

## Diabetes

## Dateline

National Diabetes Information Clearinghouse

Spring/Summer 2008

## ACCORD Trial Continues After Strategy Change

### Study to End in 2009

Although the intensive blood glucose—also called blood sugar—lowering treatment part of the Action to Control Cardiovascular Risk in Diabetes (ACCORD) study was discontinued earlier this year, the examination of treatments to control blood pressure and lipids will continue until the study's originally planned end in June 2009.

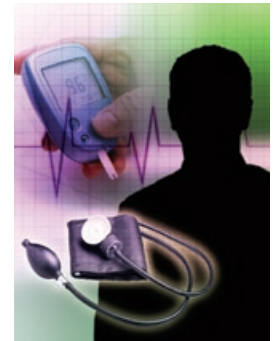
ACCORD was designed to test three treatment approaches for decreasing the high rate of cardiovascular disease among adults with type 2 diabetes who are at especially high risk for heart attacks and strokes. These approaches included

- intensive lowering of blood glucose levels to near normal compared with standard blood glucose treatment
- intensive lowering of blood pressure compared with standard blood pressure treatment
- treatment of blood lipids by a fibrate and statin, rather than a statin alone

At the recommendation of an independent, expert advisory board, the National Heart, Lung, and Blood Institute (NHLBI), the major sponsor of ACCORD, halted the blood glucose treatment part of the study when data showed that intensively reducing blood glucose below current clinical guidelines to near normal levels increased death rates in these high-risk individuals with type 2 diabetes. Study participants who were receiving intensive blood glucose lowering treatment now receive the less intensive standard treatment.

“The ACCORD results can now be considered when doctors are tailoring blood sugar strategies for adults with type 2 diabetes who are at especially high risk for cardiovascular disease,” said Denise G.

Simons-Morton, M.D., Ph.D., NHLBI project officer for ACCORD.



### Findings Instructive

“So far, findings from ACCORD have been instructive, and we look forward to data from the blood pressure and lipid components of the trial,” said Judith Fradkin, M.D., director of the Division of Diabetes, Endocrinology, and Metabolic Diseases at the National Institute of Diabetes and Digestive and Kidney Diseases, which provides the study with funding and scientific expertise.

However, she cautioned that “the results should not be extrapolated beyond the high-risk population studied” and noted that “few patients will need changes in their therapy based on these results because current guidelines do not aim for near normal levels of blood glucose and this intensive control is rarely achieved with current medical care in comparable patients.”

**FINDINGS**, continued on page 2

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**NIDDK**  
NATIONAL INSTITUTE OF  
DIABETES AND DIGESTIVE  
AND KIDNEY DISEASES

**FINDINGS**, from page 1

Diabetes is an increasingly important cause of cardiovascular disease in the United States. About 65 percent of people with diabetes die from heart disease or stroke. The National Diabetes Information Clearinghouse has a booklet entitled *Prevent diabetes problems: Keep your heart and blood vessels healthy* and a fact sheet entitled *Diabetes, Heart Disease, and Stroke*. Copies of these publications

are available at [www.diabetes.niddk.nih.gov/dm/pubs/complications\\_heart](http://www.diabetes.niddk.nih.gov/dm/pubs/complications_heart) and [www.diabetes.niddk.nih.gov/dm/pubs/stroke](http://www.diabetes.niddk.nih.gov/dm/pubs/stroke), respectively.

In addition, the National Diabetes Education Program has a fact sheet entitled *Be Smart About Your Heart: Control the ABCs of Diabetes*, which is available at [www.ndep.nih.gov/diabetes/pubs/BeSmart\\_Article.pdf](http://www.ndep.nih.gov/diabetes/pubs/BeSmart_Article.pdf). For more information about ACCORD, go to [www.accordtrial.org](http://www.accordtrial.org). ■

## NIDDK Publications Win NIH Plain Language Awards

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) received recognition in this year's National Institutes of Health (NIH) Plain Language Awards Competition.

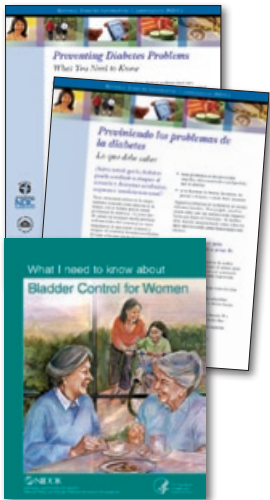
The NIDDK Awareness and Prevention Series was honored with a gold award and the easy-to-read booklet *What I need to know about Bladder Control for Women* won a bronze. An awards ceremony was held at the NIH campus in Bethesda, MD, on April 15.

The NIDDK Awareness and Prevention Series, created for health fairs and similar events, presents brief overviews in English and Spanish of common health problems in a colorful, two-page format. Designed for people not yet diagnosed with diabetes or digestive, kidney, or urologic disorders, the handouts encourage readers to seek further information from the NIDDK or their health care provider.

The *What I need to know about Bladder Control for Women* booklet explains treatments and techniques

for managing urinary incontinence and helps women prepare to speak with their doctors about the problem. Results from the NIH Diabetes Prevention Program found that women with pre-diabetes who lost 5 to 7 percent of their body weight were able to improve bladder control and stave off type 2 diabetes.

The NIH created the Plain Language Awards to promote the NIH Plain Language Initiative, established in response to a 1998 White House memorandum calling for all Federal Government writing to be in an easy-to-read format. The booklet and Awareness and Prevention Series publications can be downloaded or ordered through the NIDDK website at [www.niddk.nih.gov](http://www.niddk.nih.gov). ■



### Diabetes Dateline

*Diabetes Dateline*, an email newsletter, is sent to subscribers by the National Diabetes Information Clearinghouse (NDIC). The newsletter features news about diabetes, special events, patient and professional meetings, and new publications available from the NDIC and other organizations.

