

Baby's first cold can last longer depending on nose-dwelling bacteria

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New research on the types of bacteria living in babies' noses could offer clues as to why some recover quickly from their first cough or cold, while others suffer for longer.

The study, published in *ERJ Open Research*, suggests that babies who have a wide variety of different bacteria living in their noses tend to recover more quickly from their first respiratory virus, compared to those who have less variety and more bacteria from either the Moraxellaceae or Streptococcaceae family.

The researchers say their findings do not offer an immediate solution to help babies recover more quickly from coughs and colds. However, the results could help scientists understand the importance of the bacteria living in the [respiratory tract](#), and how they influence infections and longer term conditions such as asthma.

Dr. Roland P Neumann from University Children's Hospital of Basel, University of Basel, Switzerland, was one of the researchers. He explained: "It's well known that different types of bacteria live in our gut. The respiratory tract is also home to a wide variety of bacteria and we are beginning to understand that the types and numbers of these bacteria, what we refer to as the microbiota, can influence our respiratory health.

"We know that babies often suffer with coughs, runny noses, sore throats and ear infections, and in some babies the symptoms seem to drag on for

weeks. These are usually caused by a virus such as the common cold, but we wanted to investigate whether the microbiota of the [nose](#) might also have a role in how long symptoms last. This is important not only in terms of babies feeling unwell but also because respiratory infections in the early years are linked to the development of asthma in later life."

The research was part of a larger study that is following a group of babies from birth to investigate the complex interactions of genetic and [environmental factors](#) and their influence on lung health.

Parents taking part in this part of the study were asked to contact the researchers as soon as their babies developed symptoms of their first respiratory infection. This included more than two consecutive days when their babies were coughing, had a runny nose, signs of an ear infection or sore throat.

Researchers took swabs from the noses of babies at that point and then took swabs again three weeks later. They analysed the swabs by testing for the presence of respiratory viruses, such as the common cold, and for the types of numbers of different bacteria.

Working with sets of swabs from 183 babies, researchers were able to group the babies according to the makeup of their nasal microbiota.

On average, the babies' symptoms lasted around two weeks. Babies who were free of symptoms by the time the three-week swab was taken were more likely to have a wider mixture of bacteria in their noses and a microbiota that was not dominated by bacteria from the Moraxellaceae or Streptococcaceae family.

Among babies whose symptoms lasted three weeks or longer, researchers found less variety in the types of bacteria living in the babies' noses and the microbiota were more likely to be dominated by bacteria

from the Moraxellaceae or Streptococcaceae family. These families include specific types that are known to be linked with respiratory disease.

They found no clear link between the [type](#) of respiratory virus and the persistence of symptoms.

Researchers took account of other factors that are known to have an impact on respiratory health, including the babies age, the season of the year, whether they had siblings or attended nursery, and whether they were exposed to cigarette smoke.

They say this study cannot explain why the link exists, but a possible explanation is that certain types of bacteria may be more likely to result in inflammation and a worsening in symptoms. Or, it could be that a more diverse set of bacteria offers some protective effect.

Professor Urs Frey, Chair of Paediatrics at the University Children's Hospital of Basel, University of Basel, Switzerland, was also a researcher on the study. He said: "This study helps us to understand how bacteria that naturally live in the upper airways are important for respiratory health.

"We know that antibiotics and environmental factors, such as season and childcare, can alter the numbers and types of bacteria in babies' noses. We do not yet know what combination of bacteria would be 'ideal' and this would need to be known before we understand how we might manipulate it."

Professor Tobias Welte, from Hannover University, Germany, is President of the European Respiratory Society and was not involved in the study. He said: "There is an association between respiratory symptoms in [babies](#) in the first year of life and the development of

asthma by school-age. We do not yet fully understand this link but the bacteria living in the upper airways could play a role. We need to do more research to understand the relationship between these [bacteria](#), respiratory infections and long-term lung health."

More information: Roland P. Neumann et al, Nasal microbiota and symptom persistence in acute respiratory tract infections in infants, *ERJ Open Research* (2018). [DOI: 10.1183/23120541.00066-2018](https://doi.org/10.1183/23120541.00066-2018)

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