From cupboard to clinic — developing a dispensary in rural Tanzania

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Tanzania is east Africa's largest country. It shares borders and influence with Kenya, Uganda, Rwanda, Burundi, Zaire, Zambia, Malawi and Mozambique. It is a rich and diverse country and home to Mount Kilimanjaro, species ranging from antelopes to zebras, the Great Rift Valley, the beautiful white sands and spices of Zanzibar. It is also home to over 100 ethnic groups who make up a population of friendly and generous people with vastly different health needs to those of the UK.

For the months of July and August 2005, I undertook volunteer work at the Kiteto Christian College, Kibaya, Tanzania. This was primarily teaching English and "computing" to students aged 17–35, but also provided an opportunity to use my pharmacy training by creating a dispensary and developing a health-care outpost in this rural area.

Health care for the college is provided by the local hospital. This can be a drain on funds for the college and so the clinic was conceived as a means of providing rudimentary treatment to staff and students. This was later extended to the local population as the low standard of care available to them and a recognised need for improvement became apparent.

In the beginning

An unused storage cupboard and kitchen area with a sink was used as the starting point for the dispensary. The cupboard was full of boxes containing medical supplies that had been shipped to the college in 2004. Clearance of the cupboard provided a reasonable storage space for a dispensary. In the absence of a pharmaceutical outfitter, a trip to the town hardware store provided wood. Eight hours and a lesson in carpentry later resulted in handcrafted dispensary shelves.

A basic stock requirement for the dispensary was determined with help from friends and colleagues at home who communicated via e-mail. A friend was able to forward me the "World Health Organization's model list of essential medicines".[1] This was adjusted to take local need into account and a core stock list was produced. Supplies were acquired from a reputable pharmacy in Dodoma, the capital of Tanzania. The price of medicines is considerably cheaper in Africa due to production in developing countries such as India, so replete stock was purchased at a cost of around £20. Although the pharmacy had a wholesale licence we were not required to produce a written order, provide identification or confirmation of our authority to sell or supply the goods, as would be required under wholesale dealing in the UK.[2]

Dubious donations

On unpacking the boxes of supplies it was soon obvious that there was a

huge assortment of medicines and equipment of questionable value. This included:

- Approximately 30 blood glucose monitoring machines, without corresponding test strips or lancets
- A single peritoneal dialysis catheter
- Venous catheter grafts
- A pelvic floor exercise weight
- Oxygen cylinder tubing and masks (no available cylinders)
- Night drainage bags without catheters

The donations of medicines were unfortunately of similar worth. Drugs such as montelukast, glimepiride, sulfasalazine are of little value where the primary local health concerns are malaria, infections related to poor sanitation, poor nutrition and worm infestations. Medicines sent also included short-dated medicines, which presents a big ethical dilemma. In an area where access to good health care may be up to five hours drive away is it better to use nothing at all or an out-of-date medicine of which you cannot be sure of the efficacy or possible toxicity? UK training made me instinctively want to dispose of this medicine (as safely as possible). However, in the UK patients are fortunate in being able to access high quality health care quickly. Also, the college has a steady stream of ready volunteers, most of whom are not medically trained. Therefore having out of date medicines lying around could be potentially dangerous in the hands of lay people who are unaware of the potential hazards.

It has been raised (and highlighted by correspondence in the *The Pharmaceutical Journal*) that Africa should not be a dumping ground.[3] There is a natural human desire to help those less fortunate in making donations of medicines or equipment to developing countries. However this must be tempered with consideration of local need and appropriateness of the items being sent.

Local health care facilities

The following is based on information from local people and may not reflect the national picture of health care in Tanzania. The local hospital has a male, a female and a paediatric ward. Standards of health care and resources are unfortunately so low that recruitment problems dictate that the hospital is staffed by medical officers rather than doctors. The hospital serves a population of around 300,000 people in Kibaya and the surrounding area, although there has been no recent census. There are no catering facilities within the hospital so inpatient nutrition falls to relatives to bring food in. Patients are also required to provide their own bed linen, as this is not available, which presents an infection risk as the beds are probably not cleaned between patients.

Although Tanzanian hospitals are nationalised, outpatients must pay for their care at a cost of 3,000 Tanzanian schillings (£1.50). This covers the consultation and any medicines prescribed. This is expensive considering the United Nations estimated average wage is $2 per week (£1.20).

The hospital receives infrequent supplies of medicines from the central Tanzanian government. Unfortunately, these supplies are often misappropriated and usually find their way into the pharmacies in town.

An example of the local prescribing practices was Mr "P", a male in his 40s who was brought to the college clinic with bilateral bloodshot, sore eyes. On questioning, via a translator, it was determined that he was waking with crusty sediment around both eyes and had had the problem for five days, with no other symptoms. A hospital medical officer had prescribed "TCL" eye drops (we were unable to confirm what these were although assumed they were anti-infective), aciclovir tablets and chlorphenamine tablets. After three days, treatment his problem was not resolving but he was sleepy. We advised either chloramphenicol ointment (possible safer storage than drops in the warm climate) or gentamicin drops to try for an eye infection and to stop the Chlorphenamine. Within a couple of days of treatment with chloramphenicol eye ointment, the problem was resolving. This case demonstrates the basic level of training of the medical officer in treating empirically for a number of diseases and the polypharmacy that the paying patient can expect.

