

TROPICAL MEDICINE

Researchers Fret Over Neglect Of 600 Million Patients

When reports started coming out of Africa a few years ago that a lethal new strain of malaria was resistant to drugs like chloroquine, a team of researchers led by biochemist Anthony Cerami at Rockefeller University began to search for new ways to block the parasite from causing disease. And recently Cerami told researchers and public health workers at a meeting on tropical diseases* that a group in his lab headed by Andrew Slater has succeeded: It has identified at least two new agents that inhibit the parasite's hostile takeover of red blood cells. Good news? You'd think so, but despite the fact that 280 million people are infected with malaria, no drug company will invest in this research. "The problem here is that the victims (of the disease) are not in the developed world," says Cerami, who last year left Rockefeller to become president of the Picower Institute for Medical Research in New York.

Cerami's story illustrates a depressing trend: Even though 600 million people are infected with tropical diseases, drug companies have little incentive to invest in drugs for people who can't afford to buy them, and governments, themselves strapped for funds in these recessionary times, aren't putting much money into the work either. Indeed, less than 5% of global health research expenditures is spent on the problems of developing nations, according to figures released in early May by the World Health Organization (WHO). "There is a dearth of resources for research on problems of the Third World," says Donald A. Henderson, associate director for life sciences at the White House Office of Science and Technology Policy (OSTP).

Not surprisingly then, the major topic at last week's meeting, which was sponsored by the National Institute of Allergy and Infectious Diseases (NIAID) and WHO, was how to finance the research and development of new drugs and vaccines for tropical diseases

in such tough financial times. Some participants described creative new ways to stretch existing funds, while others put forth new arguments for trying to convince drug companies and government agencies to spend more money on tropical disease research and development. While members of the latter group admitted that this will be an up-hill battle, they are using a new tactic: If they can't appeal to the rich nations' concern for the poor ones, then they want to appeal to the rich nations' self-interest. Economist Dean T. Jamison of the University of California, Los Angeles, struck a common theme when he warned: "More of the infectious diseases that are primarily in the tropics, and thought to be under control here, are reoccurring in our own country."

Last year, for example, U.S. troops returned from Iraq with schistosomiasis, and 1200 cases of malaria and 30 cases of cholera were reported in the United States, primarily brought in by immigrants and tourists. "It woke people up when cholera showed up in L.A.; it made the front page of *USA Today*," says Richard E. Bissell, assistant administrator for research and development at the U.S. Agency for International Development.

Infectious Diseases: The Leading Killers in 1990

Cause of death	Estimated number
Acute respiratory infections	6,900,000
Diarrheal diseases	4,200,000
Tuberculosis	3,300,000
Malaria	1,000,000-2,000,000
Hepatitis	1,000,000-2,000,000
Measles alone	220,000
Meningitis, bacterial	200,000
Schistosomiasis (parasitic tropical disease)	200,000
Pertussis alone (whooping cough)	100,000
Amoebiasis (parasitic infection)	40,000-60,000
Hookworm (parasitic infection)	50,000-60,000
Rabies	35,000
Yellow fever (epidemic)	30,000
African trypanosomiasis (sleeping sickness)	20,000 or more

Source: Global health situation and projections, estimates 1992-World Health Organization, Geneva, 1992

And so, if the developed nations want to protect themselves, says the OSTP's Henderson, they need to help the developing countries detect and control tropical diseases at the source. At the meeting, he suggested that it is time to make an appeal to taxpayers and the U.S. Congress to help fund organized research centers for health care in developing nations, much as has been done for agriculture. Stephanie James, chief of the parasitology and tropical diseases branch at NIAID,

agrees: "This is not just another form of giving money to foreign countries that we could be using here. It's beneficial to the people in this country. By strengthening the scientific infrastructure in developing nations, it will help us to head off things like AIDS at the pass."

But while that argument may win more funds for basic research, it is unlikely to sway the major drug companies unless tropical diseases strike the developed nations in a big way—as AIDS has. That's why other speakers at the meeting suggested alternative ways to develop drugs. "With the declining interest of drug companies, we have had to do more and more in development ourselves," says Tore Godal, director of WHO's program for research and training in tropical diseases (TDR). Today, TDR has a half-dozen drugs in clinical trials in developing countries, including a vaccine to prevent leprosy, and therapies for sleeping sickness, malaria, lymphatic filariasis, and onchocerciasis (river blindness).

WHO gets a bargain on the development of these drugs—each one costs the agency only \$5 million to \$8 million—by getting nations where the diseases occur, such as India, to cover the costs of the trials. They also convince drug companies to help out in ways that are less costly than investing in research and development. Merck & Co. Inc., for example, is donating ivermectin, a drug WHO is testing in humans infected with the roundworms that cause river blindness. (Merck made money on the drug in the United States as a veterinary medicine but did not find it worthwhile to produce as a human therapy.)

WHO also is trying to convince other drug companies to make available drugs that are off patent so that researchers in developing nations can screen them for new uses in tropical diseases. In the case of Marion Merrell Dow Inc., Godal has won permission to pick up the production of a drug for African sleeping sickness that the company worked on for 10 years with WHO.

While all these collaborations between industry and international agencies are promising, it is still frustrating for researchers like Cerami to see their breakthroughs in the lab fail to reach the people who need them most. They hardly want to see tropical diseases moving out of the tropics and into the developed world, but to date only horror stories seem to get the message across to developed nations that the best form of health insurance is an investment in the health of developing nations. Which is why the U.S. Department of Health and Human Services' assistant secretary for health, James O. Mason, keeps trying to hammer home the point: "Health knows no boundaries—whether it is oceans, borders, or mountains," he likes to remind people, adding: "All life is interrelated."

—Ann Gibbons

* The First Annual Meeting of the NIAID International Centers for Tropical Disease Research group was held from 29 April to 1 May at the National Institutes of Health.