

THE HISTORICAL IMPORTANCE OF THE DEVELOPMENT OF THE INACTIVATED (KILLED) POLIOVIRUS VACCINE

The development of the injectable killed poliovirus vaccine was a major historical event for many reasons. Here are a few thoughts that come to mind; there are certainly other reasons that others might cite.

- (1) Within six years, it brought under control in this country a disease that was the frightening epidemic of its day.... it was even more frightening for most people than AIDS is today.
- (2) It was the first use of modern tissue culture techniques that permitted viruses to be grown in vitro (that means "in glass"; in other words in flasks and bottles and test tubes) rather than in living animals such as monkeys. Drs. Enders, Weller and Robbins at Harvard were awarded the Nobel Prize for developing the techniques that Jonas Salk used to grow poliovirus and create the killed poliovirus vaccine.
- (3) It was the first demonstration that a viral disease could be controlled successfully with a vaccine made from noninfectious (dead) viruses. Up until that time it was believed that only living viruses would work in vaccines. As you may know, a live virus vaccine was later developed for polio that could be given orally (by mouth), but that occasionally causes polio in people who receive it or others who come in contact with them. The killed poliovirus vaccine is as effective as the oral live poliovirus vaccine, but it cannot cause disease in people who receive it. For that reason, the U.S. Public Health Service now recommends that only the killed poliovirus vaccine be used today in the United States.
- (4) The fight against polio was supported by the largest private fund-raising effort ever: The March of Dimes. There was very little government or industry support for vaccine development at the time. The polio vaccine truly belonged to the people of this country -- they paid for it themselves with millions and millions of nickels and dimes and dollars and with countless hours of volunteer effort.
- (5) The nationwide field trial (test) of the killed poliovirus vaccine in 1954, run by Dr. Thomas Francis at the University of Michigan, was the largest such test ever conducted. It set the standard for controlled vaccine field trials, even to this day. In fact, it is unlikely that such a large and well-controlled study could ever be done again.
- (6) Although it is not often understood, the U.S. government and the FDA did not have the same kind of control over medicines as they do today. The methods developed for approval and monitoring of the killed poliovirus vaccine were the first of their kind and had a major influence on the way the FDA today approves and monitors efficacy and safety of vaccines and other biologic products.

(7) It was the beginning of a process that would be another major historical event: the eradication of poliovirus. In the 1970's the smallpox virus was eradicated (made extinct) by vaccination programs around the world. When that occurred, many people thought it was a special case and that no other disease organism could be made extinct on purpose. However, it would be possible to make poliovirus extinct if the killed poliovirus vaccine were used exclusively throughout the world. The oral polio vaccine currently used by the World Health Organization to control poliomyelitis (the disease) contains living polioviruses that survive in the environment. Thus, the disease-causing virus itself (poliovirus) cannot be made extinct as long as the oral live virus vaccine is used.

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