The presence of landmines all over the world is an issue the United Nations and other world organizations are trying to address. But the difficult question lies in how to find landmines that are undetectable using metal detectors, making it personal.

"It sounds. It depends on a lot of climatic factors as well. It is the size of the rat. It is the size of the sandy area. The sandy area is where the rat will dig. In a sandy area, the rat will dig. In a sandy area, the rat will dig." According to Adamo, the purpose of the Tanzania training course is to "learn the details of rat training.

The idea is to one day create an independent Mozambican MDR program. To reach this goal, APOPO gives us the opportunity to learn all the aspects of an MDR program, especially the preparation stages, which we lack so far in Mozambique." Rats are easy to train and raise, which is useful in detecting mines quickly. According to Adano, "Rats work quite independently from their trainers. They depend only on the trainer’s personal affection that they do, which allows the animal to be trained by multiple handlers. In addition, to the small size of the rats, they are less likely than dogs or humans to react in an unpredictable manner. They are also very tiny and malleable.

In real minefields, trained granite-pouched rats usually detect between 1,000 and 2,000 square yards. Two trainers guide a single rat on a leash. While one trainer rewards the rat for correct indication or behavior, the other trainer will note the rat’s behavior to ensure that the rat has indeed located a mine or piece of unexploded ordnance. MDRs show that they have located a mine or UXO by touching the soil surface in the vicinity of the mine.

Adamo thinks APOPO trainers must be patient above all else. When it comes to training the rats, "You don’t need to be a wizard to train rats. You need merely a lot of patience. And in case you ask me what I do, I know how to deal with, there are always experienced teams around to help me out," he says.

For additional references for this article, please visit http://apo po.org/2009/journal-of-mine-action.

On the way to the guest house, other staff members and I pass by the hospital and the office of Médecins du Monde (the choice of you like me, who are rather francophone-challenged: Doctors of the World). MDM is a humanitarian assistance organization, founded in 1960 by former Médecins Sans Frontières (Doctors Without Borders) folk. I am currently working for MDM.

Working in Malakal

The mission in Malakal is to improve the surgical services at the Upper Nile State Teaching Hospital, a 150-bed, government-run facility originally built by the British in the early 1940s. It is the only government hospital providing surgical services to the inhabitants of three states: Upper Nile, Jonglei, and Unity. Funding for the current project is provided by the French Embassy in Khartoum. The scope of the project includes building new operating rooms, providing new surgical equipment and supplies, and developing a training program to improve the knowledge of the local surgeons, anesthetists, gynecologists and nurses.

My responsibilities focus primarily on working with Dr. Maimou, the local Sudanese general surgeon, and his surgical assistants. I must admit, on my first day, I was rather impressed. I have a fair amount of Third-World experience, and I’m sure many of you would be horrified by what I saw. In fact, in some ways, Kaprun Central Hospital in Malawi looks a bit like the Mayo Clinic in comparison, but nonetheless the context: Malakal was smack-dab in the middle of a 20-year-old civil war. Sure, things are better now, but if anything, the financial situation for obtaining supplies has deteriorated. The issue is what are they doing with the limited resources they have? And what is the outcome?

Well, that is where I am really impressed. In January 2006, they received 327 cases. Along with 36 appendectomies, they did a lot of obstetrics, gynecology, and two prostatectomies. In addition, post-operative wound infections are almost unheard of. Basically they are doing a great deal of good surgery with very minimal resources. My role is to help them improve on what they already have. For this part of the surgical services, I really give Dr. Maimou a lot of credit. Trained in Khartoum, he is in his mid- to late-40s and has been in Malakal for three years.

After finishing rounds on my first day, we went to Capelle to check on a new admission. We were free to do as we chose due to a lack of sterile supplies. The reason, from what I understand, is that if sterile equipment is not used during the evening from 7 p.m. until about midnight, but since there had been no city power the night before, the drapes and gowns could not be sterilized. Ah, life in Africa.

It turned out to be good that we left the theater team free. One newly admitted patient was a young man, maybe 15 or 20 years old. He was lying on a gurney in the ward near him soundly. On close inspection, the soldier’s limbs lay:

Despite the fact that Malakal was near some of the fighting, relatively few of our patients know to stay away from the minefields. This may be due to the fact that small girls who lost a leg after stepping on a landmine, the survivors are the most interested to stay on the landmine fields. On rounds, we also saw a group of people away from Malakal and treated previously avoided areas that were minefield in many areas around the world.

With all my experience in operating and training medical staff throughout Malakal, this may have been the most important. The surgeon here has less experience than some international surgeons. I feel that I am truly making the International Committee of the Red Cross and others at the UN the landmines injuries and wound care. The medical personnel here in Malakal are eagerly beginning a significant landmine-injury epidemic.

The Situation

It looks like things may actually be worse than I had imagined. Regarding the problem of landmine injuries. The area east of Malakal is an area known as the “no man’s land,” an area teeming with perhaps 10 kilometers (6 miles). To

... to send. Now that it is the dry season, the ground is quite hard and many of the mines are literally trapped in the ground.

