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DIABETES IN CONTROL.com NEWSLETTER

The Newsletter for Professionals in Diabetes Care

April 2, 2003 Issue #150

From the Editor's Desk:

Thanks to all of you who stopped by our booth at the 2003 APHA Annual Conference in New Orleans.

We are still looking for Pharmacists who want to experience insulin pump use, and become a pump trainer. If you have an interest [please click here](#) to see if you qualify for this experience. [LINK TO PHARMACIST PUMP](#)

H. Peter Chase, M.D., the author of [Understanding Diabetes](#), the number one book used by families in the United States, joins us to offer printable overviews from his "Pink Panther" guide to diabetes. The first article is [Blood Glucose Testing](#)

Please check out our exclusive interview with **Mary Jo Dudley**, the AADE Diabetes Educator of the year.

More info on Lipid Soluble Thiamine for Diabetes: **Evan David Rosen, M.D., Ph.D**, explains how this nutrient helps with diabetes in his feature [Diabetes Uncomplicated](#)

Check out this weeks **Tools for Your Practice**: Lifescan has their new version of the OneTouch Diabetes Management Software v2.0.

This week's overview:

Item #1: Alternate Site Testing is the same as Fingerstick testing.

Item#7: Bone marrow stem cells provide Insulin

Item:#15 Aspirin is not for all of your patients.

Check out this weeks "Test Your Knowledge" question. [Click Here](#)

Dave Joffe, *Editor-in-Chief*

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News Flash - News Flash!!!!

Aspirin's Anti-Clotting Ineffective for those at Greatest Risk See Item #15 Below

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New Product:

Lifescan has their new version of the OneTouch Diabetes Management Software v2.0. ready to download at no charge. Just visit [OneTouch™ Diabetes Management Software](#) - Download OneTouch Diabetes Management Software for FREE.

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Tools for your Practice: 26 patient handouts

Patient handouts for every aspect of diabetes education and management, just go to <http://www.lifescan.com/professionals/patients/handouts.html>

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This newsletter is the condensed version. If you would like to see the full newsletter go to <http://www.diabetesincontrol.com/Issue150index.htm>

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OPEN STUDIES:

Needle Disintegrator Feedback Study is now full. Those of you selected will be notified this week

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This Weeks Items:

1. **Alternative-Site Testing (AST) Is Consistent With Fingertip BG Results***
[Click Here](#)
2. **Newest-Generation Calcium Channel Blockers Better Tolerated By Hypertension Patients**
[Click Here](#)
3. **Dangerous Cardiovascular Complications Endanger Pregnant Diabetic Women**
[Click Here](#)
4. **Patent Issued for New Implantable Glucose Biosensor**
[Click Here](#)
5. **Lack of Vitamin D Increases Risk for Type 1 Diabetes**
[Click Here](#)
6. **Undernutrition of Preterm Infants Protects Against Insulin Resistance**
[Click Here](#)
7. **Bone Marrow Stem Cells Provide Insulin Source***
[Click Here](#)
8. **C-Peptide Improves Sensory Nerve Function in Type 1 Diabetes**
[Click Here](#)
9. **Lead Levels Linked to Hypertension**
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10. **Cranberry Juice Raises HDL Cholesterol Levels**
[Click Here](#)
11. **Growth Hormone Replacement Therapy Benefit Type 1's***
[Click Here](#)
12. **Black Americans With African Roots Less Sensitive to Insulin**
[Click Here](#)
13. **Cilostazol Benefit Diabetics With Peripheral Vascular Disease**
[Click Here](#)
14. **Bronx Has Highest Obesity, Diabetes Rates in New York City**
[Click Here](#)
15. **Aspirin's Anti-Clotting Ineffective for those at Greatest Risk***
[Click Here](#)

ITEMS For The Week:

Item 1

Alternative-Site Testing (AST) Is Consistent With Fingertip BG Results

AST results are consistent with fingertip BG results in both the fasting state and 2 h postmeal; no benefit from site preparation by local rubbing

The objective of the study was to determine whether clinically significant differences exist in fasting blood glucose (BG) at the forearm, palm, and thigh relative to the fingertip; to assess the impact of prandial status by comparing BG between alternative sites and the fingertip at several time intervals after carbohydrate intake; to assess the effects of moderate brief exercise on site-to-site differences in

BG; to evaluate the impact of site preparation by local rubbing on alternative-site testing (AST) equivalence; and to determine levels of perceived pain and satisfaction associated with AST.

