An African adventure:

St Francis Hospital, Katete Eastern Province, Zambia

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The medical elective is a rare opportunity to experience developing world medicine in a supervised environment. It allows you to take on the responsibility of being a doctor while having good personal and professional support available. It is also a chance to learn about the complex world of tropical medicine. With these requirements in mind, I set out to find a hospital in a safe country with an English-speaking medical system. This narrowed the field considerably. I preferred a rural hospital for the depth of practical experience as well as the pathology of late-presenting cases. St Francis hospital fitted all these requirements.

My elective began with a four week stint on the male medical ward, St Augustine. I was supervised by Dr Christopher Hopkins, a general medical registrar from the UK. We started ward rounds at 08:00 with the ICU patients. These patients enjoyed close proximity to the nurses' station as well as use of the oxygen machine. From here, we continued down to see the thirty-odd patients in the main ward as well as the TB corridor. After rounds, we would finish the jobs (lumbar punctures, pleural and ascitic taps, etc.) before attending to any referrals from the other wards.

After lunch, we would continue onto the general outpatients department. The patients would typically have been triaged by the medical officers and we would see a huge variety of cases: paediatrics, obstetric, surgical, gynaecological, general practise as well as acute admissions. This would take us until anywhere between 16:00 and 18:30.

Twice a week, I would assist on the evening round or over the weekends. The evening round started at 17:30 with the children on Mbusa ICU. We would then progress to special care baby unit (SCBU), where we would see any acutely unwell babies as well as the new admissions. We would finish with the adult ICU, around 22:00. The weekend rounds started at 08:00, where we would see all the paediatric patients as well as the adult ICU cases and new admissions. This would finish mid-afternoon but the same doctors had to do an evening round as well as be on call overnight, so working weekends soon became quite taxing.

Three times a week we had morning meetings to attend. Tuesday at 07:30 was the mortality and morbidity meeting, run by a different department each week. This was followed by reports from the lab and the pharmacy, who would keep us up to date on which drugs and reagents had gone out of stock, and which had become available. Thursdays at 07:30 were dedicated teaching sessions, much like grand rounds. We learnt a wide variety of topics, including congenital heart disease and dental caries. Fridays at 07:45 was the HIV session, where the HIV specialist would offer her advice and opinion on cases for discussion.

Working on St Augustine was initially disorientating; it was difficult to bear the heat and the smell of the wards at the same time as conducting a history and examination through a translator. Nursing care on the wards, such as bathing and feeding patients, are performed by the patient's family. This leaves the nurses free to dispense medications, insert intravenous luers, and translate for the doctors. However, the quality of care administered by bedsiders hugely varied. Some patients went unfed for days, while others lay stagnant in pools of their own urine/faeces. It was a huge problem when families absconded to care for the patient as they were usually too sick to care for themselves. It took time to adjust to a workplace environment so different from the New Zealand medical system.


St Lukes outpatient clinic

We saw many cases of HIV-associated illnesses. The population prevalence of HIV is 17%, and life expectancy is only 33 years. Inpatient prevalence of HIV is extremely high and therefore the patient's HIV status is almost always relevant to the presenting complaint. There were many patients whom we offered voluntary counselling and testing (VCT) but a small proportion declined, partly due to the stigma associated with HIV. To reduce the stigma, St Francis uses the term "retroviral disease" (RVD) instead of HIV.

In many cases, a lack of laboratory tests and imaging severely hampered our diagnostic ability. A tight budget meant that repeat tests could only be justified under extreme circumstances. Our lack of head imaging made it difficult to differentiate between ischaemic and haemorrhagic strokes. Lacking thrombolysis, this only affected the administration of aspirin. If the patient had a neurological deficit with a preceding headache, the stroke was assumed to be haemorrhagic in nature and therefore aspirin was not administered.

Although the lack of specialised imaging impaired our diagnostic ability, our poor neurosurgical capacity meant that management was often unaltered. One patient in his fifties presented with three days of confusion and aphasia on a background of chronic alcoholism. Through our translators, we eventually discerned he had fallen three days ago during a drinking binge. We suspected an intracranial bleed but could not diagnose this without further imaging, and with such a poor prognosis, there was very little we could do. I had to explain the situation to the family and eventually they took him home to care for him there. It was certainly a sharp introduction into breaking bad news and counselling families through difficult situations.

Many of the patients arrived with altered mental states as well as HIV. This proved a diagnostic dilemma as the differential includes TB meningitis, cryptococcal meningitis, bacterial meningitis, and cerebral malaria. Some of the treatments for these diseases were very specific, others very toxic, so it was important to establish a diagnosis before commencing therapy. Doctors hence had a low threshold for requesting lumbar punctures, and I performed seven over the course of my elective.

