



**ICCR Middle East Scientific Meeting**

**“ABDOMINAL OBESITY, TYPE 2 DIABETES  
AND CARDIOVASCULAR DISEASE:  
THE IMPORTANCE OF LIFESTYLE”**

**PRESS KIT**

**Dubai, June 2, 2016**

## AGENDA

Chairpersons:  
Frank B. Hu and Jean-Claude Coubard

Time	Title	Speaker
	Opening and ICCR Presentation	Jean-Claude Coubard France
	Cardiometabolic Health: State of the Art	Bruce Griffin UK
	Epidemiology of Obesity, Type 2 Diabetes and CVD in Middle East	Murat Ersanli Turkey
	How Will Lifestyle Intervention Lead to Prevention of Type 2 Diabetes?	Jaakko Tuomilehto Kuwait
	Ectopic Fat and Cardiometabolic Diseases	Marja-Riitta Taskinen Finland
	ICCR Global SSB Sale Barometer	Benoit Arsenault Canada
	Sugar-Sweetened Beverages and Cardiometabolic Risk: Mechanistic Insights	Luc Tappy Switzerland
	The Evolving Science of Nutrition and How Drinking Habits Contribute to Nutritional Quality	Frank B. Hu USA
	Concluding Remarks	

## ABOUT ABDOMINAL OBESITY

Epidemiological studies published over the last 50 years have shed light on the many factors that increase cardiovascular disease (CVD) risk. Among them, although obesity is generally an acknowledged health hazard and a risk factor for CVD and type 2 diabetes, physicians have long been puzzled by the remarkable heterogeneity seen in clinical practice among individuals with a similar excess of body weight. Some obese patients have no clinical signs of CVD or type 2 diabetes, whereas other patients – who may be only slightly or moderately overweight – have a metabolic profile that predisposes them to CVD and/or type 2 diabetes. Indeed, studies have shown that the risk of CVD and type 2 diabetes does not depend on excess body weight per se, but rather on the location of this excess weight. In light of this, it is now recognized that abdominal obesity (or android obesity, central obesity or upper body obesity) is the form of obesity most likely to be associated with an altered risk factor profile contributing to an increased CVD and type 2 diabetes risk while gynoid obesity (or lower body obesity with fat located around the hips and buttocks) is seldom associated with metabolic complications<sup>1</sup>. Therefore, it is important to emphasize the importance of abdominal obesity as the form of overweight/obesity most likely to entail the highest risk of CVD and type 2 diabetes.

With the development of sophisticated non-invasive imaging techniques such as computed tomography (CT scanners), it has even been possible to clearly distinguish two different depots of abdominal fat: 1- intra-abdominal (visceral) obesity (excess fat in the abdominal cavity) from 2-abdominal subcutaneous fat (the fat located just under the skin) (Figure 1)<sup>2</sup>. Several studies have shown that a selective excess of intra-abdominal fat increases the risk of CVD and type 2 diabetes even in the absence of obesity<sup>3,4</sup>. For example, some very obese individuals have normal blood pressure, a normal plasma lipid profile, and normal blood glucose despite having a large amount of fat. However, other individuals with an apparently “healthy” body weight sometimes have a disturbed metabolic risk factors profile which includes atherogenic dyslipidemia (elevated triglycerides and low levels of good HDL cholesterol), elevated blood glucose and a state of insulin resistance, elevated blood pressure as well as inflammatory and pro-thrombotic (tendency to form clots in the blood, impeding blood flow) profile<sup>2,5,6,7,8</sup>.

### Role of adipose tissue

One of the main functions of adipocytes (adipose cells) is the storage of fat (lipids), which can be burned to meet future energy needs of the body. This function is what enabled populations to better survive. With the discovery of leptin, a hormone secreted by these adipose cells, scientists learned that adipose tissue is in fact an active endocrine gland, able to communicate with the brain to participate in the regulation of various body functions. Through its production of other important proteins including pro-thrombotic products such as plasminogen activator inhibitor-1, proinflammatory cytokines, such as TNF- $\alpha$  (tumor necrosis factor -  $\alpha$ ), IL-6 (interleukin-6), reninangiotensin system proteins, adiponectin and others, adipose tissue actively participates in disease evolution processes which can lead to hypertension, insulin resistance and type 2 diabetes as well as CVD<sup>9</sup>.

It has therefore been proposed that excess intra-abdominal fat may indicate that an individual’s subcutaneous adipose tissue is unable to serve as an “energy sink” for a calorie



surplus resulting from excess energy intake and/or reduced energy expenditure. This inability of subcutaneous adipose tissue to store the excess energy may cause fat to accumulate at undesired locations (liver, heart, muscle, etc.), a phenomenon that has been described as ectopic fat deposition<sup>10</sup>. Excess intra-abdominal fat may therefore be a “red light” or warning sign that excess energy is being stored as fat in unusual places, increasing the risk of type 2 diabetes and CVD.

### **Influence of modern lifestyle**

Modern lifestyle has had a major influence on body energy use vs. storage. With all kinds of foods becoming readily available at any times while humans are sedentary, the combination of higher energy intake and less energy expenditure is at the heart of the obesity problem around the world and one of the most important health issues to be tackled by modern society (Figure 2).

