Medical Challenges in Sudan

by Adam Kushner, M.D., M.P.H. [*Médecins du Monde*]

Working with Médecins du Monde, Dr. Kushner spent 12 weeks with a mission in Malakal, Sudan. This article, written as a journal, is his account of the first six weeks. Through his work, Dr. Kushner has helped many and witnessed the impressive ability of doctors in Malakal to work in stressful and sub-par conditions. He also came face to face with the cholera crisis and worked to get support and supplies for a second Cholera Treatment Center site.

It is the end of my first day in Malakal, Sudan, but all that matters are the orange streaks accentuating the indigo hues of the clouds, darkness slowly descending after the sunset, and the almost palpable silence.

Across the river, a flat plain extends for miles. Little grows and there are no houses or signs of activity; it looks like a no-man's-land. On our side, the eastern bank, a beehive of activity is slowly continuing. Long, metal, canoe-like boats discharge their passengers or bound-up, brown, taupe and khaki bundles of bamboo, balsa and thatch—the building materials throughout the region. The piles are stacked and stretch in random patterns along the shore. Traders and passengers amble slowly by; some climb into smaller boats and head further up or down the river to neighboring villages. Malakal, the city where I will stay for the next two to three months, is considered the gateway to southern Sudan. It is the capital of the Upper Nile state and home to more than 150,000 people. With a peace agreement reached in 2005 between the north and south, a civil war that raged for more than two decades ended. Daily, more and more former refugees return to the south seeking jobs and a way to rebuild their lives. They also return to untold numbers of landmines.

But at this time of day the Nile is quiet. Masses of green and brown reeds and other debris—small floating islands, some only a few inches in diameter, some many yards across—float rapidly northward, downstream. Flocks of heron or other such birds fly in V-formations. Occasionally a goat saunters by uttering a strident *beeehhh*, interrupting the silence. A few teenagers approach and practice their limited English skills. They smile and are eager to hear a response. "How are you?" they cry with heavy accents. One shows off his knowledge with a hearty "Good morning, teacher!"

New home constructed in the minefield in Malakal.

On the way to the guest house, other staff members and I pass the back of the hospital and the office of *Médecins du Monde* (for those of you like *moi*, who are rather *français*-challenged: Doctors of the World). MDM is a humanitarian assistance organization, founded in 1980 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 100-bed, government-run facility originally built by the British in the early 1900s. It is the only government hospital providing surgical services to the inhabitants of three states: Upper Nile, Jonguli 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 help improve the knowledge of the local surgeons, anesthetists, gynecologists and nurses.

My responsibilities focus primarily on working with Dr. Mamoun, 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, Kamuzu Central Hospital in Malawi looks a bit like the Mayo Clinic in comparison, but remember the context: Malakal was smack-dab in the middle of a 20-plus-year civil war. Sure, things are better now, but if anything, the financial situation for obtaining supplies has deteriorated. So 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 recorded 237 cases. Alright, 96 were appendectomies, but they also did eight thyroids, six gallbladders 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. As for the success of the surgical services, I really give Dr. Mamoun 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 my first day, we went to Casualty to check on a new admission. We were free to do so because all elective operations were cancelled due to a lack of sterile drapes. The reason, from what I understand, is that city electricity only runs 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.

Type-III landmine injury in Malakal.