If you would like to subscribe, go to <http://catalog.niddk.nih.gov/newsletter.cfm>. You can read or download a PDF version of the newsletter at [www.diabetes.niddk.nih.gov/about/newsletter.htm](http://www.diabetes.niddk.nih.gov/about/newsletter.htm).



#### Executive Editor: Judith Fradkin, M.D.

Dr. Fradkin is the director of the Division of Diabetes, Endocrinology, and Metabolic Diseases for the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), part of the National Institutes of Health in Bethesda, MD. Dr. Fradkin earned her M.D. from the University of California at San Francisco and completed an internship and residency at Harvard's Beth Israel Hospital in Boston. Dr. Fradkin came to the NIDDK as a clinical associate in 1979 after an endocrinology fellowship at Yale University. She has overseen NIDDK-supported research in various roles, directing the Institute's research programs in diabetes, cystic fibrosis, endocrinology, and metabolic diseases. A practicing endocrinologist, Dr. Fradkin continues to treat patients at the National Naval Medical Center in Bethesda, where she worked as a staff endocrinologist in the early 1980s.



## Diabetes Costs Continue to Rise

### Prevention Key to Controlling Future Increases

Primary prevention is an effective long-term strategy for combating escalating health costs related to diabetes care and treatment, according to National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) Director Griffin P. Rodgers, M.D., M.A.C.P.

According to the study, one out of every five health care dollars is spent caring for someone with diagnosed diabetes.

Although the landmark Diabetes Prevention Program (DPP) established that the incidence of type 2 diabetes could be reduced 58 percent with intensive lifestyle interventions, wider application of the DPP lifestyle, including diet and exercise, could yield enormous savings, Rodgers said at a congressional briefing on diabetes costs earlier this year. The briefing was prompted by an American Diabetes Association (ADA) study that reported diabetes cost Americans \$174 billion in direct and indirect costs in 2007, a 32 percent increase from 2002.

According to the study, one out of every five health care dollars is spent caring for someone with diagnosed diabetes. Because an additional estimated 6 million people are undiagnosed, the actual costs of diabetes may greatly exceed \$174 billion. The study also did not account for health costs associated with the 57 million Americans who have pre-diabetes.

The study estimated the economic impact of indirect costs to be \$58 billion when accounting for reduced productivity of both those in the labor force and unpaid workers, unemployment from disease-related disability, and increased absenteeism.

Rodgers highlighted NIDDK initiatives aimed at preventing diabetes, such as a program of translational research grants to prevent and control diabetes and obesity; the HEALTHY study, aimed at reducing type 2 diabetes risk factors among minority middle school students;



and the National Diabetes Education Program, which launched the first-ever national diabetes prevention campaign.

Rodgers said short-term solutions for decreasing diabetes-related health costs include reducing barriers to treatment and encouraging appropriate therapy.

An editorial entitled “The Economic Imperative to Conquer Diabetes,” co-authored by Rodgers and Judith Fradkin, M.D., director of the Division of Diabetes, Endocrinology, and Metabolic Diseases at the NIDDK, was published in the March 2008 issue of *Diabetes Care*. The issue also includes the ADA report about diabetes costs entitled “Economic Costs of Diabetes in the U.S. in 2007.” ■

## NIDDK Seeks Teens and Young Adults for Type 2 Diabetes Study

Can allowing insulin-producing beta cells to rest for a couple of weeks improve their ability to make insulin in the long run? The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) is recruiting teens and young adults with type 2 diabetes for a study that aims to find out.

The National Diabetes Education Program has produced tip sheets and an online quiz to help teens manage their diabetes and reduce their risk for complications. For copies of the Tips for Teens with Diabetes Series, visit [www.ndep.nih.gov](http://www.ndep.nih.gov).

Results from two recent studies in older adults newly diagnosed with type 2 diabetes indicated that an intensive, 2-week insulin treatment might break the cycle of beta cell exhaustion caused by a constant, unsuccessful attempt to compensate for existing insulin resistance and result in significant long-term improvement in beta cell function. At 12-month follow-up, study results reported about half of the studies' participants maintained normal levels of blood glucose, also called blood sugar, without the need for hypoglycemic agents.

"We can't predict the outcome of this clinical trial in children based on studies done in adults since we know very little about the natural history of type 2 diabetes in youngsters," said Kristina Rother, M.D., M.H.Sc., a staff clinician in the

NIDDK's Clinical Endocrinology Branch, which is why the Institute is undertaking the Type 2 Diabetes Study for Young People. "This short, intense, 2-week intervention will provide a tune-up for beta cells—it's a strategy to improve beta cell function over time."

The study is recruiting participants between the ages of 12 and 25 who are overweight and have been diagnosed with type 2 diabetes within 2 years prior to enrolling in the study. Participants may be any race or gender. After the initial 2-week treatment, participants will return to the National Institutes of Health for follow-up every 3 months for 1 year.

The study needs to recruit 50 participants, according to Rother, who said the NIDDK is taking steps to make the study as practical for participants and their families as possible. "At the very least, patients, as well as their family members, will learn a lot about diabetes and many related health topics from participating in this study."

Study participants will be assigned to one of two groups. One group will take metformin and follow a specific, prescribed diet for 2 weeks. The other group will also take metformin and adhere to the same diet but additionally will receive insulin through an insulin pump and oral diazoxide—a medication that inhibits insulin secretion—for 2 weeks.

For more information about the trial and how to participate, contact Rebecca Brown, M.D., lead associate investigator, at 301-594-0609, 301-402-8573 (fax), [brownrebecca@mail.nih.gov](mailto:brownrebecca@mail.nih.gov). ■

### Large, Multisite Study Addresses Type 2 Diabetes in Youth

A large, multisite study shares the goal of the Type 2 Diabetes Study for Young People: to learn more about diabetes in youth.