Some factors shown to be involved in abdominal obesity include age, gender, ethnic, inherited genes, stress, sex steroid hormones, nutrition, and physical activity/exercise. While therapeutic solutions have allowed numerous people to live longer, it has become clear that lifestyle solutions must now, more than ever before, become an integral part of management strategies for patients with cardiometabolic risk factors. Healthy nutrition and physical activity have not only proven their efficacy on various modifiable risk markers, they are also much more cost effective.

### **Necessary changes for clinical practice**

With the importance of abdominal obesity, there is therefore a clear need to shift emphasis from weight to waist circumference as more needs to be done to fight abdominal obesity. This form of obesity has now been clearly linked to a greater risk of type 2 diabetes and CVD. Most physicians have been concerned with body mass index (BMI) which is only a ratio of weight over height. While this index is useful for judging whether a person is overweight or obese, it does not help to evaluate the location of the excess fat and related health risk. Evidence is continuing to grow around the fact that when physicians, in addition to measuring BMI, measure patients’ waist circumference and adjust their therapeutic strategies accordingly, they are better able to reduce global cardiometabolic risk. Although somewhat crude, the simple proper measurement of waist circumference has been proven to be an effective marker of intra-abdominal adiposity (Figure 3)<sup>11</sup>.

Routine measures of waist circumference can also be used as a surrogate marker of abdominal fat to monitor the efficacy of weight loss management strategies<sup>12</sup>. This will help to avoid the expense of radiological imaging techniques and still allows for adequate prediction of health outcomes in both men and women. Waist circumference has become a vital sign and a therapeutic target, the “cholesterol” of the 21st century.

## DIABETES IN THE MIDDLE EAST

The energy boom of the last decade has led to rapidly increasing wealth in the Middle East, particularly in the oil and gas-rich Gulf Cooperation Council (GCC) countries. This exceptional growth in prosperity has brought with it rapid changes in lifestyles that have resulted in a significant rise in chronic diseases. In particular, the number of people diagnosed with diabetes has increased dramatically and health system capacity has not kept pace.

The dietary regime in the GCC region has moved away from “predominantly consuming fresh vegetables and fruit, whole wheat bread, fish, dates and milk to mostly foods rich in high saturated fats and refined carbohydrates coupled with a low dietary fiber intake”. Low levels of physical activity aggravate the impact of nutritional changes. Decreased physical activity has likely been supported by greater availability of cars and mechanic appliances, cheap migrant workers, access to television, as well as computers and computer games. A more sedentary lifestyle may have been reinforced by cultural impediments to physical exercise and sports. Urban planning is often not supportive of physical activities and exercise facilities are frequently not available or expensive. In addition, climatic conditions present a major obstacle to outdoor activities. Furthermore, Middle Eastern populations appear to have a higher genetic risk for diabetes.

The burden of diabetes is expected to surge over the next decades, as the Middle East will face the greatest relative increase in the prevalence of type 2 diabetes worldwide, with 60 million diabetics in 2030. The high prevalence of diabetes contributes to mortality due to complications, including eye disease (retinopathy), kidney failure, vascular diseases such as myocardial infarction and stroke, and neuropathy. For example, diabetic men are twice and women four times as likely to suffer from coronary heart disease; the risk of stroke increases by a factor of three and the risk of amputation by a factor of 25, and diabetic retinopathy is the most common cause of blindness amongst 30–69 year olds.

The International Diabetes Foundation estimated that the MENA region spent 13.6 billion US dollars on diabetes care in 2013. The countries with the highest spending per person with diabetes in 2013 in the region were the UAE, Qatar, Kuwait and Bahrain, with 2,228, 2,199, 1,886, and 905 US dollars, respectively. Under the current trajectory, the burden of the diabetes epidemic on Middle Eastern countries will continue to rise and put pressure on healthcare budgets, in particular if cases are diagnosed late and the opportunities of effective (and low cost) self-management are lost.

In addition, the region has copied many flaws of the traditional Western healthcare system, concentrating on high-end curative rather than primary care and health promotion: 40–70% of national healthcare budgets in most countries in the region are allocated to hospitals (27–30). This underinvestment in health promotion, prevention and primary care suggests the lack of a “medical home”—a healthcare delivery model that provides the continuous, integrated—, and comprehensive care that diabetes requires, in a more cost-effective way.

A recent systematic review of diabetes care in the GCC countries found that the management of type 2 diabetes based on the three major intermediate outcome measures



(glycemic, blood pressure, and lipid control indicators) was suboptimal and that in almost all cases, less than 50% of patients met clinical outcome targets.

This mismatch between the growing demand for diabetes care and the inadequate setup of local healthcare systems in the GCC countries implies the need for creative solutions. Beyond cross-sectoral health promotion efforts to curb obesity and related non-communicable diseases including the framing of specific diabetes policies and action plans, there are opportunities for health insurers, investors (e.g. sovereign wealth funds and venture capitalists), pharmaceutical companies, and healthcare delivery organizations to fill the gap by providing integrated care across the full continuum of patient needs in dedicated diabetes centers.



