Larger Study in U.S. Is Planned

who carry the Hp 1-1 or 2-1 genotype has normal antioxidant activity. The protein that's made in people who have an Hp 2-2 genotype is a much less effective antioxidant. The poor activity of the Hp 2-2 protein seems to be exacerbated when it tries to block glycosylated hemoglobin, Dr. Blum said in an interview. Vitamin E seems to supply the antioxidant activity that's missing in people with the Hp 2-2 genotype.

Genotyping for the haptoglobin alleles is easily done. In the United States, the prevalence of the Hp 2-2 genotype is about 36% in both whites and African Americans. The prevalence is much higher in certain other populations, reaching about 85% in people of Southeast Asian ancestry, said Dr. Andrew P. Levy, also a cardiologist at the Technion-Israel Institute of Technology and the senior author of the study.

A simplified and inexpensive haptoglobin genotyping kit is being developed by a U.S. company, Synvista Therapeutics Inc. The current study was supported by the Kennedy Leigh Charitable Trust, London, and received no commercial funding. Dr. Levy is a consultant to Synvista Therapeutics.

The study enrolled 3,054 people with type 2 diabetes aged 55 or older who were patients in the primary health care clinics of the Clalit Health Services in Israel. All patients underwent haptoglobin genotyping, which identified 1,434 of the patients (47%) as carriers of the Hp 2-2 genotype. This subgroup

was then randomized to receive 400 IU vitamin E daily or placebo, and the patients were followed for 18 months.

The patients who received vitamin E had a significantly lower incidence of cardiovascular death, myocardial infarction, and stroke. The event rate in the vitamin E–treated patients was very similar to the event rate in the remaining 1,620 patients who had Hp 1-1 and Hp 2-1 genotypes and who received no investigational treatment.

A second analysis divided the Hp 2-2 patients based on their HbA$_{1c}$ levels. Patients with an HbA$_{1c}$ level of less than 7.0% who received vitamin E had about a 1.5% event rate. Patients with an HbA$_{1c}$ level of less than 7.0% treated with placebo had an event rate of 3.4%. Among the patients with an HbA$_{1c}$ level of 7.0% or greater, those treated with vitamin E had a 2.9% event rate, and those treated with placebo had a 6.2% event rate.

No interaction between HbA$_{1c}$ levels and the rate of cardiovascular events was seen in the patients with the Hp 1-1 and Hp 2-1 genotypes, Dr. Blum said. Results from other studies also have shown no relationship between haptoglobin genotypes and cardiovascular risk in people without diabetes. However, patients with type 1 diabetes seem to behave the same way as the type 2 patients in the current study, Dr. Levy said.

A larger study that is being planned will enroll patients entirely in the United States, Dr. Levy said. ■

Blood Glucose Tested Daily in Two-Thirds of Adult Diabetics

BY MIRIAM E. TUCKER
Senior Writer

Nearly two-thirds of adults with diabetes in the United States perform self-monitoring of blood glucose at least daily, the Centers for Disease Control and Prevention reported.

The data come from the Behavioral Risk Factor Surveillance System, which surveys samples of more than 100,000 adults aged 18 years and older on a yearly basis. In 2006, 63% of respondents reported self-monitoring of blood glucose at least daily, compared with just 41% in 1997. Among those treated with insulin, the proportion rose to 87%, both figures exceeding the Healthy People 2010 national objective of 61%, the CDC said (MMWR 2007;56:1133-7).

Rates increased among all age groups from 1997 to 2006, from 44% to 66% for those aged 18-44 years, 43% to 62% among 45- to 64-year-olds, and from 37% to 66% among those aged 65-74 years.

The following factors were significantly positive associations with performing daily self-monitoring of blood glucose: having a high school education, compared with less education (adjusted odds ratio 1.4); having health insurance coverage (1.4); using oral medication only (2.7); using insulin only (11.0), or using both insulin and oral medication (7.8), compared with not using any medication. In addition, having annual physician visits was associated with an adjusted odds ratio ranging from 1.5 for 1-2 visits a year to 2.6 for 11 or more visits a year. Having ever taken a diabetes education course also significantly increased the odds of daily self-monitoring. By contrast, being male was associated with decreased odds of performing daily blood glucose monitoring (0.7).

