

# Non-invasive approach predicts retinopathy of prematurity earlier

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Research from Ann & Robert H. Lurie Children's Hospital of Chicago promises to spare many premature infants from undergoing invasive eye exams to detect retinopathy of prematurity (ROP), the most common

cause of preventable lifelong blindness in children in the U.S.

ROP is caused by an abnormal development of small blood vessels on the retina. Isabelle De Plaen, MD, and colleagues found that imaging the capillaries in the nailbed of preemies within the first month of life using a non-invasive technique, called nailbed capillaroscopy, can identify infants at high risk for developing ROP. This screening could eliminate the need to evaluate all premature infants with eye exams about a month later. Findings were published in the *Journal of Pediatrics*.

"Abnormal systemic vascular development starts much earlier than we thought. By measuring the nailbed capillary density soon after birth we can identify premature infants at higher risk for developing ROP long before it is detectable by an eye exam," said Dr. De Plaen, senior author and neonatologist at Lurie Children's, as well as Professor of Pediatrics at Northwestern University Feinberg School of Medicine.

"Earlier identification of these infants reduces the need to subject all [premature babies](#) to highly invasive eye exams. Our findings might also lead to the development of earlier preventive or therapeutic interventions for ROP and other complications of prematurity associated with maldevelopment of microvasculature."

ROP occurs in about 1/500–1/1,000 premature infants. It affects 33%–60% of babies with very low birth weight (less than 1,500g).

In the cohort of 32 premature neonates they studied, Dr. De Plaen and colleagues found that nailbed capillary density was higher in babies who later developed ROP. Microvascular density in the first month of life also correlated with the severity of ROP.

"The differences we found in microvascular density were most striking near birth, suggesting that perturbed microvascular development may

begin in utero during the [perinatal period](#), impacting organ microvascular development," said Dr. De Plaen. "We speculate that nailfold microvascular density quantification has the potential to help further characterize the link between the uterine environment, placental health and outcomes of preterm birth, so that we can improve those outcomes."

**More information:** Daniel York et al, Nailfold Capillaroscopy: A Promising, Noninvasive Approach to Predict Retinopathy of Prematurity, *The Journal of Pediatrics* (2023). [DOI: 10.1016/j.jpeds.2023.113478](#)

Provided by Ann & Robert H. Lurie Children's Hospital of Chicago

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