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## At the Old Swimming Hole, a Vicious Cycle Thrives

By DONALD G. McNEIL Jr.

KWA'AL, Nigeria—The pond was about the size of a school swimming pool, except it was surrounded by dry mud pocked with hundreds of hoofprints.

A herd of goats was at one edge, drinking and defecating in the same spot. The sun was going down behind a thorn tree, backlighting 50 naked boys splashing one another in the warm dusk.

Where a colonialist romantic would have seen a landscape of native innocence, I saw a horror movie: there were worms in the brown water invisibly digging right through the boys' skin.

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For the boys,  
parasites in the  
water mean blood  
in the urine.

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Kwa'al is a market village that exists only because the region's red dirt tracks meet a paved road here. Each morning, women walk in with sacks on their heads: potatoes, onions and cabbages that they pile by the road, hoping to earn \$3 or so. It is rural and traditional; a nearby village is famous for the dogs it raises for meat.

Kwa'al is also a "schisto village." A third of its children have blood in their urine because of schistosomiasis, a parasitic disease transmitted by water snails. Also known as bilharzia, it is the second most common tropical disease in Africa, after malaria. Stuck to the mud wall of a building is a Health Ministry poster showing a silhouette of a squatting boy staring down, troubled, at the scarlet stream running out of him.

The blood is just a red flag for the real problem: children with heavy infestations of the worms, known as schistosomes, are stunted and do poorly in school.

An hour in Kwa'al is a mural of parasitology: a living schematic of how the life cycle of a human boy intersects the

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### CASES WITHOUT BORDERS

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life cycle of a waterborne worm and the financial cycles of global public health.

When a team from the Carter Center and a pediatric parasitologist from the Centers for Disease Control and

vention techniques.

As one man lectured some local chiefs, using a flip chart to explain the worm's life cycle, the children lined up at a small wood table. Their names were jotted in a notebook, and their heights measured on a stick with yellow, green, blue and red bars. Those who reached yellow, 35 inches tall, were handed one pill. The



Photographs by Vanessa Vick for The New York Times



Children in Kwa'al, Nigeria, waited to be measured and then were given a dose of the deworming drug praziquantel according to their height. They are infected by swimming in contaminated water.

Prevention, Dr. Frank O. Richards Jr., drove into Kwa'al at 5 p.m., after a long day visiting villages at the ends of dirt roads, the local health volunteers began a demonstration of their pre-

tallest children were handed four, which they swallowed with a cup of water dipped from a cooking pot.

In the West, doses are figured by the child's weight. But scales get broken, and

marked sticks are easy to make. And all the children were so thin that height indicated weight accurately enough.

Unlike the nearby dog village, Kwa'al is Muslim—a prayer meeting with a loudspeaker at a mud mosque a few yards away nearly overpowered the lecturer—and Ramadan had begun. The children had to get dispensation from daytime fasting to take their pills. In some areas, health programs just shut down for Ramadan; at night, Nigeria's roads are too dangerous.

Almost all the children in line were boys. The volunteers survey schoolchildren, and Muslim girls here usually stay home, so surveys may miss them. But boys also have many more worms. In Africa, girls fetch water, but boys swim.

Meskwat Yusuf, a 15 year-old who looked 10, said he was “very happy” to get his dose.

“I could see red in my urine, and my penis pained me,” he explained. “I told my father. He told me people would come and bring drugs free, so I should not worry.” The pills were praziquantel, which kill virtually all the worms. They cost 7 cents apiece. They are cheap because they're generic, made by companies in Germany, Cyprus and South Korea. (In 1983, when only one company made them, the pills cost \$4.44 each at pharmacy prices.)

But the companies are not willing to donate the pills, so charities must buy them. The Carter Center can afford 200,000 a year—enough to treat six counties in central Nigeria.

According to a 1995 study by Dr. Michael Reich of the Harvard School of Public Health, it would take 423 million praziquantel pills a year to treat schistosomiasis worldwide. Together, the three drug companies make only 89 million.

“When you hear that, you realize the value of the donations from Glaxo and Merck and Pfizer,” said Dr. Richards, the C.D.C. consultant.

(Pfizer, Merck and GlaxoSmithKline donate millions of their patented deworming and antibiotic drugs, which can cost several dollars each in American pharmacies, to programs fighting other parasites.)

Because of the chronic praziquantel shortage, the World Health Organization rations it: any village where fewer than 20 percent of the school-age children have blood in their urine gets no treatment. “Imagine that in Manhattan, if a kid showed up with blood in his urine,” Dr. Richards said.

In any village where 20 to 50 percent of the children have bloody urine, only

children get pills. And in any village where more than 50 percent have symptoms, the whole village gets pills.

In Kwa'al, 36 percent do. When the health volunteer took questions, several parents said they had blood in their urine, so why didn't they get pills too?

Those were the rules, the volunteer said.

“I'm a pediatrician,” Dr. Richards said. “I'd love to blanket these areas. When you treat kids, their growth rates increase and their academic performance improves. But our position is W.H.O.'s position. We're not breaking ground here.” We jumped back in the truck to find the swimming hole, about 100 yards down the road.

Dr. Richards bent down to pick up a tiny snail. It was in a quarter-inch of water, but he used a leaf, not wanting to dip even the tip of his finger in.

“You can't keep a kid from urinating when he swims,” he explained. “The eggs are in the urine. They infect the snails and develop into a form that invades human skin—a sharp head and a tail, sort of like a sperm. The head goes in, the tail snaps off, and it sets up shop in the human. Then, when it releases its eggs, they burrow their way through the body to reach the bladder.”

He added, pointing to the youngsters splayed out in six inches of water, “That's why the boys have the heavy infections. They're lying there soaking up the schisto.”

As if a lifeguard had shouted, the boys all came running out of the pond at once, toward me. I was standing near where they had dropped their shirts and shorts, but the piles were so dirty they might have been cow patties.

The last one out was limping on a stick, his back bent sideways. “Look,” Dr. Richards shouted. “Polio.” More than one plague had visited Kwa'al.

As they dressed, I recognized Meskwat and others I had seen at the pill table. They had run here faster than we had driven.

Did the water, I asked, make their skin itch? Yes, they answered. It meant that new parasites were digging in.

I asked them if they realized that this was how they got the blood in their urine.

“Yes, we know,” Meskwat said. “Our parents tell us not to come. But as there is no water in the river, this is the only water we have to bathe with. This is the only way we can wash our clothes.”

As long as boys like water, schistosomiasis will never be eradicated. The world is not ready to provide chlorinated

pools, and even a widely heralded United Nations plan from the 1980's to provide clean wells in every country never came close to reaching its goals.

Instead, we settle for control: for a few thousand lucky boys, an annual deworming that does not cure, but substantially cuts their parasite load, giving them a chance to grow up—and outgrow the swimming hole.

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