FROM GENEVA

Epidemiology

Deadline for smallpox

Smallpox is one of mankind's historic scourges. But its days may well be numbered.

The World Health Organization plans to wipe out smallpox, and is confident enough of success—because of the special nature of the disease—that a deadline has been set: Global eradication is forecast by 1978.

"Smallpox," says Dr. Donald Henderson, chief of WHO's new 10-year program to eradicate the scourge, "will die like an octopus. When you kill the head in the crowded places, the tentacles in the outlying areas die too. We will not have to go up the Amazon. Smallpox is the most eradicable of the historic scourges. We will get it all," he predicts.

"Unlike polio, you know where the virus is; everyone infected gets the rash.

"If the patient lives, when the scabs fall he has the best immunity, so you can't have carriers, resistance, or reservoirs, as with malaria. Smallpox needs the crowding of towns or market centers—a critical mass, below which the disease dies out.

"Pakistan, for example, reports that the disease is always introduced from the city to the country, transmitted from one generation to another, then dies. It does not circulate in a sparsely populated area.

"Hence there are no inaccessible geographical reservoirs. We feel we can and will get it all."

Paradoxically, the 60,941 cases reported worldwide this year to August were 40 percent higher than last year, due largely to 80 percent rises in India (to 42,843) and Pakistan (now 6,812) and sharp rises in Africa, notably Dahomey, Guinea and Sierre Leone. An early falloff in southeast Asia is not foreseen. The third endemic area is South America, mostly Brazil, averaging 3,000 cases annually.

The death rate, Henderson finds, is still about 40 percent for variola major, "and no other disease has the potential to spread as this one does." South America has the less lethal variola minor.

By the end, Henderson estimates, 40 of the 59 nations classified as in or adjacent to endemic regions will have embarked on smallpox eradication drives. The rest are expected to join by 1968.

The geographical extent of smallpox distribution—if not the total number of cases—continues to decrease gradually. Latest examples now free except for imported cases are Burma, Ivory Coast and Zambia. In the past seven years, Iran, Malaysia, Thailand, Arabia and North Africa have been cleared.

Since 1959, according to the WHO's first report on smallpox, the incidence has fluctuated without a definable trend in global susceptibility. A peak of 122,927 cases was reached in 1963, followed by a decrease until 1966.

India, Pakistan and Indonesia account for 65 to 80 percent of the world total.

Yet many African countries have even higher incidences per population, with 15 to 20 percent of the world's known cases. Most heavily hit are Nigeria, Tanzania, Congo and Niger.

A five-year South American program has been drawn up and approved by the WHO Regional Committee. Brazil started late last year and has vaccinated almost five million persons.

Nineteen West and Central African countries have launched a joint program this year, aided principally by the United States, with added WHO support. American experts and equipment will simultaneously fight child-killing measles.

Activities have started in 15 countries, covering more than 10 million of the region's 126 million people. WHO itself is assisting other new efforts in the Congo and Sudan and will soon start in Kenya, Burundi, Tanzania and Zambia.

In Asia, East Pakistan will start now and West Pakistan next year. WHO-assisted campaigns in Afghanistan and Nepal will be intensified.

In India, more than 600 million vaccinations are reported over the past three years, yet studies of several recent outbreaks show that 80 percent of the victims are unvaccinated.

WHO doctors suggest that supervision is not strict enough in India, so the accessible groups are scratched again and again; the very young and the migrants are missed. "Our impression, and we are working on it, is that India needs a redeployment of existing resources and tighter supervision," says Henderson.

Over the years WHO will budget about 30 million dollars, enough for its primarily professional role. Endemic

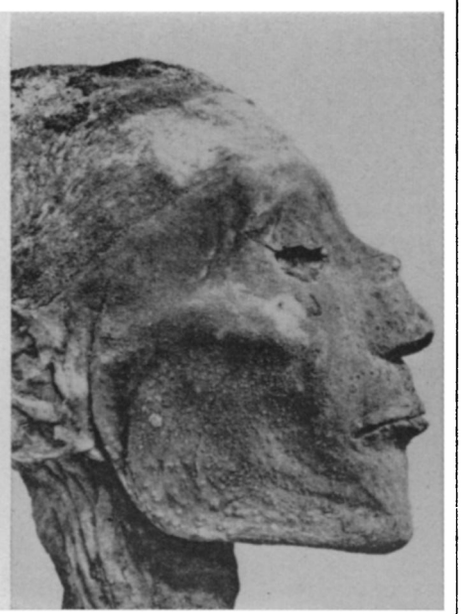
countries must bear about 70 percent of the costs.

The Soviet Union has already donated almost one billion doses of freeze-dried vaccine to other nations and now pledges 75 million more to WHO's bank.

"Many countries have the capacity to help," says Henderson, "but the U.S.S.R. shows great willingness. It, and the U.S. are the prime supporters."

culture. Many strains are being used, though the Lister and New York Board of Health strains are widely used.

Information on potency, heat stability and bacterial counts have been requested, though what comes in is not always satisfactory, "several laboratories did not seem to understand testing methods," Henderson says. Heat tests were even "much less satisfactory." Two-thirds of the reporting laboratories



WHO photos

Worldwide vaccination campaign will reach into Pakistan's villages (left and above), African towns (right) and South American hamlets to conquer a scourge as old as the pock-marked pharaoh above

But he acknowledges that informal contacts with other leading producers are promising. These are known to include Japan, Germany and Western Europe generally.

Switzerland has just given 4.75 million doses and Holland 1.6. The UAR, Tunisia and Algeria pledge 1 million each, and France is in a class with Cambodia, Philippines, Thailand and others at 200,000. Japan has given 120 motorcycles and many others small cash gifts.

Donations of vaccine are also coming in from new labs in developing countries, but, Dr. Henderson says, there are serious problems of quality.

WHO has an official lab at Utrecht, Holland, and offers free testing. Consultants are also being dispatched widely.

WHO has found in a survey, 63 freeze-dried vaccine facilities, in 43 countries, with 9 more planned. Almost all the labs customarily harvest virus from calves or sheep, with some produced in chick embryos and in tissue

could not record satisfactory results for all lots. Bacterial content on the other hand is satisfactory in about 90 percent of the labs.

In the global program, fully potent stable vaccine is crucial, say the experts, for the 85 percent of the cost, spent in transport and personnel, can be wasted on impotent vaccine. If the vaccine is good, immunity is long-lasting, gradually fading in ten years. International Certificates must now be renewed every three.

Henderson lauds the new needleless jet vaccinator that has been used to give 2,500 doses a day and has been clocked at 1,400 an hour. "You're limited by how fast the queue can move," he adds.

The most dramatic operation to date has been in Ibadan, Nigeria, where 12 teams, each with vaccinator, reconstitutor and tally man, but no medical doctor, vaccinated more than 800,000 persons in ten days, 85 percent of the population. *David Alan Ehrlich*