

# Heat Hits Diabetics in Underappreciated Ways

BY DOUG BRUNK

FROM THE ANNUAL MEETING OF THE  
ENDOCRINE SOCIETY

SAN DIEGO — Many adults with diabetes who live in a hot climate don't understand how hot weather impacts their disease self-management, results from a survey of 152 patients demonstrated.

For example, 29% of respondents did not initiate personal protective measures until temperatures reached 101° F, and 37% left their diabetes medications and supplies at home rather than risking them to heat exposure.

"This was quite concerning, because they wouldn't have the means to check



**We primarily cool ourselves by sweating, and diabetes patients may have an impaired ability to do so.**

DR. NASSAR

their blood sugars if they began to feel faint if they got behind the wheel to start driving; or if they needed to seek medical attention, they wouldn't have the means to know if they should," Dr. Adrienne Nassar said during a press briefing at the annual meeting of the Endocrine Society.

Previous studies have shown that people with diabetes have higher rates of emergency room visits, hospitalizations,

## VITALS

**Major Finding:** Nearly one-third of patients with diabetes who live in a hot climate (29%) did not initiate personal protective measures for self-management of their disease until temperatures reached 101°F, and 37% left their diabetes medications and supplies at home rather than risking them to heat exposure.

**Data Source:** A survey of 152 adult patients with diabetes at the Mayo Clinic, Scottsdale, Ariz.

**Disclosures:** Dr. Nassar said that she had no conflicts to disclose.

and deaths caused by heat illness during hot weather than during more temperate weather, but few published studies have assessed how patients manage their disease during extremely hot temperatures, said Dr. Nassar, a third-year resident in the department of internal medicine at Mayo Clinic, Scottsdale, Ariz.

"Furthermore, the number of diabetes cases is increasing in the Southwestern United States," she said. "From a physiologic standpoint, the primary way in which we cool ourselves is through sweating, and diabetes patients may have an impaired ability to do so."

In collaboration with the National Weather Service and the National Oceanic and Atmospheric Administration, Dr. Nassar and her associates surveyed 152 adults who attended the diabetes clinic at Mayo between Nov. 30, 2009, and Dec. 31, 2009, to assess the types of personal protective measures they needed to take against the heat, as well as their knowledge of safe temper-

atures and exposure times.

The mean age of respondents was 64 years, 51% were female, 58% were non-Hispanic white, 83% had type 2 diabetes, and 77% used insulin.

More than half of the patients (60%) reported staying indoors to protect themselves against the heat, 56% drank fluids frequently, 45% applied sunscreen, and 45% wore protective clothing. However, 23% reported drinking only when they became thirsty, suggesting

that they "were starting to get behind on their fluid status," Dr. Nassar said.

Nearly three-quarters of patients (71%) reported spending less than 1

hour in the heat, but 29% did not initiate personal protective measures until temperatures reached 101° F. "Heat-related illness can take place at 80°-90° when you factor in the heat index," Dr. Nassar noted.

While 73% of patients said they had received information about the harmful effects of heat on insulin, fewer indicated that they had received information about extreme heat on glucose meters (41%), oral medications (39%), and glucose testing strips (38%), and 20% "did not know when to begin [taking precautions], although this information is included in the product information inserts [contained in packaging for] medications and glucose meters," she said.

In addition, 37% of patients left their diabetes medications and supplies at home during hot days, rather than risk them to heat exposure.

Patients reported television as their primary source for weather information (89%), followed by radio, the Internet, and newspapers.

"Overall, we found that many patients expose themselves to high temperatures before initiating protective measures," Dr. Nassar concluded.

"We would like to repeat our survey in other populations, for example, outdoor laborers [who may employ unique protective strategies], adolescents, younger adults, and different socioeconomic groups."