The Treatment Options for Type 2 Diabetes in Adolescents and Youth (TODAY) study is comparing the effectiveness of three treatment regimens in delaying the need for insulin in children and teenagers aged 10 to 17 who had been diagnosed with type 2 diabetes within 2 years of enrollment in the study. The three options include the use of

- metformin alone
- metformin and rosiglitazone in combination
- metformin plus intensive lifestyle change aimed at losing weight and increasing physical activity

The TODAY study was the first clinical trial sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases to focus on type 2 diabetes in youth. For recruitment information, go to [www.clinicaltrials.gov/ct2/show/NCT00081328?term=the+TODAY+study&rank=1](http://www.clinicaltrials.gov/ct2/show/NCT00081328?term=the+TODAY+study&rank=1). ■

## Researchers Uncover More Genetic Clues to Diabetes

An international team that included scientists from the National Human Genome Research Institute (NHGRI) at the National Institutes of Health (NIH), the Wellcome Trust, and the Broad Institute recently identified six more genetic variants involved in type 2 diabetes, boosting the total number of genetic risk factors associated with the disease to 16.

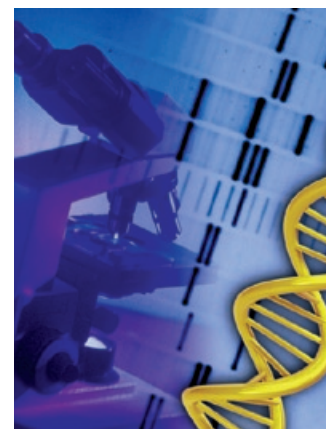
“The discovery and confirmation of these new genetic variants has been accelerated by the extensive collaboration among many laboratories studying the genetics of diabetes.”

**Catherine McKeon, Ph.D.**  
NIDDK Senior Adviser for  
Genetic Research

Last year, researchers identified at least four new genetic variants associated with increased diabetes risk and confirmed the existence of another six. See the front page story of the Fall 2007 issue of *Diabetes Dateline* at [www.diabetes.niddk.nih.gov/about/dateline/fall07/1.htm](http://www.diabetes.niddk.nih.gov/about/dateline/fall07/1.htm).

None of the newest uncovered genetic variants had been suspected of playing a role in type 2 diabetes. The new variant with the strongest association with type 2 diabetes is in a gene that has also been associated with prostate cancer.

“The discovery and confirmation of these new genetic variants has been accelerated by the extensive collaboration among many laboratories studying the genetics of diabetes,” said National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) Senior Adviser for Genetic Research Catherine McKeon, Ph.D.



More than 90 researchers at more than 40 research centers in Europe and North America collaborated to identify the variants after analyzing genetic data from more than 70,000 people. Study results appeared in an advanced online edition of *Nature Genetics* on March 31.

### New Clues

“None of the genes we have found was previously on the radar screen of diabetes researchers,” said Mark McCarthy, M.D., one of the study’s senior authors. “Each of these genes provides new clues to the processes that go wrong when diabetes develops, and each provides an opportunity for the generation of

**GENETIC CLUES,**  
continued on page 6

## NIDDK Workshop Explores Diabetes Genes, Beta Cell Function

To review research progress and stimulate new ideas among the diabetes investigative community, the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) sponsored a 2-day workshop in April entitled “Diabetes Genes and Beta Cell Function: How can we assemble the puzzle?”

The workshop highlighted research related to newly discovered risk loci for type 2 diabetes, specific beta cell functions and pathways potentially influenced by these genes, and the linkage of genes conferring risk to the clinical progression of diabetes. One of the workshop’s goals was to identify new strategies to enable an integrated correlation of at-risk loci with suboptimal beta cell functioning.

For a list of upcoming NIDDK workshops and conferences, go to [www.niddk.nih.gov](http://www.niddk.nih.gov). ■

## T1DGC Builds on Work of Human Genome Project

The Type 1 Diabetes Genetics Consortium (T1DGC), funded by the National Institute of Diabetes and Digestive and Kidney Diseases along with the National Human Genome Research Institute, the National Institute of Allergy and Infectious Diseases, and the Juvenile Diabetes Research Foundation International, is organizing and implementing international efforts to identify genes and gene variations that determine an individual's risk of developing type 1 diabetes or related autoimmune diseases.

The T1DGC consists of a coordinating center and four clinical recruitment networks in Asia-Pacific, Europe, North America, and the United Kingdom. The consortium is building on the work of the Human Genome Project, which spelled out the contents of human genes, and the International HapMap Project, which is identifying the points at which gene sequences differ from person to person. The T1DGC is resolving which of these genetic differences is significant for type 1 diabetes.

The first phase of the project involved recruiting families, particularly those with multiple siblings with type 1 diabetes, to join the study and provide DNA samples for analysis. The consortium created a database containing clinical, genetic, and medical history information to facilitate the search for susceptibility genes. In the future, the database and centralized DNA repository will serve as a resource for genetics researchers both within and outside the T1DGC.

For updates about recent T1DGC developments and other information about the consortium, go to [www.t1dgc.org](http://www.t1dgc.org). For more information about diabetes, visit [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov). ■



### GENETIC CLUES, from page 5

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new approaches for treating or preventing this condition.”

In a presentation at a recent NIH conference entitled “Genes, Environment, and Health Initiative: Translating Whole Genome Association Data into Clinical Practice,” McCarthy acknowledged that “we are some distance yet from translation.”

“We’re very early in this game,” said McCarthy. “There are many challenges to fill in the gaps.”

