

Polio Presentation

Rotary Club

October 29, 2020

(A Work in Progress)

[HTTPS://WWW.CDC.GOV/POLIO/WHAT-IS-POLIO](https://www.cdc.gov/polio/what-is-polio)

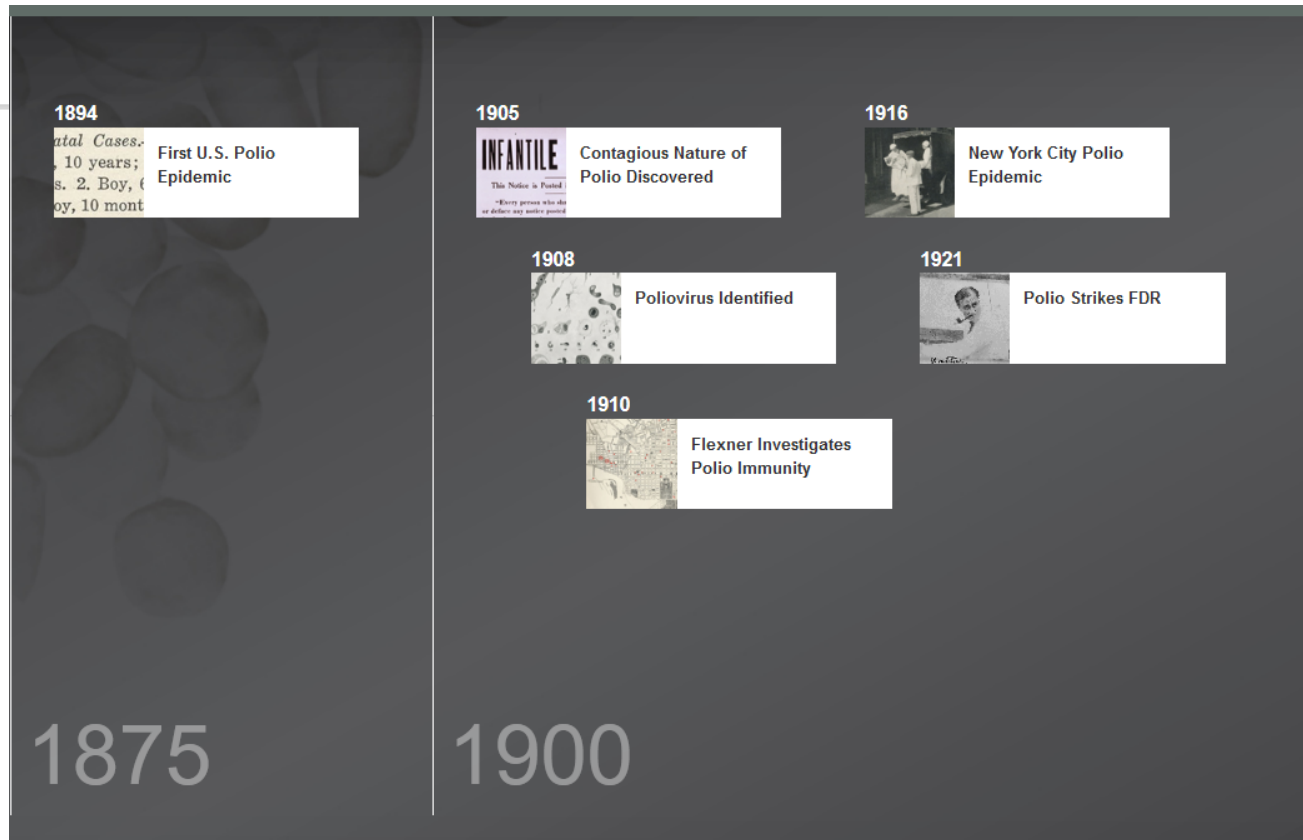
[HTTPS://WWW.HISTORYOFVACCINES.ORG/TIMELINE#EVT_100325](https://www.historyofvaccines.org/timeline#EVT_100325)

CDC: What is polio?

