



## Project Report: Teaching course in Intensive Care

Muhimbili National Hospital, Dar es Salaam, Tanzania, 9-11 November 2011

### Background

Intensive Care is a neglected specialty in Tanzania and other low-income countries.<sup>1</sup> There are very few specialists, there is a lack of awareness of the specialty's importance and resources for intensive care are poor in many hospitals. The burden of critical illness is extremely high.<sup>2</sup> Severe infections such as pneumonia, diarrhoea and malaria are endemic and traffic accidents, obstetric complications and surgical emergencies are all common. Ensuring good quality intensive care could reduce the impact of all these conditions and has the potential to significantly reduce mortality and morbidity rates.

Muhimbili University Hospital (MNH) is the largest hospital in Tanzania and functions as the highest level referral hospital in the country. The hospital has 1500 beds, 1100 out-patients are seen each day and 55000 patients are admitted annually. The Government of Tanzania has recently decided to make MNH a Super-Specialty Hospital, concentrating specialist services that are unavailable in the rest of the country.

The department of Anaesthesia and Intensive Care at MNH has only 6 specialist doctors, 4 trainee specialists, 5 Anaesthetic Officers who are partially trained in Anaesthesia and 40 nurses. As well as providing anaesthesia in the 14 operating theatres, these staff must care for the patients in the 21 Intensive Care Unit (ICU) beds. None of the doctors have sub-specialist training in intensive care and the large workload means that the few specialists are not able to provide continual care on the ICUs. Only one of the nurses has been trained in critical care – and that was over 20 years ago. Most of the care is given by nurses whose knowledge was gained during their initial vocational training, supplemented by “on-the-job” diffusion from colleagues, and informal teaching from the specialists. The facilities in the ICUs are basic, with no invasive monitoring, syringe pumps or fluid infusers. Patients of all ages and underlying conditions are admitted from all areas of the hospital, the most common diagnoses being post surgical care, sepsis and tetanus.



Karolinska University Hospital (KUH) is a tertiary referral hospital in Stockholm, Sweden. Like MNH, it is a Super-Specialty Hospital providing highly specialized care. The hospital has 1600 beds, 4000 out-patients are seen each day and 100,000 patients are admitted annually. The department of Anaesthesia and Intensive Care at KUH has 72 Specialist Anaesthesiologists, 36 Trainees (ST-doctors), 66 anaesthetic nurses and 54 Intensive Care nurses. The specialists all have advanced training in Intensive Care, and at least one is on duty 24 hours-a-day to supervise care on the 10-bed ICU. The facilities are modern and advanced and the standard of the care given can be regarded as good as anywhere in the world.

The Muhimbili-Karolinska Anaesthesia and Intensive Care Collaboration (MKAIC) was initiated in 2008. A letter of intent has been signed by the departmental directors emphasising the desire in both hospitals to develop a fruitful partnership. The aims of the partnership are to improve anaesthetic and intensive care provision in the two hospitals, and increase international and cross-cultural understandings. Previous activities have included teaching courses in Anaesthesia and care of critically ill children, visits to Karolinska by doctors from Muhimbili and research projects. This report is for the third teaching course in the collaboration, in Intensive Care.



### Aim of the teaching course

To improve the Intensive Care knowledge and skills of staff in Muhimbili National Hospital (MNH), thereby improving care for patients and to increase understanding and cooperation between two hospitals in Sweden and Tanzania.