Genome-wide association studies compare the genetic profiles of healthy individuals with those with specific health conditions. Such studies have uncovered genes involved in diabetes, heart disease, and cancer. Improved strategies for gene hunting and cheaper sequencing technologies are quickening the pace of discovery, helping scientists develop new diagnostic tools and strategies and target-specific therapeutics. For more information about NIDDK diabetes research, visit [www2.niddk.nih.gov/Research](http://www2.niddk.nih.gov/Research). ■

## First Year of Look AHEAD Trial Yields Encouraging Results

Overweight or obese people with diabetes who have received a year of intensive lifestyle intervention—including regular individual and group counseling, structured meal plans, and customized exercise programs—lost an average 8.6 percent of their initial body weight, according to first-year results of the Look AHEAD (Action for Health in Diabetes) clinical trial funded by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). By comparison, a similar group that received standard diabetes education and support lost only 0.7 percent of their weight.



The trial, which began in 2001, is following about 5,000 overweight or obese men and women with type 2 diabetes for up to 11.5 years. At enrollment, trial participants were between the ages of 45 and 75.

The Look AHEAD trial is examining the efficacy of an intensive lifestyle intervention strategy in reducing major cardiovascular disease (CVD) events, including heart attack and stroke, in overweight or obese people with diabetes. The strategy emphasizes calorie reduction and increased physical activity to achieve long-term weight loss.

“A 7 to 10 percent weight loss has a big clinical impact,” said Rena Wing, Ph.D., M.A., a professor of psychiatry and human behavior at Brown University and chair of the Look AHEAD trial. In addition, “every single parameter that we measured improved in both groups,” she said.

But participants in the lifestyle intervention group saw greater reductions in CVD risk factors, including improvements in hypertension, cholesterol and triglyceride levels, and urine-to-creatinine ratios. From a beginning average of 7.3 percent, the mean A1C level dropped to 6.6 percent in the lifestyle intervention group, versus 7.2 percent in the group that received the usual care. The A1C test estimates a person's average level of blood glucose, also called blood sugar, from the previous 3 months. The target A1C value is less than 7 percent.

Lifestyle intervention group participants also reduced their use of diabetes, blood pressure, and lipid-lowering medicines while improving control of these factors.

### Further Study Needed

Overweight and obese people with type 2 diabetes are at high risk for major CVD events, including heart attack and stroke. Studies show weight loss lowers type 2 diabetes and CVD risk factors, but to date no prospective study has shown that weight loss actually reduces the incidence of major CVD events.

“The goal is to assess the impact of weight loss and sustaining that weight loss over the long term on CVD risk and events in overweight and obese people with type 2 diabetes,” said Mary Evans, Ph.D., program director for Look AHEAD and NIDDK director of Special Projects in Nutrition, Obesity, and Digestive Diseases.

The trial, which began in 2001, is following about 5,000 overweight or obese men and women with type 2 diabetes for up to 11.5 years. At enrollment, trial participants were between the ages of 45 and 75.

After providing an initial session of diabetes education about the importance of diet and exercise, foot care, and managing hyperglycemia, researchers split participants into two groups. Those in the lifestyle intervention group receive intense counseling while striving to meet a 10 percent weight loss goal through a

## Tight Cholesterol and Blood Pressure Control May Reverse Atherosclerosis in Adults with Diabetes



**A**ggressively lowering cholesterol and blood pressure levels below current targets in adults with type 2 diabetes could help prevent and possibly reverse hardening of the arteries, or atherosclerosis, according to new study results from the National Heart, Lung, and Blood Institute (NHLBI). Atherosclerosis, the number one cause of heart disease, can lead to heart attack, stroke, and death.

The 3-year Stop Atherosclerosis in Native Diabetics Study (SANDS) is the first study to compare two treatment targets for LDL, or bad, cholesterol and systolic blood pressure levels, key risk factors for heart and blood vessel disease, in people with diabetes. Sixty-five percent of diabetes deaths are related to cardiovascular causes.

About one-half of the 500 SANDS participants were asked to lower their LDL cholesterol and blood pressure to standard levels, while the other half aimed for more aggressive lowering. All participants were American Indians aged 40 or older who had diabetes and high blood pressure and elevated LDL cholesterol but no history of heart attack, stroke, or other evidence of cardiovascular disease.

“This study provides good news for adults with type 2 diabetes,” said NHLBI Director Elizabeth

G. Nabel, M.D. “These patients are two to four times more likely than people without diabetes to die from heart disease. For the first time, we have evidence that aggressively lowering LDL cholesterol and blood pressure can actually reverse damage to the arteries in middle-aged adults with diabetes.”

The study was conducted at four clinical centers in southwestern Oklahoma, Phoenix, northeastern Arizona, and South Dakota. Results were published in the April 9 issue of the *Journal of the American Medical Association*.

The National Diabetes Information Clearinghouse has a fact sheet about diabetes, heart disease, and stroke at [www.diabetes.niddk.nih.gov/dm/pubs/stroke](http://www.diabetes.niddk.nih.gov/dm/pubs/stroke). ■

### Look AHEAD, from page 7

strategy that emphasizes calorie reduction and increased physical activity but also allows the use of weight-loss drugs for some who were not meeting weight-loss goals at 6 months. The remaining half receive standard diabetes support and education at the initial meeting and at three follow-up visits throughout the year.

The intensive lifestyle intervention will last 4 years, after which participants will be offered maintenance counseling. Look AHEAD investigators plan to publish 4-year results in 2009.

Several ancillary studies on topics such as sleep apnea, fatty liver disease, and eating disorders also are under way.

Although first-year results are encouraging, said Wing, Look AHEAD researchers won't know if reductions in CVD risk translate to actual reduced major CVD events until the trial's conclusion in 2012.

For more information about NIDDK-funded research on diabetes, visit [www2.niddk.nih.gov/Research/ScientificAreas/Diabetes](http://www2.niddk.nih.gov/Research/ScientificAreas/Diabetes). For information about diabetes, diet, and physical activity, go to [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov). ■

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## Largest, Most Comprehensive Study of its Kind Tracks Diabetes in U.S. Youth

Nearly 154,000 children in the United States have some form of diabetes, according to results of the SEARCH for Diabetes in Youth study—a decade-long examination of the disease and its trends in youth. The study has found that while type 2 diabetes is still rare among children younger than 10, the risk of developing the disease increases with age, especially among certain minority groups. Researchers will report on diabetes trends among U.S. youth in 2010.