- Poliomyelitis or polio, is a **disabling and life-threatening disease** caused by the poliovirus.
- **Virus** spreads from person to person; can **infect the spinal cord, causing paralysis; lives in throat and intestines; then distributed by the blood to the nervous system**; only infects people.
- **Virus enters through mouth** through droplets from a sneeze and/or contact with feces (**poop**) of an infected person.
- Symptoms – sore throat, fever, tiredness, nausea, headache stomach pain (**flu-like**); people with **no symptoms (72 of 100)** can still spread the virus
- More serious symptoms – paresthesia (feeling of pins & needles); meningitis (infection of spinal cord and brain), **paralysis (1 of 200 or .5%)**
- **Infected person** (with or without symptoms) can **spread to others immediately or up to 2 weeks**.
- **Post-polio syndrome (PPS)**: can affect polio survivors decades later; muscle pain, weakness or paralysis as adults

Timeline 1875 – 1921

<https://www.historyofvaccines.org/timeline>



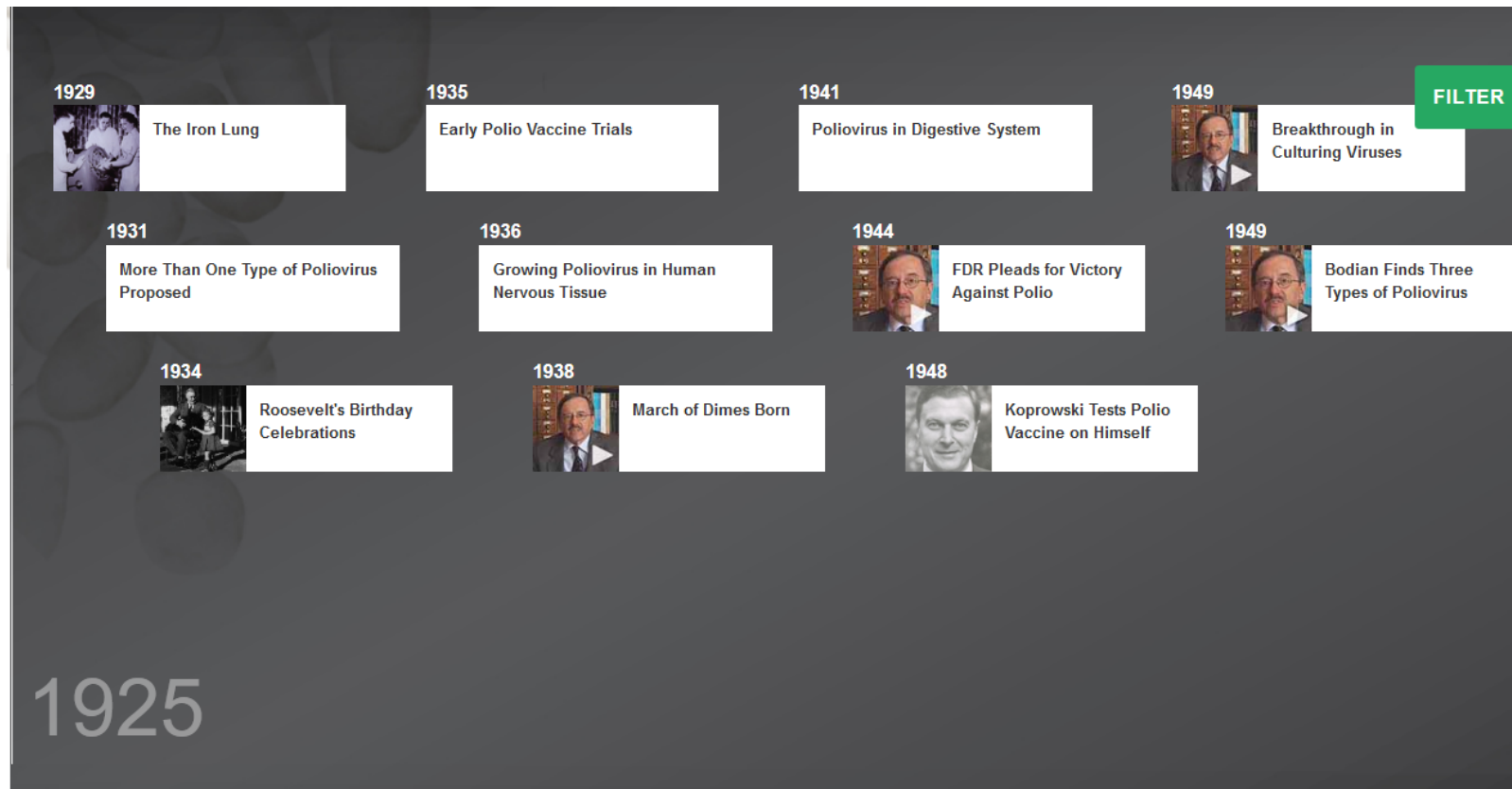
8/8/1921 - Polio Strikes FDR

- Franklin Delano Roosevelt (1882-1945), former New York State Senator, Assistant Secretary to the Navy, and future U.S. president, fell ill with what most historians think was polio.
- Roosevelt's illness **left his legs paralyzed for life. He avoided being photographed in his wheelchair,** however, and used braces and canes to appear to walk.

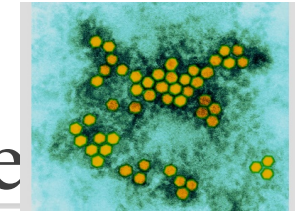


Timeline 1925 – 1949

<https://www.historyofvaccines.org/timeline>



Iron Lung, March of Dimes, FDR Appeal, **Bodian**



