

illness in the Balkans that baffled scientists for decades (see p. 146), hard data are scarce and strong opinions are abundant. It's also difficult to disentangle the science from politics. In Nicaragua, former sugar cane workers with the disease and their families have staged demonstrations demanding compensation, igniting violent showdowns with police that included a fatal shooting of a protester in January.

But with increasing attention from researchers, community advocates, the sugar cane industry, and officials in affected countries and abroad, the research landscape is shifting markedly, with a slew of new studies under way or in the works. "The international global health community needs to take this very seriously," says Peter

At 15, Sorto started harvesting cotton and planting flags for crop-dusters, but at 22 he landed a plum government job, complete with health care. His kidney problem came to light in 1998, after a doctor's visit for an inflamed toe. Tests revealed gout due to high uric acid levels, and his doctors started closely monitoring his kidney function. He did not have diabetes or hypertension, but by 2005, he had developed end-stage renal disease. Sorto, a classic case of CKDu, was offered a kidney from his sister, and he had the rare insurance plan in El Salvador that would cover the cost of the transplant. Still, he initially was reluctant to accept his sister's kidney. "I didn't want to expose her to any risks," Sorto says. Finally, faced with an imminent death, he acceded, and both are doing fine today.

Each month, up to 70 new patients with end-stage renal disease show up seeking dialysis; the hospital can offer the life-extending treatment to only a few dozen each month. The others must seek out private care, or, more commonly, return home to die.

A young doctor in training at the hospital, Ramón García Trabanino, first brought CKDu to light. "The whole hospital was flooded by renal patients," remembers García Trabanino, who began working at the hospital in the late 1990s. "I thought, 'Why are all these people here with kidney disease? It's not normal.'" An adviser suggested he do a study.

Over 5 months, García Trabanino interviewed 202 new patients with end-stage renal disease. Medical records and personal histories uncovered an obvious cause for CKD in only one-third of the patients, equally split between men and women. Of the rest, 87% were men and the majority worked in agriculture and lived in coastal areas, he and his co-authors reported in September 2002. Their report in the *Pan American Journal of Public Health* speculated that patients who had CKD with *características peculiares* might have developed the disease after exposure to herbicides and insecticides.

Health officials took little interest in this greenhorn's findings. "I spoke with PAHO and I remember them laughing at me," García Trabanino says. "They thought I was crazy." The Ministry of Health in El Salvador took no action, but it did give him an award for his study. "The judges must have been drunk that night," he says.

García Trabanino, who now runs a private dialysis clinic, understands why this landmark report received little traction. "It was very weak," he says. "If I could travel back in time, I'd erase half of what I wrote and do more testing. But that's what we could do back then."

A newspaper article about the award caught the attention of Julio Miranda, a leader of a social fund for health emergencies in Tierra Blanca de Jiquilisco. Miranda's team contacted García Trabanino and explained that they had seen an extraordinary rise in deaths from kidney failure since the mid-1990s. "Many people thought it was pesticides," Miranda says. They agreed to



Early detection. Ramón García Trabanino, who now runs a dialysis center in San Salvador, reported a rise of a baffling chronic kidney disease in 2002.

Hotez, a pediatrician at Baylor College of Medicine in Houston, Texas, who specializes in neglected tropical diseases and edits the *Public Library of Science* journal by that name. "What we're seeing is not business as usual. This is a serious outbreak and we need all hands on deck."

A hot lead

Osmin Sorto, 49, lives in Tierra Blanca de Jiquilisco, an agricultural community near the coast in a region of El Salvador called Bajo Lempa, and says he has watched more than 100 people die of CKD. He could easily have been one of them.

Few CKDu patients are so lucky. Hospital Nacional Rosales, in El Salvador's capital, San Salvador, is a palatial complex built of Belgian iron in the 1890s. The 525-bed landmark—El Salvador's largest public hospital—is always full. When nephrologist Zulma Cruz started working there 13 years ago, her ward had 18 beds for peritoneal dialysis, which drains kidney toxins from the abdomen, and 16 hemodialysis machines that do the more sophisticated cleansing of toxins from the blood. Today, the hospital has 85 beds filled with patients on peritoneal dialysis and 90 more coming each day to take turns on 30 hemodialysis machines.