Fasting BG was measured using the One Touch Ultra (LifeScan, Milpitas, CA) at the fingertip, palm, thigh, and each forearm (with local rubbing) in 86 patients with type 2 diabetes. A 40-g carbohydrate meal was consumed and BG was again measured from each site at 60, 90, and 120 min postmeal, with an additional forearm test at 90 min without local rubbing. Patients then exercised for 15 min with repeat BG at each site. Differences in BG between sites were assessed using repeated-measures ANOVA and regression analyses.

Significant differences in BG at alternative sites were found 60 min postmeal ($P = 0.0003$) and postexercise ($P = 0.037$). Specifically, clinically significant differences (expressed as percent difference from the fingertip) at 60 min include $-8.8 \pm 10.8\%$ at the forearm and $-13.7 \pm 10.7\%$ at the thigh, and postexercise $+19.1 \pm 19.1\%$ at the forearm and $+15.6 \pm 22.6\%$ at the thigh. However, no significant differences were observed between sites in either the fasting state or at 90 and 120 min postmeal. The dynamic results suggest a time lag in equilibration of forearm and thigh BG during periods of rapid glucose change. Palm and fingertip BG test results were similar at all time points.

From the results it was concluded that AST results are consistent with fingertip BG results in both the fasting state and 2 h postmeal; no benefit from site preparation by local rubbing was noted. However, testing at sites other than the hand cannot be recommended 1 h postmeal or immediately after exercise. AST is equivalent and appropriate for use at testing times commonly used in clinical practice. *Diabetes Care April 2003*

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dbaza inc. has created a comprehensive, practical, and engaging educational tool to educate newly diagnosed children with type 1 diabetes. This product can help you use your education time more effectively, allowing you to spend your time on the more difficult issues. [More Information](#)

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Item 2

Newest-Generation Calcium Channel Blockers Better Tolerated By Hypertension Patients

Lercanidipine and lacidipine, both newest-generation dihydropyridine calcium channel blockers, are much better tolerated than third-generation amlodipine, say researchers.

The latest calcium channel blockers offer the potential of fewer side effects and better patient compliance, combined with effective control of blood pressure.

These conclusions are drawn from the COHORT trial and are reported by A. Zanchetti of the University of Milan in Milan, Italy. The trial compared patient tolerability between lercanidipine, lacidipine and amlodipine among 828 elderly hypertension patients, aged 60 years or older.

All three treatments lowered blood pressure to a similar degree, but lercanidipine and lacidipine were better tolerated than amlodipine.

Tolerability was based on the percentage of patients who experienced oedema, the most common side effect of calcium channel blockers. Lercanidipine and lacidipine were better tolerated both as single agents and in combined therapy with other antihypertensive drugs, the researchers report.

Successful treatment with calcium channel blockers depends on patient compliance, they add, and the better tolerability of the latest generation of calcium channel blockers could result in improved compliance. *Clin Cardiol 2003;26(2 Suppl 2):1117-1120*

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FACT: The best predictors of cardiovascular disease in patients with Type 2 diabetes are dyslipidemia, elevated blood pressure, smoking and hyperglycemia.

N Engl J Med 1998; 339:229–34.

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Item 3

Dangerous Cardiovascular Complications Endanger Pregnant Diabetic Women

Early development of a restrictive pattern of ventricular filling in pregnant diabetics can lead to complications during delivery.

Whereas pregnancy in healthy women results in a reversible physiological left ventricular hypertrophy, a disturbed relaxation pattern and a temporary decrease of left ventricular systolic function, pregnant women who are diabetic have delayed relaxation at the beginning of pregnancy and develop a restrictive filling pattern, say specialists in Düsseldorf, Germany. They studied the course of haemodynamic parameters under the increased volume load during pregnancy and delivery in women with insulin-dependent diabetes.

