

A day in the children's unit of Mulago Hospital, Uganda

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Summary The emergency ward for children in Uganda's main teaching hospital provides care for up to 200 seriously ill children per day. The poverty of funding available to this State Hospital results in a chronic lack of drugs, medical supplies and essential equipment. Child Advocacy International is helping local staff to improve standards with training programmes in neonatal and paediatric life support, pain control and palliative care. It is also piloting the Child Friendly Healthcare Initiative (Paediatrics 2000; 106: 1056–1064). This article describes conditions in the children's unit of Mulago hospital during one 24-h period in 1999.

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INTRODUCTION

Child Advocacy International (CAI), a non-governmental humanitarian aid organization dedicated to improving hospital care for children, first began work in Mulago Hospital, Uganda's largest teaching hospital based in Makerere University, in 1998. Medical and nursing teams have been working and continue to work with local staff to improve standards and to introduce the pilot phase of the Child Friendly Healthcare Initiative.¹ Since 1998 the children's wards have been renovated. This article relates the experience of one of the authors (CR) during a 24-h period on the children's wards.

A 24-H WINDOW OF CHILD HEALTH CARE AT MULAGO HOSPITAL

It is 8 a.m. in the morning and a long queue of mothers with their sick babies and children has already formed in front of the Acute Care Ward. Some of them sit on a wooden bench, others on the floor, all patiently waiting to be seen.

The ward is partially closed, as it is being cleaned and the children who stayed overnight are being sent to one of the paediatric wards or discharged. A bucket of grey water mixed with a little detergent is being sloshed around in one room. The cleaner tries to ignore the two small bodies wrapped in cloth lying on the stone workbenches. On most mornings he will see one or two dead bodies waiting to be taken away by relatives.

Children are often severely ill when they finally reach this hospital. They may have been treated at other health centres or received traditional medicine. Treatment is not completely free. Due to a Government-imposed 'cost sharing', a fee of Ush 2000 (about £1, double the national average daily income) must be paid for each patient. Medicines are free but only those the hospital has in stock. The money raised through 'cost sharing' is used to buy drugs for the Acute Care Ward and is an important source of income. A mother who is too poor to pay can make a request to be exempted which is usually granted. However, those without money may be too embarrassed to ask or do not know they can be exempted. This can delay admission of their deteriorating seriously ill child while they try to find the money.

On arrival, the children are triaged outside the ward.² A specially designated nurse weighs each child, measures axillary temperature and fills out a registration card. The card is marked RED—urgent, BLUE—intermediate or

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Table 1 Uganda*

Population	21 m (Kampala 1.5 m)
Population growth rate	5.2%
Urban population	14%
Children 0-15 years	48%
Fertility rate	7.1

Statistics for 1999.

GREEN—non-urgent. The efficiency of this system is dependent on the knowledge and experience of the staff being available to run it. If left to the most junior nursing staff, classification becomes haphazard. At night triage is not done, as there is only one nurse for the whole ward.

The ward fills up as the day progresses. Of the 100 or so children presenting during the day-shift, around 50 will be admitted and space for them to be cared for must be found in one of the 18 cots available. Mothers know that they must bring blankets, clothes and food with them, as the hospital cannot provide these. Donated bedding quickly disappears from the ward, as do toys and any items not locked up. More seriously, medical equipment such as oxygen masks, BP machines and ophthalmoscopes, also 'disappear'. By mid-day there is standing room only for the parents and several children share one cot.

Once through triage and the payment desk, children are seen by a laboratory technician who takes blood. This will always be tested for malarial parasites and a haemoglobin level will be measured if the child looks anaemic (a haemoglobin level of <4 g/dl is common). Sometimes a child will present in heart failure with an Hb of <2.5 g/dl due to malaria. A race against time begins. The priority is to find a vein, usually the femoral, for a blood sample for crossmatching and blood group typing. This takes varying amounts of time. Out of hours (usually after 5 p.m.) the doctors have to do this procedure themselves or use O-negative blood. Medical students or nurses can be sent to collect the blood from the blood bank but, if they are not around, the doctor must go, leaving the ward without a doctor. Once the blood has been obtained, a cannula needs to be found for the transfusion. By lunchtime, the ward has often run out of venous cannulae and on some days only butterfly needles are available. Sometimes patients will be asked to go and buy their own cannulae from a pharmacy in town at a cost of approximately £1 each.