One interesting case I admitted was a 33 year old gentleman who presented with a progressive headache and confusion two weeks after commencing antiretroviral therapy. He had stopped speaking days before admission and therefore taking a history became difficult. I performed a lumbar puncture which was clear; negative CrAg (crytococcal antigen), no acid-fast bacilli or organisms seen on microscopy. Cryptococcal and bacterial meningitis was thereby excluded but the differential included TB meningitis and toxoplasmosis. TB meningitis is difficult to diagnose as acid fast bacilli are often absent from CSF (Thwaites, 2004) and PCR was not available. A diagnosis would therefore commit the patient to long-term antituberculous treatment (ATT) as well as a one month course of steroids. Prednisone at these doses would cause the patient to deteriorate if the diagnosis was incorrect, so it was prudent to trial toxoplasmosis therapy. Unfortunately, he failed to improve on high dose cotrimoxazole and died within a week.

There were also many cases of HIV-associated Karposi's Sarcoma (KS). I would administer palliative chemotherapy for day-stay patients on a daily basis. I soon learnt the indications for starting chemotherapy and I would be responsible for prescribing and administering the medications. First, I would check the patient's lesions (if cutaneous KS) to ensure there was no overlying infection. Next, a full blood count needs to be performed to ensure the patient was not neutropenic or thrombocytopaenic, and if anaemic (Hb < 9g/dL) a blood transfusion was required pre-treatment. I would double check that the patient was compliant with ARV's as well as their prophylactic septrin. Finally, the maximum lifetime dose of doxorubicin must be calculated to prevent cardiotoxicity. The patient then required premedication with promethazine before I could administer 50mg doxorubicin and 2mg vincristine.

It was rewarding seeing patients' quality of life improve on chemotherapy as there was little we could do for other illnesses. Many patients had long durations of stay as we attempted to improve their function to the point where they could be discharged. This was especially difficult in patients with long-term neurological diseases. One patient in his fourties had been admitted with a long history of lower limb weakness as well as constitutional symptoms. He was diagnosed with spinal TB (Pott's disease) and developed urinary retention while in hospital. This required long-term rehabilitiation, including a wheelchair and an indwelling catheter. Unfortunately, St Francis did not have the facilities to supply him with a wheelchair. He lived in a rural area, making physio follow-up almost impossible. We started him on ATT's and discharged him to begin ARV's at his local HIV clinic. I hope he continued to be compliant with treatment as his quality of life would be unlikely to improve without halting the progression of his TB.

Many of the patients we treated were very young, with poor prognoses. The mode decade of age at presentation was between 30 and 40 years; many younger. Children over the age of ten were generally admitted to the adult ward; so we were treating malaria and sickle cell disease alongside strokes.

It tried my patience to work with the busy ward staff in patient education as the language barrier made it difficult. Western concepts of medicine were hard to grasp due to poor education levels and strong traditional beliefs. I developed ways of effectively delivering education for the more common diagnoses on the ward, including type one diabetes after a diabetic ketoacidosis (DKA). Day one involved the pathogenesis of diabetes and long-term consequences of poor glucose control. On day two, I talked about the importance of eating the right foods. During the hungry season, Zambians would often go without eating and we would train them how to handle hypoglycaemic attacks. Day three was dedicated to teaching them how to draw up and administer their own insulin. Tight control was impossible due to the lack of glucometers, so all patients were commenced on bd insulin regimes. I would often draw tables to remind illiterate patients of insulin doses.

St Augustine was a stepping stone to the hectic world of tropical paediatrics. Between myself and one other doctor, our ward rounds would cover over 100 patients on a busy day. We begun at the SCBU and worked our way through the ICU. The acute malnutrition ward came next, before the general ward. We would finish up with the babies room, the overflow ward, and the regular malnutrition ward. Some of the wards were heated (despite the 35°C ambient temperature) and there were often two or three patients to a bed. There were always children crying and the stench of stale urine filled the air. It was certainly a different working environment to Starship hospital.


Special Care Baby Unit (SCBU)

Mornings began with rounds at SCBU. Antenatal care is very limited in Zambia as there are few midwives, let alone prenatal ultrasound. Multiple births would often come as a surprise, and it was difficult to estimate prematurity. Our patients came as small as 500g with very poor prognoses. This is partly due to our poorly resourced unit. There was only one oxygen machine, which fluctuated between functional and "at the workshop". We could give IV fluids to only one neonate at a time as there was only one syringe pump. The poorly designed incubators allowed cockroaches to crawl into the warm spaces; however the insect bites prevented apnoeas in patients with poor respiratory drive. Our pharmaceutical arsenal was reduced to IM antibiotics and aminophylline. The mortality of these patients was startling. By the 5th of January, we had five neonatal deaths in the year 2010.