The specialists examined 51 women with insulin-dependent diabetes and 51 healthy pregnant women. Fifty one healthy women who were not pregnant were used as controls.

Left ventricular mass and fractional shortening were calculated and mitral inflow and pulmonary venous flow profiles were analysed to evaluate left ventricular diastolic function.

It was found that during pregnancy, left ventricular mass increased, fractional shortening decreased and diastolic dysfunction occurred. While the healthy pregnant women developed signs of disturbed relaxation during pregnancy, pregnant diabetic women showed signs of a disturbed relaxation at the beginning of gestation.

Of the 51 pregnant diabetic women, 29 developed a restrictive ventricular filling pattern at the 24th week of gestation. The remaining 22 diabetic women had a comparable restrictive filling pattern only during vaginal delivery.

There were dangerous complications in 10 of the 29 pregnant diabetic women but no complications in the other 22 diabetic pregnant women or the healthy pregnant women.

Diabetologia 2003; 46:267-275

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Item 4

Patent Issued for New Implantable Glucose Biosensor

M-Biotech announced at the MedTech Conference in Irvine that it has received a third U.S. patent for its unique hydrogel technology used in its implantable glucose biosensor.

M-Biotech has combined microsensor technology with advanced polymer science to create a miniature glucose sensor. The M-Biotech biosensor was developed to overcome the pain and inconvenience of existing "finger stick" products that dominate the market and result in unacceptable levels of non-compliance with diabetic patients.

There are two main parts to the M-Biotech system: the implantable glucose biosensor, which is a tiny sensor that is implanted near the abdomen in the subcutaneous layer of the skin and the pager like alarm monitoring device that displays glucose levels to the patient, and alerts them when the levels are not safe so corrective action can be taken.

"The implanted sensor is what makes our system radically different from other approaches now being pursued," said In Suk Han, PhD, president, CEO of M-Biotech. "Our sensor's technology is very simple, inexpensive, and completely eliminates the main hurdles that face both chemical and optical methods such as calibration, long term implantation, interference, and longevity. In addition, the advances allowed by the M-Biotech sensor could enable the development of the first closed-loop insulin delivery system because you could now have a wireless connection between a highly reliable continuous glucose monitor (M-Biotech device) and a topical or implanted insulin delivery system now under development by several companies."

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DID YOU KNOW: Pharmacists are being certified as Diabetes Care Managers and can be an important ally to other medical professionals

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Item 5

Lack of Vitamin D Increases Risk for Type 1 Diabetes

Vitamin D-deficiency in infancy and vitamin D receptor gene polymorphisms may be risk factors for insulin-dependent Diabetes.

The biologically active form of vitamin D, is a potent modulator of the immune system as well as a regulator of bone and mineral metabolism.

"1,25(OH)2D3 and its analogs significantly repress the development of insulinitis and diabetes in the non-obese diabetic (NOD) mouse, a model of human IDDM," reported Julia B. Zella and Hector F. DeLuca at the University of Wisconsin-Madison.

They continued, "1,25(OH)2D3 may modulate IDDM disease pathogenesis by repression of type I cytokines, inhibition of dendritic cell maturation, and upregulation of regulatory T cells. The function of vitamin D as a genetic and environmental determining factor for IDDM, the protective role of 1,25(OH)2D3 and its analogs in a mouse model of IDDM, and the possible mechanisms by which this protection occurs will be reviewed."

Zella and DeLuca published the results of their study in the Journal of Cellular Biochemistry (Vitamin D and autoimmune diabetes. *J Cell Biochem*, 2003;88(2):216-222).

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Item 6

Undernutrition of Preterm Infants Protects Against Insulin Resistance

Investigators suggest that guidelines advocating nutrition to "normalize" growth in infancy may actually increase adult morbidity and therefore should be changed.