All blood used in the hospital has been screened for HIV, but the possibility that infected blood has slipped through the screening process remains a worry for everyone. Blood transfusion in severe anaemia (Hb < 5 g/dl) is often life saving and most parents readily agree to this treatment. It is not always easy to find venous access, so after third-year medical students have tried numerous times, the intern must struggle to find an

Table 2 Mortality*

Infant mortality	83/1000 live births
Under 5 mortality	131/1000 live births
Life expectancy at birth	42 years
Maternal mortality	510/100 000 p.a.

Statistics for 1999.

Table 3 Mulago Hospital

Beds	~ 2000
Paediatric	200-300
Paediatric wards	2 large general paediatric wards 1 neonatal 1 nutrition 1 diarrhoea 1 acute care 1 HIV/research
Deliveries	Surgical children are initially placed on the adult wards and may not get transferred to a paediatric ward ~ 20 000/year

intact vein. They are usually successful in the end, often succeeding with a scalp vein. There are no central venous catheters available and intra-osseous access is rarely chosen. Only 2-5-ml syringes are available. There are no intra-osseous needles and no three-way taps. Once the children receive a transfusion they usually improve rapidly. On a particularly busy day, 36 blood transfusions may be undertaken (Table 2).

By late morning the queues have become longer. The order in which children are seen has become more chaotic. The interns tend to pick the most sick looking from the queue, often over-riding the nurse's triage system. A not-so-sick child may have to wait for up to 8 h before being seen. Junior doctors undertake most of the work. At night-time there will only be one intern on duty, who also covers all the other paediatric wards, a total of around 300 paediatric patients (Table 3).

Nurses are also in short supply. At night, one nurse may look after 100 sick children. It is often impossible to undertake a ward round with a nurse, as she has to prepare the next drug round, mainly the giving of injected medicines, hours ahead. There is no time to check the children's temperature or do other observations. It is a blessing that the mothers stay in the wards, as they usually help with the nursing duties and more

importantly, provide emotional support for their sick children.

A convulsing 4-year-old is carried into the treatment area. He has been fitting for an hour and the parents have already been to a local health centre where he has been given intramuscular quinine. His temperature is 40.5°C and he has a high concentration of *Plasmodium falciparum* (4+) in his blood. Despite the critical state of the child, few investigations can be undertaken. It is useless to ask for plasma electrolytes—it can take hours to several days for the results to come back depending on the availability of laboratory facilities and staff. Blood cultures are often not taken as the appropriate sample bottles are not available. The only investigation undertaken is a blood glucose. Intravenous glucose, an anticonvulsant (sometimes a vial of diazepam can be obtained) and an i.v. infusion of quinine (without burette or cardiac monitoring as neither are available) are usually given in this situation.

Oxygen administration is by guesswork. There may be bubbles coming out of the cylinder into the waterseal, but as there are about 10 children connected to the one cylinder and the l/min flow gauge is broken, it is anyone's guess whether any of the children are receiving a therapeutic quantity of oxygen via their nasal cannula. There is no pulse oximeter and oxygen cylinders are often near empty or empty. Large oxygen cylinders have to be 'manhandled' by the nurses. They stand unsecured, threatening to topple over and crush anyone nearby. Many of the nurses have to be handy with spanners, as professional maintenance of these cylinders is virtually non-existent; in fact, biomedical engineering has all but collapsed and wards are full of equipment that has stopped working.

A child is carried into the resuscitation area and laid on the treatment couch; a bare bed which already has three other babies squeezed like sardines on it. The mothers are huddled over their babies, administering nasogastric fluids or tepid sponging them (Fig. 1). Quietly, they make room for the new arrival. The mothers are afraid of intravenous lines and nasogastric tubes because they have noticed that children who are given these are more likely to die. This mistaken, if understandable, attitude sometimes leads to the refusal of life-saving therapy with tragic results. The only intravenous fluids available are 50% and 5% dextrose, normal (0.9%) saline and occasionally Ringer's Lactate solution. The Acute Care Ward also makes its own oral rehydration solution. The water for this is boiled in a small kettle in the kitchen as the designated water-urn is broken and there is no money to repair it. There is only one working tap for the 10 different rooms of the Acute Care Ward.