SEARCH, which began in 2000, is the first multicenter population-based diabetes surveillance effort that uses standardized methods and includes all major U.S. racial/ethnic groups and all types of diabetes.

Led by the U.S. Centers for Disease Control and Prevention (CDC) and co-sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), the \$22 million study resulted from a disturbing trend, first noticed about 20 years ago: formerly unheard of in children, type 2 diabetes was suddenly accounting for as much as 40 percent of childhood diabetes cases in some clinics.

“An alarm went off,” said Giuseppina Imperatore, M.D., Ph.D., the lead scientist for SEARCH at the CDC. “There was something going on, but we didn’t have good epidemiological data to tell if the trend was real or not because these studies were not population-based.”

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SEARCH uses surveillance databases maintained by networks of endocrinologists, hospitals, care providers, and health plans from six geographically distinct locations chosen to reflect the diverse U.S. population. These networks refer new diabetes cases to SEARCH for further evaluation. Volunteers enrolled in SEARCH complete a physical examination and detailed medical history questionnaire and donate blood and urine for biochemical and genetic analyses.

SEARCH study sites, selected to reflect U.S. diversity, are

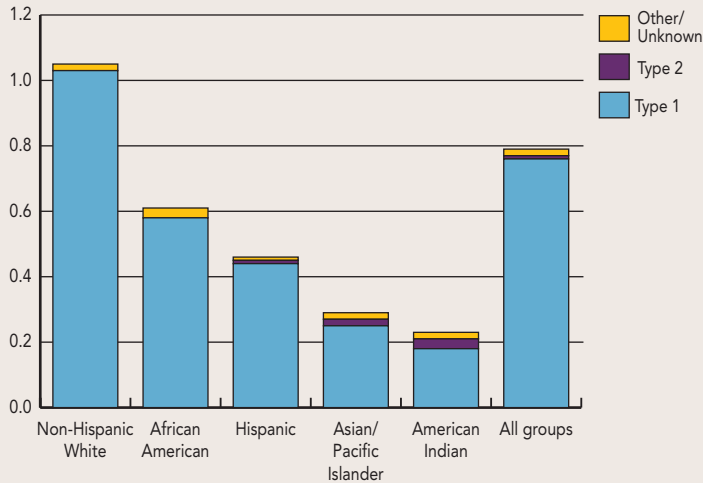
- Kaiser Permanente Southern California, Pasadena
- University of Colorado Health Sciences Center, Denver
- Pacific Health Research Institute, Honolulu
- Children’s Hospital Medical Center, Cincinnati
- University of South Carolina School of Public Health, Columbia
- Children’s Hospital & Regional Medical Center, Seattle

So far, SEARCH data have led to nearly two dozen publications—most notably, reports on the prevalence and incidence of youth diabetes broken down by age and sex in five major races/ethnicities: non-Hispanic White, African American, Hispanic, Asian/Pacific Islander, and American Indian.

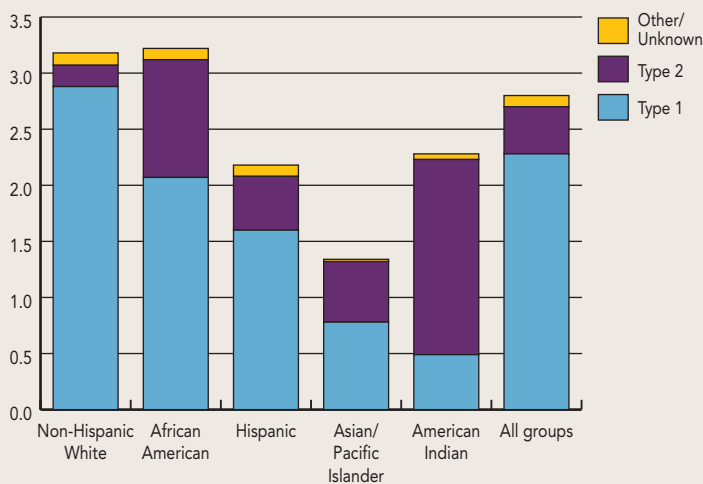
**SEARCH STUDY,**  
continued on page 10

SEARCH STUDY, from page 9

**Prevalence of Diabetes among U.S. Youth, Ages 0 to 9 (Per 1,000)**



**Prevalence of Diabetes among U.S. Youth, Ages 10 to 19 (Per 1,000)**



### Prevalence of Diabetes in Youth

Based on a one-time count in 2001, SEARCH estimates approximately 154,000 diabetes cases among youth aged 0 to 19 years old, or 1.82 cases per 1,000 youth.

Among younger children, aged 0 to 9 years, the vast majority of cases are still type 1. Prevalence was highest among non-Hispanic White youth.

In children aged 10 to 19, the prevalence of type 2 diabetes increased; however, type 1 still accounted for the majority of cases among all racial/ethnic groups except American Indians, who had a higher prevalence of type 2 diabetes. The prevalence of all types of diabetes was highest among non-Hispanic White and African American youth.