A marker for insulin resistance was lower in a group of adolescents that were born prematurely and randomized to an undernutrition cohort, according to the results of a study published in the March 29 issue of *The Lancet*.

"Whether our results can be generalized to full-term infants requires further research," senior author Alan Lucas, MD, from the Institute of Child Health in London, U.K., says in a news release. "We

recognize that preterm infants are different to those born at term in many respects – most notably that they have medical problems related to prematurity itself. Nevertheless, even if our findings are not generalizable they could still apply to the 6% of the population born preterm."

The investigators tested fasting concentrations of 32–33 split proinsulin, a marker for insulin resistance, in 216 adolescents born prematurely in the 1980s who had participated in randomized trials of infant nutrition, and in 61 adolescents born at term who received "normal" nutrition in the first few weeks of infancy.

Compared with both preterm infants given a high-nutrient diet and with healthy children born at term, adolescents given a relatively low-nutrient diet early in infancy had a 20% decrease in fasting proinsulin concentration. This marker was associated with greater weight gain in the first two weeks of life (13.2% change per 100 g weight increase; 95% confidence interval, 5.5% - 20.9%; $P = .001$), independent of birthweight, gestation, neonatal morbidity, and demographic, anthropometric, and socioeconomic factors.

The authors suggest that associations between low birthweight for gestation and later cardiovascular risk factors may reflect early postnatal rather than antenatal factors. "We have shown for the first time in human beings the importance of a lower nutrient intake and slower growth early in postnatal life in favorably programming a key health outcome," they write. "Our findings, therefore, could partly explain what up to now has been regarded as the fetal origins of adult disease."

They suggest that relative undernutrition associated with colostrum and breast-feeding very early in infancy may reduce cardiovascular risk. "If confirmed in infants not born prematurely, our findings would suggest that public-health interventions that aim to reduce the risk of coronary heart disease by the promotion of weight gain in infancy could even be deleterious," they conclude. "Consequently, present recommendations for infant feeding need to be reappraised as new data emerge." *Lancet*.

2003;361:1089-1097

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DID YOU KNOW: Young women with type 1 diabetes are 30 times more likely than other women their age to die of heart disease. Young women with type 1 (insulin-dependent) diabetes face a huge heart risk. They are 30 times more likely than other women their age to die of heart disease. This is according to a report presented at a diabetes meeting in Glasgow, Scotland.

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Item 7

Bone Marrow Stem Cells Provide Insulin Source

Morphed cells functioned as pancreas cells producing insulin in response to glucose.

While the researchers warn that their findings cannot be applied to treating diabetics now, they say the results potentially offer a means of producing unlimited quantities of functional insulin-producing cells culled from the bone marrow of patients with the illness.

Writing in the *Journal of Clinical Investigation*, study leader Dr Mehboob Hussain says the research suggests that there is an "additional, easily accessible source of cells that are capable of becoming insulin-producing pancreatic endocrine cells".

Dr Hussain and his team reached their conclusions after using a molecular biology technique called "CRE-loxP", which allowed them to identify and isolate bone-marrow-derived cells.

Several research groups have reported that embryonic stem cells and cells found in the pancreas can be converted into insulin-producing cells, but until now no one has specifically explored the bone marrow as a source of beta cells - the cells found in the pancreas that are damaged or destroyed in some forms of diabetes.

Dr Hussain and colleagues used CRE-loxP to create male mice with bone marrow cells that produced an enhanced green fluorescent protein only in the presence of activated insulin genes, typically found in pancreatic beta cells.

The bone marrow was then transplanted from the male mice into female rodents in which bone marrow had been destroyed by radiation.

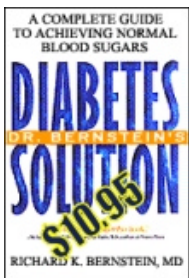
These cells, the researchers found, functioned as insulin-producing beta cells all containing the Y chromosome, which could only have come from a male donor. In addition, the cells secreted insulin in response to glucose, one of the signatures of pancreatic beta cells.