## **ABOUT THE INTERNATIONAL CHAIR ON CARDIOMETABOLIC RISK**

The ICCR is an independent, academic, multidisciplinary organization affiliated with Université Laval and located at the Centre de recherche de l'Institut universitaire de cardiologie et de pneumologie de Québec in Québec City. Université Laval launched the International Chair on Cardiometabolic Risk in March 2006, at the annual meeting of the American College of Cardiology in Atlanta. The Chair's goal is to create a platform to examine new ideas, pool member experience and expertise, and share scientific and clinical data to benefit healthcare professionals around the world and the general public. The overarching purpose is to fight the abdominal obesity, diabetes, and cardiovascular disease epidemic sweeping the world and to educate about the importance of physically active lifestyle associated with healthy eating and drinking habits.

The activities of the multidisciplinary group of experts of the Chair have largely focused on the study of the reasons why patients with an excess of intra-abdominal (visceral) fat are at increased risk of developing cardiovascular disease and type 2 diabetes irrespective of the presence or absence of classical risk factors such as smoking, hypertension and elevated cholesterol. Thus, the aim of the Chair is to help physicians better identify and treat patients at increased cardiovascular risk by taking into consideration, not only the well-known risk factors but also, and maybe more importantly, the presence of abdominal obesity and its associated metabolic complications. Obesity has become a clear medical target and many physicians are integrating body mass index (BMI) with its cut-offs for assessing whether a person is overweight or obese. This multidisciplinary academic institution aims to stimulate and promote scientific research, medical education and public awareness around cardiometabolic risk, and would like to develop further research, risk assessment tools and patient management strategies which would hopefully start to reverse the growing trends around cardiovascular disease and type 2 diabetes largely resulting from our sedentary lifestyle, low quality nutritional habits and abdominal obesity

The Chair's website <http://www.myhealthywaist.org/> is a key component of the strategy. The website is the most comprehensive, up-to-date, and easy-to-use source of information on abdominal obesity and cardiometabolic risk. Intended for both health professionals and the general public, it uses state-of-the-art technology to help visitors better understand the risk factors and markers that must be addressed and the lifestyle changes that must be made in order to prevent abdominal obesity, type 2 diabetes and cardiovascular disease.

Since its inception, the Chair has organised and participated in several international conferences and various scientific, educational and preventive activities. The Chair held a successful 1st International Congress on Abdominal Obesity (ICAO) in 2010 in Hong Kong (China). The second conference was held in Buenos Aires (Argentina) in February 2011, whereas the 3rd edition was held in Québec (Canada) in July 2012. After the 4th edition, which took place in Seoul (South Korea) in September 2013, the conference returned to Québec City in July 2015 for its 5th edition and is now called the ICCR Congress on Chronic Societal Cardiometabolic Diseases.

The members of Executive Council and Scientific Council have been chosen based on their expertise, their remarkable scientific contributions, and their status as world leaders in



various disciplines including cardiology, diabetology, lipidology, endocrinology and metabolism, obesity, nutrition, physical activity, and basic research.

After 10 years of activities worldwide, the International Chair on Cardiometabolic Risk has become the multidisciplinary research education platform on abdominal obesity and related cardiometabolic risk. From the enthusiastic and positive feedback received, it is clear that there was a need for this academic organization which will pursue its crusade against the causes and consequences of poor nutritional habits and sedentary lifestyle leading to our current epidemic of abdominal obesity and type 2 diabetes.



## INTERNATIONAL CHAIR ON CARDIOMETABOLIC RISK MEMBERS

### Executive board members

Scientific Director	Jean-Pierre Després	Director of Research in Cardiology, Centre de recherche de l'Institut universitaire de cardiologie et de pneumologie de Québec Professor, Faculty of Medicine, Université Laval, Québec City, Québec, Canada
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	Peter Libby	Mallinckrodt Professor of Medicine Chief, Cardiovascular Medicine, Harvard Medical School Brigham & Women's Hospital, Department of Medicine, Boston, MA, USA

### Academic board members

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	George Kunos	Scientific Director of NIAAA/NIH, Lab. Physio. Studies, Neuroendocrinology Section, Bethesda, MD, USA
Abdominal obesity	Michael Jensen	Division of Endocrinology and Metabolism, Department of Internal Medicine, Mayo Clinic and Foundation, Rochester, MN, USA
	Yuji Matsuzawa	Director, Professor Emeritus Osaka



		University, Sumitomo Hospital, Osaka, Japan
	Luc Van Gaal	Professor, Antwerp University Hospital, Faculty of Medicine, Department of Diabetology, Metabolism and Clinical Nutrition, Antwerp, Belgium
Lipids	Christie Ballantyne	Director, Center for Cardiovascular Disease Prevention, Atherosclerosis, Houston, TX, USA
	Ronald Krauss	Children's Hospital Oakland Research Institute, Atherosclerosis Research, Oakland, CA, USA
Diabetes	Juliana Chan	Professor, The Chinese University of Hong Kong, Department of Medicine and Therapeutics, Shatin, Hong Kong, China
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