1949 –Three Strains of Polio Virus Ide

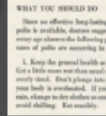
- Breakthrough!
- David Bodian, MD, PhD and Isabel Morgan, PhD - Johns Hopkins University School of Medicine, **identified three types of poliovirus.**
- **Vaccine** would have to produce **immunity to all poliovirus types.**



Timeline 1950 – 1955 (w details)

<https://www.historyofvaccines.org/timeline>

1950**Koprowski Tests Polio Vaccine on Children**

1952**Salk Begins Early Polio Vaccine Tests**

1953**Salk Gives Vaccine to His Family**

1955**The Cutter Incident**

1951**Cultivation of Poliovirus in Monkey Kidney Tissue**

1952**Polio Cases Surge**

1954**Massive Polio Vaccine Trial Begins in U.S.**

1955**The Aftermath of the Cutter Incident**

1952**IgG Used for Polio Protection**

1953**Salk Becomes a Public Figure**

1955**Polio Vaccine Results Announced**

1955**Polio Vaccination Suspended**

FILTER



1950 – Koprowski Tests Polio Vaccine on Children

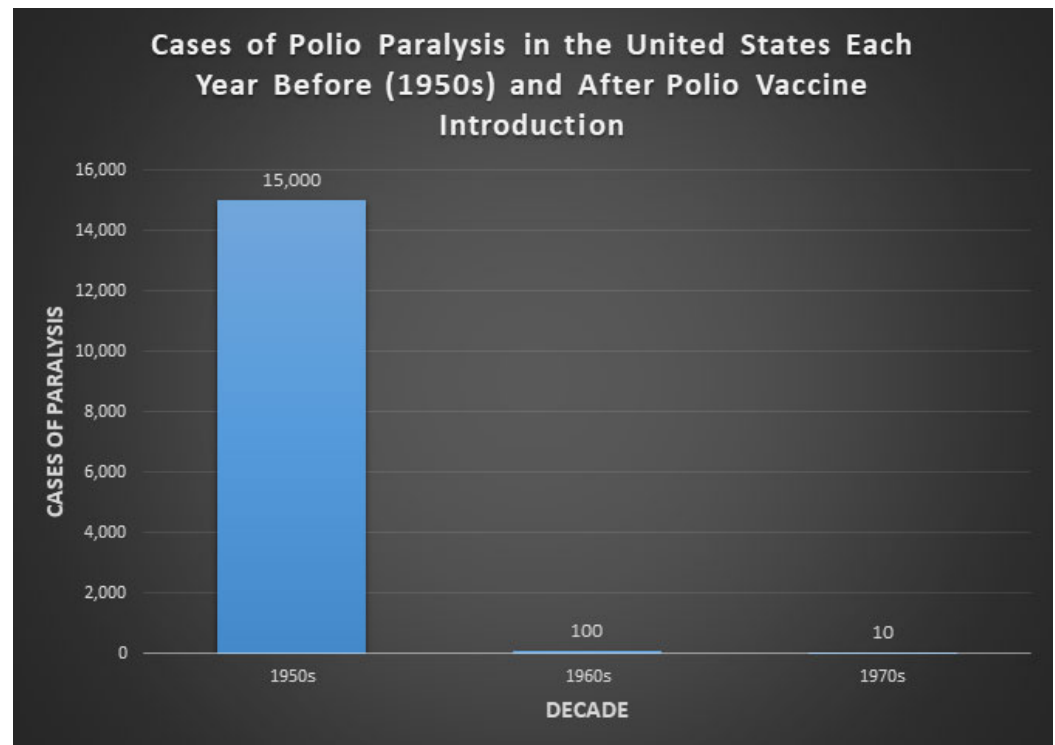
- **World's first effective live polio vaccine**
- First trial of **oral vaccine on 20 intellectually disabled children** and in New York Institution
- Parental permission given.
- **Live, but weakened virus mixed with chocolate milk**
- None became ill with polio and **all developed Type II poliovirus antibodies.**
- Methods generated **considerable controversy; testing live vaccine in human subjects was premature**
- Objection to testing the vaccine on institutionalized children
- **Vaccine not approved in U.S.;** Over 1 Million injected with polio vaccine in the Congo 1957 - 1960



