Press Release

Embargoed until: 5:00 PM ET on Wednesday April 4, 2018

Date: 4th April 2018

Weight Loss before Puberty Minimises Increased Risk of Developing Type 2 Diabetes as Adults in Boys who were Overweight

Childhood overweight at 7 years is associated with increased risks of type 2 diabetes in adulthood only if it continues until puberty or later ages, according to a study titled "Change in Overweight from Childhood to Early Adulthood and Risk of Type 2 Diabetes" published in the New England Journal of Medicine.

Being overweight in childhood and early adulthood is associated with an increased risk of developing type 2 diabetes in adult life. To determine whether or not weight loss in boys who were overweight or obese before early adulthood can reduce the risks of type 2 diabetes later in life, the researchers studied the associations between overweight patterns defined as combinations of weight status in childhood, adolescence and early adulthood, and later development of type 2 diabetes.

The researchers analysed data on 62,565 men in Denmark who were in the Copenhagen School Health Records Register and the Danish Conscription Database and who had weight and height measured at the ages 7 and 13 years, and in early adulthood (17-26 years). Overweight was defined by the U.S. Centers for Disease Control and Prevention criteria. The men were born between 1939 and 1959 and were followed in the Danish National Patient Register for information on type 2 diabetes. The study was supported by funding from the European Commission Horizon 2020 programme as part of the DynaHEALTH project, and by the European Research Council.

The study showed that being overweight in childhood, adolescence or in early adulthood was associated with up to 3.5 times higher risk of type 2 diabetes at ages 30-60 years. A total of 6,710 of the men were diagnosed with type 2 diabetes at 30 years of age or older. Men who had been overweight at 7 years of age but normalised weight by age 13 years and were normal weight as young men had similar risks of type 2 diabetes, diagnosed at 30 to 60 years of age, as men who were never overweight. Men who normalised weight between age 13 and early adulthood had increased risks of type 2 diabetes, but lower risks than men who were overweight at all ages, indicating that the adverse effects of overweight at 13 years are partly reversible. Men who became overweight at 13 years or were persistently overweight had four times the risk of developing type 2 diabetes at ages 30-60 years, as compared with men who were never overweight.

"These findings suggest that the adverse effects of overweight at 7 years of age on type 2 diabetes risk may possibly be reversed by losing weight before puberty and maintaining normal weight until early adulthood. In comparison, the adverse effects of overweight at 13 years are only partly reversible," said the study's lead author Lise G. Bjerregaard, PhD, postdoctoral research fellow, Center for Clinical Research and Disease Prevention, Bispebjerg and Frederiksberg Hospital in Copenhagen, Denmark. The study's senior author, Associate Professor Jennifer L. Baker, from the Center for Clinical Research and Disease Prevention and the Novo Nordisk Foundation Center for Metabolism and Basic Research, Section for Metabolic Genetics, at the University of Copenhagen, said "These results show the importance of preventing and treating overweight in children, especially before puberty, as it may greatly reduce their risk of type 2 diabetes later in life".

The article in the New England Journal of Medicine (2018) is "Change in Overweight from Childhood to Early Adulthood and Risk of Type 2 Diabetes," by Lise G. Bjerregard et al. (doi: 10.1056/NEJMoa1713231).

ENDS

Notes to editors:

See more at: www.dynahealth.eu or http://childgrowth2cancer.org.

This press release only reflects the author's view and the Commission is not responsible for any use that may be made of the information it contains.

Contact Information:

For information about the study:

Dr. Bjerregaard can be reached at lise.geisler.bjerregaard@regionh.dk; or +45-38163065 (Central European Summer Time Zone, UTC +2).

Dr. Baker can be reached at jennifer.lyn.baker@regionh.dk (Pacific Daylight Time Zone, UTC -7).

For information about DynaHEALTH:

Coordinator contact:

Professor Marjo-Riitta Järvelin, email marjo-riitta.jarvelin@oulu.fi or m.jarvelin@imperial.ac.uk. Telephone +358 40 5606043

Press contact:

Claire Webster, email Claire.Webster@betatechnology.co.uk, Telephone +44 1302 322633

About DynaHEALTH

Partners:

- University of Oulu, Centre for Life Course Health Research and the Northern Finland Cohort Centre, Finland (Coordinator);
- Abbott, Spain;
- Academic Medical Centre, Amsterdam, the Netherlands;
- Beta Technology Ltd, UK;

- Brunel University London, UK;
- Erasmus University Medical Centre Rotterdam, the Netherlands;
- Imperial College London, UK;
- Institute of Diabetes Research, Helmholtz Zentrum München, Germany;
- Center for Clinical Research and Disease Prevention, Bispebjerg and Frederiksberg Hospital, The Capital Region, Copenhagen, Denmark;
- Laboratorios Ordesa, Spain;
- Ludwig-Maximilans-University of Munich, Germany;
- The Folkhälsan Research Centre, Finland;
- University College London, UK;
- University of Granada, Spain.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 633595.

About Horizon 2020

Europe has a 10 year growth and jobs strategy called **Europe 2020**. It was launched in 2010 to create the conditions for smart, sustainable and inclusive growth. Five headline targets have been agreed for the European Union to achieve by the end of 2020, covering employment, research and development, climate/energy, education, and social inclusion and poverty reduction.

Europe has identified new engines to boost growth and jobs; these are addressed by seven **'flagship initiatives'**. Within each initiative both the European Union and national authorities have to coordinate their efforts so they are mutually reinforcing. **'Innovation Union'** is one such flagship initiative. **'Innovation Union'** is the European Union strategy to create an innovation-friendly environment that makes it easier for great ideas to be turned into products and services that will bring our economy growth and jobs.

Horizon 2020 is the financial instrument implementing the Innovation Union and:

- Has a budget of nearly €80 billion for the period 2014-2020 which makes it the biggest European Union Research and Development programme ever.
- Is open to everyone.
- Has three priorities (Industrial Leadership, Excellent Science and Societal Change); each of which has a number of sections with a different focus and each section has a detailed work programme.

http://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020

About The New England Journal of Medicine (NEJM)

The New England Journal of Medicine (NEJM) is the world's leading medical journal and website. Published continuously for over 200 years, NEJM delivers high-quality, peer-reviewed research and interactive clinical content to physicians, educators, and the global medical community.

Its mission is to bring physicians the best research and information at the intersection of biomedical science and clinical practice and to present this information in understandable and clinically useful formats that inform health care delivery and improve patient outcomes.