In speaking with the head of the United Nations Mine Action Service here in Malakal, I find that once the rains begin and the groundsoftens, there will be a significant increase in the number of landmine injuries. In the past two months, there have been seven victims brought to the Malakal Hospital. I have operated on two: the soldier I wrote about above (whose limbs I was able to save), and a six-year-old girl who required an above-knee amputation. A third child is also on the wards recovering from injuries he suffered after playing with a piece of unpacked ordnance. I was told the other victims were very severely injured and died soon after admission.

To understand the landmine situation more clearly, I have also spoken with the UNMAS folks about making sure the victim data is incorporated into the Information Management System for Mine Action database. For those of you who don’t know, INMSA is a global standardized database to collect information on landmines and minesfields. It also has a victim component. In addition, I am hoping to get a better hospital surveillance program on victim data established and have also written a proposal to get a stockpile of surgical consumables in place for if and when we begin to receive large numbers of landmine victims. Data shows landmine victims utilize vast amounts of hospital resources, and we need to be prepared for such a disaster.

As for me, being here has the usual funnel of operating in suboptimal conditions. While here, I am not focusing on landmine casualties. I do general surgery. A few cases had to be cancelled due to lack of sterile drapes and gowns. We skidom into surgery, sufficient clamps, or forceps with teeth. However, I am told that a batch of new instruments is being sent from Paris in a week or so — the supplies will definitely be welcomed. In addition, work on the new operating rooms is proceeding nicely and they will hopefully be completed soon. The lack of supplies or a new operating room has, of course, not really limited our operating; we managed to do numerous appendectomies and hernias, a few delayed closures, thyroectomies, hernia repairs, and skin grafts, a
Some shrapnel was buried in the abdomen of the child with the flank injury. We did the entire operation under ketamine anesthesia. The only injury was a hole in the descending colon; we recovered the splenic flexure, exteriorized the wound, and I was able to close before I left Malakal. All three boys are currently doing very well.

Other than that, we have done a few more thyroids, a common bile-duct exploration for stones, a number of hernias, and of course a whole bunch of appendectomies. Abdominal pain has increased. At first, it was only jejunal. A number of people left Juba with symptoms, and the boat was stopped by the local authorities. Our case of cholera was confirmed and that person was isolated and treated. Today, however, 21 more cases were reported with one death. Hopefully things will remain under control.

UNMABS has agreed to fund our proposal for the purchase of US$33,000 to stockpile enough surgical supplies to treat 100 landmine victims. Due to the change in funding sources for the local Ministry of Health from Khartoum to Juba, no one is certain that the current hospital supplies will replace. I was excited to hear that the program was approved as a quick-impact project, and it was quickly approved within two weeks of writing the proposal. The supplies should be delivered within 10 days.

We have found that people are building homes closer and closer to the minefield. Last week three boys were mine

Another Landmine Incident

Saturday night while walking to our favorite grilled goat restaurant, I was informed about another landmine/UXO accident. I immediately went to the hospital and discovered four nine-year-old boys who had literally been playing in a minefield (about 100 yards from their houses) and who had detonated a piece of UXO. One was dead on arrival; a second only suffered a cheek missing, and had burns over his front, back and arms, probably from his shirt catching on fire. The last boy had a penetrating wound to his left flank.

The Bad News

Cholera is here, big time. The cases started arriving a week and a half ago, and so far over 600 patients have been treated at the MSF Cholera Treatment Center. After we were notified about the arrival of numerous cholera patients, we stopped by early Thursday morning to see if MSF needed any help. They stated that they were desperate for more medical personnel. So, being part of medical personnel myself I let my services (with the approval of MSF.) For four days, or actually three days and one night, I worked on the MSF CTC. Let me tell you, it was certainly eye-opening.

The CTC is set up in the local soccer stadium, a large expense of dusty and dry, cracked ground. The entire area is enclosed by a corrugated metal fence, which is helpful in keeping people away from the infected patients; however, there are front entrances to the stadium and people and nurses continue to enter despite the armed police stationed at the entrance. In the stadium there is a giant earth playing field and in the south of that is a mass of tents and plastic fencing. The CTC is divided into four zones—one each for observation, for recovery, for hospitalization, and for the staff and supplies. Sprayers are placed at the entrance and a central point in order to spray everyone's hands and feet with a dilute chlorine solution in order to limit contamination.

In theory, the medical care for a cholera patient is fairly easy and basic. Patients are admitted with severe diarrhea, vomiting and evidence of dehydration. The way to treat them is with fluid, lots of fluid, and then more fluid, then when you think they have had enough and are beginning to drink, you make sure they are getting more fluid. Now when I say fluid I mean it; Rogersolution, an electrolyte mixture given intravenously. Must guidelines say about it in 10 liters (6 to 11 quarts) per patient.

