

## The Americans With Disabilities Act and Diabetes

The Americans with Disabilities Act prohibits employment discrimination against qualified individuals with disabilities and requires employers to make reasonable accommodations to enable disabled workers to perform essential job functions (1). Examples of reasonable accommodations include schedule modification, job restructuring, and acquiring or modifying equipment. However, employers have the right not to hire or to discharge individuals who pose a "direct threat" to the health or safety of themselves or others if no reasonable accommodations exist, with decisions to be made on a case-by-case basis. For workers with diabetes, the Americans with Disabilities Act provides legal recourse against employment discrimination and, equally important, support for negotiating changes in the work environment that will enable them to perform the essential functions of their job and adhere to their diabetes regimen.

To identify work conditions that influence diabetes management we interviewed 22 of 29 practicing endocrinologists in the St. Louis area. Questions covered were 1) work conditions that make it difficult or easier for patients to manage their diabetes; 2) changes in jobs that would reconcile the demands of work and of diabetes management; and 3) company attitudes, policies, and procedures ideal for people with diabetes. Content analysis by two raters ( $\kappa = 0.96$ ) identified four response categories: schedule (timing of work activities), work environment (physical facilities, social atmosphere, company philosophy/policy), job demands (essential job functions), and job characteristics (objective attributes that affect worker's behaviors and attitudes).

Virtually all the physicians (91%)

mentioned work conditions related to schedule (e.g., shift work, overtime, irregular hours, and timing of meals) as making diabetes management difficult. A wider range of conditions was referred to as making diabetes management easier, including flexibility and freedom (i.e., job characteristics), a set routine and consistent activity levels (i.e., job demands), and physical facilities, such as an adequate cafeteria and a place for monitoring blood glucose and injecting insulin (i.e., work environment). Suggestions for job changes to accommodate diabetes management also varied but were predominantly related to work environment (64%). Although the physicians could describe company attitudes, policies, and procedures ideal for workers with diabetes, they knew only a few exemplary companies ( $n = 6$ ).

Findings from this study suggest a wide range of job accommodations can be considered to enable workers with diabetes to perform their job and attend to their diabetes management. In addition to work schedule, the essential functions of the job and work conditions, such as restricted allowances to leave workstations and appropriate space for diabetes care, need to be evaluated and reasonable accommodations identified that will reconcile requirements of the job and of the diabetes regimen. Work accommodations that support diabetes management have increased urgency now that the Diabetes Control and Complications Trial has demonstrated the benefits of intensive control and the accompanying threefold risk of hypoglycemia (2). Physicians and diabetes educators can help patients and their employers evaluate all elements of the workplace that influence diabetes control and determine reasonable accommodations that will support optimal work performance and diabetes management.

JOAN M. HEINS, MA, RD, CDE  
CYNTHIA L. ARFKEN, PHD  
WALTER R. NORD, PHD  
CHERYL A. HOUSTON, MS, RD  
JANET B. MCGILL, MD

From the Center for Health Behavior Research (J.M.H., C.A.H.), Division of Biostatistics (C.L.A.), and Division of Endocrinology, Diabetes and Metabolism (J.B.M.), Washington University School of Medicine, St. Louis; and the Department of Management (W.R.N.), Washington University School of Business, St. Louis, Missouri.

Address correspondence to Joan M. Heins, MA, RD, CDE, Center for Health Behavior Research, Washington University, Box 8012, 660 South Euclid, St. Louis, MO 63110.

