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Update from the children's cohort

Editorial

Changes in our society and daily life during the past decades have resulted in an epidemic of lifestyle related diseases. Predisposing modifiable risk factors such as poor nutrition, physical inactivity and stress are highly prevalent among children. This unhealthy lifestyle gives rise to overweight, and causes metabolic disturbances and early signs of diseases at a very young age.

For a long time, type 2 diabetes (T2D) has been seen as an adult only disease. However, nowadays, T2D is found among children and youth as prevalence of overweight and obesity has increased.

PREVIEW partners in Maastricht (NL) together with the partners in Navarra (ES) and Swansea (GB) give insight into the effects of the PREVIEW intervention in children with over-weight and obesity

Anita Vreugdenhil, Maastricht, NL

Update from the children's cohort

By Elke Dorenbos, Margriet Westert-Plantenga and Anita Vreugdenhil, Maastricht, NL

Type 2 diabetes (T2D) in children

Over the past three decades childhood overweight and obesity prevalence has reached epidemic proportions. Driven by this surge in childhood obesity, the prevalence of T2D in children has also risen. A large study has shown that T2D in children and adolescents has increased by 30% in the last decade, from 34 per 100,000 in 2001 to 46 per 100,000 in 2009.¹ This is particularly worrying since T2D is the end result of a long process and is therefore usually considered to be an "adult disease".

In children, diabetes risk is often assessed by measuring insulin resistance. This is a condition where cells fail to respond to the hormone insulin, and the body requires increasing amounts of insulin to maintain normal blood glucose values. Since insulin resistance is an

early step in disturbed glucose metabolism, it is often considered to be a precursor to developing T2D.

Insulin resistance in children is directly affected by weight status and fat mass and therefore often present in overweight and obese children. In children, depending on ethnicity, gender, age, and pubertal status, the rates of insulin resistance are as high as 44%.²

Thus, to decrease diabetes prevalence and to ensure that children have a healthy future, diabetes prevention should start as early as possible in childhood.

Progress of the PREVIEW children study

To assess the most optimal combination of lifestyle factors to prevent T2D development in children, the PREVIEW study is also performed in a children's cohort. The protocol is largely similar to that of adults, although there are some exceptions:

- the study is performed in the Netherlands, Spain and the United Kingdom
- the main outcome is insulin resistance at the end of the study
- there is no weight loss phase, but a focus is on weight stabilization during the first 8 weeks
- coaching of the participants is more personalized, and the family is involved
- children are encouraged to exercise with instructions for both medium and high intensity

- duration of the study is 2 years

In November 2013, the first child was included in the study. In December 2015, the 134th and last child was recruited. All children have been through Clinical Investigation Day (CID) 4, and almost quarter of the children has completed all CIDs.

At the moment, the results of the first year of the lifestyle intervention in the children's cohort are being analysed. Hopefully we will be able to publish early findings in a peer-reviewed journal next year!

Keeping children motivated and PREVIEW fun!

Even more than in adults, it is extremely important to keep lifestyle intervention for children fun. Therefore, the PREVIEW study – in collaboration with the Centre for Overweight Adolescent and Children's Healthcare (COACH), NL – has organized extra activities for the participants to keep them engaged and motivated.

Examples of activities that have been organized are:

- COACH-related Face-book page where exercises and recipes are posted weekly
- cooking workshops for all the participating children
- supermarket workshops for parents to practise reading food labels and learn responsible shopping
- weekly sports classes
- sports days, e.g. sporting with their local soccer heroes
- visits to fruit and vegetable growers

These activities are highly appreciated by the children. It

keeps them motivated to continue working hard for a healthy future.

What do children and parents say about PREVIEW?

The PREVIEW intervention program and the activities are well received by both children and parents. Parents often mention that they appreciate the practical advice they receive in the personal coaching sessions. They also value the cookbook and recipes that are provided by PREVIEW.

Almost all children are following the Facebook page and actively posting their recipes and tips there. One of the children has enjoyed this so much, that she even started her own blog with tips for other overweight/obese children.

In addition, children are very enthusiastic about the extra activities, such as the cooking classes and sports days. They often mention that these give an extra boost and keep them motivated.

Topic of the next newsletter:

Lessons learned from PREVIEW so far.

1 D. Dabelea et al. Prevalence of type 1 and type 2 diabetes among children and adolescents from 2001 to 2009. *JAMA* 2014; 311(17): 1778-1786.
2 M. van der AA et al. Population-based studies on the epidemiology of insulin resistance in children. *J Diabetes Res* 2015; 2015: 362375.

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