

THE BIG LITTLE NEWSLETTER FOR THE STUDY ON THE PREVENTION OF CARDIOVASCULAR DISEASE AND TYPE 2 DIABETES IN CHILDREN AND ADOLESCENTS



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Going Digital



For more than ten years now we have been sending you the *Big Little Newsletter* by mail in order to keep you in touch with what is going on in the Quality study. In this, the digital age, we have come around to the decision to get the switch done. Indeed, this present issue of our newsletter should be arriving to you first by email and then by regular (snail) mail (in the name of the participant). If you have only received it by mail please send us an email telling us which email address we should be using for you: famille@recherche-ste-justine.qc.ca. From now on the *Big Little Newsletter* will only be available digitally. We wish to keep you informed of the study's good news since, thanks to you, research on heart disease and diabetes prevention continues to make progress. One advantage of this new digital format is that it comes in color!

Family Day of Scientific Sharing

Many of you have asked what results are yielded by the Quality study. Well, with that in mind a very special day is being prepared for you on **June 3rd, 2017**. Because scientific knowledge is progressing **thanks to you** we are inviting you for a small gathering with the research group and other participants in the Quality study. On this occasion you will meet with the researchers, and learn about their specialty and about the types of analyses they do with the data collected during your visits. We hope you will be able to join us so that we are all united in this event that will allow you to exchange with other participating families and to ask your questions directly to the team of specialists.



The event will be held in the new Sainte-Justine UHC amphitheater. The participants and their mother and father are invited. In order for us to set things up appropriately, and to prepare a sufficient number of lunchboxes for the participants we have drafted a quick survey that will help us to know how many people will attend.

Survey for the Family Day of Scientific Sharing



Click here to fill out the two-question survey:
[Survey for the Day of Scientific Sharing, June 3 2017](#)

If you have not received this issue of the newsletter by email please inform us of which email address we should use to reach you, either by emailing us at famille@recherche-ste-justine.gc.ca or by phoning us at (514) 345-7751, or toll free at 1 (877) 326-8596.

Interview with Andraea Van Hulst



A graduate of nursing, Andraea Van Hulst is pursuing her academic career as a post-doctoral at the Sainte-Justine UHC Research Center and at McGill University in epidemiology. Her research focuses on the effects of obesity, notably on heart disease and metabolic health. She discusses with us a study she is currently working on.

The influence of weight gain weight from birth to childhood on insulin dynamics in preadolescents and adolescents.

Q : First, what does “insulin dynamics” mean?

A: Insulin is a hormone produced by the pancreas that plays a major role in controlling blood sugar (glucose). Insulin allows sugar coming from, say, food we eat to be absorbed by the body’s cells, where it is used as energy supply. To maintain glucose at a normal level a balance is reached between the insulin produced by the pancreas and our organs’ sensitivity to the effect of insulin. “Insulin dynamics” refers to the interaction between, on one hand, the sensitivity to insulin in the cells of the body, and, on the other hand, the production of insulin by the pancreas.

Q: Why study insulin dynamics?

A: They are interesting because they inform us of the risk of developing diabetes. Before diabetes develops there exists a certain resistance to insulin: the body’s cells are less sensitive to the effect of insulin and the sugar starts to accumulate in the blood. The body reacts by producing more insulin, thus allowing initially to maintain normal blood glucose levels. Eventually though this defense mechanism ceases to work efficiently and the pancreas ends up being incapable of providing the increased amounts of insulin required. The sugar accumulates in blood, leading to prediabetes and then to diabetes. In short, measuring insulin dynamics allows us to determine whether the glucose regulation system is overworked, and if it still is effective.



Interview with Andraea Van Hulst... Continued

Q: The participants in the Quality study did the Glucose Tolerance Test when they came for their visits (everyone remembers the infamous super-sweet orange juice...!) What was being measured exactly with this test?

A: It is precisely with that test that we were able to measure the insulin dynamics of the participants. This juice contains a given amount of sugar and aims to reproduce in a controlled environment the effect that a meal might have on glucose metabolism.