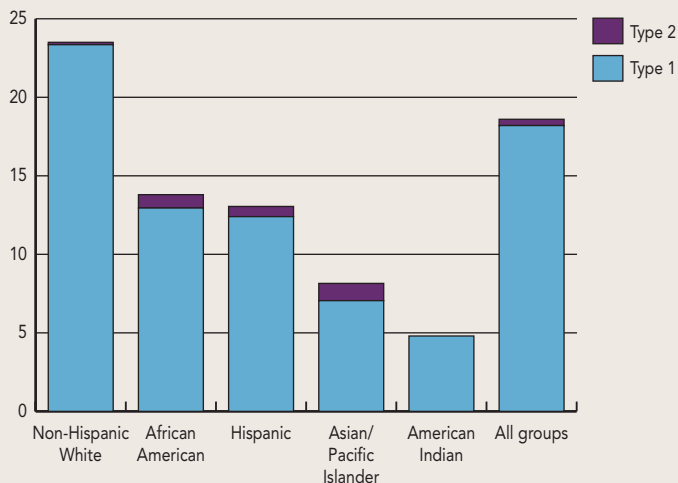
### Incidence of Diabetes in Youth

To establish youth diabetes trends, SEARCH is tracking new cases diagnosed from 2002 to 2009. Based on data for 2002 to 2003, the overall incidence of diabetes is approximately 24.3 new cases per 100,000 per year. Type 2 diabetes represented an increasingly greater percentage of youth diabetes cases as children's ages increased—from 0 cases in the group aged 0 to 4 years to about half of all new cases—except among non-Hispanic Whites—in the group aged 15 to 19. Among youth aged 15 to 19 years, American Indian youth had the highest incidence of type 2 diabetes, whereas non-Hispanic Whites had the lowest.

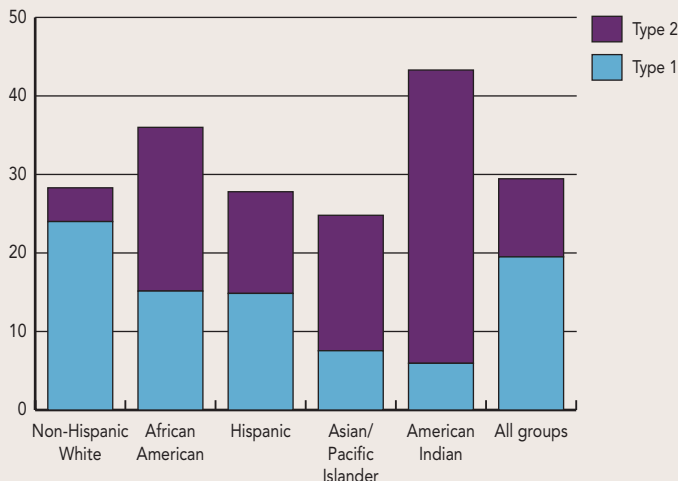
### Understanding Diabetes in Youth

In addition to tracking diabetes, SEARCH is increasing scientists' understanding of diabetes and its related conditions to help find better strategies to prevent, diagnose, and effectively

**Incidence Rates of Diabetes, Ages 0 to 9  
(New Cases Per 100,000 Per Year)**



**Incidence Rates of Diabetes, Ages 10 to 19  
(New Cases Per 100,000 Per Year)**



**SEARCH STUDY**, from page 10

treat diabetes in youth. The study is identifying risk factors for diabetes complications, learning how youth diabetes progresses and how types 1 and 2 differ, and describing what kind of treatment children are getting.

More information about the SEARCH study, including a list of publications to date, is available at [www.searchfordiabetes.org](http://www.searchfordiabetes.org). ■

## Other Diabetes in Youth Studies

The NIDDK is funding several other studies related to diabetes in youth:

- **HEALTHY** study: to determine whether changes in school food services and physical education classes, coupled with activities that encourage healthy behavior, lower risk factors for type 2 diabetes among middle school students.
- **Treatment Options for Type 2 Diabetes in Adolescents and Youth (TODAY)** study: to examine the effectiveness of three treatment options in children and teenagers aged 10 to 17 who had been diagnosed with type 2 diabetes within 2 years of enrollment in the study. The treatment options include the use of metformin alone, metformin and rosiglitazone in a fixed dose combination, and metformin plus intensive lifestyle change aimed at losing weight and increasing physical activity.
- **Type 2 Diabetes Study for Young People:** to determine whether short-term beta cell rest induced by intensive insulin therapy and diazoxide result in prolonged improvement in beta cell function in teenagers and young adults with type 2 diabetes compared with patients who receive conventional treatment—see story on page 4. ■

## DMICC Explores Expanding Collaboration to Translate Diabetes Research into Practice

Federal agencies involved with diabetes research, prevention, and treatment brainstormed about collaborating to better translate research into practice during a recent meeting of the Diabetes Mellitus Interagency Coordinating Committee (DMICC).



The DMICC, which includes representatives of 23 federal organizations and liaison representatives from the American Diabetes Association and the Juvenile Diabetes Research Foundation International, is charged with coordinating the activities of all federal programs with programs related to diabetes and its complications. DMICC members heard from colleagues about ongoing federal diabetes initiatives during the spring meeting. They included the

- **Special Diabetes Program for American Indians.** Kelly Acton, M.D., M.P.H., director of the Indian Health Service (IHS) Division of Diabetes Treatment and Prevention, explained how the IHS actively and rapidly translates National Institutes of Health-funded and other diabetes research into programs that improve people's lives at the community level.

Acton described the Special Diabetes Program for Indians, which, now in its tenth year, spends \$150 million annually to provide grants for diabetes treatment and prevention services in 399 IHS, tribal, and urban Indian health programs. The program serves about 569 tribes and villages.

As part of the program, the Diabetes Prevention Demonstration Project focuses on preventing diabetes among at-risk American Indians and Alaska Natives. The project is implementing the 16-week Diabetes Prevention Program curriculum with some modifications for the nonresearch setting and for cultural sensitivity.

