Anaesthetic Teaching in Sub-Saharan Africa

Introduction

In March this year, we were invited by Dr Keith Thomson, a Consultant Anaesthetist in Basingstoke, to participate in a three day anaesthetic conference at C.H.U. Tokoin Hospital, Lome, Togo, West Africa. We were asked to prepare and deliver lectures, and to organise and run workshops. As neither of us had travelled to sub-Saharan Africa before, we were both nervous but excited by the prospect of this experience.

We did not anticipate the enormity of the challenges that lay ahead, not only regarding our teaching skills and environment, but also our outbound journey to Africa!

Getting there: 2 legs become 6!

Our journey began at 4am to Heathrow airport, with several unscheduled 'vomit' stops (Lou had gastroenteritis). At Heathrow we joined three of our team, to discover our flight was delayed by 3 hours, and consequently, we missed our planned connection in Paris.

This was the beginning of a long 36 hours…

We travelled from Paris Charles De Gaulle airport to Orly airport (via taxi), then flew from Orly to Casablanca with the promise of a connecting flight to Cotonou, Benin. No such flight existed. Following a frustrating twenty-four hours of negotiating and queuing, we boarded our flight to Togo, via Ghana! We arrived in time for the first afternoon of workshops, exhausted but excited to participate.

We look back on that experience with amusement, but at the time, our circumstances did cause concern, particularly amongst those of the group with more experience of the dangers of travelling in Africa. Their presence was reassuring; there is a lot to be said for blissful ignorance! We travelled with a great group of people, and our experiences certainly united us as a team.

Demographics

	Togo	UK
Population	6.2 million	61.2 million
Percentage >65yrs of age	2.8%	16.4%
Median age	18.7 years	40.5 years
Life expectancy at birth	59.7 years	79.2 years
Infant mortality rate	56.8 deaths per 1000 live births	4.8 deaths per 1000 live births

Anaesthesia in Togo

There are six Togolese physician anaesthetists, three of which work within the private sector. The remaining three work at the C.H.U. Tokoin teaching hospital, where the conference was held. This is the biggest hospital in Togo, employing 40 of the 100 nurse anaesthetists. The Togolese anaesthetists undergo three years training in the government service and serve the national population of over 6 million. In comparison, at Basingstoke Hospital alone, there are 41 anaesthetists to serve a local catchment population of 300,000.

The hospital has eight operating theatres, with the majority of cases being obstetric, general surgical and trauma emergencies.[2,3,4] This is comparable across sub-Saharan Africa. Theatres are equipped with a basic Boyle's anaesthetic machine, and disposable airway equipment, which is routinely re-used until no longer functional. Patients are monitored by clinical examination, augmented only by manual blood pressure measurement.

Induction agents are limited, with ketamine, thiopentone and diazepam the most commonly used. The only available muscle relaxant is pancuronium. No peripheral nerve stimulators or reversal agents are available. Maintenance of anaesthesia is provided by halothane; occasionally isoflurane, or repeated thiopentone dosing. Simple analgesics are used post-operatively, and morphine is rarely used.

One study in 2005 aimed to establish the death rate and causes of avoidable peri-operative deaths in Lome, Togo[1]. 1464 anaesthetics were delivered during a six month period, of which 30 patients (2%) died within 24 hours. The study suggested a staggering 93% of these total deaths were avoidable.

The majority of patients (77.43%) were aged between sixteen and sixty years, with only 11.9% being above the age of sixty. In the sub-group of peri-operative deaths, 56% were ASA 1 or ASA 2 patients, and the remaining 44% ASA 3 or 41.

Eleven peri-operative deaths were categorised as "anaesthetic avoidable mortalities"1. Of these eleven deaths, four were a result of gastric aspiration, two related to post-operative hypoxia, two "overdoses" of anaesthetic agents, one difficult intubation, one undetected oesophageal intubation and one secondary to anaphylaxis. A further ten deaths were deemed "administrative", resulting from "insufficient or unavailable" blood for transfusion.

