

Conquering the Crippler

Canada's Role in the Fight Against Polio

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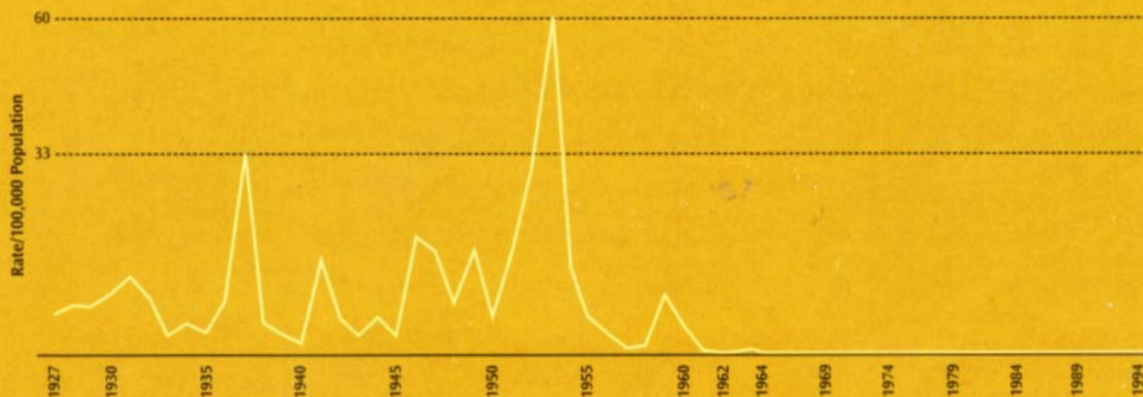
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For further information on the history of poliomyelitis in Canada, visit www.healthheritageresearch.com





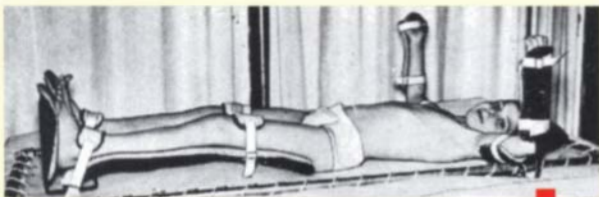
homemade treatment

At the height of the 1937 Ontario polio epidemic, the Hospital for Sick Children in Toronto constructs a wooden lung that saves a young boy. The hospital later builds 27 "homemade" iron lungs, funded and distributed by the provincial government.



marching mothers

Inspired by the U.S. example, Canadians start their own March of Dimes, launching a national "Canadian Foundation for Poliomyelitis" in 1948. It is later reorganized into independent provincial groups, including the Ontario March of Dimes. By the early 1950s, Marching Mothers are a common sight during January fundraising campaigns.



public health

Ontario is struck with a severe epidemic in 1937 and the Department of Health responds aggressively to the crisis, providing convalescent serum and standardized splints to all cases.

new polio therapies

Strict immobility until recovery was the general rule until the early 1940s, when a nurse from Australia, Sister Elizabeth Kenny, revolutionized polio rehabilitation through active and passive exercise of the affected muscles.



government takes action

Provincial and federal governments play an active public health role in managing the disease and its financial impact. Faced with an unprecedented number of disabled children after the 1937 epidemic, the Ontario government establishes a program of free specialized hospitalization for all paralytic cases for a three-week period. In 1948, a \$30-million annual Federal Health Grants program is introduced that supports similar polio treatment policies in all provinces.



epidemic '53

The iron lung becomes a symbol of polio. At the peak of the polio crisis in Winnipeg, an overwhelming 92 cases in one hospital are dependent on the machines simultaneously.



1910 - 1953

Epidemic Era

Polio hit Canada hard during the first half of the 20th century. The disease affected nearly 50,000 Canadians from 1927 through 1962, including more than 4,000 who lost their lives. The government, the medical community, scientists and the public struggled to find new ways to manage the disease.



PHOTO: Hospital for Sick Children, Toronto



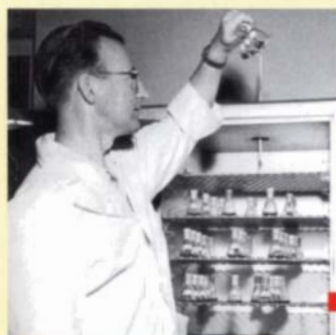
team leader

Dr. Andrew J. Rhodes leads a comprehensive polio research program at Connaught, which makes significant scientific advances during the early 1950s.



inspirational breakthrough

At last, a major breakthrough in 1949. Dr. John Enders and his colleagues discover a way to grow the poliovirus in test tubes. This innovation inspires many, including researchers at Connaught Medical Research Laboratories.



safe base discovered

In 1951, Dr. Arthur Franklin discovers that Medium 199 is especially effective for cultivating the poliovirus in monkey kidney cells without additional animal sera. As a result, Medium 199 provides a pure synthetic culture base for a polio vaccine.

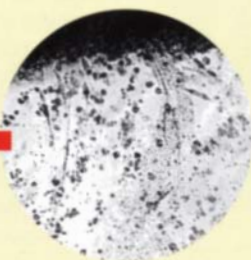


producing virus in bulk

Producing enough of the virus was a significant obstacle to developing the polio vaccine. In 1952, Connaught researcher Dr. Leone N. Farrell creates the "Toronto Method" to produce poliovirus in larger quantities. It cultures the poliovirus in a solution of Medium 199 and monkey kidney cells using large Povitsky bottles incubated on a custom-designed rocking machine.

medium 199

The synthetic nutrient base known as Medium 199 was developed at Connaught in 1949 by Dr. Joseph F. Morgan, Helen J. Morton and Dr. Raymond C. Parker. This chemically pure mixture of over 60 ingredients was originally created for studying cell nutrition in cancer research.