1952 – Polio Cases Surge

(One of the most feared diseases)

- 57,628 polio cases in 1952;
21,000+ paralytic
- **Only people with paralytic infection were considered to have disease** (contrary to COVID count today)
- Introduction of trivalent inactivated poliovirus vaccine (IPV) – **Jonas Salk** and trivalent oral poliovirus vaccine; **Albert Sabin** oral vaccine in 1963 dropped cases to below 100



1952 -Salk Begins Early Polio Vaccine Tests

- First tests on humans of their **killed-virus** polio vaccine.
- Subjects were **resident children** in institutions for the **physically and intellectually disabled**
- Salk tested vaccine for **all three strains** of polio; some individually or combinations
- Vaccine **recipients produced antibodies** to the virus type/types in the vaccine they were given



1953 –

his family



- Peter Salk receiving vaccine from father, Jonas Salk on April 24, 1953

Massive Polio Vaccine Trial Begins April 25, 1954

- **1.3 – 1.8 million children** in trial
- Randomized, double-blinded test
- Almost **one year to analyze** results
- Totally funded by **March of Dimes**



Polio Vaccine Results Announced 4/12/1955

- **80-90% effective** against paralytic polio.
- U.S. government **licensed Salk's vaccine** later this same day
- **Press conference** paved the way for widespread distribution and use of the vaccine.
- **The Shot Felt Around the World**
- **Opinion: Open mic - ACA**



The Shot **FELT** 'Round the World How the Polio Vaccine Saved Millions April 12, 1955