Next came the paediatric ICU, where a child would frequently arrest over the course of the ward round. In my limited experience, an average of two children would die each day, and the overall mortality was 10%. I became proficient in ventilating and performing chest compressions. The doctors would often administer 1mg intracardiac adrenaline if circulation did not spontaneously recover. Patients here were usually cerebral malaria cases who had presented late. Many parents are not concerned until their children start displaying seizure-like activity. Patients may live up to 300km from the hospital, most do not own motorised transportation, and so late presentation is common. Resuscitation was rarely successful, and when it was, the patients often arrested later that day. Therefore I also examined many deceased patients in order to pronounce them dead.

There was a minority of meningitis cases admitted to ICU, many of whom were misdiagnosed as malaria by the clinical officers. I came across a 2½ year old patient who was admitted with fits, fevers and a cough. Although she was RDT (rapid diagnostic test for Plasmodium falciparum) negative as well as blood slide negative, she had been started on quinine and left in the general ward. On examination she had an increased respiratory rate and widespread crepitations, so I moved her to the ICU and started her on oxygen, IV benzylpenicillin and chloramphenicol (to cover sepsis as well as an LRTI). Over the next 48 hours, she failed to respond and in consultation with the director, we decided to start her on dexamethasone as well as ceftriaxone. The patient showed no neurological improvement and developed fixed, dilated pupils. After consulting the family, we decided to trial gentamicin to cover a gram negative sepsis, but would withdraw treatment if she failed to improve.

The most heart-wrenching cases were in the acute malnutrition corner. Children would often come in malnourished and oedematous, having very poor physiological reserves, and be extremely unwell from concurrent infection. All malnourished children received vitamin A and cotrimoxazole, and if they had a concurrent illness they were upgraded to ampicillin and gentamicin. They were all screened for malaria and given F75, a high-calorie supplement, to feed them to within one standard deviation of their median weight for height. Many children were malnourished not due to poverty but secondary to a defective alimentary tract, such as a cleft palate or lip.

One five month old presented with an acutely distended abdomen and abdominal x-rays displayed dilated bowel loops. He was diagnosed with Hirschsprung's disease and we attempted to insert flatus tubes to relieve the pressure on the megacolon. Unfortunately he died before surgery could be performed. Death is not uncommon as children with malnutrition have the poorest prognosis, with a mortality of 30%.

The general ward provided great opportunities for learning as it held a wide range of pathology: from chronic illnesses like lymphoma to acutely unwell children with malaria. Soon I could take basic histories in Nyanja, the local language, and could quickly assess and triage children.

The most varied and interesting part of my day was the afternoon clinics. Held in the jam-packed St Lukes clinic, there would often be five doctors, two translators, and as many patients as possible. There was only one bed available and this was often taken with acutely unwell patients who required immediate admission. Patient privacy was negligible as translators would often have to shout across the room to be heard.

This was a difficult environment to discuss sexually transmitted infections, especially when using relatives as translators. Many women presented with non-specific lower abdominal pain and vaginal discharges. Due to a paucity of resources, we were unable to swab all of our patients, and we relied on syndromic management. It became extremely difficult to explain the need for partner treatment and importance of contraceptive use in this population. The translators we used were very staunchly Christian, and they would sometimes use inappropriate or judgemental tones with patients. For example, I had a 14 year old patient who presented for a police report following being sexually assaulted. The translator proceeded to lecture her about the importance of abstinence while I filled in the paperwork. As she was speaking in Nyanja, I was unaware what she was saying until after the consultation had ended.

The pathology I saw at the outpatient clinics was astounding. There were many cases of late-presenting tumours which I referred on to the surgical ward. For example, a female in her thirties presented with a two year history of a breast growth. It was pungent, dripping with pus and had a peau d'orange appearance. I admitted her to the surgical ward for further management.

There were often trauma cases, mainly motor vehicle accidents, which presented via outpatients. I became adept at reading X-rays and we managed many fractures and orthopaedic injuries. I saw a 14 year old boy who presented with a right leg mass following a fall one month ago. We diagnosed him with an osteosarcoma and referred him to the surgeons who recommended an amputation, along with chemotherapy. Unfortunately, due to the acute onset of his tumour, and his general good health, it was difficult to explain the severity of the situation to his parents. They refused treatment and took him home to trial traditional therapies.

Another interesting case was a 38 year old woman who presented with a two month history of chest pain, headaches, irregular paravaginal bleeding and a mass sensation in her lower abdomen. She was convinced she was pregnant and may be miscarrying, however a pelvic ultrasound revealed a non gravid uterus. CXR revealed cannonball metastases and her urine ßHCG was positive. She was diagnosed with choriocarcinoma and we referred her to the gynaecologists for further management. Although she commenced chemotherapy, she soon absconded from treatment and has since been lost to follow up.

