Lack of Concordance of WHO and NCEP Criteria for the Diagnosis of the Metabolic Syndrome in Recently Diagnosed Diabetes in North America and Europe in the ADOPT Study Cohort

S. E. Kahn[1], S. M. Haffner[2], B. Zinman[3], M. A. Heise[4], M. C. O'Neill[4], L. E. Porter[4]; and The ADOPT Study Group.

[1]VA Puget Sound Health Care System and University of Washington, Seattle, WA, United States, [2]University of Texas Health Science Center at San Antonio, San Antonio, TX, United States, [3]Mount Sinai Hospital/University of Toronto, Toronto, ON, Canada, [4]GlaxoSmithKline, King of Prussia, PA, United States.

Background and Aims: It is believed that type 2 diabetic subjects in North America are more obese than those in Europe, and therefore more likely to have the Metabolic Syndrome. **Materials and Methods:** We tested this hypothesis using 1999 World Health Organisation (WHO) and National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III) definitions. Subjects comprised a recently diagnosed (< 3 years) Caucasian subset of the ADOPT study cohort from North America [n = 1,756; median BMI 32.2 (IQR 28.5, 36.7) kg/m^2] and Europe [n = 2,008; BMI 30.1 (27.4, 33.6); *P* < 0.0001 for means]. **Results:** Prevalence of the Metabolic Syndrome in North America was similar using the WHO and NCEP definitions while in Europe, the rates differed. The prevalence of the Metabolic Syndrome was higher in North America, with most pronounced differences seen with the NCEP criteria (*P* < 0.0001). Prevalence of the individual components of the syndrome also differed between regions. Waist circumference [106.7 (97.8, 117.5) vs. 103.0 (95.0, 110.2) cm; *P* < 0.0001] and HOMA IR [7.3 (4.8, 11.0) vs. 5.5 (3.9, 8.2) μU/ml.mmol/l; *P* < 0.0001] were greater in North America. Blood pressure (BP) was lower in North America [systolic BP 130 (120, 140); diastolic BP 80 (72, 84) mmHg] than in Europe [139 (128, 145); 80 (75, 86)] (*P* < 0.0001 for systolic BP and diastolic BP).

	Metabolic Syndrome Prevalence (Overall/Individual Criteria) by Region (%)			
	North America		**Europe**	
	WHO	**NCEP**	**WHO**	**NCEP**
Overall	**83.1**	**83.4**	**80.7***	**74.7**
Criterion				
"Lipids"	67.6**	N/A	48.0	N/A
HDL	N/A	52.7†	N/A	23.0
Triglycerides	N/A	63.4†	N/A	46.3
Obesity‡	90.8	72.9†	91.8	65.2
Blood pressure	60.3**	73.1†	70.8	83.2
Microalbuminuria	12.8	N/A	14.9	N/A

*P < 0.0001 WHO vs. NCEP criteria; **P < 0.0001 North America vs. Europe using WHO criteria; †P < 0.0001 North America vs. Europe using NCEP criteria.
‡ Assessed by waist/hip ratio or BMI in WHO criteria, waist circumference in NCEP.

Conclusions: The greater prevalence of the Metabolic Syndrome in type 2 diabetic subjects in North America compared with Europe is likely a result of the greater obesity in subjects in North America, which appears to be more central in nature. While obesity by WHO criteria is similar on the two continents, the inclusion of waist circumference as one of the NCEP ATP III

criteria may make it a more sensitive indicator of central obesity and insulin resistance, and their attendant metabolic effects.