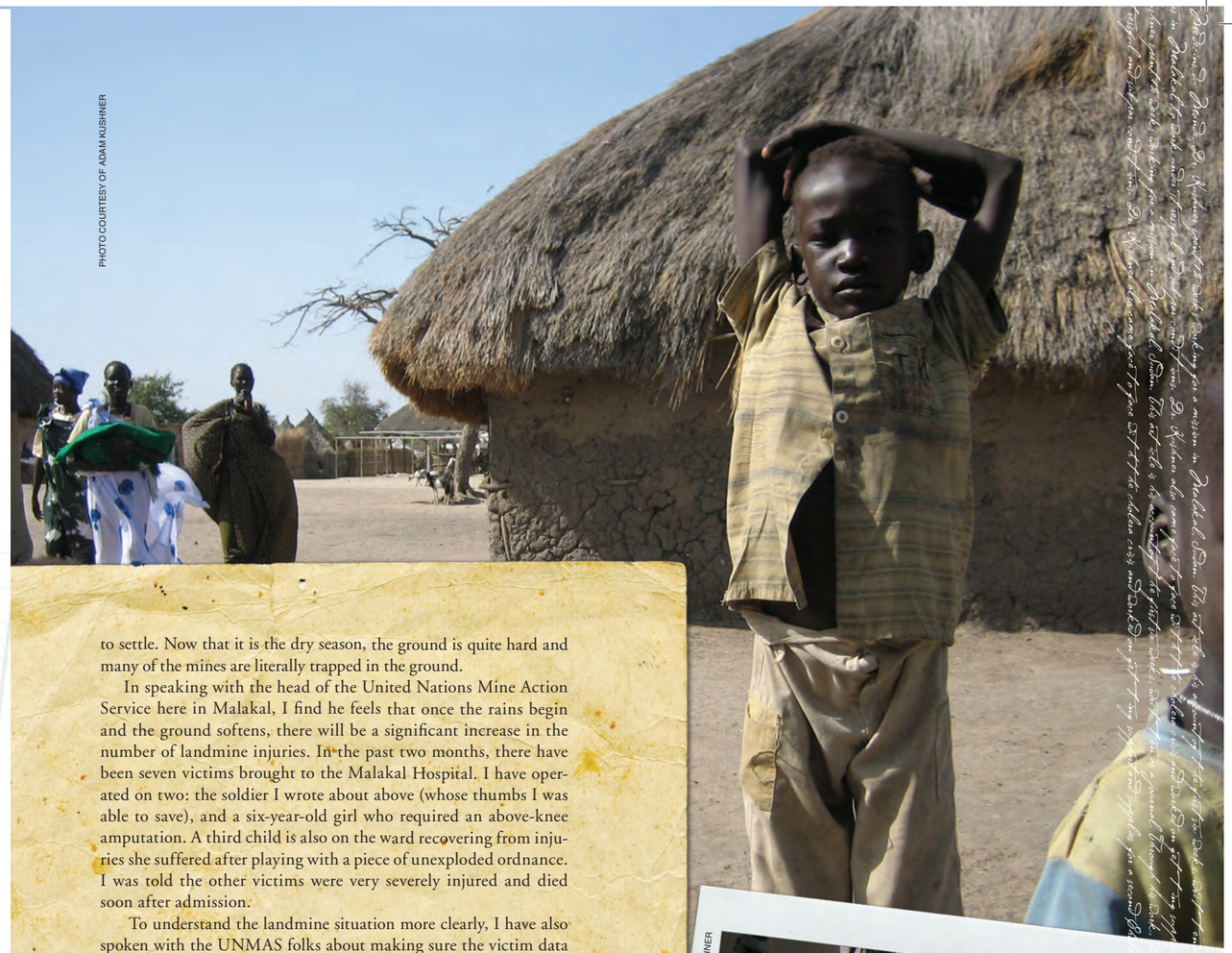
It turned out to be good that we and the theater team were free. One newly admitted patient was a young man, maybe 19 or 20 years old. He was lying on the floor of the small room with hordes of people crowded around. A number of men in uniform stood near him soundlessly. On close inspection, the soldier's head and what was left of his hands were wrapped in bandages. It was a Type-III landmine injury.[1]

Despite the fact that Malakal was near some of the fighting, relatively few landmine victims were treated at the hospital. This may be due to the fact that most locals know to stay away from the minefields. On rounds we also saw a small girl who lost a leg after stepping on a landmine. An increasing number of people are returning to Malakal, and areas previously avoided are now being used and explored. It's a sad fact that this is a common occurrence after the cessation of hostilities in many areas around the world.

With all my experience in operating and training medical staff throughout the Third World, this case may have been the most important. The surgeons in Malakal have almost no experience in war surgery, and although I certainly have less experience than some international surgeons, I feel I am truly making a difference. I have to give credit to people like Robin Coupland and others at the International Committee of the Red Cross who recorded much of the data on civilian landmine injuries and wrote extensively about the best ways to manage these horrific wounds. The medical personnel here in Malakal are eagerly learning these lessons. I am saddened, however, because I believe this is just the beginning of 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 entire eastern section of Malakal is considered one massive minefield; an area stretching for perhaps 10 kilometers (6 miles). To make matters worse, this is the only place where land is available for returnees

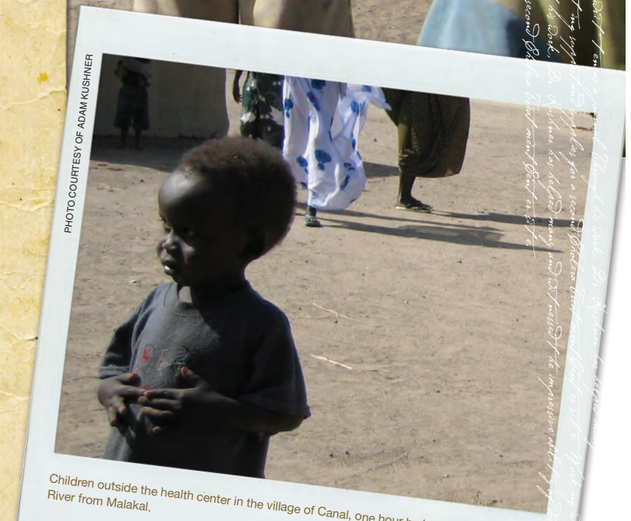


to settle. Now that it is the dry season, the ground is quite hard and many of the mines are literally trapped in the ground.

