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## To Conquer, or Control? Disease Strategy Debated

By DONALD G. McNEIL Jr and CELIA W. DUGGER

There is a heroic allure to ridding the planet of a horrible disease forever.

Louis Pasteur is famous as the inventor of the vaccine. Jonas Salk is synonymous with the one he created to combat polio. In the medical community, doctors like Donald A. Henderson and William Foege are honored as the conquerors of smallpox.

Though the dream of eradication continues to animate scientists, doctors and public health officials, the history is at best rocky. In the past century, eradication efforts failed against hookworm, yellow fever and malaria. Today the struggling drive against polio has raised new questions about whether eradication of any disease is achievable, and, if so, whether the cost in terms of effort and dollars would be worth it, given all the other diseases that need attention.

The latest push began in 1993, when the International Task Force for Disease Eradication, a panel of experts, was convened in Atlanta by the Centers for Disease Control and Prevention, Emory University and the Carter Center. The experts reviewed 95 diseases and identified a handful they believed could be wiped out in a generation or less. Ancient scourges largely forgotten in rich countries, many of these diseases continue to cause misery and drain resources in the developing world, despite the existence of cures and vaccines.

Yet none have been driven into extinction, inflaming the debate over whether simple control was a more reasonable goal that would allow donors and health professionals to spread their resources to greater benefit for greater numbers.

Advocates of eradication say that it is a worthy goal to root out forever even one source of human misery, and that an unpredictable world offers brief opportunities to do so. Dr. David L. Heymann, the World Health Organization director general's representative for polio

### Other Likely Candidates for Eradication

DISEASE	EST. CASES	TRANSMISSION	BREAKING THE CYCLE
<b>Guinea worm</b>	12,000	Worm larvae in water fleas swallowed by humans. Worms can grow three feet long.	Filter or treat pond water. Dig deep wells so they do not get contaminated.
<b>Lymphatic filariasis</b>	120 million (1996)	Mosquitoes carry juvenile worms. Adult worm nests swell legs and scrotums, crippling victims.	Deworming pills kill juvenile worms, but victims must be treated annually for 6 years.



Eric S. Lesser for The New York Times

A woman with lymphatic filariasis in Haiti.

<b>Measles</b>	30 million annual cases; 450,000 die	Virus spread by coughing, sneezing or contact.	Vaccine delivered by injection.
<b>Blinding trachoma</b>	70 million infected; 2 million blind	Bacteria spread by flies or person-to-person contact. Infected eyelids invert and scratch the cornea.	Antibiotics, access to clean water and covered latrines. Surgery for late stages.



Mariella Furrer for The New York Times

A woman with blinding trachoma in Ethiopia.

<b>Onchocerciasis (river blindness)</b>	18 million infected; 500,000 blind	A worm in the bite of a black fly migrates to eyes.	Insecticides for flies. Deworming pills for victims.
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**Other Likely Candidates for Eradication (cont.)**

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DISEASE	EST. CASES	TRANSMISSION	BREAKING THE CYCLE
<b>Hepatitis B</b>	350 million carriers	A virus in blood or body fluids can cause fatal liver disease.	Three vaccine doses.
<b>Leprosy</b>	2.8 million infected; 1-2 million disabled	Bacteria transmitted by extended contact causes nerve damage and loss of fingers and toes.	Antibiotic triple therapy daily for a year. Symptoms can take 20 years to appear.
<b>Neonatal tetanus</b>	200,000 deaths per year	The umbilical cord is cut with a dirty blade. 95 percent death rate.	Clean delivery practices; vaccines for babies and mothers.
<b>Iodine deficiency</b>	740 million+	Goiters in adults, brain damage in fetuses.	Iodized salt.

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eradication, noted that if smallpox had not been wiped out a year before the dawn of AIDS, it might well be impossible now, given that the smallpox vaccine was dangerous for people with compromised immune systems, like those with H.I.V. "Now we know that there are many people we can't vaccinate for smallpox," he said. "It's very possible we couldn't wipe out the disease. Think of what would have happened if we hadn't eliminated smallpox in that window of opportunity—a window we didn't even know about."

Others agree. "As soon as polio is done—and polio must succeed—I think measles will be taken up," said Dr. Donald R. Hopkins, of the Atlanta-based Carter Center, who heads the International Task Force for Disease Eradication. But many, like Dr. Henderson, who helped vanquish

smallpox, remain doubtful and believe the obstacles to eradication are far greater than advocates admit. The "siren song of eradication," he says, has led public health authorities to declare goals he considers more "evangelical" than attainable.

After the struggle with polio, "people will think very hard before taking on another disease," said Dr. Julian Lob-Levyt, executive secretary of the Global Alliance for Vaccines and Immunization, a group that includes countries, international organizations and the Bill and Melinda Gates Foundation. He says that, despite scientific advances, the increased mobility of people and chaos in places like Sudan and Somalia, where no one can be sure of the status of any disease, make eradication harder today.

"We're not talking about eradication the way we used to," he said.

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