The nurses know they ought to make regular measurements of temperature, pulse-rates and neurological observations on a child with cerebral malaria but usually there are simply not enough staff available to do this. A child on the resuscitation bed, staring and in a decerebrate posture is brought to my attention by a third-year medical student and an anxious mother asking whether he was 'alright'. Apparently, the child has already been like this for half an hour. A few hours later he is dead.

There is a constant stream of mothers with their sick children arriving. It seems that in the afternoon heat the children are even sicker. They have usually travelled long distances. The doctors are also becoming tired now. The intern often misses lunch and sometimes works the whole day without a break. The majority of children seen



Figure 1. Overcrowded treatment room in the Acute Care Ward.

will require admission and medical students are taught to take very detailed histories and present their clerked patients on the 2- or 3-h ward round starting at 7 a.m. the next morning. Teaching in this medical school hospital is excellent.

Pain relief

As with so many hospitals in disadvantaged countries there are major problems with the control of pain and suffering. I visit the adult intensive care unit where there is a baby who has undergone a number of operations in an attempt to repair a moderate-sized exomphalus. He has just returned from the operating theatre and as the hospital has no ventilators for children below 15 kg, he was intubated and is being hand ventilated by his mother with an ambu-bag. When I pointed out to the nurses that the baby, who had bloodshot eyes wide open in pain, had been given no pain relief, the surgeon informed me that morphine would depress his respiratory drive and therefore had to be avoided.

Pain control is usually regarded as of secondary importance. Although opiates such as pethidine and morphine are available, along with weaker opiates and non-steroidal anti-inflammatory drugs, they are rarely used. Only paracetamol and aspirin are prescribed on a regular basis, more often in an 'as required' format. It is near to impossible for a mother to find a busy staff nurse to obtain an analgesic for her child. Intravenous morphine is only rarely given and efforts are being made to introduce oral morphine.

An 8-year-old boy with endomyocardial fibrosis attends the acute ward to have his recurrent ascites drained. He usually comes here on his own. He hardly cries when abdominal paracentesis is performed without local anaesthetic (lignocaine is not available) (Fig. 2).

A father carries his 12-year-old daughter into the ward. She is toxic and in obvious pain associated with a visible mass in her abdomen. Her father says the swelling has only been visible for a few days and she had been 'absolutely fine' before this appeared. On taking a history, the patient says that she had felt something in her tummy for over a month. She has been vomiting for more than a day. I approach one of the nurses for analgesia but it takes a while, despite pleading for urgency, before she interrupts her drug dispensing to the other (less sick) children and goes to find the key for the controlled drug cupboard. We find six broken vials of pethidine, all neatly sealed with sticky plaster but the pethidine has evaporated. One vial is left, fortunately just enough.

Hospital-acquired infection is a major problem. Hand washing is not usually possible. Pathogens have been grown from the sterilizing solution and there are no alcohol swabs. Opened drug vials continue to be used,



Figure 2 A boy with endomyocardial fibrosis bravely has his ascites drained.

even after 2 days. Dilution increases the risk of contamination. Two children have developed osteomyelitis after intra-osseous infusions, despite a 'sterile' technique, making it more difficult to persuade local staff of the usefulness of this technique.

It is getting dark now and the ward sinks into gloom. The beds are overcrowded and even the 'intensive care' treatment bench now has five children on it. Lighting is so poor it becomes difficult to see veins for cannulation. One baby has endured 12 'stabs' in an attempt to cannulate a vein by a keen third-year medical student trying to get access for a blood transfusion. He had even tried both external jugular veins. The child, traumatized, is crying and looks exhausted. With only one intern on duty at this time, the student did not want to ask for help. Final-year medical students are expected to have performed 20 cannulations, 10 lumbar punctures and 20 venepunctures during their 6 weeks paediatric attachment and will not pass if this is not achieved. Their venepuncture skills are usually excellent by the time they become interns.