### Objectives of the course

By the end of this project:

1. Knowledge and skills about Intensive Care among anaesthetic doctors and ICU nurses at MNH will have improved
2. Six staff from Karolinska University Hospital (KUH) will have spent one to two weeks at MNH
3. There will be a greater understanding between the staff at MNH and KUH, and increased knowledge about the best ways to take the Muhimbili-Karolinska Anaesthetics and Intensive Care Collaboration (MKAIC) forwards
4. A plan for the next projects within the MKAIC will have been discussed and decided upon

### Planning

During 2011 the course was planned. The teachers from Karolinska were Dr Jonas Blixt, Dr Tim Baker, Dr Henrik Jörnvall, Dr Dan Gryth, ICU Nurse Ulrica Mickelsson and ICU Nurse Lotta Förars. The local coordinator at Muhimbili was Dr Mulungu and the teachers from Muhimbili were Dr Mpoki and ICU Nurse Trust Majuta. 50.000SEK were generously donated by the Hedlundstiftelse ([www.hedlundsstiftelse.se](http://www.hedlundsstiftelse.se)), two flight tickets were funded by the company "Leap of Faith" and further funds were raised by MKAIC. Dr Mulungu chose the course participants and organised all practicalities.



### Schedule

The first day (Tuesday 8<sup>th</sup> November) was for the introduction of the staff of Karolinska and Muhimbili to each other and orientation to the hospital. Several important meetings were also carried out with leading staff at Muhimbili. Over 30 medical textbooks and seven pulse oximeters were distributed to individual doctors and nurses and to the department of Anaesthesia.



Days 2-4 (Wednesday, Thursday, Friday) were the teaching course.

The teaching consisted of formal lectures interspersed with interactive sessions. These included role play scenarios, group discussions, questions and recap sessions. A test was conducted at the start and end of the course, and feedback from the participants was sought both written/anonymous and open. A detailed course schedule is in Appendix A.

The following week Jonas, Ulrica and Lotta stayed on the ICU to conduct bedside teaching for the doctors and nurses.



## Impressions of Intensive Care at Muhimbili

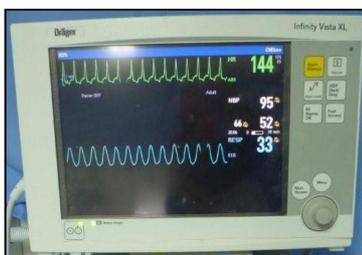
The main Intensive Care Unit at Muhimbili is a large room with 8 beds. The hospital's sickest patients are treated there by nurses and anaesthesiologists. The equipment and drugs are reasonably modern and well stocked: there are ventilators and electronic monitoring. Training and knowledge is however variable with some of the staff lacking skills at managing patients who become unstable. Routines and systems for a smooth-running unit are sub-optimal. Acute drugs and equipment are not kept close to the patients and nurses spend much time searching for them. Daily goals for the patients are not decided upon, and the management is difficult to modify if a patient deteriorates. The lack of anaesthesiologists in the hospital means it is hard to get acute medical reviews. Jonas, Lotta and Ulrica felt that there is a huge desire among staff for new knowledge and to improve routines. The bedside teaching was really appreciated and the staff expressed the hope that MKAIC would continue to work with them. The overall impression was of a unit with clear potential for MKAIC improvements and staff who were eager for change.

### MKAIC saves a mother's life

On the first day of the ICU course a 31 year old pregnant mother of two children was taken to the operating theatre. She required an urgent caesarean due to two days of obstructed labour. Unfortunately her baby had died in her womb and she was very weak and in shock. The anaesthesia was difficult and the local staff couldn't ensure that she could breathe with a free airway. One of Karolinska's doctors who was in the theatre was asked for emergency help. He succeeded in "intubating" the woman and stabilising her condition and the operation could be completed. Afterwards she was in severe shock and was transferred to the



Intensive Care Unit. Due to her critical state the Tanzanian anaesthesiologists once again requested help from MKAIC. She required blood, intravenous fluids, assisted breathing and pain relief, all of which were prescribed and monitored by the Karolinska team during the evenings and in breaks in their teaching. Gradually she began to improve and by the time the course was completed she was awake, transferred to a general ward and would soon be going home to her family.



