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Live Attenuated Poliomyelitis Vaccine

For many years, the possible use of a live attenuated poliomyelitis vaccine, that is, a virus which has been grown in animals or eggs until it has lost its disease-producing potential without losing its immunizing ability, has been discussed. For more than 7 years, the problem has been under serious investigation.

The Salk vaccine, now in use and giving good results in protecting against paralytic poliomyelitis, is made from killed virus.

The main advantages visualized for a vaccine made from live attenuated virus are: (*a*) longer lasting immunity—although the Salk vaccine is believed to provide protection for some time, the actual duration of immunity is not yet known because it has been in use for such a short time; (*b*) ease of administration, with the live virus given orally instead of by injection; and (*c*) presumably lower costs of production.

At the present time three sets of strains are under investigation. These are most readily identified by the names of their developers, the Sabin, Lederle, and Koprowski strains, named respectively for Dr. Albert Sabin of the University of Cincinnati, Lederle Laboratories, and Dr. Hilary Koprowski of Wistar Institute of Philadelphia. The name of Dr. Herald Cox, of the Lederle Laboratories, is also associated with the Lederle strains.

Each set consists of three type strains. These sets of strains have now been administered to large numbers of persons in an attempt to determine: (*a*) their ability to produce adequate and durable levels of antibody, and (*b*) their safety in general use.

No untoward results have been reported in relation to these studies. Stated in this way, the facts appear impressive. It must be remembered, however, that the data these studies were designed to collect have not yet been fully assembled, analyzed, or made public.

The Public Health Service is following these developments closely. Our Division of Biologics Standards of the National Institutes of Health, for example, is conducting laboratory investigations aimed at characterizing the type strains. These investigations are of importance because the Service may be asked some day to license the products.

I also have appointed an ad hoc committee composed of outstanding experts in this field to keep me advised of developments with respect to live attenuated poliomyelitis vaccines. This committee consists of Dr. Roderick Murray, chairman, director of the Division of Biologics Standards, National Institutes of Health; Dr. David Bodian, Johns Hopkins University; Dr. William McD. Hammon, University of Pittsburgh School of Public Health; Dr. Alexander Langmuir, Public Health Service, Communicable Disease Center, Atlanta, Ga.; Dr. Joseph Melnick, Baylor University, and Dr. John R. Paul, Yale University Medical School.

This committee has met twice and considered all information now available on these vaccines. The committee finds a number of important issues remain to be answered or resolved before the live attenuated poliomyelitis vaccines can be considered other than in the experimental stage.

These issues cover such points as: apparent differences in the ability of the different strains to invade the nervous systems of experimental animals; transmission of virus from vaccinated persons to others; feasibility of feeding the three type strains simultaneously; effect of viruses in the intestinal tract, other than polioviruses, on the development of immunity to poliomyelitis; validity of surveillance of populations inoculated to date.

The committee has felt some concern because some of the trials of live attenuated poliomyelitis vaccine have not followed the recommendations of the World Health Organization Expert Committee on Poliomyelitis. It also has been concerned by apparent differences in the virulence for the nervous system of some of the virus strains being used. This aspect of the problem needs further study.

The experience thus far indicates that encouragement should be given to carefully conducted, small-scale studies designed in such a way that the laboratory and epidemiological surveillance could produce results upon which a judgment could be made.

Large-scale trials of live attenuated poliomyelitis vaccine in the United States are considered unproductive because so large a proportion of the population already has been immunized with killed vaccine.

The decision to permit such trials in other nations is, of course, one for their health and medical authorities. However, because the experimental vaccines are made in the United States and because our ad hoc committee has been studying reports on them, I feel that such information as we have should be made public so that not only our people but the peoples of other nations can have all current available information as exists on which to form their opinions and base their decisions.