MEDICINE

Better Polio Vaccines

Manipulating viruses to get mutant that would give a safe, live virus vaccine and adding chemicals to dead viruses are methods now being investigated.

➤ NOW IN the works are vaccines that will be better for protecting against polio than the one now getting its first mass trial among hundreds of thousands of American school children.

The present vaccine, developed by Dr. Jonas E. Salk of Pittsburgh, is made from polio viruses that have been killed. It is known officially as Poliomyelitis Vaccine, Types 1, 2 and 3.

"This is a safe vaccine but I am pretty sure there will be a better one," Dr. Thomas M. Rivers, director of the Rockefeller Institute for Medical Research, New York, told SCIENCE SERVICE.

Dr. Rivers is chairman of the committee that advised the National Foundation for Infantile Paralysis to go ahead with mass field trials this season with the present vaccine.

Dr. Salk is still working to perfect a new and better polio vaccine. He already has one on trial in a few children. This one, like that getting mass trials, is made from killed polio viruses. But it has a chemical, called an adjuvant, added to give it greater potency. The hope is that such a more powerful vaccine will give protection for a longer time.

The big questions to be answered by the field trials of the vaccine this summer are: Will it protect children? And if so, for how long?

Levels of polio-fighting antibodies in the blood stay up for as long as seven months, trials on a few thousand children have shown. The antibody level is the only measure on humans that scientists have as yet for the vaccine's probable value. If it can be taken as a sign of protection, which no one is yet sure about, the present vaccine should protect at least through one polio season. That would mean giving a booster shot every year.

A total of 900,000 children will take part in the current vaccine trials, according to present plans. Not all of these will get vaccine. The nose count of polio patients among the controls compared to those among the vaccinated at the end of the season will help determine the value of the present vaccine.

Dr. Salk hopes to get a vaccine that would protect for, say, three years.

The current one, Dr. Rivers and his committee decided, is the best so far. It is safe and seems promising enough to try. As Dr. Rivers said, the first automobile was a far cry from today's cars, but we did not go on walking while waiting for the 1954 models with all their improvements. So why let children continue to run the risk of polio when we have what might be the Model T of polio vaccines ready?

At least three groups of researchers are known to be trying to manipulate the polio viruses so as to get a mutant or changed form of virus that could be used for vaccinating.

If they succeed, polio vaccines in the future will be made from harmless relatives of the viruses that cause polio.

The situation will be something like vaccination against smallpox, in which the harmless cowpox virus, close relative of smallpox virus, is used to protect against smallpox.

It may even be that the vaccinated children, when such vaccines are used, would get a mild sickness. But they would be protected from crippling, paralyzing polio.

At Yale University, Dr. Joseph L. Melnick has already succeeded in giving monkeys protection against polio by vaccinating them with harmless mutant viruses developed by passing virulent polio viruses through cultures of testicular and kidney tissues.

At Lederle Laboratories, Dr. Herold Cox has succeeded in making at least one of the three polio viruses adapt itself to growth on embryonated hen's eggs. A vaccine could be made from this, but the present problem is to get all three polio viruses adapted to growing on eggs so that the egg vaccine would protect against all three viruses that attack humans.

In Cincinnati, Dr. Albert Sabin has developed attenuated, or weakened, strains of polio viruses which, though living and able to stimulate the body's defensive forces against the virulent virus, nevertheless are too weak to cause paralytic polio in monkey trials.

Other scientists are working on the problem, trying to develop mutants or to weaken the polio viruses so as to make a safe live virus vaccine. The hope is that such a vaccine would be more powerful and give longer lasting protection against the disease.

Some scientists, however, feel there is always the danger that the harmless mutants would mutate back to a virulent form of virus and that the attenuated, or weakened, ones would also become virulent again.

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NATIONAL ACADEMY MEETING—Dr. Richard E. Hewitt of the Carnegie Institution of Washington demonstrates a new technique for sectioning frozen tissue. Watching are Dr. Vannevar Bush, president of Carnegie, who developed the method with Dr. Hewitt, and Dr. W. L. Hughes of Johns Hopkins University, Baltimore Md. The technique was demonstrated and explained as a portion of one of the many scientific exhibits shown to members of the National Academy of Sciences at their annual meeting in Washington.