- **Diabetes Data Analysis.** Sheila Roman, M.D., M.P.H., a senior medical officer in the Hospital and Ambulatory Policy Group at the Centers for Medicare and Medicaid Services

(CMS), discussed three databases maintained by CMS with diabetes data, including the

- Chronic Condition Data Warehouse, a patient-centric research database that supports studies for improving the quality of care and reducing the cost of care for chronically ill Medicare beneficiaries, the integration of existing CMS administrative databases, and identification of new research data needs.
- Medicare Quality Monitoring System, a surveillance system that provides quality indicators of health care provided to Medicare beneficiaries for various clinical and topical areas from 1992 through 2001—and beyond in some cases. The system includes utilization and process and outcome quality measures for diabetes.
- Medicare Current Beneficiary Survey, a survey of a national sample of all Medicare beneficiaries that includes survey data on 2,400 patients with diabetes living in the community and a section of diabetes probes every other year.
- **Hispanic Community Health Study/Study of Latinos.** Larissa Aviles-Santa, M.D., M.P.H., F.A.C.P., F.A.C.E., project officer of the Hispanic Community Health Study/Study of Latinos, discussed this National Heart, Lung, and Blood Institute-lead epidemiological study. The study, which is the largest study of Hispanic/Latino health ever done, will examine the prevalence of and risk factors for cardiovascular disease and

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## NIDDK Welcomes Four New Advisory Council Members

U.S. Department of Health and Human Services Secretary Michael O. Leavitt appointed four new members to the Advisory Council of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The Advisory Council guides the NIDDK's discussion of broad science policy issues and provides second-level review of funding requests. The new members, who will serve 4-year terms, are

**David M. Altshuler, M.D., Ph.D.**, professor of genetics and medicine at Harvard Medical School, member of the Diabetes Unit and Department of Molecular Biology at Massachusetts General Hospital, and director of the Program in Medical and Population Genetics at the Whitehead Institute/Massachusetts Institute of Technology Center for Genome Research in Boston. Altshuler serves on the Diabetes, Endocrinology, and Metabolic Diseases Subcommittee.

**Nancy C. Andrews, M.D., Ph.D.**, dean and vice chancellor of Academic Affairs at Duke University School of Medicine in Durham, NC. She is an internationally renowned researcher in pediatric hematology and oncology and the only woman to lead one of the nation's top 10 medical schools. Andrews serves on the Kidney, Urologic, and Hematologic Diseases Subcommittee.

**James W. Freston, M.D., Ph.D.**, the Boehringer Ingelheim Chair of Clinical Pharmacology and professor emeritus at the University of Connecticut School of Medicine at Farmington. Appointed to the NIDDK Advisory Council last year for a 1-year term, Freston has been reappointed this year for a 4-year term. He continues



Pictured with NIDDK Director Griffin P. Rodgers, M.D., M.A.C.P. (center), are (from left) Nancy C. Andrews, M.D., Ph.D.; James P. Schlicht, M.P.A.; James W. Freston, M.D., Ph.D.; and David M. Altshuler, M.D., Ph.D. Photo credit: Michael Spencer, NIH.

to serve on the Digestive Diseases and Nutrition Subcommittee.

**James P. Schlicht, M.P.A.**, executive vice president and chief government affairs and advocacy officer at the American Diabetes Association (ADA). He is directly responsible for management of all advocacy and government affairs functions and the formulation, adoption, strategic development, and implementation of all ADA public policy positions. Schlicht serves on the Diabetes, Endocrinology, and Metabolic Diseases Subcommittee. ■

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other conditions among U.S. Hispanic/Latino populations and will recruit 16,000 participants at four sites: Bronx, NY; Chicago; Miami; and San Diego. The study, which is currently funded through 2013, will include data collection about diabetes and kidney disease among Hispanic/Latino populations.

Following recruitment and baseline examination, participants will be followed annually to ascertain changes in health and fatal cardiovascular and noncardiovascular events. Another key component of the study is evaluation of the influence and assimilation of North American culture on health and chronic disease risk. The study will further knowledge of Hispanic/Latino health and the development of Hispanic/Latino investigators. ■

## NIH Lecture Series Spotlights Addiction, Obesity, Diabetes

What do obesity and drug addiction have in common? Plenty, according to experts at the National Institutes of Health (NIH), who recently explored the topic as part of the NIH Demystifying Medicine lecture series for doctoral students, fellows, and staff.

“Compulsive overeating shares many of the same characteristics as drug addiction,” said Nora D. Volkow, M.D., director of the National Institute on Drug Abuse (NIDA), at a Demystifying Medicine session entitled “Hunger, Appetite, Obesity, Addiction: The New Pandemic.” According to Volkow, obesity and drug addiction have roots in some of the same areas of the brain, such as the hypothalamus, amygdala, and prefrontal cortex.

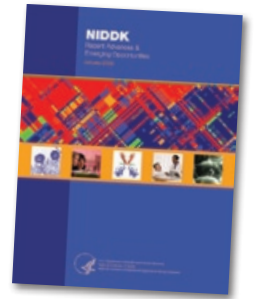
In addition to acknowledging the role of the hypothalamus in behavior that results in obesity, Monica C. Skarulis, M.D., an investigator in the Clinical Endocrinology Branch of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), discussed the effect of hormones such as leptin and ghrelin on losing weight and maintaining weight loss. Skarulis also discussed two forms of weight-loss surgery—gastric bypass and gastric banding.

The NIDDK funds research related to obesity’s link to type 2 diabetes, bariatric surgery as a treatment for severe obesity, genetic factors that predispose people to obesity, the role of gut bacteria in obesity, and obesity prevention. The NIDDK also supports studies of eating disorders associated with obesity in some people.

### Accelerating Research

The NIDDK and the NIDA are part of a 25-Institute task force to accelerate obesity research across the NIH. NIDDK Director Griffin P. Rodgers, M.D., M.A.C.P., serves as a task force co-chair. The U.S. obesity epidemic has contributed to increases in diseases that are the focus of NIH research, such as diabetes, heart disease, and stroke.

The NIDDK publication *Recent Advances and Emerging Opportunities* has more information about NIDDK research on diabetes and obesity. The publication is available online at [www2.niddk.nih.gov/AboutNIDDK/ResearchAndPlanning/Advances/Advance\\_2008.htm](http://www2.niddk.nih.gov/AboutNIDDK/ResearchAndPlanning/Advances/Advance_2008.htm).



