New insights into how a deadly intestinal disease in preemies develops

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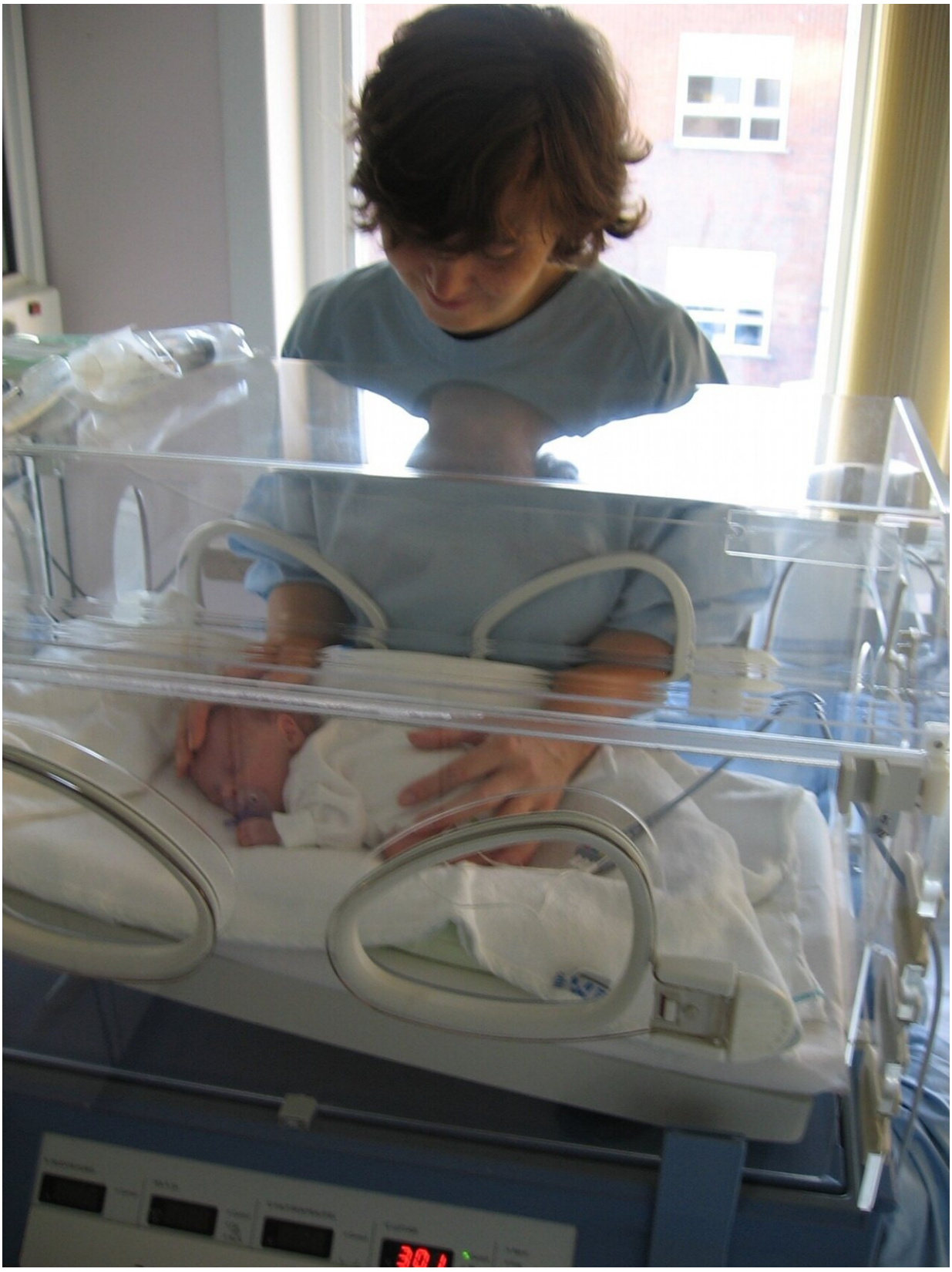

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A recent study from the Stanley Manne Children's Research Institute at Ann & Robert H. Lurie Children's Hospital of Chicago sheds light on what predisposes premature infants to necrotizing enterocolitis (NEC), a deadly intestinal disease. Currently, there are no targeted treatments for NEC because the causes are not well understood. The study identifies key players in the disease development, which offers promise for novel treatments. Findings were published in the journal *Communications Biology*.

Building on their previous work, which found that decreased development of tiny blood vessels in the intestines contributes to NEC, researchers demonstrate in the current study that macrophages, which are a type of white blood cells and part of the innate immune system, play a critical role in this process. They also show that a growth hormone called insulin-like growth factor-1 (IGF-1), which macrophages produce, stimulates microvascular development in the intestine.

In a mouse model, they found that macrophages and IGF-1 are significantly reduced in the perinatal intestine prior to NEC development. When mice were treated with IGF-1, their intestines grew more blood vessels and were less susceptible to NEC.

"Blood vessel growth in the neonatal intestine is critical to provide sufficient oxygen and nutrients to intestinal cells, and defective vascular development increases susceptibility to NEC. We identified IGF-1 as a novel mechanism by which macrophages promote intestinal microvasculature development in neonatal mice that protects against NEC," said senior author Isabelle De Plaen, MD, a neonatologist and researcher at Lurie Children's and Professor of Pediatrics at

Northwestern University Feinberg School of Medicine. "We then confirmed the relevance of our findings in human NEC. These new insights open the door to developing novel treatment approaches that could help preserve intestinal embryonic macrophage IGF-1 production to promote healthy intestine development in premature infants."

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

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