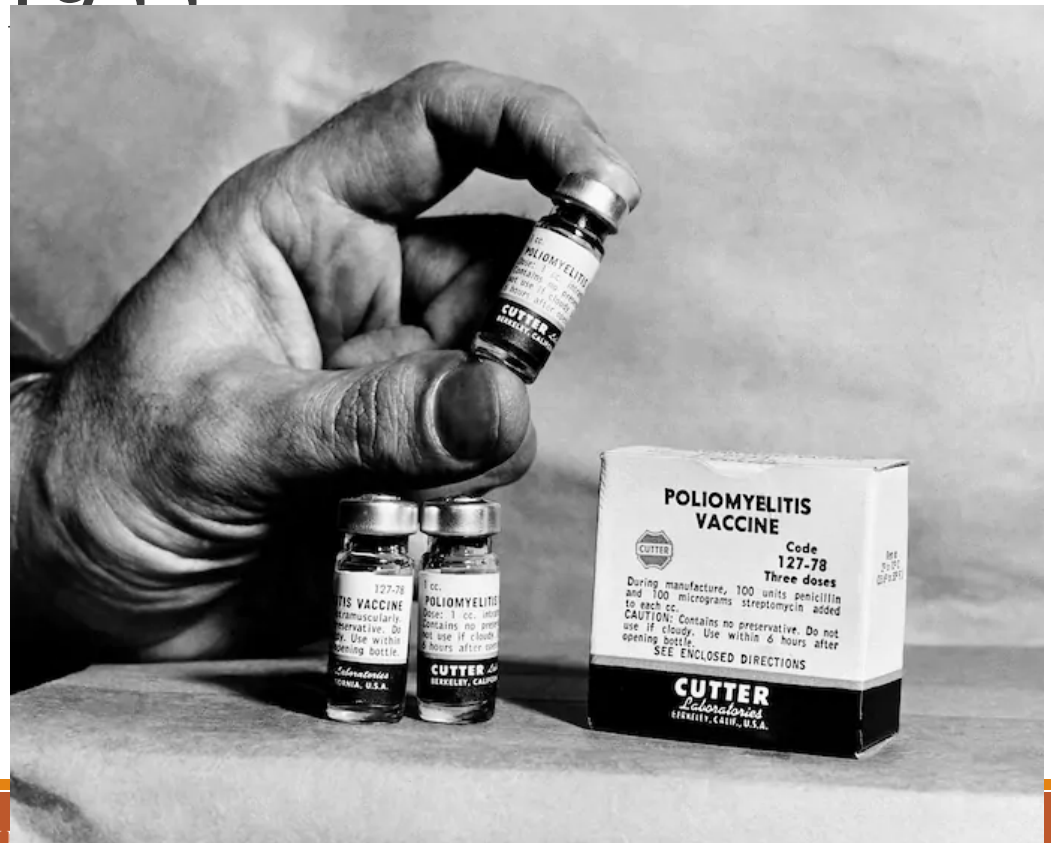


<https://www.youtube.com/watch?v=Jp9V2p40kKw>

Cutter Incident

4/24/1955

- Idaho doctor reported paralytic polio in a recently vaccinated girl
- Disturbing detail: paralysis in the vaccinated arm
- Vaccine produced by Cutter Laboratories in Berkeley, CA (one of six pharma labs)
- **Production error** – failure to completely kill Type 1 poliovirus in the vaccine



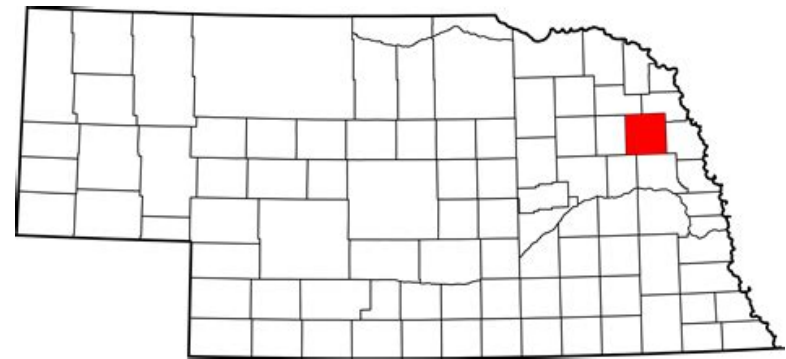
Polio Vaccination Suspended

5/8/1955

- **U.S. Surgeon General suspended the polio vaccination** program
- **Cutter Laboratories** – produced 120,000 vaccines; **2 of 8 batches had live poliovirus that survived** the formaldehyde treatment
- **11 people died** from vaccine in trials and hundreds paralyzed
- Company sued; although **not found negligent**, paid damages for breach of warranty
- **Vaccines resumed mid-June; mid-September (West Point, NE)**

Cuming County, NE & Polio -1952 & 1955

- **1952 - 36 cases in Cuming County; local reporting**
- Rehab Options
- Therapies
- West Point, District #25
- (The rest of the story)