For more information about Demystifying Medicine lectures, visit [www1.od.nih.gov/oir/DemystifyingMed](http://www1.od.nih.gov/oir/DemystifyingMed). The NIH initiated the series to help bridge the gap between advances in biology and their application to major human diseases. The 2-hour lectures are held on the NIH campus from January through May and are presented live through online streaming video. Recorded videos are available online following each live event. Both live and recorded sessions are available on the NIH videocasting website at <http://videocast.nih.gov>. ■

## Featured in the NIDDK Reference Collection

### Diabetic Retinopathy

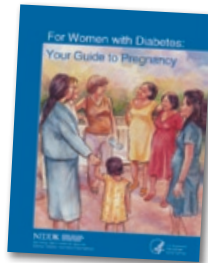
A poster from the National Eye Institute (NEI) at the National Institutes of Health reminds people with diabetes of the importance of getting a dilated eye examination to monitor their eye health and diagnose diabetes-related eye disease, or diabetic retinopathy. The poster uses the acronym TRACK to remind readers to take their medication; reach and maintain a healthy weight; add exercise to their daily routine; control their blood glucose, also called blood sugar; and kick the smoking habit. The poster is illustrated with drawings of people exercising, getting eye exams, and being involved in other aspects of self care that can contribute to good eye health. Free copies of the poster are available from the NEI at 2020 Vision Place, Bethesda, MD 20892-3655, 301-496-5348.

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) Reference Collection is a free, online database that helps health care professionals, health educators, patients, and the general public find educational materials not typically referenced in most databases. The NIDDK does not control or endorse the information contained in this collection; the information is provided as a convenience to our visitors. To find more diabetes resources, visit [www.catalog.niddk.nih.gov/resources](http://www.catalog.niddk.nih.gov/resources). ■

## Additional Resources

### For Women with Diabetes: Your Guide to Pregnancy

Pregnancy in women who have diabetes is considered high-risk. While millions of high-risk pregnancies produce perfectly healthy babies without harm to the mother's health, pregnant women with diabetes need to pay careful attention to their health. The National Diabetes Information Clearinghouse's (NDIC's) new booklet *For Women with Diabetes: Your Guide to Pregnancy* explains how diabetes can affect a pregnant mother and her baby and includes checklists for planning a safe and healthy pregnancy. The booklet also discusses labor and delivery and issues to pay attention to after the baby arrives. Charts at the back of the booklet help women record their daily blood glucose, also called blood sugar, levels; food intake; and physical activity. To download a copy of the booklet, go to [www.diabetes.niddk.nih.gov/dm/a-z.asp](http://www.diabetes.niddk.nih.gov/dm/a-z.asp). To order a free copy, visit [www.catalog.niddk.nih.gov](http://www.catalog.niddk.nih.gov).



### Updated Publications

The NDIC has updated the following publications:

- *Diabetic Neuropathies: The Nerve Damage of Diabetes*
- *Guía para personas con diabetes tipo 1 y tipo 2 (Your Guide to Diabetes: Type 1 and Type 2)*
- *Lo que usted debe saber sobre la alimentación y la diabetes (What you need to know about eating and diabetes)*
- *What I need to know about Diabetes Medicines* (former title: *Medicines for People with Diabetes*)



**ADDITIONAL RESOURCES,**

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## New Interactive Tools

New to the Interactive Health Education Tools section of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) website are

### Videocasts

- Demystifying Medicine—Diabetes and Autoimmunity: Turning against Self
- Demystifying Medicine—Hunger, Appetite, Obesity, Addiction: The New Pandemic

### Streaming Audio

- ¿Por qué los mexicanoamericanos sufren más diabetes? (Why do Mexican Americans suffer more from diabetes?)

The NIDDK interactive tools section consolidates all the tools and resources about diabetes from the National Institutes of Health and the National Library of Medicine. To access these resources, visit [www.diabetes.niddk.nih.gov/resources/HealthTools](http://www.diabetes.niddk.nih.gov/resources/HealthTools).

## NDEP News

### Diabetes Curriculum

The National Diabetes Education Program (NDEP) has developed a multigenerational curriculum to help African American families and communities prevent diabetes through healthy eating and increased physical activity. *Power to Prevent: A Family Lifestyle Approach to Diabetes Prevention* was developed for community-based organizations, faith-based communities, diabetes educators, and other program leaders and contains

- a dozen 60- to 90-minute interactive modules focusing on physical activity, nutrition, and diabetes prevention
- a leader's guide



- evaluation tools
- an accompanying CD-ROM with free materials to enhance the program

To download a free copy of the curriculum, go to [www.cdc.gov/diabetes/ndep/power\\_to\\_prevent.htm](http://www.cdc.gov/diabetes/ndep/power_to_prevent.htm) or call 1-888-693-6337 to order a copy. Shipping and handling fees may apply.

## Preventing Type 2 Diabetes

The NDEP is urging people at high risk for type 2 diabetes to take small steps to lower their risk for the disease and serious complications. The *Ten Ways to Prevent Type 2 Diabetes* lists include useful tips about making healthy food choices daily and creative ideas for becoming more physically active. Target audiences include African Americans, [www.ndep.nih.gov/diabetes/pubs/ten-ways-african-americans.pdf](http://www.ndep.nih.gov/diabetes/pubs/ten-ways-african-americans.pdf); Hispanics/Latinos, [www.ndep.nih.gov/diabetes/pubs/ten-ways-hispanics-latinos.pdf](http://www.ndep.nih.gov/diabetes/pubs/ten-ways-hispanics-latinos.pdf); and American Indians, [www.ndep.nih.gov/diabetes/pubs/ten-ways-american-indians.pdf](http://www.ndep.nih.gov/diabetes/pubs/ten-ways-american-indians.pdf).