There were many cases of "western-style" medicine in the elderly population, for example hypertension, GORD and type two diabetes. Patients have poor knowledge about these diseases, which makes it difficult to counsel patients about the cause of their illness and lifestyle modification. Locals believe that obesity is a sign of good health as they see high mortality in malnourished, cachexic people. They also see salt as a luxury so it is difficult to implement exercise and dietary changes.

CONCLUSION

I highly enjoyed my elective at St Francis Hospital. This experience was a real eye-opener to the poverty and illness of the developing world. There was great cultural difference compared to working in a New Zealand hospital, and working with translators and poorly educated patients was certainly a challenge.

The steep learning curve forced me to develop on both a professional and personal level. Seeing patients on my own helped me decipher signs and symptoms and formulate management plans. The complexity of the cases allowed me to study whole new avenues of tropical medicine. I developed new skills, performing lumbar punctures and pleural taps. It was difficult to see so many children die despite our best resuscitation efforts; always wondering if I could have done more to prevent their deaths.

I would highly recommend this hospital for anyone wanting to experience the pros and cons of tropical medicine in Africa.

REFERENCES

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A taste of medicine in Zambia

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Victoria Gates undertook her elective during her Trainee Intern year at St. Francis Hospital, in Katete, Eastern Province, Zambia.

I chose Saint Francis Hospital and Zambia, as an elective destination, for several reasons. Firstly I had always wanted to do my elective in Africa. In recent years, several students at the Auckland medical school had been to Zambia for their electives, and it consistently receives positive reports from the students. Zambia is a very poor country that is currently relatively safe for visitors. This, and the fact that Saint Francis Hospital has English-speaking staff, made it an obvious choice for me over other options in Africa.

I also wanted to challenge myself by travelling to a country outside my comfort zone. Developing world medicine has always appealed to me. I believed doing this for my elective would be a great opportunity to get a lot of hands-on experience making clinical decisions as well as learning procedures.

OVERVIEW

My time at the hospital was spent on the adult medical and paediatric wards. I also spent several days in surgery. My days would start at 8am every day, apart from Tuesday and Thursday, when there were clinical meetings at 7.30am. Ward round would go until 1pm, and often we would have to briefly go back to the ward after lunch to finish jobs. The afternoons were spent in OPD (outpatient department) which would keep us busy until 6pm and sometimes later! I also did many evenings and several weekends on call.

During my time at the hospital I was exposed to an amazing range of pathology. In general, the patients are in an immunosuppressed state and so the presentations and aetiology of common diseases, such as COPD, cirrhosis and epilepsy, differed from that in New Zealand. The main aetiology of COPD in New Zealand is cigarette smoking, but in Zambia the disease predominantly affects women (who do the cooking and have high exposure to toxic gases in poorly ventilated houses). Cirrhosis in Zambia is commonly caused by aflatoxin exposure (from mould), schistosomiasis, hepatitis B and alcohol (only the latter two are usual in New Zealand). Portal hypertension from schistosomiasis can be dramatic and may present with massive ascites or malaena. Often the most revealing information in the history is that the patient is a fisherman! A stat dose of praziquantel is standard treatment, and therapeutic ascitic drainage may also be required. Adult onset epilepsy in Zambia with no history of trauma is usually due to neurocysticercosis, which is also treated with praziquantel.

ADULT MEDICINE

On the wards, I saw patients on my own and decided on management with support from the doctor if necessary. By the end of my time here I had gained confidence in making management decisions. I was able to perform ascitic taps, chest drains, and lumbar punctures. I also made up and administered chemotherapy for patients with Kaposi's sarcoma (KS) and lymphoma. The wards were understaffed with only a few nurses who, in addition to their ward jobs, had to translate for us. This made the ward rounds much less efficient.

Some particularly interesting cases on the ward were Addison's disease presumed secondary to TB, toxic epidermal necrolysis, transverse myelitis, and Stevens-Johnson Syndrome from antiretrovirals. I also assisted in managing several emergencies such as an iatrogenic pneumothorax that required immediate intervention..

There is one old ECG machine in the hospital that requires a lot of wiring up and is used very infrequently partly due to the staff's lack of operating knowledge. Also, there is very little ischaemic heart disease in Zambia so the main indication for an ECG is to check for arrhythmias or for evidence of hyperkalaemia (since the lab cannot test for electrolytes). One day there was a 60 year old patient who had presented in shock following a collapse and we initially suspected the cause to be cardiogenic. We managed to carry out a 'Zambian exercise ECG test', which involved asking him to run up and down the ward and then lie down quickly while we attached all the leads – quite a task!

SURGERY

My brief time in surgery gave me an appreciation of the stark contrast between the surgical management here and at home. In the wards, there are patients lying in traction for weeks, with no operations done on simple conditions such as fractured neck of femur, bed rest being the only option. However there were also some remarkable operations performed, such as