

ONE HUNDRED ELEVENTH CONGRESS  
**Congress of the United States**  
**House of Representatives**  
COMMITTEE ON ENERGY AND COMMERCE  
2125 RAYBURN HOUSE OFFICE BUILDING  
WASHINGTON, DC 20515-6115

Majority (202) 225-2927  
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**MEMORANDUM**

**June 29, 2010**

**To: Members of the Subcommittee on Health**

**Fr: Democratic Staff of the Subcommittee on Health**

**Re: Subcommittee Hearing on “The Battle Against Diabetes: Progress Made; Challenges Unmet”**

On Thursday, July 1, 2010, at 10:00 a.m. in room 2322 Rayburn House Office Building, the Subcommittee on Health will hold a hearing entitled “The Battle Against Diabetes: Progress Made; Challenges Unmet.” The hearing will examine advances in research into type 1, type 2, and gestational diabetes, as well as other related public health efforts. It will explore our current understanding of the causes and consequences of diabetes, as well as evidence-based prevention and management strategies.

**I. BACKGROUND**

Diabetes refers to a group of diseases categorized by high blood glucose (sugar) levels, which results from the body’s inability to convert food into energy.<sup>1</sup> Typically, the human body breaks down sugars and starches derived from food into glucose, the main source of fuel or energy for the body’s cells.<sup>2 3</sup> Insulin, a hormone produced in the pancreas, facilitates the transfer of glucose from blood into cells. People with diabetes either produce little to no insulin, or cells in the body respond inappropriately to insulin that is produced. Diabetes results in loss of the body’s main source of energy because glucose builds up in the blood and is eventually excreted through urine, rather than being transferred to the body’s cells.

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<sup>1</sup> Centers for Disease Control and Prevention, *National Diabetes Fact Sheet, 2007* (2008) (online at [www.cdc.gov/diabetes/pubs/pdf/ndfs\\_2007.pdf](http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2007.pdf)).

<sup>2</sup> American Diabetes Association, *Diabetes Basics* (2010) (online at [www.diabetes.org/diabetes-basics/](http://www.diabetes.org/diabetes-basics/)).

<sup>3</sup> National Diabetes Information Clearinghouse, *Diabetes Overview* (2008) (online at [diabetes.niddk.nih.gov/dm/pubs/overview/index.htm](http://diabetes.niddk.nih.gov/dm/pubs/overview/index.htm)).

There are three main types of diabetes: type 1 (formerly called juvenile-onset or insulin-dependent diabetes), type 2 (previously referred to as adult-onset or non-insulin-dependent diabetes), and gestational.<sup>4</sup> Type 1 diabetes is an autoimmune disorder, where the body's immune system mistakenly destroys the pancreatic cells (beta cells) that produce insulin.<sup>5</sup> This form of diabetes accounts for roughly 5% to 10% of diagnosed cases. The vast majority (90% to 95%) of diabetes is type 2. Type 2 diabetes is characterized by insulin resistance, which is eventually followed by decreased insulin production. Gestational diabetes refers to glucose intolerance during pregnancy and occurs among an estimated 3% to 7% of pregnant women.<sup>6</sup> Women with gestational diabetes are at substantial risk for developing type 2 diabetes later in life.

An estimated 23.6 million Americans – 7.8% of the country's population – have diabetes.<sup>7</sup> In 2007, approximately 1.6 million new cases of diabetes were diagnosed among people 20 years of age or older. At least 57 million Americans have pre-diabetes, or above-normal blood glucose levels that are not yet high enough to be categorized as diabetes.

Racial and ethnic minorities are more likely to have diabetes than their white counterparts.<sup>8</sup> Americans over age 60 also have a higher prevalence of diabetes relative to the general population. American Indians have the highest prevalence of diabetes – over four times that of whites, after adjusting for population age differences. African Americans and Hispanics are nearly twice as likely to have diabetes as whites, after adjusting for population age differences.

Diabetes can be managed through a healthy diet, moderate physical activity, blood glucose monitoring, and, when necessary, medication (insulin or other medicine). However, if left untreated, increased blood glucose can harm the body and its organs. Consequentially, diabetes can lead to several health complications (e.g., heart disease and stroke, high blood pressure, blindness, and amputation) and premature death. In 2007, diabetes was the seventh-leading cause of death.<sup>9</sup> Among people of comparable age, the risk of death is twice as high for those who have diabetes than for those who don't.<sup>10</sup>

## **II. FEDERAL GOVERNMENT'S RESEARCH AND OTHER PUBLIC HEALTH EFFORTS**

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<sup>4</sup> *Supra* note 1.

<sup>5</sup> *Supra* note 3.

<sup>6</sup> Dr. Michael Greene and Dr. Caren G.S. Solomon, *Gestational Diabetes Mellitus — Time to Treat*, *New England Journal of Medicine* (June 12, 2005).

<sup>7</sup> *Supra* note 1.

<sup>8</sup> *Id.*

<sup>9</sup> Centers for Disease Control and Prevention, *Leading Causes of Death* (Dec. 31, 2009) (online at [www.cdc.gov/nchs/fastats/lcod.htm](http://www.cdc.gov/nchs/fastats/lcod.htm)).

<sup>10</sup> *Supra* note 1.

Several agencies within the Department of Health and Human Services (HHS) play a role in the federal government's response to diabetes. Since 1974, an interagency committee has worked to coordinate diabetes activities within HHS and across the government.<sup>11</sup> This committee, the Diabetes Mellitus Interagency Coordinating Committee (DMICC), includes representatives from seven HHS agencies and the Office of Minority Health, the Veterans Health Administration, the Department of Agriculture, and the Department of Defense. The National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC) are two HHS agencies represented on the DMICC, with leading roles in the nation's diabetes research and other public health efforts.

