patients at risk of serious illness as part of scoring systems designed to predict morbidity and mortality. EWSS can predict patients at risk of deterioration early enough to take action at a time when the patients still can be rescued.

Developing countries do not have enough human or equipment resources to provide the high level of care that requires patients very critical. Implementation (4) of adequate monitoring associated to an EWSS, does not imply extra cost and can help low-income countries to:

- improve the care on these patients
- make a better use of the resources available, allocating them to patients that can be rescued
- help the health workers to focus their care towards the patients that are at more risk of deterioration
- be used as a rapid, simple and at-no-cost triage tool used in emergencies to identify medical patients in need of hospital admission

Activation of CCOT can help the hospital to:

- provide adequate resuscitative measure to patients that are critically ill
- spread skills and knowledge in resuscitative interventions to staff in the wards
- provide emergency service and high care in the hospital

Shisong has taken a big step forward in the management of critically ill patients. The implementation of the EWS will be evaluated to assess the impact in the reduction of mortality. The continuation with the training, activation and implementation of a Critical Care Outreach Team can be the core of an emergency service. The incorporation of a basic level of emergency medical care into the

hospital would have a significant impact on the well-being of the population and on the future of this soon to be referral hospital.

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