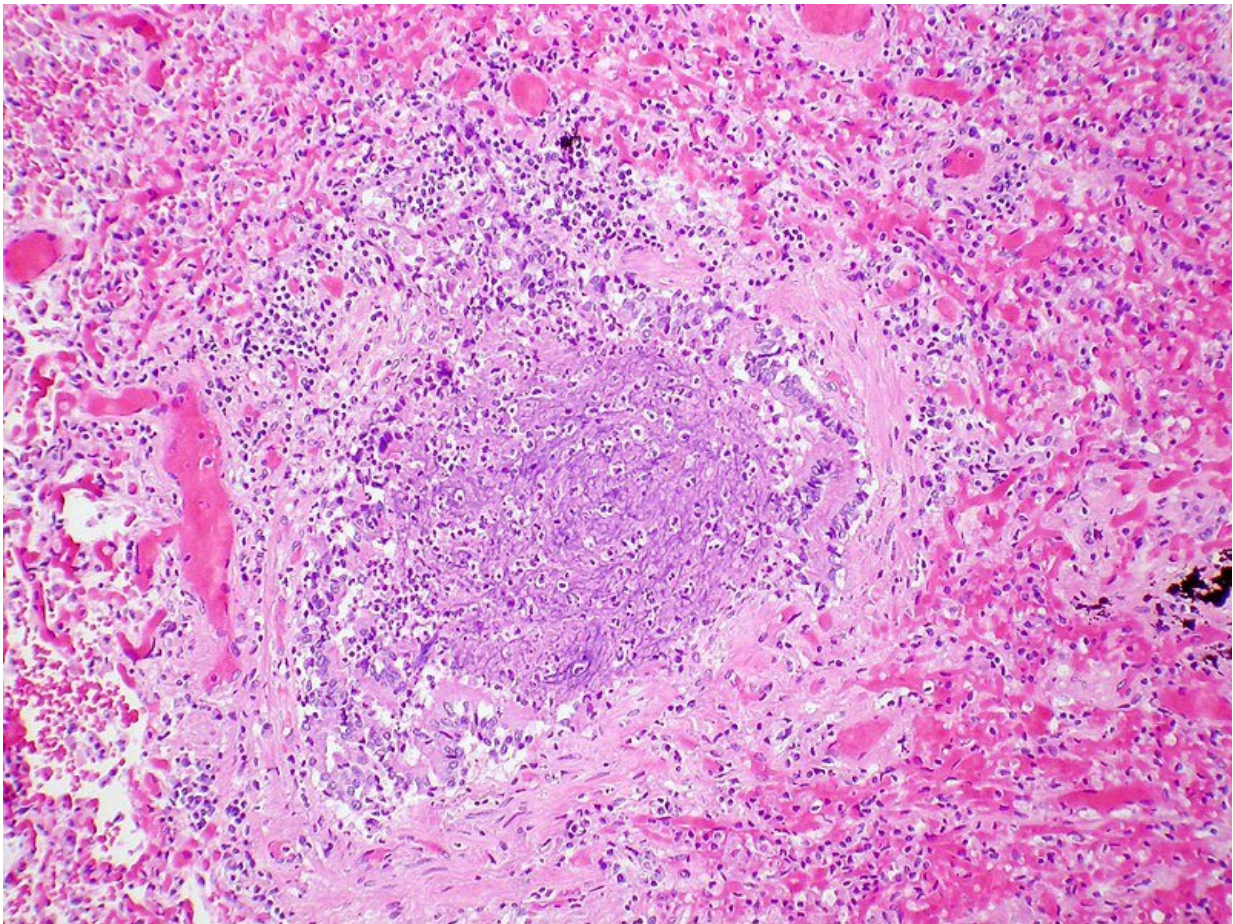


New research may identify infants who face high asthma risk after viral lung infections

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Acute inflammatory exudate occluding the lumen of the bronchiole and acute inflammation of part of the wall of the bronchiole. Credit: [Yale Rosen](#) /Wikimedia Commons, CC BY-SA 2.0

A type of viral lung infection called bronchiolitis is the leading cause of hospitalizations in U.S. infants as well as a major risk factor for developing asthma. New research led by investigators at Massachusetts General Hospital (MGH) has revealed a complex interplay among the infecting virus, the airway's microbial composition and function, and the infant's immune response that all contribute to a child's risk of developing asthma after bronchiolitis.

The work, which is described in the *European Respiratory Journal*, relies on metatranscriptome profiles, or microbes' RNA within certain environments—in this case, the airway of [infants](#) with severe [bronchiolitis](#).

After analyzing tissue from the nasopharynx, or the upper part of the throat, of 244 infants hospitalized for bronchiolitis, the team identified five metatranscriptome profiles based on the infecting virus and the microbial composition and function of the nasopharynx. Infants with different metatranscriptome profiles not only had distinct microbial function at the time of bronchiolitis.

Importantly, infants had different risks of developing [asthma](#) by age five based on their metatranscriptome profile. For example, infants with one profile had an approximate 40 percent risk of developing asthma. Therefore, interactions among the infecting virus, bacteria residing in the nasopharynx, and the infant's immune system likely affect a child's risk of developing asthma after severe bronchiolitis.

"Our findings may provide an [evidence base](#) for the early identification of high-risk children during an important period of airway development—early infancy—and should facilitate further investigations into the development of metatranscriptome profile-specific strategies for asthma prevention," says lead author Yoshihiko Raita, MD, MPH, MMSc, a research staff member in the Department of Emergency

Medicine at MGH.

More information: Yoshihiko Raita et al, Nasopharyngeal metatranscriptome profiles of infants with bronchiolitis and risk of childhood asthma: a multicentre prospective study, *European Respiratory Journal* (2021). [DOI: 10.1183/13993003.02293-2021](https://doi.org/10.1183/13993003.02293-2021)

Provided by Massachusetts General Hospital

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