#### **A. National Institutes of Health (NIH)**

Within NIH, the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) is the principal institute devoted to conducting and supporting research on diabetes. NIDDK also chairs the DMICC. NIDDK has six operational divisions, one of which focuses on basic, translational, and clinical research on diabetes – the Division of Diabetes, Endocrinology, and Metabolic Diseases.

Several NIDDK-supported research studies have furthered our understanding of the genetic causes of diabetes.<sup>12</sup> Researchers have identified over 40 genes associated with increased risk of type 1 diabetes and 38 such genes for type 2 diabetes.<sup>13</sup>

A major, seminal study in our understanding of the effect of lifestyle and environment on diabetes risk is the NIDDK-led Diabetes Prevention Program (DPP). This study concluded that intensive dietary training, physical activity, and behavior modification (“lifestyle intervention”) greatly reduces high-risk individuals' risk of developing type 2 diabetes over a three-year period.<sup>14</sup> The lifestyle intervention proved to be more effective than treatment with metformin, a drug used to treat type 2 diabetes. The effectiveness of the interventions have been shown to endure for ten years after participants were first enrolled.

Two other major NIDDK studies, the Diabetes Control and Complications Trial (DCCT) and its follow-on study, the Epidemiology of Diabetes Intervention and Complications (EPIC), have contributed to our understanding of delaying and preventing complications caused by type 1 diabetes. These studies concluded that rates of eye, kidney, nerve, and cardiovascular

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<sup>11</sup> National Institute of Diabetes and Digestive and Kidney Diseases, *Diabetes Mellitus Interagency Coordinating Committee (DMICC)* (May 14, 2009) (online at [www2.niddk.nih.gov/AboutNIDDK/CommitteesAndWorkingGroups/DMICC/#NextSteps](http://www2.niddk.nih.gov/AboutNIDDK/CommitteesAndWorkingGroups/DMICC/#NextSteps)).

<sup>12</sup> National Institute of Diabetes and Digestive and Kidney Diseases, *Recent Advances and Emerging Opportunities* (Feb. 2010) (online at [www2.niddk.nih.gov/NR/rdonlyres/9EECF0E0-D78C-4B9E-B446-2D509D2C6FDB/0/FebDoc2010\\_Final508.pdf](http://www2.niddk.nih.gov/NR/rdonlyres/9EECF0E0-D78C-4B9E-B446-2D509D2C6FDB/0/FebDoc2010_Final508.pdf)).

<sup>13</sup> *Id.*

<sup>14</sup> *Id.*

complications can be dramatically reduced through early and intensive glucose control (insulin administration guided by self-monitoring of blood glucose levels).

## **B. Centers for Disease Control and Prevention (CDC)**

At CDC, the National Center for Chronic Disease Prevention and Promotion (NCCDPHP) oversees the agency's efforts to promote health and well-being through prevention and management of chronic diseases, including diabetes. The Division of Diabetes Translation, one of NCCDPHP's nine divisions and offices, works to implement proven diabetes research into daily practice, in both clinical and community settings.<sup>15</sup>

The division supports diabetes prevention and control efforts within state/territorial, local, tribal, academic, community, health care, and national organizations. This work includes facilitating access to services for people who have diabetes, or are at risk of developing the disease. Specific activities of the division include: (1) surveillance to better understand and monitor the burden of diabetes; (2) research on the public health implications of implementing proven interventions to prevent or delay diabetes among those at high risk for diabetes, as well as interventions to control the condition among those who already have the disease; (3) support for state and territorial-based diabetes programs; and (4) coordination of media strategies and provision of information to the public.

In collaboration with NIH, CDC administers the National Diabetes Education Program (NDEP). NDEP builds upon work from the DPP study, DCCT, and other studies and focuses on reducing morbidity and mortality from diabetes and diabetes-related complications.<sup>16</sup> Program aims are to improve treatment and outcomes for people with diabetes, promote early diagnosis, and prevent the onset of diabetes. Key features of NDEP are its partnerships with over 200 public and private organizations with interest and expertise in diabetes, and directing program activities to a broad audience, including people with diabetes and their families, health care providers, and the general public.

## **III. WITNESSES**

The following witnesses have been invited to testify:

### **Panel One:**

**Ann Albright, Ph.D., R.D.**

Director, Division of Diabetes Translation  
Centers for Disease Control and Prevention

**Judith Fradkin, M.D.**

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<sup>15</sup> Centers for Disease Control and Prevention, *About CDC's Division of Diabetes Translation* (Mar. 12, 2010) (online at [www.cdc.gov/diabetes/about/index.htm](http://www.cdc.gov/diabetes/about/index.htm)).

<sup>16</sup> Centers for Disease Control and Prevention, *About NDEP* (Mar. 12, 2010) (online [www.cdc.gov/diabetes/ndep/about.htm](http://www.cdc.gov/diabetes/ndep/about.htm)).

Director, Division of Diabetes, Endocrinology, and Metabolic Diseases  
National Institute of Diabetes and Digestive and Kidney Diseases  
National Institutes of Health

**Panel Two:**

**Robert A. Goldstein, M.D., Ph.D.**

Senior Vice President, Scientific Affairs  
Juvenile Diabetes Research Foundation

**Robert R. Henry, M.D.**

President-Elect, Medicine & Science  
American Diabetes Association

**Buford Rolin**

Vice Chairman and Nashville Area Representative  
National Indian Health Board  
Chairman  
Poarch Band of Creek Indians