County Seat, West Point

West Point Republican Newspaper Stories

1952 - 1953

June 10, 1952: Polio Funds Helps 5 Patients in Bancroft

Sept 4, 1952: Hospitalization of Polio Patients Continues

June 29, 1953: Polio Evaluation Clinic Scheduled at Wayne

July 16, 1953: Hospital Seeks Funds for Polio Equipment

July 23, 1953: Need Becomes Great for Polio Equipment

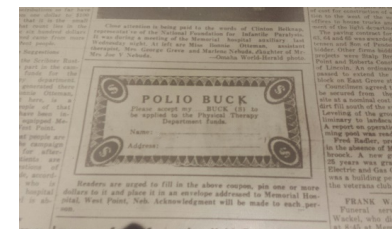
July 30, 1953: Memorials Boost Polio Therapy Fund

August 6, 1953: Therapy Fund Mounts as Need Understood (**polio bucks**)

August 13, 1953: Therapy Room at Memorial Hospital

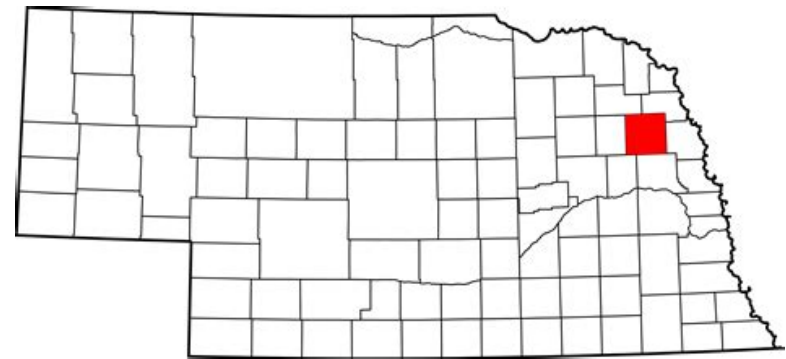
Oct 22, 1953: First Polio Patient Receives Treatment

Oct 29, 1953: Polio Fund goes over \$3000



Cuming County, NE & Polio -1952 & 1955

- **Rehab Options**
- Therapies
- West Point, District #25
- (The rest of the story)



County Seat, West Point

Polio Rehab - St. Joseph's Hospital, Omaha

1927 Postcard

St. Joe's Hospital – Chapel



Polio Rehab – “Hattie B.”

1919 - The Society for the Relief of the Disabled formed a new charity

1922 - founded as the **Hattie Baker Munroe Home for Convalescing Crippled Children.**

1997 - The Meyer Rehabilitation Institute (MRI) and the Hattie B. Munroe Pavilion become the Munroe-Meyer Institute (MMI) for Genetics & Rehabilitation.

2009 - MMI becomes an academic unit of UNMC.



Polio Rehab – Warm Springs, GA

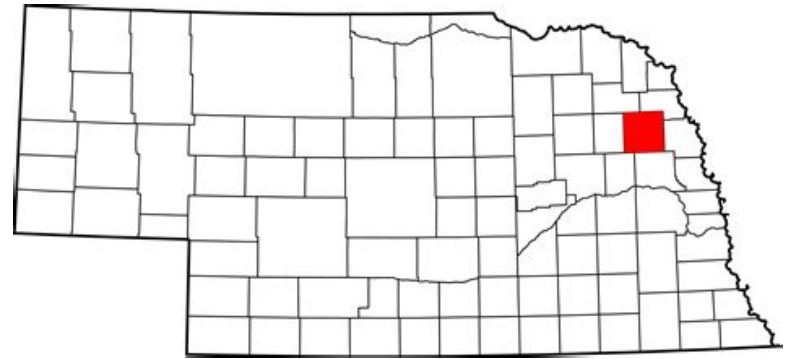
https://www.youtube.com/watch?v=sUQQqMr_big

[5-Minute Trailer – HBO
Movie](#)



Cuming County, NE & Polio -1952 & 1955

- Rehab Options
- **Therapies**
- West Point, District #25
- (The rest of the story)



County Seat, West Point

Polio Therapies – Range of Motion (ROM) Evolution

- **Early therapy:** rest the afflicted muscles, immobilize the muscles using splints, plaster body casts; results - atrophy of afflicted and non-afflicted muscles.
- **1940: Sister Elizabeth Kenny** to the America from Australia
- New therapy to relieve pain & spasms: use of moist strips of steaming wool, ROM
- Goal: promote the neuroplastic recruitment of remaining nerve cells
- Became the hallmark of polio therapy

