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FIRST LARGE-SCALE STUDY OF ITS KIND TO BETTER UNDERSTAND WHY PEOPLE DEVELOP DIABETES

Team hopes to identify biomarkers of progression and change the course of the disease

A new project, '**A**ssessing the **P**rogression to **T**ype-**2** **D**iabetes' (**APT-2D**), aims to collect and analyse comprehensive information from 2,300 volunteers, so as to study in greater detail the factors which contribute to the progression of Type-2 Diabetes (T2D), one of the world's most common conditions. By doing so, the study hopes to identify ways to change the natural course of the disease, through the development of more targeted and effective interventions that will help to improve the outcomes for every patient with, or at risk for, T2D.

T2D is a condition in which a person has high blood sugar levels, either because the pancreas does not make enough insulin to absorb sugar from the bloodstream (i.e. defect in insulin secretion) or the body does not respond to insulin effectively (i.e. insulin resistance). The contribution of each type of defect in developing diabetes, and the reasons why some individuals progress to T2D and its related complications (e.g. heart, kidney and eye disease) more than others, are incompletely understood.

APT-2D is a landmark collaboration between the National University Hospital, Singapore (NUH) and Janssen Pharmaceuticals, Inc. and facilitated by Johnson & Johnson Innovation, marking the first time that researchers will be collecting and studying an extensive array of detailed biological, clinical, environmental and lifestyle information in individuals with normal or pre-diabetic blood sugar levels, in the largest-ever study of this kind, in this region. The participants in this study will be followed up for three years to see if they develop T2D, including assessing how well their bodies can secrete and respond to insulin. The results of this five-year study will help to better characterise the specific risk factors and identify the bio-markers which increase individuals' susceptibility to developing T2D, as well as to predict potential response to treatment or progression to T2D-related complications. With this information, it is hoped that clinicians will be able to deliver more targeted treatment and interventions to those at higher risk of developing T2D and its complications. It will also help other researchers to develop drugs which could more effectively treat diabetes.

The study's Principal Investigator, Dr Sue-Anne Toh, Senior Consultant with the Division of Endocrinology in NUH and a Clinician-Scientist at the National University Health System, says, "Globally, much of our efforts are put into treating the disease rather than prevention. As people live longer, they are likely to spend more years in declining or poor health due to chronic diseases such as diabetes. There is an urgent need, both at the individual and population level, to prevent illnesses associated with ageing or lifestyle. To stop and reverse this trend, improved approaches to prevent, pre-empt and treat diseases are needed."

APT-2D is an expansion of a current local diabetes study 'BRITE-SPOT[1] which is also spearheaded by Dr Sue-Anne Toh. Started in October 2015, BRITE-SPOT seeks to build a large bio-bank of biological samples and a registry that captures lifestyle and environmental information, medical history and physical measurements of 3,000 persons with T2D and their first degree relatives (parents, siblings and children) who are not diabetic but at high risk of developing the disease. BRITE-SPOT will serve as a major resource to support a diverse range of research intended to improve the prevention, diagnosis, and treatment of Type-2 diabetes. Half of the participants under BRITE-SPOT (those who are pre-diabetic or have normal blood sugars) will also be eligible to participate in APT-2D. It is estimated that there will be 3,800 participants recruited for both BRITE-SPOT and APT-2D in total.

The APT-2D study is supported through fundings from Janssen Pharmaceuticals, Inc. and the Singapore Ministry of Health's National Medical Research Council under the Ministry of Health Industry Alignment Fund.

Recruitment of volunteers

Individuals who are interested to be part of the APT-2D study and fit the following criteria may contact the research team at email brite_spot@nuhs.edu.sg or mobile 91354495 / 91314490 (during office hours).

- 30 to 65 years of age
- Generally healthy with no known history of diabetes or other chronic diseases requiring long term medication
- Normal blood sugar level OR
- Pre-diabetics (borderline high blood sugars approaching diabetic range)

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About the National University Hospital

The NUH is a tertiary hospital and major referral centre for a comprehensive range of medical, surgical and dental specialties. The Hospital also provides organ transplant programmes for adults (in kidney, liver and pancreas) and is the only public hospital in Singapore to offer a paediatric kidney and liver transplant programme.

Staffed by a team of healthcare professionals who rank among the best in the field, the NUH offers quality patient care by embracing innovations and advances in medical treatment.

In 2004, the NUH became the first Singapore hospital to receive the Joint Commission International (JCI) accreditation, an international stamp for excellent clinical practices in patient care and safety. Today, patient safety and good clinical outcomes remain the focus of the hospital as it continues to play a key role in the training of doctors, nurses and allied health professionals, and in translational research which paves the way for new cures and treatment, offering patients hope and a new lease of life.

[1] Bio-bank and Registry for Stratification and Targeted intervention in the Spectrum of Type-2 Diabetes

A member of the National University Health System, it is the principal teaching hospital of the NUS Yong Loo Lin School of Medicine and the NUS Faculty of Dentistry.

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