



· **A BRIEF HISTORY OF VACCINES AND IMMUNIZATIONS**

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In 1985 a further important development occurred with the decision in the Americas to undertake polio eradication — a key decision for which due credit must go to Ciro de Quadros, Albert Sabin and the bold decision of Rotary International to make an unprecedented commitment to raise \$100 million — a goal they were to eventually double! Polio eradication was invaluable in another way in that it served to launch within EPI a comprehensive surveillance program. An international vaccine research program was also launched as an initiative of the Rockefeller Foundation, UNDP and the World Bank, and subsequently strengthened and broadened through the 1990 Children's Vaccine Initiative. More recently yet, effort have begun to assure the availability of adequate supplies of vaccine which fully meet international standards.

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During the past fifty years, dramatic progress has been made both in the development of new vaccines and in their application. Five decades ago, there was only one vaccine in use in most countries albeit in widespread use in only a few — the smallpox vaccine. And that vaccine left much to be desired. It was heat labile; much of it was of marginal or low potency; and many batches were heavily contaminated with staphylococci.

The Second World War provided a new impetus to immunization, resulting in the successful large scale use in the military of yellow fever and smallpox vaccine and tetanus toxoid, as well as more marginally effective typhoid and cholera vaccine preparations. Civilian vaccine use during and, directly, after the war was a different story. Smallpox vaccination, as a national policy, was more or less vigorously pursued by many industrialized countries — but few in the developing world. A number of other vaccines were available for use — much as diphtheria and tetanus toxoids, BCG and rabies vaccines. However, no countries of which I am aware had a national policy and plan which assured universal access to vaccines other than for smallpox, despite the fact that diphtheria toxoid, in particular, was known to be effective. This is especially noteworthy because major diphtheria epidemics, accounting for over one millions cases, swept western Europe at the end of World War II.

A major and dramatic change in the status quo occurred during the late 1940s. As Europe sought to recover from the ravages of war, it quickly became apparent that

tuberculosis was a major and growing problem in a number of countries and that medical departments could not begin to cope. Danish Relief Missions in Hungary, Poland and Yugoslavia reached the conclusion that a BCG campaign offered the most feasible approach; indeed, the only hopeful one. The Danes worked with national authorities to launch large scale vaccination campaigns. Soon, thereafter, two newly founded international organizations — WHO and UNICEF — elected to jointly support a major BCG vaccination campaign, an effort which was led by Danish health staff and primarily supported by the Scandinavian countries. Within a period of little more than three years, 1948-1951, campaigns were conducted in some 22 countries of Europe, Asia, north Africa and Latin America. Nearly 30 million persons were tested for tuberculosis sensitivity and some 14 million were vaccinated. Thus, the concept of a joint international collaborative immunization effort was born. After the initial campaigns, a decision was made to continue and extend the program and, from 1951-1956, 34 more countries began campaigns, 160 million more were tested and 60 million vaccinated.

The second significant development in immunization was the decision by the World Health Assembly in 1967 to undertake a global smallpox eradication effort — a program which necessarily required cooperative efforts on a global scale. As with the BCG program, health service staff, often augmented by community residents, vaccinated systematically throughout countries, endeavoring to reach 80% or more of all residents. Where BCG programs were in place, the campaigns were usually joined. The BCG and smallpox campaigns shared two other important strategies: 1) in both programs, from the

beginning, stringent efforts were made to assure that all vaccine which was used in the program, fully met accepted international standards; and 2) a research agenda was supported as an essential and integral activity. I note this because, regrettably, neither of these two initiatives became part of WHO's Expanded Programme on Immunization until after that program had been operating for more than a decade. A further critical factor in the success of smallpox eradication was the early development of national programs for the surveillance of cases and the provision for the containment of outbreaks which were found. This concept had not been part of the BCG campaign, in significant part because of the problems in detecting and accurately diagnosing tuberculosis.

To a number of us it seemed only logical to build on the smallpox and BCG vaccination structures and experience in order to provide for the delivery of a more comprehensive array of vaccines of importance to children throughout the world. The first step toward that end was taken in 1960 — exactly 35 years ago — when, with major support from PAHO and Merck, Sharp and Dohme, the first international conference on childhood immunization was convened here in Washington under PAHO aegis.

Dr. Conrado Ristori, Dr. Charles Cockburn, Dr. Mauricio Martins da Silva and I served as the secretariat. At that meeting, formal recommendations were developed for industrialized and developing countries as to the vaccines to be included and appropriate means for implementation of programs.

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of the progress has occurred not within the past 5 decades but within the past 10 to 20 years. And we now foresee so much more that can be done with potential impacts perhaps twice or more that which has already occurred — including both disease eradication and the provision of all manner of new and improved vaccines. However, we need perspective as we review the past and look to the future. Let us not forget that over the past generation no other medical procedure, activity or discovery has so greatly benefitted mankind in the prevention of death and disability as has immunization!