Dr. Joseph Morgan



Helen Morton



Dr. Raymond Parker



1947 - 1953

Canadian Polio Advances

Dedicated researchers at Connaught Medical Research Laboratories at the University of Toronto (known today as Sanofi Pasteur Limited) made critical contributions towards the development of the Salk polio vaccine. Their collaborative approach and the financial support of the National Foundation for Infantile Paralysis ensured that one discovery quickly led to another.



PHOTO: National Film Board of Canada



northern expertise

In 1953, the National Foundation for Infantile Paralysis (NFIP) – now called the March of Dimes – was funding Dr. Jonas Salk's efforts to develop an inactivated polio vaccine (IPV) and requested the assistance of Connaught Laboratories. Through Director Dr. Robert Defries' leadership, Connaught successfully supplied all of the poliovirus fluids required for a U.S. field trial of Salk's vaccine.

american trials

Connaught produced more than 3,000 litres of poliovirus fluids for the NFIP's mammoth vaccine trial, which began on April 26, 1954. It involved the elaborate tracking of 1,800,000 healthy school children, who were either given the vaccine or the harmless "199" as a placebo, or were simply observed to see whether they contracted polio. These children are known as the *Polio Pioneers*.



safe, effective, potent

On April 12, 1955, the announcement of the U.S. field trial results turned into a major media event. The vaccine was declared "safe, effective and potent." American vaccine manufacturers rush-released their vaccine to the U.S. public with little planning or government control.



perseverance

America's euphoria over the Salk vaccine was shattered when some children acquired the disease from vaccine made by Cutter Laboratories in California. Although the U.S. government responded by suspending the vaccination program, the Canadian program continued with the endorsement of Paul Martin, Sr., Minister of National Health and Welfare and a polio survivor himself. Vaccinations here proceeded without incident.



canadian trials

For Canada's initial trials of the vaccine, Connaught prepared a finished vaccine that included the double testing of each lot by Connaught and Ottawa's Laboratory of Hygiene. Federal and provincial governments shared the full cost of the vaccine and distributed it free to children in grades 1 to 3.



1954 - 1955

Trials of the Century

The largest medical experiment in history tested the Salk polio vaccine and brought hope to those living in fear of the disease. Canadian involvement in this massive experiment was crucial. Without Connaught Medical Research Laboratories, there would never have been a trial, or a practical vaccine in the first place: no American vaccine producer had the experience or facilities to take on the project.



PHOTO: Globe & Mail



growing global need

Starting in 1957, Connaught exports the Salk vaccine to Czechoslovakia, Great Britain, and eventually to 44 other countries that have no, or only limited, local supply and that are otherwise without protection against polio's growing global threat.



Dr. Jonas Salk

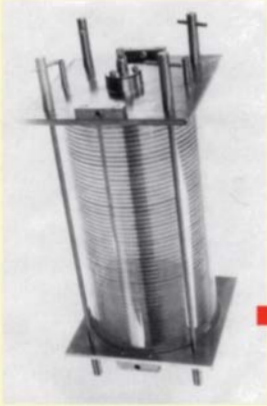
boosting immunization

In 1959, DPT-Polio and related vaccine combinations (including Td-Polio and T-Polio) are licensed in Canada and form the foundation of provincial immunization schedules.



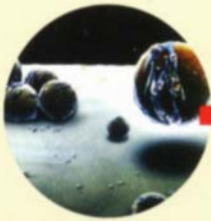
oral polio vaccine

By 1960, Connaught is developing a trivalent oral polio vaccine (OPV) using "seed pools" provided by Dr. Albert B. Sabin of the University of Cincinnati. After several pioneering Canadian "demonstrations" of the vaccine, OPV is licensed in Canada in 1962.



bulk production

Connaught licenses a purified and concentrated IPV in 1965 and by 1976, a new production method called the Multi-Surface-Cell-Propagator (MSCP) replaces the large racks of rocking bottles.

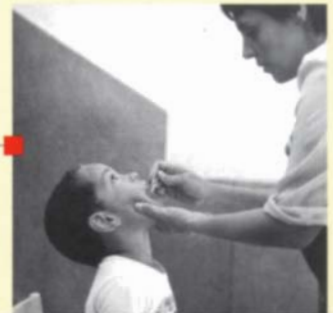


close to our goal

Since the early 1960s, polio has virtually disappeared from Canada, and since 1988, rapid progress has been made to eradicate the disease globally. Connaught continues to contribute towards the global fight against polio. Sanofi Pasteur has donated more than 120 million OPV doses to the Global Polio Eradication Initiative since 1997.

technological improvements

In 1988, Connaught introduces an enhanced potency eIPV, produced by the cultivation of poliovirus in a continuous human diploid cell line known as MRC-5, using microcarrier cultures fermented in large 1,000 litre tanks. One small vial of MRC-5 cells enables the production of some 700,000 doses of eIPV in 15 to 18 months.



1955 - tomorrow

Towards a Polio-free World

North America successfully defeated polio through partnerships, international cooperation and critical contributions from Canadian scientists. Today, we are close to global eradication, but sustained collaborative effort remains critical to banishing polio from the world forever.

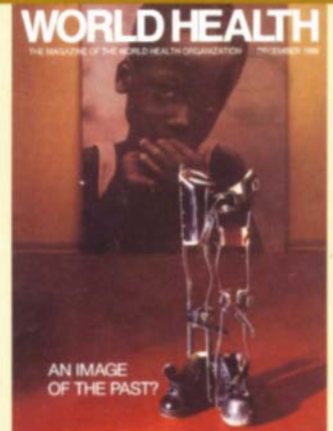


PHOTO: World Health Organization