New method identifies children most at risk for severe RSV infection

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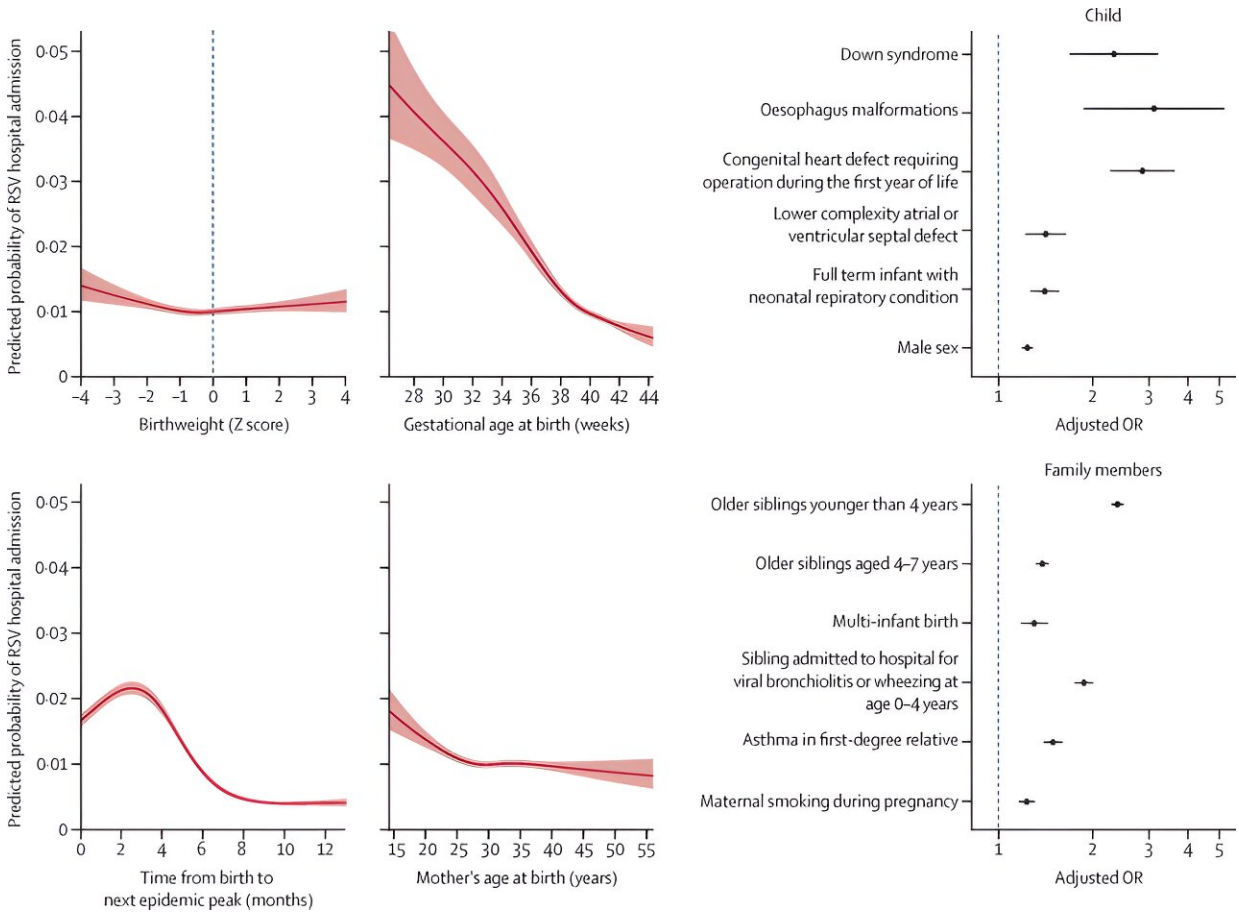

Final prediction model variables and their individual association with the probability of RSV hospital admission For continuous variables, the predicted probability and its 95% CI is shown for the range of the variable, when the other variables in the model are averaged. For binary variables, ORs adjusted for other variables in the model are shown. The OR for sex used female as a reference value. The highest population attributable fractions were observed for time from

birth to next epidemic peak (months; 0·68), having siblings aged 0–4 years (0·37), and gestational age (0·25). OR=odds ratio. RSV=respiratory syncytial virus. Credit: *The Lancet Digital Health* (2023). DOI: 10.1016/S2589-7500(23)00175-9

Researchers from Karolinska Institutet, among others, have developed a prognostic model that identifies the children most at risk of severe RSV infection. The study, published in *The Lancet Digital Health*, can show which children will benefit most from new methods to prevent a serious infection.

RSV (respiratory syncytial virus) is a respiratory virus that causes significant morbidity in children and can be dangerous, especially for babies. In recent years, two new promising preventive medicines against the disease have been developed: a long-acting antibody that protects against RSV infections and a vaccine given to the mother during pregnancy.

By prioritizing these promising new drugs to the right patients, hospital and intensive care stays and a large number of complications in young children can be prevented.

"It is not possible to offer new preventive drugs to all children. Our study identifies the children who need the drugs the most both at the individual level and also within the population," says one of the researchers behind the study, Catarina Almqvist Malmros, professor at the Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, and senior consultant in pediatrics at Astrid Lindgren Children's Hospital.

More than 2 million children included

Based on the whole population and information from health care records, 1.25 million children born in Finland between 1997 and 2020 were studied and the reference group consisted of 1.4 million children

The study confirmed that the risk of contracting a serious RSV infection is highest in children under 6 months of age.

"Premature babies, children with certain congenital diseases and children with siblings of preschool age are at the highest risk. In addition to estimating the significance of previously known risk factors, we identified esophageal malformations and less severe congenital heart disease as new risk factors for severe RSV infection," says Samuel Arthur Rhedin, resident in pediatrics at Sachsska Children's Hospital, postdoctoral researcher at the Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, and another of the researchers behind the study.

One of the most common cause of hospitalization

In Finland, the disease burden caused by RSV epidemics, which generally start in November to December, is high.

"The RSV virus causes serious infections especially in children under 1 year of age. In Finland, it is one of the most common causes of hospitalization among young children and globally a significant cause of child mortality. Our study helps to target prevention methods so that they provide as much benefit as possible," says pediatric specialist Santtu Heinonen from HUS, New Children's Hospital in Helsinki, Finland and one of the researchers behind the study.

More information: Pekka Vartiainen et al, Risk factors for severe respiratory syncytial virus infection during the first year of life: development and validation of a clinical prediction model, *The Lancet*

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