



News Release

Issued: Friday 15 March 2019

UNDER STRICT EMBARGO UNTIL 23:30 GMT FRIDAY 15 MARCH 2019

Children's noses hold clues to serious lung infections, study shows

Tiny organisms in a child's nose could offer clues to improving the diagnosis and treatment of severe lung infections, research shows.

Experts found that the composition of the microbiome – the population of bacteria and viruses found in vast numbers in the body – was altered in the noses of children with respiratory infections, compared with healthy peers.

This difference predicted how long children had to spend in hospital and helped spot those likely to recover naturally, potentially reducing the need for antibiotics.

Researchers say the results also help explain why some children are more prone to developing infections than others and could be key to preventing serious lung infections.

Lower respiratory tract infections (LRTIs), including pneumonia and bronchiolitis, are a leading cause of death in under-fives worldwide. Symptoms include shortness of breath, weakness and fever.

Doctors from the University of Edinburgh worked with teams in The Netherlands to take samples from more than 150 children under the age of six hospitalised with LRTI. They compared these with samples from 300 healthy children.

They found that the microbiome in the back of the nose and throat was related to that seen in the lungs, making it easier to understand and diagnose infections.

Children with LRTI had a different microbiome profile – including the types and amounts of individual viral and bacterial organisms – compared with the healthy children, experts found.

These profiles could identify 92 per cent of children as being healthy or ill when combined with factors such as the child's age. This was true no matter what symptoms the child had.

Experts say this breaks with traditional thinking that symptoms predict whether either a virus or bacteria is causing the illness and could impact on a decision of whether or not to use antibiotics.

The microbiome profile also helped the scientists predict the length of the child's hospital stay, a marker of infection severity.

The study, funded by the Netherlands Organisation for Scientific Research, is published in the journal *The Lancet Respiratory Medicine*.

Professor Debby Bogaert, Scottish Senior Clinical Fellow and Honorary Consultant in paediatric infectious diseases at the University of Edinburgh's Medical Research Council Centre for Inflammation Research, who led the study, said: "Lung infections can be extremely serious in children and babies and are very distressing for parents. Our findings show for the first time that the total microbial community in the respiratory tract – rather than a single virus or a bacteria – is a vital indicator of respiratory health. This could really impact on how doctors diagnose LRTIs and use precious antibiotics to fight infections."

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