

Notes From Abroad

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Tugela Ferry, South Africa: Treating HIV and TB in Rural Settings

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As 2005-2006 marks the inaugural collaboration with the site, Dr. Leo Calo was the first Yale resident in the Yale/Johnson and Johnson Program to complete an IHE at the Church of Scotland Hospital in Tugela Ferry, South Africa. He worked there for six weeks, between January 6 and February 17, 2006.



Dr. Calo with a family receiving home-based care. The mother of the eight children is infected with HIV and TB.

It is early morning. The torrential downpour that materialized yesterday and carried several children away with the river has given way to the summer heat, and the mud has turned to dry earth and dust once more. A crowd is growing outside, composed mostly of patients who have walked long distances to be seen, some referred from the inpatient wards for HIV testing. They fill the space in front of the mobile home that serves as our clinic and line up alongside the female TB wards, where some shade from a blue plastic canopy may be had. Some of the

women have children with them, and many have colorful bandanas wrapped tightly around their heads, which signal that they are married. Most of the patients are thin, with wasted temples and extremities whose underlying bony structure is readily visible.

Today is Monday, a day for blood draws to check CD4 counts and viral loads. Newly diagnosed patients will have their first education session about HIV, the opportunistic infections, the importance of disclosure to partners, the adherence required for treatment to be successful, the medication regimens and their side effects. Some returning patients have been on treatment for months or years and are just here to pick up their medications, a month's worth of triple therapy doses pre-packaged into small zip-lock bags and stapled to each day on a monthly calendar. Most patients are taking one of two regimens the South African government is funding through its rollout of anti-retrovirals (ARVs) for all HIV-infected individuals (efavirenz-3TC-stavudine or nevirapine-3TC-stavudine). The clinic is now treating 700 such patients, adding 100 new ones with each month that passes. An additional 100 patients are receiving a once daily ARV regimen (efavirenz-3TC-videx) started in the setting of TB co-infection, as part of research collaboration with Yale investigating the feasibility of extending the directly observed therapy (DOT) model used globally to treat TB, to HIV in HIV/TB co-infected patients. Contrary to arguments in the recent past that treating HIV in rural, third

world settings is not feasible, the rates of adherence to ARVs and resultant improvements in CD4 counts and HIV viral loads in Tugela Ferry have been comparable to numbers seen in the US.

We are in the clinic. I communicate through gestures and simple Zulu words, which are sufficient to tie the tourniquet and draw a sample of blood. Eventually I resort to a translator, as communication beyond simple greetings breaks down quickly. I have not mastered the insertion of clicks into my words, the slurring of certain sounds. Usually there are no questions, it seems these are not part of the doctor-patient interaction here, as they are in the US. Most patients today have complaints of burning in their feet and legs, many have new or old zoster rashes, some have odynophagia and thrush, a number have urinary infections or STDs; others have headaches. One patient is tachypneic, tachycardic, febrile, and has a marginal blood pressure. He has been losing weight, a cough and night sweats for several weeks, and multiple contacts with TB infected individuals. His CD4 count is low. I order a chest X-ray and sputums for microscopy and culture, and empirically start treatment for bacterial and pneumocystis pneumonia as well as for TB. I give him two liters of saline in clinic, as there is no guarantee that orders written now will be enacted rapidly once he reaches the TB ward, given significant staff shortages throughout the hospital.



The TB ward at Church of Scotland Hospital.

The Church of Scotland Hospital (COSH) is a 350-bed hospital with departments including casualty (emergency room), an operating room, male and female medicine inpatient wards, male and female TB wards, a pediatrics ward, an obstetrics ward, and outpatient HIV and general medicine clinics. It serves a mostly Zulu population of more than 300,000 in the Msinga district of KwaZulu Natal province. A network of 14 outlying clinics is staffed by nurses. Initially the COSH was conceived for a staff of 20-30 doctors, but presently only 8-9 doctors work here full time, half of whom are completing their year of social service after finishing medical school. There is also a significant shortage of nurses, with 24 open positions posted recently at the KZN website. Attracting health care workers to rural Tugela Ferry is difficult, as many providers are attracted to bigger cities and many times to other countries. Given the nearly exponential increase in HIV patients being treated in the ARV clinic here, already thinly stretched resources are bound to be stretched further in coming months and years, raising questions about the sustainability of the growth of the HIV treatment program.

Philanjalo, an NGO established by Dr. Tony Moll [the site mentor], is key in coordinating services relating to HIV and AIDS in Tugela Ferry. These include voluntary counseling and testing for HIV, an orphanage, a school awareness program, a mother-to child transmission prevention program, a hospice, and home based care for sick patients in the community. Last Thursday I went with Mary, who coordinates the home based care program, to distribute food and supplies paid for by the Global Fund to fight AIDS, tuberculosis and malaria, at an outlying clinic. We distributed piles of food, clothing, and many pairs of fancy evening shoes not well suited to the ground here, but much appreciated nonetheless. Several women had small babies on their backs, kept secure by colorful swaths of cloth wrapped around mother and child. As they left, they carried heavy boxes on their heads for a journey home under the sun, often trailing two or three children. We departed from the tar road

that had led us here, and branched off onto dirt roads in search of a home-based carer, with whom we would visit a sick patient at home.