However, the researchers highlight that only 1.7 to 3 per cent of beta cells in the pancreas of the female mice came from transformed bone marrow stem cells and it remains unknown which subpopulation of stem cells in the bone marrow are the actual source of insulin-producing cells.

"We still need to find out how well these converted cells are functioning compared to indigenous beta cells in the pancreas. A lot more work needs to be done.

"Nevertheless, our study demonstrates the potential for using the bone marrow as a source of insulin-producing cells," said Dr Hussain. *Journal of Clinical Investigation March 2003*

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Item 8

C-Peptide Improves Sensory Nerve Function in Type 1 Diabetes

Treatment with C-peptide improves sensory nerve function in patients with type 1 diabetes.

Intensified insulin treatment can slow the progression of various diabetic complications, the authors explain, but nothing has been shown to prevent the development of diabetic neuropathy.

Dr. John Wahren and colleagues from Karolinska Institutet in Stockholm, examined whether 3 months of C-peptide treatment could exert a beneficial effect on early peripheral nerve function abnormalities in 26 patients with type 1 diabetes.

Sensory and motor nerve conduction velocities, as well as compound muscle action potential (CMAP) and sensory nerve action potential (SNAP) amplitudes, were similar at baseline for the C-peptide-treated patients and 20 placebo-treated patients. Metabolic control of diabetes was also similar in the two groups, they report in the February issue of Diabetes.

After 6 weeks of treatment, the C-peptide group showed a significant increase in sensory nerve conduction velocity, which persisted as a 5% improvement after 12 weeks, the authors report. This change resulted in a restoration of sensory nerve conduction velocity to 80% of normal values.

"The significance of the 5% improvement in sensory nerve conduction velocity stems from the fact that C-peptide could and, for the first time in humans, did improve nerve conduction velocity in type 1 diabetic patients," Dr. Wahren told Reuters Health. "No other treatment has been able to achieve that."

Motor nerve conduction velocity also improved after 6 weeks of C-peptide treatment, the report indicates, but this improvement had disappeared by 12 weeks.

CMAP did not change in either patient group, the researchers note, but SNAP increased significantly in the placebo group. On the other hand, vibration threshold decreased significantly (compared with placebo) after 12 weeks of C-peptide treatment.

"C-peptide is after all a biologically active peptide hormone of potential importance for the therapy and/or the prevention of long-term complications of type 1 diabetes," Dr. Wahren concluded. "Molecular and cellular mechanisms of C-peptide action are becoming increasingly understood, and supportive in vivo data from patients and animals accumulate."

"Phase 2 B clinical trials to establish proof of this concept in patients with diabetic neuropathy are now under way," Dr. Wahren added. *Diabetes* 2003;52:536-541.

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FACT:

?? **The typical American now consumes approximately three hamburgers and four orders of french fries every week.**

?? **What we eat has changed more in the last 40 years than in the last 40,000**

Diabetes In Control Choice Award Update:

The winner of the Diabetes in Control Choice Award for the best new product for the new millennium is.... [Click Here to find out](#)

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Item 9

Lead Levels Linked to Hypertension

Lead at levels far below those considered safe can increase blood pressure.

That, according to the results of a study of perimenopausal women published in the March 26 issue of *The Journal of the American Medical Association*.

"Blood lead is among the few predictors of both systolic and diastolic blood pressures in perimenopausal US women. Per unit change, blood lead was a stronger predictor of diastolic blood pressure than age," write Denis Nash, PhD, MPH, from the University of Maryland School of Medicine in Baltimore, and colleagues. "From a public health perspective, the most important and troubling implication of these findings is that lead appears to increase blood pressure in women at very small increments above 1.0 µg/dL, well below what is considered deleterious in adults."

Dr. Nash's group conducted a household interview and physical examination of 2,165 women, aged 40 to 59 years, who participated in the Third National Health and Nutrition Examination Survey from 1988 to 1994.

