Neuherberg, July 4, 2013. Respiratory infections in early childhood may be a potential risk factor for developing type 1 diabetes mellitus (T1D), according to a study published by JAMA Pediatrics, a JAMA Network publication.

Prof. Anette-Gabriele Ziegler; Dr. Andreas Beyerlein, Institute of Diabetes Research, Photo: Helmholtz Zentrum München

The incidence of T1D is increasing worldwide, although its etiology is not well understood. Infections have been discussed as an important environmental determinant, according to the study background.

Andreas Beyerlein, Ph.D., from the Institute of Diabetes Research, Munich, Germany, and colleagues sought to determine whether early, short-term or cumulative exposures to episodes of infection and fever during the first three years of life were associated with the initiation of persistent islet autoimmunity (development of antibodies against the islet cells of the pancreas) in children at increased risk for T1D.

“Our study identified respiratory infections in early childhood, especially in the first year of life, as a risk factor for the development of T1D. We also found some evidence for short-term effects of infectious events on development of autoimmunity, while cumulative exposure alone seemed not to be causative,” the authors note.
The study included 148 children at high risk for T1D with 1,245 documented infectious events during 90,750 person-days during their first three years of life.

According to the results, an increased hazard ratio (HR) of islet autoantibody seroconversion was associated with respiratory infections during the first six months of life (HR=2.27) and ages 6 to almost 12 months (HR=1.32). During the second year of life, no meaningful associations were detected for any infectious category. A higher number of respiratory infections in the six months prior to islet autoantibody seroconversion was also associated with an increased HR (1.42).

"Potential prevention strategies against T1D derived from studies like this might address early vaccination against specific infectious agents. Unfortunately, we were not able to identify a single infectious agent that might be instrumental in the development of T1D. Our results point to a potential role of infections in the upper respiratory tract and specifically of acute rhinopharyngitis (inflammation of the mucous membranes)," the authors conclude.

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Further Information

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As German Research Center for Environmental Health, Helmholtz Zentrum München pursues the goal of developing personalized medical approaches for the prevention and therapy of major common diseases such as diabetes mellitus and lung diseases. To achieve this, it investigates the interaction of genetics, environmental factors and lifestyle. The Helmholtz Zentrum München has about 2,100 staff members and is headquartered in Neuherberg in the north of Munich. Helmholtz Zentrum München is a member of the Helmholtz Association, a community of 18 scientific-technical and medical-biological
research centers with a total of about 34,000 staff members. www.helmholtz-muenchen.de

The **German Center for Diabetes Research** (DZD) brings together experts in the field of diabetes research and interlinks basic research, epidemiology and clinical applications. Members are the German Diabetes Center in Düsseldorf, the German Institute of Human Nutrition (DIfE) in Potsdam-Rehbrücke, Helmholtz Zentrum München – German Research Center for Environmental Health, the Paul Langerhans Institutes of the University Hospital Carl Gustav Carus in Dresden and the University of Tübingen, as well as the Gottfried Wilhelm Leibniz Association and the Helmholtz Association of German Research Centres. The objective of the DZD is to find answers to open questions in diabetes research by means of a novel, integrative research approach and to make a significant contribution to improving the prevention, diagnosis and treatment of diabetes mellitus. www.dzd-ev.de

The **Institute of Diabetes Research** (IDF1) focuses on the pathogenesis and prevention of type 1 diabetes and gestational diabetes. For this purpose, it is investigating the molecular mechanisms of disease development, in particular the interaction of the environment, genes and the immune system. The aim is to identify markers for early diagnosis and the development of therapies to prevent and cure diabetes. IDF1 is part of the Diabetes Research Department.

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