In speaking with the head of the United Nations Mine Action Service here in Malakal, I find he feels that once the rains begin and the ground softens, 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 thumbs I was able to save), and a six-year-old girl who required an above-knee amputation. A third child is also on the ward recovering from injuries she suffered after playing with a piece of unexploded 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, IMSMA is a global standardized database to collect information on landmines and minefields; 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 fun/torture 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 enough sterile drapes and gowns. We seldom have cautery, sufficient clamps, or forceps with teeth. However, I am told that a batch of new surgical instruments is being sent from Paris in a week or so—the supplies will certainly be welcomed. In addition, work on the new operating rooms is proceeding nicely and they will hopefully be completed soon. This 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 cholecystectomies, thyroidectomies, a burn contracture release and skin graft, a



Children outside the health center in the village of Canal, one hour by boat up the White Nile River from Malakal.

PHOTO COURTESY OF ADAM KUSHNER

bunch of hemorrhoidectomies, and the drainage of a psoas abscess.[2] I have also instituted a formal classroom-teaching session two days a week and have been going over various surgical topics. So on the surgery side, as they say in Arabic, *mumtaz* (excellent).

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 few scratches. The other two had more severe injuries. One was yelling in pain, had a large chunk of his 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.

Now the prospect of getting an operating-room team together at 7 p.m. on a Saturday night in a district hospital in southern Sudan didn't initially seem like an option, but to my surprise and delight, Dr. Mamoun was able to rally the troops and by 10 p.m. we were exploring the abdomen of the child with the flank injury. We did the entire operation under ketamine anesthesia.[3] The only injury was a hole in the descending colon; we recovered a one-inch piece of shrapnel. We mobilized the splenic flexure,[4] exteriorized the wound, and created a temporary colostomy,[5] which 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. Also, cholera has arrived. At first, it was only by barge.[6] A number of people left Juba with symptoms, and the boat was stopped by the local authorities. One 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.

Goats are being trained to detect explosives in the Middle East.

UNMAS has agreed to fund our proposal (to the tune of US$13,000) 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 stocks will be replaced. I was excited to hear the project was approved as a quick-impact project, and it was quick—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 there were two more landmine victims. Two young girls were slightly injured when a goat detonated a landmine close to where they were squatting. Their wounds were dressed at the hospital and they did not require an admission.

The Bad News

Cholera is here, **big time**. The cases started arriving a week-and-a-half ago, and so far over 500 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 offered my services (with the approval of MDM). For four days, or actually three days and one night, I worked in the MSF CTC. Let me tell you, it was certainly eye-opening.

The CTC is set up in the local soccer stadium, a large expanse 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 four entrances to the stadium and people and goats continue to enter despite the armed police stationed at the entrance. In the stadium there is a groomed-earth playing field and to 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 posted 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, and 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 what I mean is Ringers solution, an electrolyte mixture given intravenously. Most guidelines say about 6 to 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 forgot, is in Africa, where things never really go as planned. An additional problem for me is that I don't speak Arabic or the local languages of Shilluk, Dinka or Nuer. This lack of communication adds to the frustration of working in over 100 degrees Fahrenheit in the middle of a hot, dusty stadium in tents filled beyond 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 effectively 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

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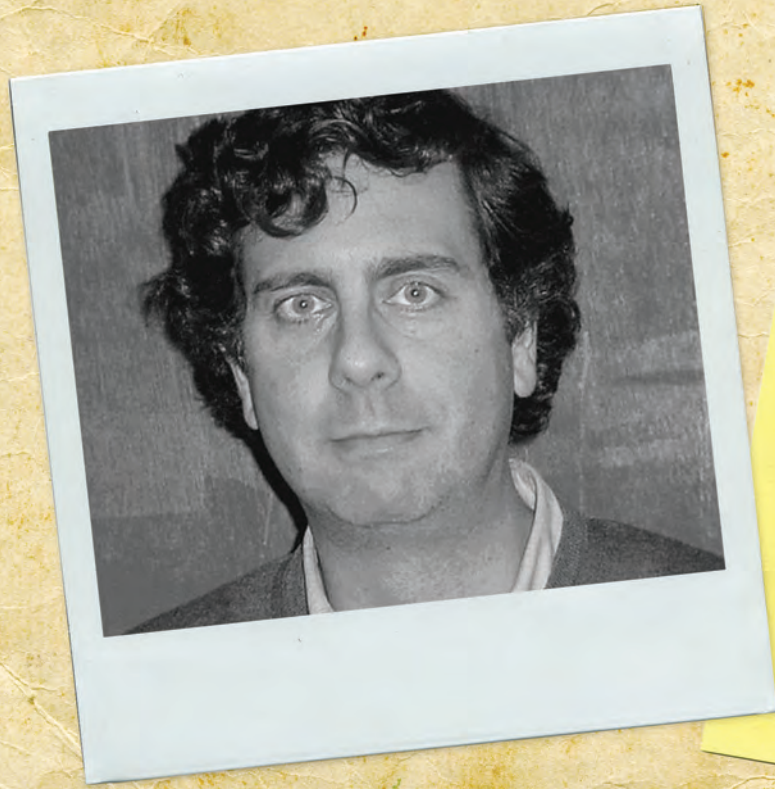
Sunset over White Nile River in Malakal.



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