

Press release

PRE-DIABETES COSTS NATION \$25 BILLION ANNUALLY IN EXTRA MEDICAL CARE, NEW DATA SHOW

***57 Million Americans With Elevated Blood Sugar
Incur \$443 Each In Extra Medical Care;***

***Gestational Diabetes Costs \$3,305 Per Woman, \$209 Per Infant
In First Year With Future Health at Risk;***

Aggressive Intervention Needed to Stem Diabetes Epidemic

WASHINGTON, DC (June 24, 2009) -- One of every four American adults suffers from a silent condition known as pre-diabetes at a cost of more than \$25 billion a year in increased medical costs, according to new data published today. And among the 180,000 pregnant women diagnosed with gestational diabetes, health care costs attributed to the condition are estimated at \$623 million a year, a companion study showed.

The American Diabetes Association (ADA) published a cost study in 2008 that estimated the total direct and indirect costs of diagnosed diabetes in the United States at \$174 billion. With the encouragement of the ADA, the National *Changing Diabetes*® Program (NCDP) recently engaged The Lewin Group to build upon this previous study and provide a more comprehensive assessment of the annual cost of diabetes by expanding their current economic research model to include undiagnosed diabetes and gestational diabetes, and pre-diabetes as well. When added to the diagnosed diabetes costs, these additional costs bring the total diabetes-related medical expenses and lost productivity in 2007 to \$218 billion.

"We are only beginning to grasp the full economic impact of diabetes," said George Huntley, Chair of the Board for the American Diabetes Association. "For the first time we can demonstrate that health care costs begin to rise long before diabetes has developed. Both of these early conditions -- including pre-diabetes and gestational diabetes -- are associated with significant increases in the use of health care services and expenses. Yet with aggressive intervention, both can be averted or at the very least delayed."

The studies were conducted by The Lewin Group and appear in the current edition of the peer-reviewed journal *Population Health Management*. Both studies tracked medical claims filed between 2004 and 2006 to identify patients with pre-diabetes

and gestational diabetes and compared their health care usage with a reference population.

"It is absolutely critical that we understand the economic impact of diabetes on the nation so that we can develop health care policies that can effectively support the necessary behavior change and aggressive medical management needed to stem the diabetes epidemic," said Dana Haza, Senior Director of NCDP, an initiative created by Novo Nordisk to drive systems change at the national and local level.

Pre-diabetes

Pre-diabetes, a precursor to type 2 diabetes that is characterized by elevated glucose levels, affects one in four adults, or an estimated 57 million Americans. According to the study, as many as 83 percent of people with impaired glucose tolerance may develop diabetes unless they take significant steps to lose weight, eat right and exercise more. The total annual cost of pre-diabetes to the nation's health care system is more than \$25 billion, or \$443 for each adult suffering from the condition, according to the study.

These cost estimates are likely to understate the real economic burden of pre-diabetes and do not take into account the reduced quality of life associated with pre-diabetes, said Yiduo Zhang, PhD, The Lewin Group, and lead author of the pre-diabetes study. "Even before type 2 diabetes develops, we found that the everyday life of people with pre-diabetes is being affected."

People with pre-diabetes have statistically higher rates of medical visits compared to people with normal blood-sugar levels, according to the study. And people with pre-diabetes more frequently seek medical attention for high blood pressure as well as metabolic and renal complications that are typically associated with diabetes.

Specifically, the study showed that people with pre-diabetes had 34 percent more ambulatory visits associated with their condition than the reference population, including 92 percent more visits for hypertension and 9 percent more visits for cardiovascular disease. This additional health care usage translated to an additional physician visit and two additional prescriptions per year for each person with diabetes.

The study reviewed health claim records for 3.5 million adults. Patients were determined to have pre-diabetes if they had either fasting blood glucose levels of 100 to 125 mg/dl or oral glucose levels of 140 to 200 mg/dl.

"There is growing evidence that even slightly elevated blood sugar levels are associated with higher medical costs," said Haza. "These data not only quantify those increased costs but strengthen the argument for aggressive lifestyle intervention programs that have been shown to prevent or at least delay the onset of pre-diabetes."

Gestational Diabetes

Gestational diabetes mellitus (GDM) affects 4.5 percent of pregnancies that result in deliveries and is associated with significantly higher rates of medical complications for both mother and newborn. The condition cost an estimated \$636 million in 2007, or \$3,305 per pregnancy plus \$209 in the newborn's first year of life. More than a

third (36 percent, or \$230 million) of these costs are carried by government programs such as Medicaid.

Nearly 9 percent of pregnant women over the age of 35 are likely to suffer from gestational diabetes, and the incidence of the condition is growing as a result of increasing obesity rates among women of child-bearing age. GDM is associated with increased risk of cesarean delivery and, like pre-diabetes, is a significant precursor of type 2 diabetes. Between 20 percent and 50 percent of women who have GDM go on to develop diabetes in the decade following pregnancy.

Elevated glucose levels are toxic not only to the mother but also to the developing fetus. Among infants, gestational diabetes results in an increased risk of death, jaundice, hypoglycemia and respiratory distress syndrome. Further, adult offspring of mothers with gestational diabetes have a significantly increased risk of developing type 2 diabetes as well as cardiovascular disease.

"The effects of gestational diabetes can be seen for decades and take a tremendous toll on the health and well being of both mother and child," Haza said.

The study reviewed health claims in the nine months preceding delivery and the 12 months following delivery. Among infants, the analysis reviewed health care usage in the 12 months following birth. "Again, we believe these numbers are very conservative since we focused only on near-term medical costs and did not look beyond a year after delivery," said Yaozhu Chen, MPA, The Lewin Group, and lead author of the gestational diabetes study.

The pre-diabetes and gestational diabetes studies were the final of four studies commissioned by the NCDP's Economic Barometer to examine the economic impact of diabetes. The first two studies -- one measuring the costs of type 1 vs. type 2 diabetes and another examining the cost of undiagnosed diabetes -- were published in April in *Population Health Management*.

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About The Lewin Group

The Lewin Group is a premier national health care and human services consulting firm with nearly 40 years' experience finding answers and solving problems for leading organizations in the public, nonprofit, and private sectors. With its industry experience and knowledge, The Lewin Group provides its clients with high-quality products and insightful support to help them maximize the delivery of programs and services that make a difference in the lives of their constituents. For more information on The Lewin Group, visit www.lewin.com.

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About the National Changing Diabetes® Program

The National *Changing Diabetes*® Program (NCDP) is a multi-faceted initiative that brings together leaders in diabetes and policy to improve the lives of people with diabetes. NCDP strives to create change in the U.S. health care system to provide dramatic improvement in the prevention and care of diabetes. Launched in 2005, NCDP is a program of Novo Nordisk. For more information, please visit www.ncdp.com.

About Novo Nordisk

Novo Nordisk is a healthcare company with an 86-year history of innovation and achievement in diabetes care. The company has the broadest diabetes product portfolio in the industry, including the most advanced products within the area of insulin delivery systems. In addition to diabetes care, Novo Nordisk has a leading position within areas such as hemostasis management, growth hormone therapy, and hormone therapy for women. Novo Nordisk's business is driven by the Triple Bottom Line: a commitment to social responsibility to employees and customers, environmental soundness and economic success. With headquarters in Denmark, Novo Nordisk employs more than 27,550 employees in 81 countries, and markets its products in 179 countries. Novo Nordisk's B shares are listed on the stock exchanges in Copenhagen and London. Its ADRs are listed on the New York Stock Exchange under the symbol 'NVO'. For global information, visit novonordisk.com; for United States information, visit novonordisk-us.com.

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