

Strategy to help doctors determine when to treat retinopathy of prematurity

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Scientists have shown that through eye examinations, doctors can identify infants who are most likely to benefit from early treatment for a potentially blinding eye condition called retinopathy of prematurity (ROP), resulting in better vision for many children.

These long-term results of the Early Treatment for [Retinopathy](#) of Prematurity (ETROP) study confirm that the visual benefit of early treatment for selected [infants](#) continues through six years of age. The research is published in the April 12 online issue of Archives of Ophthalmology and was supported by the National Eye Institute (NEI), part of the National Institutes of Health. The Edward S. Harkness Eye Institute at NewYork-Presbyterian Hospital/Columbia University Medical Center and NewYork-Presbyterian/Morgan Stanley Children's Hospital were among the 26 participating study sites.

"We showed that early treatment for high-risk [premature babies](#) can improve their vision. This research promises to transform the way babies with ROP are treated," says Dr. John Flynn, study principal investigator and the Anne S. Cohen Professor of Clinical Pediatric Ophthalmology at Columbia University College of Physicians and Surgeons and an ophthalmologist at NewYork-Presbyterian/Morgan Stanley Children's Hospital and professor of medicine at Weill Cornell Medical College.

"We showed there isn't a single treatment strategy that works for all infants with ROP, but rather that doctors need to determine whether the baby has a mild or severe form of the disease before proceeding with

retinal surgery," adds study co-author Dr. Michael Chiang, associate professor of ophthalmology at Columbia University College of Physicians and Surgeons and an ophthalmologist at New York-Presbyterian Hospital/Columbia University Medical Center. "This can be determined with a simple bedside exam using an ophthalmoscope to look at blood vessels in the retina."

An estimated 15,000 premature infants born each year in the United States are affected by some degree of ROP. At-risk infants generally are born before 31 weeks of the mother's pregnancy and weigh 2.75 pounds or less.

This disease, which usually develops in both eyes, is one of the most common causes of vision loss in children. About 90 percent of infants with ROP have a mild form that does not require treatment, but those who have a more severe form can develop lifelong visual impairment, and possibly blindness.

During pregnancy, the blood vessels of the eye gradually grow to supply oxygen and essential nutrients to the light-sensitive retina. If a baby is born prematurely, growth of the blood vessels may stop before they reach the edge of the retina. In these newborns, abnormal, fragile blood vessels and retinal tissue may develop at the edges of the normal tissue. The abnormal vessels can bleed, resulting in scars that pull on the retina. The main cause of visual impairment and blindness in ROP is retinal detachment. Laser therapy or cryotherapy, using freezing temperatures, are the most effective treatments to slow or stop the growth of abnormal blood vessels.

Previously, doctors treated infants with ROP when they estimated their risk for retinal detachment to be 50 percent, a strategy developed through the NEI-supported Cryotherapy for Retinopathy of Prematurity study. Although this was a major finding, many infants still went on to

develop severe eye disease. Therefore, the first phase of the ETROP study aimed to discover if doctors could identify infants at a higher risk for progression of the disease and intervene early to improve their vision.

In 2003, the ETROP study found that early treatment -- upon diagnosis as higher risk for severe ROP -- improved the vision and retinal health of certain infants after nine months. These infants had dilated or twisted blood vessels in the retina and substantial growth of new blood vessels, classified as Type 1 disease. Eyes with Type 2 ROP, or a more moderate amount of new blood vessel growth, did not benefit from early treatment. Doctors could predict which infants were more likely to benefit from early treatment by identifying certain eye characteristics, such as the appearance and location of the [blood vessels](#).

The current study followed the same 370 children through six years of age, when researchers checked their vision and examined the development of their eyes. The nine-month study recommendations were confirmed through six years. Type 1 eyes benefitted from early treatment, and Type 2 eyes had similar results with either early treatment or treatment at the standard time. Seventy-five percent of the early-treated Type 1 eyes were spared legal blindness, compared with 67 percent of Type 1 eyes that received treatment at the standard time. Of the Type 2 eyes that were carefully monitored for disease progression through the standard protocol, more than half improved without treatment.

Provided by New York- Presbyterian Hospital

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