

Potential bacterial indicator for serious intestinal disease in premature infants found

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Scientists have discovered a microbial biomarker that may indicate which premature infants are at increased risk for developing necrotizing enterocolitis (NEC), a serious intestinal disease that affects approximately 10 percent of premature infants and commonly leads to infant death. The findings may offer potential targets for interventions to prevent the disease. NEC occurs when tissue in the small or large intestine is injured and begins to die. The condition typically affects infants born before 32 weeks gestation, but it can occur in full-term infants who have other health problems, such as a heart defect. Scientists do not know the exact cause of NEC but have suspected certain gut bacteria may be a contributing factor.

A new study supported by the National Institutes of Health found that the type and amount of [gut bacteria](#) differ among very low birthweight [infants](#) (infants born weighing less than approximately 3 pounds, 5 ounces) who develop NEC and those who do not. Investigators collected and stored [stool samples](#) from 972 premature, very low birthweight infants from three U.S. hospitals for the first 60 days of life or until NEC was diagnosed, whichever came first. Investigators then selected from this group 46 infants who were diagnosed with NEC as well as 120 infants who did not develop the condition but had similar gestational ages, birth weights and birthdates to serve as a control group. Using advanced gene sequencing technologies and statistical analyses, investigators examined stool samples from the 46 NEC cases and 120 controls to classify each infant's changing microbial community structure.

The researchers found that infants who developed NEC had higher proportions of Gammaproteobacteria in their guts over time and lesser proportions of anaerobic bacteria Clostridia and Negativicutes, compared to infants who did not develop NEC. This discovery forms the basis for considering gut microbial management strategies to prevent this disease, according to the study authors. The study was funded through NIH's [Human Microbiome Project](#) and received additional support from the Foundation for NIH, the National Institute of Allergy and Infectious Diseases, the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, and the National Institute of Diabetes and Digestive and Kidney Diseases, all part of NIH.

More information: B Warner et al. Gut bacteria dysbiosis and necrotising enterocolitis in very low birthweight infants: a prospective case-control study. *The Lancet* DOI: 10.1016/ S0140-6736(15)00952-6 (2016).

Provided by NIH/National Institute of Allergy and Infectious Diseases

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