The study is expected to appear in the September 2010 issue of the *Journal of Diabetes Science and Technology*. ■



**It's important for people with diabetes to stay hydrated when temperatures rise.**

## Low-Dose Combination Drug Reduced Diabetes Risk

BY HEIDI SPLETE

FROM THE LANCET

A combination of low doses of rosiglitazone and metformin reduced the relative risk of developing type 2 diabetes by 66% in high-risk adults, according to a study by Canadian researchers.

Both rosiglitazone and metformin can reduce the risk of developing type 2 diabetes in adults with impaired glucose tolerance, but this study is the first to combine the two drugs to test for similar effectiveness with fewer side effects, said Dr. Bernard Zinman of Mount Sinai Hospital in Toronto, and his colleagues.

In this study, 103 participants were randomized to a combination of 2 mg of rosiglitazone and 500 mg of metformin in a single capsule (Avandamet, GlaxoSmithKline) twice daily, while 104 participants received a placebo capsule. The study, known as the Canadian Normoglycemia Outcomes Evaluation (CANOE)

trial, also included a structured lifestyle intervention of five individual counseling sessions during the first year of the study, followed by educational materials that were mailed or e-mailed to participants (*Lancet* 2010 June 3 [doi: 10.1016/S0140-6736(10)60746-5]).

The primary outcome was a diagnosis of type 2 diabetes, based on two fasting plasma glucose values of 7.0 mmol/L or more, or one positive oral glucose tolerance test with a 2-hour plasma glucose value greater than 11.0 mmol/L.

After an average follow-up period of 3.9 years, 14 patients (14%) in the treatment group and 41 (39%) patients in the placebo group developed type 2 diabetes, for a relative risk reduction of 66%. The absolute risk reduction was 26%, and the number needed to treat was 4.

In addition, significantly more individuals in the treatment group compared with the placebo group had attained normal glucose tolerance levels by the

## VITALS

**Major Finding:** A combination of 2 mg of rosiglitazone and 500 mg of metformin twice daily reduced the relative risk of developing type 2 diabetes in high-risk adults by 66%.

**Data Source:** A randomized, double-blind, placebo-controlled trial of 207 adults at increased risk for type 2 diabetes.

**Disclosures:** The study was funded by GlaxoSmithKline, from which Dr. Zinman has received consulting fees, honoraria, and grant support. Dr. Buchanan and Dr. Xiang have received research support from Takeda Pharmaceuticals, and Dr. Buchanan has served on a speakers panel and received travel and accommodation expenses from Takeda.

end of the study (80% vs. 53%, respectively). "The magnitude of this effect is equivalent to that of any of the published diabetes prevention strategies," the researchers said.

The average age of the patients was 55 years in the placebo group and 50 years in the treatment group. The breakdown of gender and ethnicity, and the values of baseline risk factors including total cholesterol, blood pressure, body mass index, and insulin resistance were similar between the two groups.

The treatment group showed no significant increase in myocardial infarction, heart failure fractures, and weight gain or loss of 2 kg or more compared with the placebo group, and the researchers found no significant interaction between statin use and treatment outcome.

No significant differences in beta-cell function were noted, but decreased C-reactive protein levels and reduced alanine aminotransferase levels in the treatment group compared with baseline suggest reduced inflammation and improved liver

function, the researchers noted.

Limitations of the study included the fact that it was not powered to address the long-term effects of combination therapy on cardiovascular safety, the researchers noted. The study also was limited by the inability to show whether the effects of the combination drug indicate the prevention or early treatment of type 2 diabetes.

The CANOE study data suggest that combining low doses of rosiglitazone and metformin can reduce the risk of type 2 diabetes with fewer side effects, but the conclusions are not definitive, wrote Dr. Thomas A. Buchanan of the University of Southern California, Los Angeles, and Dr. Anny H. Xiang of Kaiser Permanente Southern California in Pasadena.

"The issue of whether prevention provides better long-term outcomes than does early treatment remains unknown," they said in a comment (*Lancet* 2010 June 3 [doi: 10.1016/S0140-6736(10)60900-2]). ■