General population screening reduces life-threatening diabetic ketoacidosis

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Credit: Petr Kratochvil/public domain

JDRF, the leading global organization funding type 1 diabetes (T1D) research, today announced new research that found widespread

screening for islet autoantibodies reduced the occurrence of life-threatening diabetic ketoacidosis (DKA) among children with pre-symptomatic T1D.

The JDRF-funded research study known as Fr1da was published in the *Journal of the American Medical Association*. The project screened 90,632 children ages two to five in Bavaria, Germany, during primary care visits, revealing pre-symptomatic T1D in 280 children, or .31 percent, of the children screened. Of these 280 children, 24.9 percent developed T1D and the prevalence of DKA was less than 5 percent, which is significantly lower than in the population of unscreened children, where the prevalence of DKA is 20 percent in Germany and approximately 60 percent in the United States.

"If we identify children at high risk of developing T1D, we can monitor their disease progression to prevent DKA, a life-threatening condition that often goes undiagnosed, as well as potentially enroll them in clinical trials aimed at halting or delaying the progression toward T1D," said Sanjoy Dutta, Ph.D., vice president of research at JDRF.

The Fr1da study, led by Anette-Gabriele Ziegler, M.D., Ph.D., director of the Institute of Diabetes Research at Helmholtz Zentrum München, is the first to introduce pre-school screenings for T1D in a general population. The success of the study shows that large-scale screenings are possible and that there are clear benefits to early diagnosis of T1D.

"A crucial finding of the study is that there is a 9 percent annualized risk for disease progression in children with pre-symptomatic disease," said Dr. Ziegler. "This is remarkably similar to the risk in previously studied genetically susceptible children. Its implication is that multiple antibodies can be used to identify children with pre-symptomatic T1D who could benefit from intervention in any childhood population regardless of genetic risk."

This initial research is progressing in several ways. The study will continue under the name "Fr1da-plus," adding nine- and 10-year-old children in addition to two- to five-year-olds. The researchers will also perform a cost-benefit analysis of the screenings, as part of the evidence to move screening to the public health sector as standard of care. Additionally, JDRF and Fr1da will use this data to inform screening protocols in the future to support JDRF's mission to accelerate cures for T1D.

More information: Anette-Gabriele Ziegler et al. Yield of a Public Health Screening of Children for Islet Autoantibodies in Bavaria, Germany, *JAMA* (2020). DOI: 10.1001/jama.2019.21565

Provided by JDRF

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