## Course Participants

43 participants took part in the course:

- 5 Specialist Anaesthesiologists
- 3 Anaesthesia trainees
- 8 Doctors in Internal Medicine
- 14 ICU Nurses
- 13 Nurses

On Thursday 12 medical students also participated in the course.

## Knowledge Test

Each participant received a test at the beginning of the course, and again at the end. (Appendix B) In the pre-course test the participants scored an average of 13.8 correct answers out of 19. After the course the average score was 17.5. This is a relative increase of 27% meaning that the course has led to a significant improvement in the participants' knowledge of intensive care.



## Course Feedback

A feedback form was distributed at the end of the course. The feedback was overwhelmingly positive. Over 80% of the participants felt the course was "very useful" for their work.

### Some comments:

"The course was an eye opener to me and a morale booster to the nurses"

"It was my privilege to be on the course. I learnt more than I can tell you. Thank you for coming!"

"I can now save the life of patients instead of waiting for a doctor to come"

"Teachers were very good, charming and cooperative"

"Thank you for the very good course. I will try to teach other people what I have learned and change Muhimbili"

"I promise I am going to practise in working place & share with other co-workers"

"I really appreciate this course since it helps to do perfect things systematically"

"Reminder of most important basic things for saving lives"

"The coordinator from Karolinska is good, thanks for trying to be part of this world!"

## Budget

The total cost of the course was 99,640 Swedish Kronor.

Item	
Return Flights Stockholm - Dar	60000
Visas	2500
Transfers in Stockholm	1241
Transfers in Dar	525
Insurance	3075
Accommodation Dar Course	14280
Accommodation Dar Bedside Teaching	8330
Books	1089
Large Pulse oximeter	2400
Small Pulse oximeters x6	6000
Stationary	200
	<b>99640 SEK</b>

## Future plans for MKAIC

Discussions were held about how to take MKAIC forwards. It was decided that the following activities would be prioritised for 2012:

- Clinical attachments at Karolinska for two doctors from Muhimbili
- Two workshops in Obstetric Anaesthesia and Paediatric Anaesthesia
- Research projects in the quality of Anaesthesia and Intensive Care
- Clinical attachments at Muhimbili for an ICU doctor and nurse from Karolinska to improve ventilator usage
- Introduction of a checklist and guidelines for caesarean sections at Muhimbili
- A National refresher meeting in Anaesthesia & Intensive Care

## Conclusions

Overall the course has been a great success. The reception at Muhimbili was extremely positive, the staff from Karolinska found it rewarding and interesting, the participants gave the course very positive feedback and the test showed a dramatic improvement in knowledge levels. Most of all it was clear that there is a huge need for an initiative in Anaesthesia and Intensive Care. MKAIC has both a well defined role and the capacity to fulfil that role. Improvements are important and achievable, and if MKAIC can continue to achieve its objectives there is potential to directly save a significant number of lives.



## Appendix A Course Timetable

Tues 8/11:	9.00: 13.00: 15.00:	Guided tour of MNH. Observation of ICUs, theatres, general wards & casualty Lunch, MUHAS checking the facilities for the course – projector, buying materials etc
Wed 9/11:	8.00: 8.45: 9.00: 9.30: 10.15: 10.45: 11.15: 12:00: 13.15: 14.15: 15.15: 15:30: 18:00	Arrival Introduction Pre-course test LECTURE 1: Introduction to intensive care Coffee LECTURE 2: ABCDE System for managing the critically ill patient LECTURE 3: Scenarios: how to do them & Our example scenarios LECTURE 4: Airway & Breathing: Henrik Lunch Scenarios End Assisting with a patient on ICU Assisting with a patient on ICU
Thurs 10/11:	8.30: 9.15: 10.15: 10.45: 11.30: 12.30: 13.15: 14.00: 14.45 15.30 16.00:	Recap LECTURE 5: Circulation Coffee LECTURE 6: Fluids Scenarios LECTURE 7: Disability Lunch LECTURE 8: Supportive Care and ICU Nursing Scenarios End Assisting with a patient on ICU
Fri 11/11:	8:30: 9:30: 10.15: 10.45: 11.45: 12:30: 13.15: 13.30: 14.15: 14.45 15:00:	Recap LECTURE 9: Routines on ICU at Muhimbili Coffee LECTURE 10: Pain relief, drugs, everything else LECTURE 11: Three most common diagnoses on ICU, Muhimbili Seminar: how to improve critical care at Muhimbili Test Lunch Feedback, Test feedback Closing address by ED & certificates End
Mon 14/11- Fri 18/11		Observation & Bedside Teaching ICU: Jonas, Lotta, Ulrica