After adjustments for age, race, ethnicity, alcohol intake, cigarette smoking, body mass index, and kidney function, blood lead levels were significantly associated with prevalence of systolic and diastolic hypertension. Compared with women in the lowest blood lead quartile (mean, 1.0 µg/dL), women in the highest quartile of blood lead (mean, 6.3 µg/dL) had a 3.4-fold increase in the risks of diastolic hypertension (adjusted odds ratio [OR] 3.4; 95% confidence interval [CI], 1.3 - 8.7).

The effect of lead level on risk of diastolic hypertension was even higher in postmenopausal women (OR for highest to lowest quartile, 8.1; 95% CI, 2.6 - 24.7). Blood lead levels were also linked to moderately increased risks of general and systolic hypertension.

Compared with women in the lowest quartile of blood lead levels, those in the highest quartile had a difference in mean blood pressure of 1.7 mm Hg systolic and 1.4 mm Hg diastolic. Mean blood lead level in this sample was 2.9 µg/dL. These findings suggest effects of lead at levels less than the U.S. occupational blood lead exposure limits (40 µg/dL) and even less than the current Centers for Disease Control and Prevention level for preventing lead poisoning in children (10 µg/dL).

"The findings from our study of associations of blood lead with systolic and diastolic hypertension and blood pressure among women in the general population lend support for further studies on the health effects of bone lead mobilization during the menopausal transition," the authors write. "These results provide support for continued efforts to reduce lead levels in the general population, especially women."

JAMA. 2003;289:1523-1532

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Special Feature:

The Results of the Diabetes In Control 10,000 Step Study:

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Item 10

Cranberry Juice Raises HDL Cholesterol Levels

Free radical damage is decreased after one serving a day and overcomes the oxidant stress of fructose.

Investigators at the University of Scranton, Pennsylvania, are reporting that cranberry juice contains more phenol antioxidants than 20 commonly consumed fruit juices and that consumption can significantly raise HDL cholesterol levels in hypercholesterolemic patients.

At the 225th annual meeting of the American Chemical Society, underway this week in New Orleans, Dr. Joe A. Vinson told attendees that he and his colleagues measured the effects of cranberry juice consumption in 20 subjects with untreated hypercholesterolemia.

Following a fasting period, half the subjects worked their way up to 3 servings of cranberry juice with an artificial sweetener added daily, while the other half consumed cranberry juice plus sugar for 1 month. Each serving consisted of 8 oz. of cranberry juice containing about 27% pure juice, comparable to what is commonly sold in most supermarkets.

There was no effect on total cholesterol after the study period, but LDL levels dropped somewhat with 2 servings of cranberry juice per day and HDL cholesterol levels increased significantly with 3 servings per day, Dr. Vinson told Reuters Health. Triglyceride levels increased significantly in the group that consumed 3 servings of cranberry juice plus sugar daily, but did not change in the group that consumed cranberry juice with the artificial sweetener.

"The increase of about 10% in HDL levels that we found translates into a 40% decrease in heart disease risk according to Framingham data," he asserts.

Dr. Vinson notes that subjects lost about 2 pounds during the study period, which approached statistical significance. "It didn't matter if [the drink] contained sugar or not," he commented. "We think the weight loss is because of the polyphenols...that affect metabolism," he explains.

"Free radical damage is decreased after one serving a day," Dr. Vinson said. "Cranberry juice overcomes the oxidant stress of fructose."

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Item 11

Growth Hormone Replacement Therapy Benefit Type 1's

Growth hormone (GH) replacement therapy is beneficial in patients with type 1 diabetes and GH deficiency.

That, according to the results of a small study reported in the March issue of Clinical Endocrinology. "Specific problems in patients with insulin-dependent diabetes mellitus (IDDM) and GH deficiency are hypoglycemic attacks, increased insulin sensitivity, and loss of energy," Dr. Emanuel R. Christ and colleagues from King's College London, UK, note. These symptoms may be associated with GH deficiency.

The researchers examined the effect of GH replacement therapy in five diabetic patients with GH deficiency. The patients had a mean age of 41.6 years and mean BMI of 22.3. The team used validated questionnaires to assess quality of life and measured body composition, metabolic control (HbA1c), insulin requirements, and frequency of hypoglycemia. In addition, they obtained monthly eye photographs.