A hypothermic neonate with presumed sepsis has a respiratory arrest. Fortunately, an ambu-bag with the

right-sized facemask is quickly found and the baby, following a number of positive pressure inflations, starts breathing again. After a bolus of 10% glucose, and i.v. loading doses of gentamicin and ampicillin, together with the warming of the baby by placing her next to mother's body (Kangaroo care), things begin to improve. But then a further apnoeic episode occurs. The baby is given i.v. adrenaline and more prolonged resuscitation. However, the baby would not breathe. There is no laryngoscope and even if the baby could be intubated, no ventilator is available. After an hour of bag and mask ventilation and no respiratory effort by the baby a decision is made to discontinue resuscitation. It is very frustrating and sad to have to do this especially with the knowledge that this baby probably could have lived if a ventilator had been available (Fig. 3).

The introduction of continuous negative extrathoracic pressure (CNEP)⁷ in infants with acute respiratory failure has been helpful, especially those with pneumonia and bronchiolitis.

Suddenly, a power cut plunges the Acute Care Ward into darkness. After a short delay the hospital generator starts and light returns to the rest of the hospital. However, the Acute Care Ward remains in darkness since it is not connected to the emergency generator. Everyone now must work by candle and torchlight.

During the night the constant stream of ill children eases slightly. The intern on duty covers the neonatal unit, two large general paediatric wards, holding 100 children each, and the Acute Care Ward. Nurses from other wards will have to fetch the intern if they want him/her as there is no bleep or telephone system in place. The registrars usually go home around midnight and are then reachable by telephone—if a working phone can be found in the hospital. The pay for these long hours worked by hospital doctors and nursing staff is poor. Doctors at registrar level receive about £180 per month and experienced nurses £90 per month. Many will take on second jobs just to make 'ends meet'.

The next morning I see a child who has arrived the previous night. This is a little 1½-year-old girl, weighing 4 kg and covered in sores. A picture of utter misery. She

has flexion contractures in both knees and ankles, is unable to stand and almost too weak to sit. Her fingernails are long and dirty, she keeps scratching her large multiple skin sores. Her hair is sparse and she wears no clothes. She cannot talk and only whines as her grandmother, who is looking after her, tries to explain her condition. She is clearly incapable of providing adequate care. No systems or guidelines are in place to deal with this—a social worker apparently exists but is difficult to track down. There are no facilities to deal with child ill-treatment or neglect and no one knows what should be done with the child. Abandoned by everyone who should have protected and nurtured her, this lost soul will probably go back to the same home circumstances and die there.

Until the UNCRC is implemented and child ill-treatment, abuse and neglect become better recognized, these sad cases will continue to happen but remain unmanageable. Advocacy for the rights of children has now become a major goal of our work in the hospital and to help achieve this, Child Advocacy International, with the support of UNICEF and WHO, are introducing a pilot of the Child Friendly Healthcare Initiative into Mulago hospital. One of the 12 standards in the initiative encompasses the need for child protection.¹

There is hope for improvements at Mulago—the teaching is excellent and a new children's hospital is being built. The Rotary Club in Kampala has adopted the Acute Care Ward and is now finding the money for vital resources. Mulago has also been linked with James Cook University Hospital, Middlesborough, UK, which is enabling an exchange of doctors and nurses to learn from each other. Neonatal, paediatric life support and pain control courses have been introduced by Child Advocacy International.

As dawn breaks at the end of another 24 h in Mulago's Acute Care Ward the long queue of mothers with sick children is building up at the triage station and a new shift of young doctors prepares for another long, hot day. Improvements cannot come too quickly for them or the children they serve.

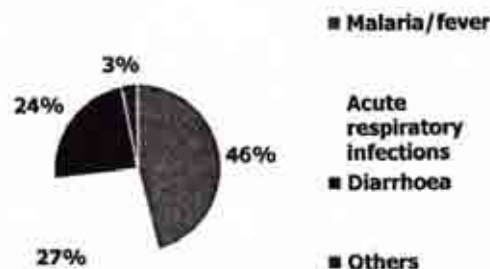


Figure 3 Most frequent illnesses for infants and children in Uganda⁸.

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