## Appendix B Pre & Post Course Test

Put a cross in the box  that is the correct answer to the following questions:

1. What does "A" stand for in the ABC of acute care?
  - Antidote
  - Advanced
  - Airway
2. An early finding in respiratory distress is:
  - cyanosis
  - fast respiratory rate
  - low blood pressure
3. Initial management of a blocked airway can include:
  - Lifting the chin
  - Bag and mask ventilation
  - Lying the patient flat on her back
4. A good first treatment for shock is:
  - IV Ringers Lactate
  - IV Hydrocortisone
  - IV Frusemide
5. If the patient is making gurgling sounds when breathing a good treatment is:
  - Suctioning the airway
  - Chest compressions
  - Antibiotics
6. An unconscious patient should be nursed:
  - Lying flat on her back
  - In the recovery position
  - With the head turned to the side
7. How much fluid may a 70kg adult in hypovolaemic shock need in the first 24hours?
  - 1 litre or less
  - 2 litres
  - 4 litres or more
8. A good first treatment for shock is:
  - raising the legs of the patient
  - lie the patient on their front
  - raising the head of the bed
9. How much IV fluid should be given initially to a 12kg child in shock?
  - 100ml then reassess
  - 240ml then reassess
  - 24ml then reassess
10. Which of the following is an indication for admission to ICU?
  - HIV positive adult with acute pneumonia and respiratory rate 70/min
  - Terminally ill 70 yr old with advanced cervix cancer and bilateral bronchopneumonia
  - An important politician with pneumonia and respiratory rate 24/min
11. The correct dose of adrenaline in anaphylactic shock is:
  - 10mg IV
  - 1mg IV
  - 0.3mg IM
12. What is the correct dose of IV glucose in an unconscious 10kg child with suspected hypoglycaemia?
  - 50ml 10% glucose
  - 50ml 50% glucose
  - 5ml 5% glucose
13. When evaluating conscious level, the scale "AVPU" can be used. What does the "V" stand for?
  - Volume
  - Ventilation
  - Voice
14. Reduced urine output postoperatively should usually be treated first with:
  - Frusemide
  - Fluids
  - Dopamine
15. Which of the following could be a sign of hypoxia?:
  - adult with respiratory rate 30/min
  - newborn baby with respiratory rate 40/min
  - 15 year old with respiratory rate 16/min
16. Which of the following is an emergency drug and should be kept on the ICU at all times?
  - Salbutamol
  - Amodiaquine
  - Fluconazole
17. Which of the following is emergency equipment and should be kept on the ICU at all times?
  - X-ray film
  - Oro-pharyngeal airway
  - Lumbar puncture needle
18. Which of the following patients should not be given morphine?
  - A post-op patient who is a heroin addict
  - A post-op patient with respiratory rate 6/min
  - A post-op patient who is agitated, restless & sweating
19. Which of the following is a contraindication to NG-feeding?
  - A semiconscious patient recovering after head injury
  - A patient with a blocked airway who may need intubating
  - An unconscious child with meningitis



Muhimbili



Participants



Lecture



Karolinska Teachers



Course books



Doctors at Muhimbili



Seminars



Helping a patient breathe



Certificates



Scenario



Ward Round on ICU



Teaching on ICU