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## Ondasentron in the Treatment of Diabetic Diarrhea

Diabetic autonomic neuropathy plays an important role in the pathogenesis of fecal incontinence and diarrhea occurring in diabetic patients, especially with those who have

poorly controlled insulin-dependent diabetes mellitus (IDDM) (1,2). Many drugs have been suggested as active treatment (clonidine, somatostatin, loperamide, calcium-channel blockers, intestinal antibiotics, tricyclic antidepressants, and anticholinergic agents), but clinical responses are often unsatisfactory, and diarrhea (with incontinence) may last for days or weeks despite medical efforts. Here we describe the case of a 48-year-old man, who has suffered from IDDM since he was 21. His HbA<sub>1c</sub> ranged from 8.4 to 9.3% over the last 12 months, even though he was on multiple insulin injection therapy. His diabetes complications included background retinopathy, impotence, and peripheral and autonomic neuropathy (which was diagnosed through electromyogram and cardiovascular tests). Some months ago, he presented with several episodes of incontinence and diarrhea, which were treated at separate times with loperamide, rifamixine, verapamil, clonidine, amitriptyline, or anticholinergic drugs, without evidence of clinical relief.

The intermittent attacks (5–10 stools daily) lasted from 1 week to 10 days and were apparently unmodified by the prescribed therapy; then, bowel habit returned to normal or, more often, to constipation. Body mass index remained quite unchanged, and no pathological results were obtained on sequential collected coprocultures, abdominal ultrasonographic scan, X-ray enema, and fibrocolonoscopy. On the contrary, ano-rectal manometry showed impaired anal sensation. So, with the patient's informed consent, we prescribed ondansetron hydrochloride, an antagonist of 5-hydroxytryptamine (5-HT) type 3 receptors, which was suggested to prolong colonic transit in healthy volunteers (3) and was proposed in the treatment of diarrhea-predominant irritable bowel syndrome (4). Initially, ondansetron was administered in a dosage of 8 mg three times per day for 5 days; but, on other occasions, a prompt 2-day treatment

was sufficient to abolish abdominal disorders. This observation suggests that rapid action on 5-HT type 3 receptors may be effective treatment for this diabetes complication and indicates the importance of serotonin as one of the putative noncholinergic alternative control systems of intestinal smooth muscle (5).

ANTONIO BOSSI, MD  
ALESSANDRO BARESI, MD  
ANTONIO BALLINI, MD  
COSTANTE BINDELLI, MD

From the Diabetes Unit and Division of Internal Medicine, Treviglio General Hospital, Treviglio, Bg, Italy.

Address correspondence to Antonio Bossi, MD, P. le Ospedale 1, 24047 Treviglio, Bg, Italy.

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## Autonomic Neuropathy and Corrected QT Interval Prolongation

There is a relationship

**B**ravenboer et al. (1) found no correlation between the corrected QT interval (QT<sub>c</sub>) and cardiovascular autonomic tests. During a 9-year-long study on the same topic, we examined 553 subjects; 162 patients (14–57 years of age, mean of 33.2 years, mean diabetes duration of 13 years) had insulin-dependent diabetes mellitus (IDDM), and 94 had non-insulin-dependent diabetes mellitus (NIDDM) (27–69 years of age, mean of 52 years, mean diabetes duration of 9 years). Because liver diseases are independent risk factors of autonomic neuropathy (AN) (2,3), chronic alcoholics were classified into three groups: 32 without liver disease (26–55 years of age, mean of 42.6 years), 48 with fatty liver (26–58 years of age, mean of 42.7 years), and 83 with alcohol-related cirrhosis (28–69 years of age, mean of 48.3 years). We also examined 49 patients (22–68 years of age, mean of 52 years) with chronic nonalcoholic liver disease and 85 healthy control subjects (14–66 years of age, mean of 41.7 years). Parasympathetic function was evaluated by heart-rate variation during deep breathing, standing (30:15 ratio), and Valsalva maneuver; sympathetic function was assessed by blood pressure response to standing and to the sustained handgrip test (4). QT<sub>c</sub> was determined with Bazett's formula (5,6). The mean value of five subsequent sinus-beats was calculated.

At summarized statistical evaluation, heart-rate response to deep breathing ( $P < 0.001$ ), Valsalva ratio ( $P < 0.01$ ), sustained handgrip test ( $P < 0.001$ ), and blood pressure response to standing ( $P < 0.05$ ) showed a significant linear regression to aging, but the 30:15