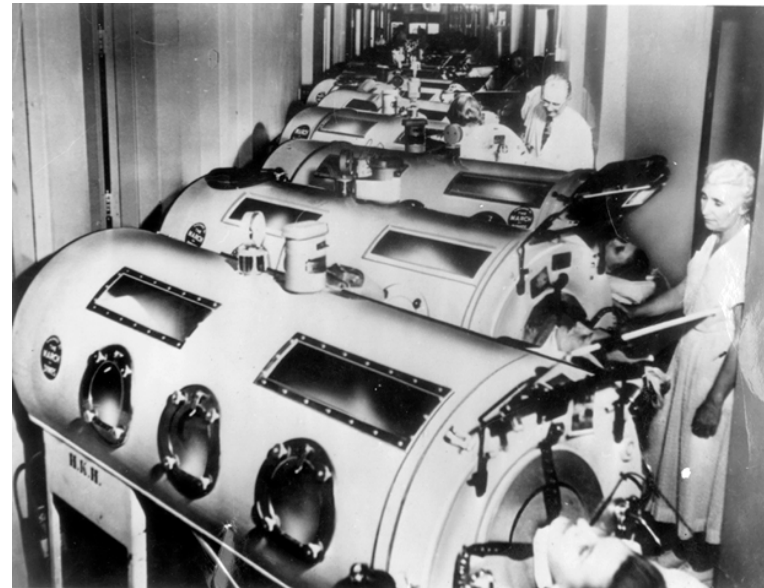


Polio Treatments - Iron Lung (1929)

<https://www.youtube.com/watch?v=cUCqsl6JROg>

8:35 minutes

Homework for “the rest of the story.”

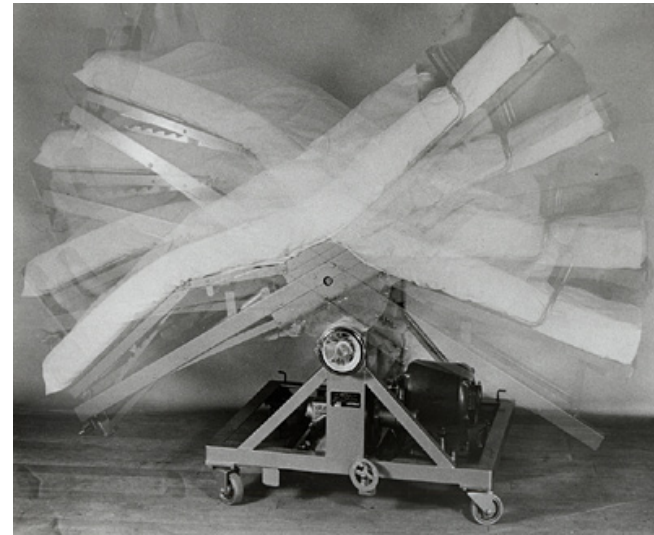


Polio Therapies – Rocking Bed

“The principle of the bed was simple. When my head was up, my feet down, my internal organs were pulled by *gravity*, pulling my diaphragm with them and sucking air into my lungs. When my position was reversed ... air was forced out of my lungs.”

—Larry Alexander, 1954

16 – 18 “rocks” per minute



Polio Therapies - tilt table

Hattie B. Munroe

This photo shows a Tilt Table which is used by paraplegics, quadraplegics and persons suffering from polio. This will get them accustomed to the upright position and also prevent osteoparesis from forming.



Cuming County, NE & Polio -1952 & 1955

- 36 cases in Cuming County; local reporting
- **Bancroft – early cases**
- Rehab Options
- Therapies
- **West Point, District #25**
- **(The rest of the story...)**



County Seat, West Point

Rural West Point, NE
District #25 “Country” School
1952 & 1955 (Cutter Incident lapse)

(3) Families Impacted in One Sq. Mile:

- 16 kids + 6 adults

The Aftermath:

- (2) Deaths
- (1) Quadriplegic
- (1) Paraplegic
- (1) Hemiplegic
- (1) Diagnosis; subsequent recovery
- (1) No diagnosis; post-polio syndrome



Polio Presentation – The Rest of the Story Rotary Club TBD (A Work in Progress)

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