Q: During the first visit for the study the data for the weight and height of the participants was gathered from their health record. Every measurement available for the period of time between birth and the age of 2 was recorded. Plus, for each visit the body composition was measured with the DEXA test, determining the proportion of bone, muscle, and fat in the body, which allows us to establish the percentage of body fat. So what link can be made between the weight at birth and an adolescent's insulin dynamics?



A: Many studies suggest that the weight at birth may have an effect on the sensitivity to insulin measured in teens. But there are different mechanisms by which the body weight at birth may influence insulin dynamics 12 years later. Oddly, these mechanisms work in opposing ways. We have found that a greater weight at birth predicts a better sensitivity to insulin 12 years later, independently of the weight gained over that period of time. Yet children who weigh more at birth and who continue to weigh more or to have greater body fat are at greater risk of developing a lesser sensitivity to insulin. In other words, having an adequate weight at birth and maintaining a healthy weight until adolescence is related to a better sensibility to insulin.

Q: What can be said of the influence of weight gain after birth and body fat during childhood on insulin dynamics?

A: We have found that, whatever their weight was at birth, children who gained weight faster over the first 2 years of life weighed more at ages 8-10, which is tied to worse sensitivity to insulin and to a greater need for insulin production. One could say that a rapid increase of weight early in life leads the toddler on the path of weight and body fat gain into childhood and possibly beyond. This surge of body fat carries detrimental effects on glucose metabolism that may in time develop into diabetes.

Q: Weight at birth and in the first 2 years of life is not something the participants who are now young adults can do anything about. What other factors may we act upon in order to maintain better insulin dynamics?

A: There are many factors one can control, especially for youths like the ones participating in the Quality study. For example, adopting healthy habits towards eating, physical activity, sleep and sedentary activities. Here are some recommendations:

Interview with Andraea Van Hulst... Continued

According to the Canadian Society for Exercise Physiology teens should accumulate at least 60 minutes of moderate to vigorous physical activity per day involving a variety of aerobic activities, for example skating, skiing, cycling, running... enough to perspire and be short of breath (able to speak but not to sing!). On top of that, muscle and bone strengthening should each be incorporated three days a week through activities involving lifting light weights or one's own body. Adults should each week make 150 minutes of moderate to vigorous aerobic physical activity, and muscle strengthening at least twice a week.



According to Canada's Food Guide it is recommended to enjoy a variety of foods from all four food groups. Eating different vegetables and fruits every day, and choosing whole grain cereal products, lean meats and dairy products and alternatives served with little or no added fat or salt, are a big part of healthy eating habits. One should limit the intake of foods and drinks that are high in calories, fat, sugar or salt (sodium).

According to the Canadian Society for Exercise Physiology teens from 14 to 17 years old need 8 to 10 hours of sleep per night. The Canadian Sleep Society deems most adults require 6 to 9 hour of sleep each night. The need for sleep varies from one person to another, each must determine her or his own need of sleep, which must be restorative and allow to fully restore one's energy.

Moreover, time spent on sedentary activities of leisure such as watching television or playing with a computer, etc., should be limited to 2 hours a day.

Q: All in all, how can your findings be useful to health professionals?

A: The results of our study are of importance in that they may help health professionals in identifying early-on young children who are at a higher risk of developing diabetes later in life. For example, nurses working at vaccination clinics measure the increase in weight and in size of toddlers using growth charts. A child gaining weight too quickly could be monitored closer to maintain a healthy weight throughout her or his childhood and youth.

Hypertension Component

The blood pressure project that has been added on to the 3rd visit for the QUALITY study is still up and running. Indeed, not all of you have yet been requested to partake in this complementary study. So, if you qualify for this project you may yet be getting a call soon from a member of our team who will ask you to enroll for it. This sub-study aims to better understand blood pressure in youths by monitoring it over a twenty-four-hour period.



New members in the Quality team

We take advantage of this issue to officially welcome our new colleagues who are bringing their knowledge and expertise to make the Quality that much better.



Marie-Béatrice Saade,
endocrinology fellow



Khalil Rabhi,
biostatistician



Soren Harnois-Leblanc,
research intern

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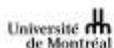
Our partners and funding agencies



Ours reasearchers' affiliations



CHU Sainte-Justine
*Le centre hospitalier
universitaire mère-enfant*
Pour l'amour des enfants.



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