Local prescribing was also rather dated by western standards. Another patient, Miss "Z", presented to the hospital with tachycardia and anxiety attacks. This was subsequently discovered by volunteers at the college after she returned from the hospital with a prescription for phenobarbitone and diazepam. The prescribing of an anti-epileptic for these symptoms was unfamiliar, but correspondence with a doctor in the UK elucidated this as dated use as a sedative for anxiety. It is likely that prescribing in Tanzania is influenced by the availability of cheap drugs rather than less toxic but more expensive newer alternatives.

Testing in the local hospital was idiosyncratic by UK standards. One of the students with ongoing indigestion was prescribed amoxicillin for suspected *helicobacter pylori*. This was amended to triple therapy at the college. This resolved the indigestion, although no subsequent tests were available to confirm eradication of the bacteria. However, the hospital had offered to perform an x-ray on the patient's stomach if symptoms did not resolve in a couple of days. This did not appear to be logical investigation.

Resources available

E-mail is available at the college through a dial-up remote server, however this cannot sustain use of the internet. The copious health information that professionals now take for granted was not at our fingertips. E-mail from colleagues and friends in medical professions was invaluable for the gleaning of information. We were able to discuss a diagnosis with paediatric consultants at the Harrogate Healthcare Trust (see patient cases).

With volunteers at the college not necessarily being medically trained, it was important to provide accessible information for subsequent volunteers to be able to use the clinic resources safely. Written guidance was produced on doses of medicines stocked with relevant warnings, antibiotic use and a guide to treating common problems, blood-glucose monitoring and appropriate use of available dressings. This was peer reviewed by colleagues at home over e-mail and checked by volunteers at the college for clarity.

Patient cases

Common problems encountered were malaria and indigestion due to the local diet. The following are a couple of interesting cases.

Patient 1: a five-year-old male child presenting with hepatosplenomegaly and anaemia.

History: he had been taken to the Kilimanjaro Christian Medical Centre by his parents five months previously. The discharge letter documented "massive hepatosplenomegaly and severe iron deficiency anaemia. Transfused. Liver biopsy: no abnormality seen. Creatinine, aspartate aminotransferase (AST)/ alkaline phosphatase: normal — alanine aminotransferase — 110. Diagnosis? Storage disease? Tropical splenomegaly r/o sickle cell disease. Given malaria prophylaxis." The gross abdominal swelling had not abated and the parents had been giving the child lots of red meat for the anaemia, without success.

Outcome: I e-mailed paediatric consultants at the Harrogate Healthcare Trust who suggested that malaria with liver involvement may be causing the swelling. Thus, he was given Malarone at a paediatric treatment dose. Subsequent correspondence suggested the hepatosplenomegaly could be related to hookworm infection. This causes anaemia and the patient could have reverted to fetal blood production (in the liver) causing the swelling. The patient had unfortunately not returned after the malaria treatment to confirm if this had worked. Documentation was left to try albendazole for hookworm if he returned.

Patient 2: a one-year-old female infant presenting with gross burning to the outside of the fingers of her left hand.

History: the child was encountered by chance on a visit to a local village by volunteers at the college. She was invited for treatment as the raw flesh on the hand was crawling with flies and infection risk was evident.

Outcome: the hand was dressed on three occasions with a combination of products including Jelonet and Iodoban. Padding of the hand was important to provide both protection and prevent contamination from dirt in the squalid living conditions. The dressings were particularly traumatic for the patient as she had not encountered white people before, was frightened by our presence and afraid of what we were doing to her doubtless painful hand.

One of the dressings had to be undertaken from the back of a Landrover on a visit to the village as the mother had been unable to bring the baby into the college due to a bout of malaria. Upon removing the third set of dressings the skin had healed well and we advised the mother to try to keep stretching the fingers gently to prevent scar tissue developing in the skin.

Conclusions

Medical care in a developing country is an eye-opening experience. In the UK patients are fortunate to receive free health care. Treatment on the whole chosen clinically rather than based on monetary considerations. Better education also provides well-trained doctors. Lack of available funds in developing countries however precludes these same fundamentals being available to local people.

This experience was personally valuable in project managing the set up of the dispensary using training in relation to local need. It was enormously satisfying to meet and treat the wonderful local people and I would encourage any pharmacist to undertake a similar experience abroad.

All proceeds from the writing of this article will be donated to the Kiteto Christian College for the further development of the clinic and essential health care services. If you would like to donate towards the good work being undertaken this would be greatly appreciated. Donations can be made to: The DMK Association, Account no: 90738034, Barclays Bank, Abbeygate Street, Bury St Edmunds.

References

1. *World Health Organization. WHO model list of essential medicines. Available at: www.who.int/medicines/publications/essentialmedicines/en/index.html. Accessed 10 November 2005.*
2. *Royal Pharmaceutical Society of Great Britain. Medicines, ethics and practice: a guide for pharmacists. 29th ed. London: The Society, 2005: 17.*
3. *Parker V. Not a dumping ground (letter). Pharmaceutical Journal 2005;274:12.*