PUBLIC HEALTH

We Are Not Created Equal

Every year a quarter of a million babies are born unequal in this free country. But scientists are trying to overcome many of the 200 birth defects that give children a false start.

By FAYE MARLEY

➤ THIS TRUTH is self-evident: We are not created equal.

The idealistic framers of the Declaration of Independence were writing of normal people—not of those born with the 200 different kinds of malformations recognized by the World Health Organization.

A million Americans, including 250,000 babies born each year, suffer from handicaps of birth defects. Twenty-one thousand of these babies die annually. Of those who live, 100,000 are completely or partly paralyzed.

Hopeful Outlook

But scientists are idealistic too, and the war of independence they are fighting has given hope to the mother who finds her new baby has a malformed heart or water on the brain. The club foot, the harelip, even such a minor defect as cross-eyes no longer condemns a child to lifelong inequality.

This does not mean that scientists have conquered the problems of heredity, of viruses, of environmental interference in the uterine world where babies grow. But they have made beginnings.

Take the 35 recognized types of congenital heart malformations. Today, 17 of them can be cured or improved by operations unknown until a few years ago.

Since 1954, Dr. Denton A. Cooley and his co-workers at Baylor University, Houston, Texas, have reported survival of 288 out of 400 infants who had undergone surgery for a wide variety of congenital heart defects. Those who died would almost certainly have died without the surgery, and the number who lived give promise for thousands more successful operations.

These Texas surgeons repaired holes in the heart, or septal defects. They transposed the great vessels. They repaired heart valves that failed to open, and they made the blood flow properly in babies whose lungs were drained.

Scientists almost always build on each other's discoveries. One well known result of congenital heart defects is the "blue baby." Many different kinds of these defects may cause blueness, or cyanosis, but the most common is called tetralogy of Fallot. This is a combination of four defects in the heart and great vessels, causing interference with the blood to the lungs.

These babies are starved for oxygen. Up until 1945 nothing could be done to help them. Many died during infancy or early childhood, and those who lived were abnormal.

In 1945 Dr. Alfred Blalock of Johns Hopkins Hospital had been working on an experiment with dogs, unconnected with blue babies. He was trying to produce hardening of the pulmonary artery, ordinarily free from this condition. His theory was that if he connected a large branch of the aorta, which is affected by arteriosclerosis when blood pressure is increased, to the pulmonary artery and increased the pressure, he might achieve his aim. But nothing happened.

Watching his work, Dr. Helen Taussig suggested that this operation, which increased the flow of blood to the lungs, might be tried on children with tetralogy of Fallot, whose lungs do not get enough blood. The results made medical history.

The next year, in 1946, two other doctors perfected a blood shunt method from the aorta to the pulmonary artery, which gave thousands of children a new lease on life. But one of them, Dr. Willis J. Potts of Chicago, realized that neither the Johns Hopkins operation nor the shunt could correct the deformities inside the heart that were causing blue babies.

Then in 1955, Dr. C. Walton Lillehei of the University of Minnesota conceived of circulation outside the body, and the heart-lung machine made open-heart surgery possible. Today the deformities causing blue babies are eliminated by surgery.

Various studies on heart defects reported by the National Heart Institute of the National Institutes of Health, Bethesda, Md., suggest that heredity, or genetics, is not to blame. Virus infections, vitamin deficiencies, X-rays or lack of tissue oxygen may affect the fetus at a critical stage in its development.

