

**Details of Study ID 202305\_NL**

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<p><b>Date of Approval:</b></p> <p>May 2023</p>
<p><b>Name of study:</b></p> <p>Adiposity rebound in patients within I-CAH</p>
<p><b>Summary of the proposed work to be performed with the registry data:</b></p> <p>CAH is associated with obesity and other diseases in later life including diabetes, high blood pressure, and problems with the bones and heart. We are studying 'adiposity rebound', which is defined as the age at which the BMI is lowest in early childhood. Earlier adiposity rebound in otherwise healthy children is associated with obesity in later life and cardiometabolic diseases in adulthood. Youth with CAH have been shown to have an earlier adiposity peak and rebound from as early as 1.7 years in a UK study to 3.8 years in a study from the USA.</p> <p>This project is looking back at growth measurements in children with CAH in the I-CAH registry to determine at what age the adiposity rebound occurs. We will also be looking at whether there are contributory factors for early adiposity rebound in children with CAH, including the dose of medication they receive early in life, and in a smaller subsection of the population for which we have the data, whether dexamethasone treatment of the mother in pregnancy effects this timing. We will be using advanced statistical modelling to estimate the timing of the adiposity rebound, and then assess the other aspects of growth around these values to estimate how much the doses have an effect. We will also use the blood tests that these patients have had in the first few years of life to see if they are related in a consistent way to the timing of the adiposity rebound.</p> <p>This study will allow us to time the adiposity rebound in CAH, and provide an exploratory analysis of the impacts of this timing to inform future research that aims to improve the long term health of those with CAH.</p>
<p><b>Lay summary for the public (for the I-DSD/CAH websites and other publicity materials) (maximum 50 words)</b></p> <p>Adiposity rebound is the age at which a BMI is lowest in childhood, and has been shown to occur at different times in different studies into CAH. We are going to</p>



quantify the variability of the adiposity rebound in patients in the I-CAH, and explore factors contributing to its timing. Earlier adiposity rebound in otherwise healthy children is associated with obesity in later life and cardiometabolic diseases in adulthood. This study will allow us to time the adiposity rebound in CAH, and provide an exploratory analysis of the impacts of this timing to inform future research that aims to improve the long term health of those with CAH.

#### **Inclusion criteria**

- All children with 21 OHD, who are older than 3 years and diagnosed before the age of 18 months.
- Subjects should have at least 3 measurements of height and weight prior to 18 months, and at least 3 measurements of height and weight after 18 months and before 8 years of age. We would contact centres in case of inadequate measurements to see if they can be provided.

#### **Exclusion criteria**

- Children who were diagnosed later than 18 months
- Children who are less than 3 years old
- Children who have insufficient growth data to accurately estimate their adiposity peak or rebound

#### **Data to be collected for all participating cases:**

Core Data

And

Longitudinal I-CAH Dataset on 3 occasions that coincide with the 3 height and weight measurements between the ages of 3 yrs and 8 yrs.

#### **Expected outputs**

This study will quantify the timing and variability in adiposity rebound in patients with CAH in the I-CAH. It will also help to identify the possible predictive factors of earlier adiposity rebound in children with CAH due to 21-hydroxylase deficiency, particularly in relation to glucocorticoid and mineralocorticoid dosing and chronic androgen exposure. This will inform future data requests to I-CAH for larger more targeted studies. The study analysis will be disseminated through presentations at national and international academic meetings and publications in peer-reviewed journals.

#### **Publication Plan for authorship in outputs (refer to [guidance](#))**

The authors involved in study design, data extraction and analysis and writing the paper will be listed first. Clinical contributors would be listed next according to the alphabetical order. The senior authors involved in initial design of the study, data analysis and continuous supervision will be listed last.