Abandoning the car, we crossed a rusty suspension bridge over the Tugela river, climbed a mountainside carpeted with aloe plants and cacti, and reached a magnificent valley. The silhouettes of large mountains in the distance framed the river below. Three round mud-walled huts, pastel yellow and blue, stood out on a small ledge. Our patient's home appeared just like hundreds of others I had seen dotted throughout the landscape. She was well, weaving a mat with two young children looking on. She sent one of them to buy a bottle of coca cola for us, an unnecessary luxury that we could not refuse. She told us about a burning sensation in her legs, and that she had not yet tried amitriptyline. It takes her three hours to walk to the clinic from here when she is well, if it has not rained and the road is clear. She has no telephone, no car or bicycle, no running water, no toilet. She takes care of eight children in addition to herself. An amazing resilience was etched in the thick skin of her face, in the traditional scars that were cut across her cheeks when she was young. Weeks earlier she had been close to death in the female TB ward with HIV/AIDS and TB. Perhaps she had presented in the same way as my patient had earlier today.



A mountain-top view of Tugela Ferry, in the valley below.

It is later in the day and I make my way to the male TB ward. After donning my N-95

respirator, which nobody else here does despite the fact that 10-15% of TB cases are multi-drug resistant (MDR- resistant to rifampin and isoniazid), and a small minority are extremely drug resistant (XDR- resistant to all six drugs tested), I enter the dark longitudinal building. At one end a television broadcasts a South African soap opera that mimics the superficialities of American soap operas. There are three long rows of beds with interspersed mattresses on the floor. Fifty to sixty cachectic patients from ages 18 to 70, but mostly in their 20s and 30s, occupy them. Some of these patients are critically ill and would qualify for ICU level of care if they were in the US. Many others are receiving treatment for acute conditions that are unrelated to their TB, but are often secondary to their HIV/AIDS. Others wait for chest tubes draining tuberculous effusions to be pulled, or are here indefinitely to receive their MDR TB injections. Occasional coughing fits break through the thick atmosphere, softened by the humming of ceiling fans that mix the air, waft it to every patient and nurse, and out the windows to those walking to the HIV clinic, maternity ward, and operating rooms.

A ventilation system that would reduce the spread of resistant TB strains between patients has been proposed, but the funding has been delayed indefinitely. The rationale given by bureaucrats is that every TB ward in South Africa should have such ventilation, and until this can be coordinated the COSH will have to wait. In the meantime the hospital is a place where vulnerable patients- 80% of patients in the TB wards are HIV co-infected- risk exposure to TB and resistant TB. Fifty cases of XDR TB have already been diagnosed at COSH, all in HIV positive patients, usually with CD4 counts less than 50, and with a mean survival of 25-30 days after sputum samples are obtained. Mapping out where patients with XDR TB lived in Msinga reveals they were scattered throughout the district without clear clustering. The only place their trajectories clearly intersected was at the COSH, suggesting they may have contracted the XDR

TB through nosocomial spread while they were here. Consequently the goal in the TB wards is to obtain a chest X-ray and sputums for microscopy and culture, test for HIV and if positive measure a CD4 count, treat acute problems, and discharge patients to the community quickly to minimize their risk of exposure to resistant TB.

Many unanswered questions arise in the ward. Why do MDR and XDR-TB exist here? How much does the fact that HIV treatment was not available until recently in South Africa contribute to the current prevalence of TB here, and subsequent widespread use of antibiotics with associated development of resistance? Is resistance largely related to high rates of non-adherence to TB treatment, despite the DOT program, and if so what are the barriers to adherence? Is the treatment duration (six months for pulmonary TB, nine months for extra-pulmonary TB) in a population immunocompromised by both HIV and malnutrition adequate, or could it sometimes allow TB bacilli to survive with newly acquired resistance? Expectant faces make eye contact as I make my way to the man I admitted this morning. He is still visibly tachypneic and diaphoretic, but manages a feeble smile. A group of ten or twelve visitors files past us towards a patient at the end of the ward, and starts to sing to him in Zulu. Their repeated prayers, initiated by a soprano voice that is joined by a resonating chorus of bases, reach all of the patients.

As I walk home, I cross paths with a small group of women carrying water on their heads, their faces painted with orange clay. Soon I will be back in a tertiary care hospital where obesity rather than malnutrition dominates the landscape, where the challenges in treating HIV have more to do with substance abuse, hepatitis C, treatment fatigue, and virus resistance patterns than with TB. I am glad that people with HIV in this part of Africa finally have access to treatment. I am glad they are among the ones proving that HIV treatment can work as well for the disadvantaged living in poor

countries as for people living in wealthy countries.