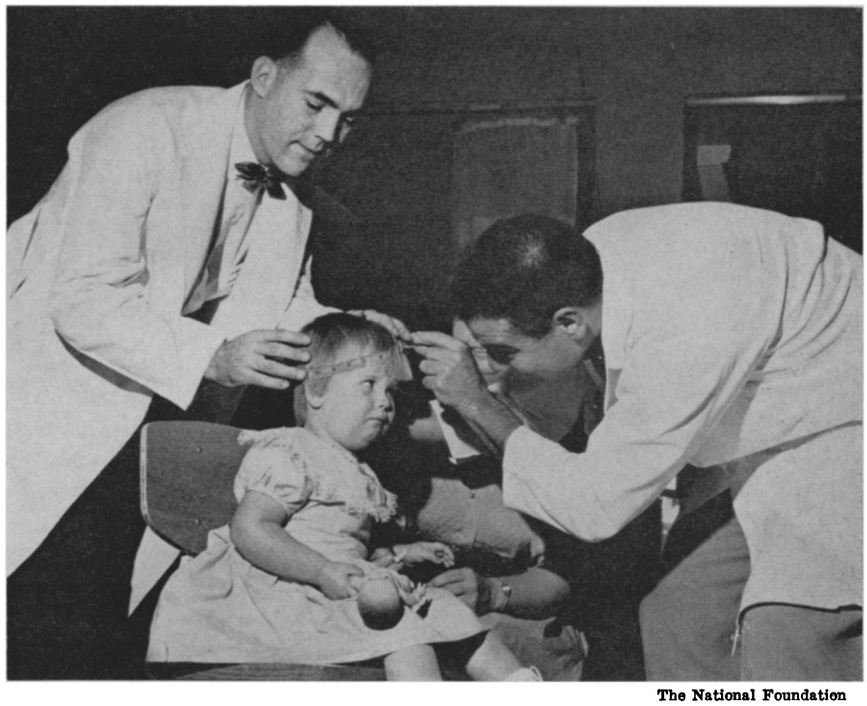
Patient-Aid Program

The National Foundation's patient-aid program includes three major defects involving the central nervous system that affect 8,000 newborn infants a year. They are hydrocephalus, or water on the brain; spina bifida, or open spine; and encephalocele, or cleft skull.

Before the thalidomide disaster called attention to the fact that horribly deformed babies could be caused by a drug, the U.S. Public Health Service's National Institute of Neurological Diseases and Blindness at Bethesda, Md., started a project aimed at finding out why an estimated one in five pregnancies fails to produce a healthy child.

By 1970, 15 cooperating hospitals, universities and medical centers will have interviewed some 50,000 expectant mothers and followed up their babies in an effort to get

(Continued on p. 63)



The National Foundation

ANOTHER OPERATION?—Mary Jo was born with water on the brain, or hydrocephalus. Doctors are measuring her head to see if another operation is necessary. She has already had ten because the excess fluid being drained from her brain "clogged" before it could be absorbed by her body.

Not Created Equal

(Continued from p. 55)

new knowledge about the causes of disorder. Interviews include questions about all drugs taken during pregnancy.

Known as the collaborative project on cerebral palsy, mental retardation and other neurological and sensory disorders of infancy and childhood, the research could prevent many tragedies of birth.

Scientists at the Institute and workers under grants at medical centers are carrying on a wide variety of research projects aimed at saving children from mental retardation. Already discovered is the fact that giving too much oxygen to premature babies can cause a disorder that once blinded 20% of such infants. This condition, called retrolental fibroplasia, has been entirely eliminated.

It is now possible to prevent mental retardation caused by such chemical abnormalities as cretinism, phenylketonuria, or PKU, and galactosemia—all due to inborn metabolic defects.

PKU Due to Enzyme Lack

Research has shown that the child born with PKU is without an enzyme necessary to metabolize phenylalanine, a chemical found in all proteins. The phenylalanine accumulates in the blood and finally damages the victim's brain. There is now a simple blood test that can be given before the child leaves the hospital. Also, there is a special diet free of phenylalanine and, together, these discoveries could wipe out PKU.

In galactosemia, the infant's brain is damaged because he cannot metabolize galactose, a sugar found in milk. A blood test shows whether or not the condition is present, and a diet from which galactose has been eliminated will correct the disorder.

In cretinism, the child's physical growth as well as his mental development is stunted because of a congenital deficiency of thyroid hormone. By giving the hormone to children born with a defective thyroid gland, the condition can be corrected if it is discovered early enough.

Now that a virus has been discovered that causes rubella, or German measles, a vaccine may be expected, in a few years at most, that will prevent deformities often caused when an expectant mother gets the disease in her first three months of pregnancy. The only preventive now is to expose young girls to German measles before adolescence.

A new potential cause of birth defects was reported early in 1963 after tests at the University of Cincinnati College of Medicine showed too much or too little hormone production during pregnancy.

Dr. Richard M. Hoar produced in guinea pigs many of the typical birth abnormalities seen in babies by removing the adrenal glands, situated on top of the kidneys, and by supplementing the animal's output of the cortisone-like adrenal hormones. Later he used an experimental drug that suppresses the ability of the adrenal glands to produce hydrocortisone. His studies are continuing under a renewal grant from the National Foundation—March of Dimes.