

Urine test identifies babies at most risk of necrotizing enterocolitis

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Abnormal gut bacteria in premature babies can be found days before the onset of necrotizing enterocolitis (NEC) finds new research in BioMed Central's open access journal *Microbiome*. Babies who later went on to develop NEC had a lower diversity of gut bacteria 4-9 days after birth, increased level of Firmicutes or Enterobacteriaceae, and lacked the *Propionibacterium* found in healthy babies.

NEC is a common but devastating problem of premature babies - affecting about 10% of infants born at under 29 weeks, about a third will die. To find out what the difference is between babies who have NEC and those who do not, 35 [premature babies](#) from Cincinnati Children's Hospital Medical Center were investigated. In this study, which also involved researchers from Boston College, Miami University, and Broad Institute, eleven of the babies went on to develop NEC.

Babies who went on to develop NEC had a lower diversity of gut organisms between days 4-9 after birth. All of the babies with NEC also had unusual levels of specific bacteria. Babies whose NEC started early (between 7-12 days after birth) had abnormally high levels of Firmicutes while babies whose NEC started later (19-31 days) had high levels of Enterobacteriaceae. All of the affected babies lacked *Propionibacterium* usually found in healthy babies.

The bacterial levels in this study were analysed from [stool samples](#). But bacterial levels in the gut can also be determined indirectly from urine. Prof Ardythe Morrow, who led this study explained, "Our data show that

onset of NEC appears to be related to having abnormally high levels of specific bacteria in the gut during the first week or two of life. Our data also indicate that a simple urine test looking at levels of alanine and [histidine](#), which appear altered by these bacteria, can be used early in life to identify babies at risk of NEC."

To make sure that these findings apply to preterm infants in general, the research team is now studying hundreds of infants in multiple hospitals.

More information: Early microbial and metabolomic signatures predict later onset of necrotizing enterocolitis in preterm infants, Ardythe L Morrow, Anne J Lagomarcino, Kurt R Schibler, Diana H Taft, Zhuoteng Yu, Bo Wang, Mekibib Altaye, Michael Wagner, Dirk Gevers, Doyle V Ward, Michael A Kennedy, Curtis Huttenhower and David S Newburg, *Microbiome* 2013, 1:13 [doi:10.1186/2049-2618-1-13](https://doi.org/10.1186/2049-2618-1-13)

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