60% of the 1464 anaesthetics were emergencies, *without* use of a rapid sequence induction technique. Over 90% comprised general anaesthesia, with regional techniques (sub-arachnoid block), accounting for 8%.[1]

47% of total deaths were associated with cardiovascular collapse (namely acute haemorrhage or septic shock), and 30% with respiratory failure. *50% of total deaths were in obstetric patients.*[1]

These statistics clearly support the necessity of continuing professional development and the need for ongoing education with regard to anaesthetic safety and best practice. 'Better' practice however, seems a more realistic target where facilities and equipment are limited and care is challenged to the extreme.

The conference

The conference took place over three days, and was held at the teaching hospital in Lome. The faculty consisted of three consultant anaesthetists, one neonatologist, three trainee anaesthetists and two interpreters. The morning sessions were lecture-based, with practical workshops held in the afternoon, focusing on neonatal resuscitation, airway skills, and obstetric case histories with management discussions. We also arrived with two neonatal dummies, two anaesthetic intubating heads and boxes of donated disposable equipment to complement our practical sessions.

It was attended by 96 anaesthetic practitioners and 2 midwives from 23 hospitals in Togo. The delegates were incredibly enthusiastic, attentive and knowledgeable. During lectures, the delegates were keen to be updated on best Western practice; for example: secondary prevention in the management of head injured patients, despite their limited resources and challenging professional circumstances. They have no recovery, no intensive care facilities and no ventilators. Their practical skills were impressive, and all were keen to demonstrate repeatedly during workshops to be reassured of their proficiency.

At the end of the conference, we had planned to evenly distribute our donated equipment to each of the delegates. However, the true desperation of their clinical circumstances became apparent with the stampede and chaos of delegates grabbing items off the carefully organised table.

Feedback at the end of the conference was very positive. Delegates were appreciative of the time we had donated and our efforts. In spite of the language barrier, we happily developed a friendly rapport with the delegates, often mediated by flamboyant sign-language! We definitely came away feeling we had made a positive impact on their education. However, it is difficult to be certain if our teaching will have any lasting influence on their anaesthetic practice.

Our experience

Shiny

"I felt apprehensive prior to departing on this trip for a number of reasons. I have never taught on a conference like this before, to this number of delegates. Even with previous experience of the 'lecture theatre', I prefer to teach on a smaller scale, as I feel the teacher-student interaction is crucial to the learning process. However, with the morning lectures, we could reach the larger audience to impart key information. During the afternoon workshops, we were able to develop relationships with the delegates, which enhanced the learning process."

Lou

"I was the most junior member of the team (CT2 Anaesthetics), and also nervous about participating in the conference. I thoroughly enjoyed the teaching experience and adapted my techniques to deliver concise information. As a junior trainee I feel privileged to have been given this opportunity. I was very lucky to be part of a magnificent, welcoming and dynamic team which made my whole experience even more memorable."

Teaching in Africa challenged all aspects of lecture technique and content, and forced us to scrutinise the way we think about delivering education. Teaching in one's first language is demanding, yet we had the additional challenge of French translation as we lectured. We were incredibly fortunate to have two fantastic translators, (both non-medical), who had sacrificed their time to revise complex medical vernacular. The conference would have been impossible without their expertise.

We modified our lecture technique, using shorter sentences with longer pauses, to allow for concise and accurate translation. The results of the end-of-day quiz sessions clearly confirmed that the salient points had been communicated. Alongside gaining insight into delivery of medical education in Africa, we certainly augmented our own teaching skills and knowledge.

This was one of the most rewarding and memorable experiences of our training and teaching to date and we would wholeheartedly recommend teaching and travelling in West Africa to those lucky enough to have the opportunity.

Our Thanks

We were invited to stay on the Africa Mercy Ship which had docked in Togo the month prior to our visit. Mercy Ships are a global charity that provide 'hospital ships' to deliver free surgical and medical care to developing countries. They were extremely generous, and took care of us during our stay in Togo, providing excellent food, safe travel and accommodation.

www.MercyShips.org.uk

We wish to thank Dr Keith Thomson for his impeccable organisation and support during the conference and also for his great sense of humour and hilarious anecdotes. Our thanks also go to C.H.U. Tokoin Hospital, Mrs Aicha Bissang (president of the nurse anaesthetists association), Dr Kadjika Tomta and Dr Moussou Tabana, all the delegates and the rest of the faculty for making our experience truly valuable.

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Dr Shiny Shankar and Dr Louise Young

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