So, it all sounds fine and dandy, and not too difficult. There are local nurses to assist with the majority of the work and the doctor merely supervises. Well, the problem is we are in Sudan. Which for those of you who are far, is in Africa, where things never really go as planned. An additional guideline for me is that I don’t speak Arabic, the local languages of Shilluk, Dinka or Nuer. This lack of communication adds to the frustration of working in one 100 degrees. Fathebash in the middle of a hot, dusty stadium to treat filled hospital capacity with patients with non-stop vomiting and diarrhea. Sure there are beds with large holes in the center and buckets placed under them, but often they do not collect all the fluid. Patients, especially little children, vomit on the beds, on the floor, and occasionally on the staff.

Getting Through CTC

The language barrier prevents me from efficiently communicating with many of the nurses, the patients and the caretakers of the children. Sure, I am learning some phrases, and although they were helpful in...
Working with Médecins du Monde, Dr. Kushner spent 12 weeks working for a mission in Malakal, Sudan. This article is his account of the first six weeks, written as a journal. Through his work, Dr. Kushner has helped many and witnessed the impressive ability of doctors in Malakal to work under stressful and sub-par conditions. Dr. Kushner also faced to face with the cholera crisis and worked on getting support and supplies for a second Cholera Treatment Center (CTC).

The shifts at the CTC are from 8 a.m. to 8 p.m. The first day was long and stressful; the second day was long and stressful, the third day was rather unbearable. That third day I was assigned to the third big tent, which only had two patients when I arrived. More and more patients were brought in during the course of the morning, and I had to mobilize and carry in the colchexa beds and wait up the entire day. We had few supplies and there were no cell phones, so I collected patients who had been admitted. Initially, children presented with IVs and the most widespread IVs on many of the other patients. I assessed the new patients and filled out the on-page charts for each new admission. As the day wore on, it got increasingly difficult. The number of patients began to increase, we were flooded with new admissions, with hand injury, some barely alive. I tried to continuously assess the patients’ status. There was no money when I spoke English. They did not understand my questions and they did not understand how to care for the patients. I was on a treadmill that was growing faster and faster. I was constantly moving from bed to bed, trying to maintain the hydration status of the patients, trying to keep them calm with the fluidity in trying to convince the caretakers to give the children electrolyte solutions.

As my stress increased, I realized that not only were the stories concerning IVs, but when a bag finished they would continue to administer the fluidic, even when the patient’s body had been removed. I kept running into the boxes of Ringers and hanging the bags myself. The water was so hot that many of the patients who needed more than five liters of fluids were receiving only one. I kept running into the boxes of Ringers and hanging the bags myself. This occurred throughout the day, but things went from bad to worse as multiple severely dehydrated children were brought in.

We struggled for more. Other local doctors and nurses were likewise inoculated to the effort and I was continually running between the single large tent and the new, larger tent that we had set up. I tried to maintain IVs on one child. Another Dutch doctor came to help, and I took a much-welcomed break. For such a supposedly straightforward and simple medical job, the stress of the newly dying children, fear, inability to communicate, incongruities of the neighborhood and apathy of the caretakers was almost too much to bear. I must admit, I was by far one of the most horrible days of my life. But as all days eventually do, it finally ended.

Overwhelming Cholera Crisis

I did my count in the CTC until the following evening for the night shift. By this time we were all aware that the cholera crisis was beginning to overwhelm the MDF site. Rosamund (our field coordinator) had been in contact with the MDF headquarters in Paris and a decision was made to send an emergency wire to Malakal and set up a second MDF CTC. Monday was spent going around town, trying to get support and material for the second site. At the surgery project is so small, our available resources and personnel are severely limited. In fact, we only have one vehicle. And yes, it is white with the MDM logo on the side all nongovernmental organization vehicles should be.

Luckily, offices of leverage readily came to us. The International Committee of the Red Cross gave us a 10,000-liter (2,642-gallon) bladder. UNICEF provided buckets, cups, chlorine and plastic sheeting; the United Nations High Commissioner for Refugees gave us plastic sheeting; the United Nations Office for the Coordination of Humanitarian Affairs and the United Nations Mission in Stellenbore in a vehicle; and the Indian Army helped in getting the supplies. We received the names of local staff from the Ministry of Health and local nurses; medical assistants; cleaners, cooks and campers—all the stuff that was needed to run a CTC.

A site was located and we began to set up as a team of logistics and nurses arrived from Paris. The only thing missing now is some logistical support, which is held up customs in Dubai and medical supplies, including plenty of Ringers, which have been held up in Khartoum. We are hoping to be operational within the next day or two, but for all the number of issues, there are a bit and the current situation is manageable.

While all this has been happening, I have not been operating. Dr. Mamou, is quite capable of functioning on his own, although both he and I are keen to continue to work. Patients who needed more than five liters of fluids were receiving only one. I kept running into the boxes of Ringers and hanging the bags myself. This occurred throughout the day, but things went from bad to worse as multiple severely dehydrated children were brought in. We struggled for more. Other local doctors and nurses were similarly inoculated to the effort and I was continually running between the single large tent and the next, larger tent that we had set up. I tried to maintain IVs on one child. Another Dutch doctor came to help, and I took a much-welcomed break. For such a