Studies on the efficacy of daily blood glucose monitoring for patients with type 2 diabetes not treated with insulin remain inconclusive. ■

Daily Self-Monitoring of Blood Glucose In Adults With Diabetes

1997   2006

Age (years)	1997	2006
18-44	44%	66%
45-64	43%	62%
65-74	37%	66%
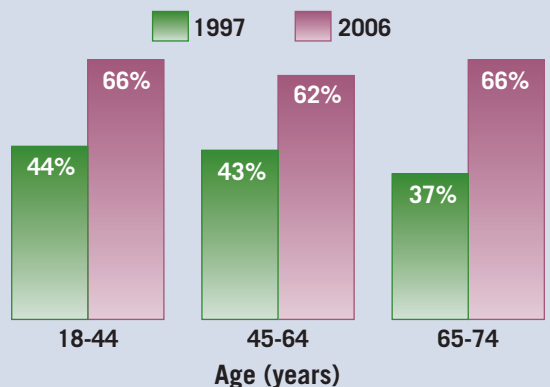
Note: Based on self-reported data in the United States.
Source: Centers for Disease Control and Prevention

ELSEVIER GLOBAL MEDICAL NEWS

Metabolic Syndrome Goes Uncharted in Primary Care Records

BY BETSY BATES
Los Angeles Bureau

VANCOUVER, B.C. — Nearly a third of primary care patients met criteria for metabolic syndrome, yet just 1% had the powerful risk indicator noted in their charts, according to a cross-sectional audit of records from 30 primary care practices in Rhode Island.

"Metabolic syndrome is highly prevalent but seldom diagnosed," concluded the authors of a poster presented at the annual meeting of the North American Primary Care Research Group.

The investigators found the cluster of factors defining metabolic syndrome in the charts of 32% (1,348) of 4,240 patients aged 20-80 years, but only 50 patients' charts reflected that diagnosis.

Subclinical metabolic syndrome—the term used to designate patients who lack diagnosed hypertension, diabetes, or hyperlipidemia, but who otherwise met criteria for the syndrome—was found in 113 patient charts (3%), reported Dr. David Anthony and his associates from the department of family medicine at Brown University, Providence, R.I., and the Brown University Center for Primary Care and Prevention.

Failure to recognize metabolic syndrome in the chart may have serious consequences, because it is intended to alert physicians to patients who may be at high risk of diabetes and cardiovascular disease based on a "perfect storm" of risk factors.

However, Dr. Anthony said in an interview that the low rate of metabolic syndrome diagnosis in charts may reflect the fact that the concept is "confusing and ultimately not helpful to primary care docs in communicating with their patients."

"Primary care physicians have effective means of communicating cardiovascular risk using the Framingham risk score, but lack the same for diabetes risk," he said.

"Metabolic syndrome attempts to combine the two in a way that is confusing to patients and doctors alike. What primary care docs really need is an effective and accurate predictor of a patient's risk of developing diabetes, along with useful tools for communicating that risk to their patients, so they can make good decisions about their health behaviors such as diet and exercise."

Dr. Anthony and his associates used data from the Cholesterol Education and Research Trial to examine findings in patients' charts that would merit a diagnosis of metabolic syndrome according to the National Cholesterol Education Program, including three of the following five factors:
▶ Systolic blood pressure of less than 130 mm Hg, or diagnosed hypertension in the chart.
▶ Serum triglyceride level of 150 mg/dL or higher, adjusted for lipid medications in the study.
▶ HDL cholesterol level less than 40 mg/dL in men or less than 50 mg/dL in women, adjusted for lipid medications in the study.
▶ Fasting glucose of 110 mg/dL or higher, or diagnosed diabetes in the chart.
▶ Waist circumference greater than 102 cm in men or 88 cm in women, approximated from the body mass index for study purposes, according to the third National Health and Nutrition Examination Survey (NHANES III) adjustments.

Analysis showed that patients with metabolic syndrome in the study were older than those without the diagnosis (mean age 57 vs. 51 years); had a higher BMI (33 vs. 26 kg/m^2); weighed more (average 205 vs. 163 pounds); and were prescribed more medications (average of seven vs. four medications).

Among patients with metabolic syndrome, 80% had hyperlipidemia, 73% had hypertension, and 26% had diabetes—rates significantly higher than those in the nonmetabolic syndrome population (P less than .001).

Their lipids were worse than those of nonmetabolic syndrome patients by every measure. They also were more likely to have gastroesophageal reflux disease and depression, and were significantly less likely to be physically active. In addition, they were slightly more likely to be smokers than were the nonmetabolic syndrome patients (15% vs. 12%), although this difference was not significant.

They were more likely to have received a referral to a nutritionist, been advised to increase their physical activity, and been counseled about smoking cessation, yet they were less likely to be at cholesterol or blood pressure goals than were patients without metabolic syndrome.

There was a stepwise increase by age in the percentage of patients who met criteria for metabolic syndrome: 19% of patients aged 40-49 years, 34% of those aged 50-59 years, 41% of those aged 60-69 years, and 48% of patients aged 70 years or older.

It is noteworthy that the metabolic syndrome patients were no more likely than were other patients to have a family history of early coronary artery disease.

The authors noted that most patients with metabolic syndrome had other major cardiovascular risk factors, which may have served to alert their physicians to their overall cardiometabolic risk, even when the metabolic syndrome diagnosis was missed.

Patients with subclinical metabolic syndrome may be less well recognized as being at elevated risk of diabetes and cardiovascular disease, because they may lack the telltale diagnoses of hypertension, diabetes, and hyperlipidemia, although they have other important risk factors. ■