The mean baseline insulin-like growth factor I (IGF-I) concentration was 7.8 nmol/L, which significantly increased 3 and 6 months (17.9 nmol/L and 19.2 nmol/L, respectively; $p < 0.05$) after GH therapy.

Mean baseline HbA1c levels was 8.2%, which did not change significantly during the study.

Insulin requirement at baseline was 0.40 U/kg per day. This increased significantly (0.69 U/kg per day at 3 months and 7.0 U/kg per day at 6 months, $p < 0.04$) with GH replacement therapy.

After 6 months of GH replacement therapy, there was a nonsignificant increase in lean body mass and a significant decrease in body fat mass ($p < 0.01$).

The results of monthly eye examinations showed no significant changes in the retina in any of the patients.

"Number of severe hypoglycemic (< 3 mmol/L) attacks decreased significantly ($p < 0.04$) and quality of life assessed by validated questionnaires improved significantly in all patients," Dr. Christ and colleagues report.

These findings suggest that, at least in the short-term, GH replacement therapy can benefit type 1 diabetics with GH deficiency and that long-term studies are warranted to determine the safety of this treatment. *Clin Endocrinol* 2003;58:309-315.

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DO YOU KNOW

Diabetes Patients see their pharmacists 4 times a month on average. Make each patient's pharmacist a part of your diabetes care team and they can help improve outcomes.

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Item 12

Black Americans With African Roots Less Sensitive to Insulin

American children whose genetic roots strongly reach back to Africa are less sensitive to insulin—a factor important in the development of type 2 diabetes—than those whose ancestors hailed heavily from Europe.

That, according to study results in the April issue of the journal Diabetes. Rather than relying on broad categories of race, such as black or white, researchers in diabetes and obesity from the Keck School of Medicine of USC and the University of Alabama at Birmingham analyzed a group of children for 20 key genetic markers found far more often in those of African descent than those of European descent. They found that the more African-origin markers in children's genetic makeup, the less their bodies responded to insulin—and the more insulin in their blood.

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Medical researchers have long known that diabetes disproportionately afflicts black communities. But by using specific genetic markers of ancestry, the UAB and Keck School team is moving beyond general concepts of race and racial groupings to better understand how genes influence the development of disease.

"We have previously shown that African-American children are more insulin-resistant, but prior to this study, we lacked evidence suggesting a genetic basis of this effect," says Michael I. Goran, Ph.D., professor of preventive medicine and physiology and biophysics at the Keck School and a study coauthor. "With these results, we have evidence to suggest that at least part of the different profile in African Americans may be intrinsic rather than due to environmental factors."

"Knowing that genes may play a role in ethnic differences in risk for type 2 diabetes may influence how physicians treat their patients," adds study co-author Barbara A. Gower, Ph.D., associate professor of nutrition sciences at UAB. "In particular, they may want to emphasize the importance of a healthy lifestyle to their African-American patients."

Gower indicated that follow-up analyses with individual markers will be a first step toward identifying specific genes associated with insulin secretion or action.

Researchers conducted their study in a group of 125 Alabama children between ages 5 and 16 who identified themselves either as African American or European American.

The researchers looked for 20 specific sequences of genetic code that are found more frequently in people of African descent than in those of European descent. This analysis measures the individuals' "African admixture," a term for the relative proportion of their genetic make-up that reflects African origin. Pennsylvania State University researchers came up with the genetic panel and analyzed the DNA.

Looking at the group as a whole, the more African-origin genetic markers found in the children, the less sensitive the children were to insulin.

Insulin works in this way: Normally, after a meal, the body breaks down carbohydrates into glucose, or sugar, in the blood. That signals the pancreas to secrete insulin, because insulin helps the body's cells pick up the glucose and convert it to energy. But when cells become less sensitive to insulin, as they gradually do in type 2 diabetes, they cannot absorb glucose as well as they should and the sugar remains in the blood.

The proportion of African-origin markers found in the children also was linked to higher fasting insulin (levels of insulin in the blood between meals) and greater acute insulin response (levels of insulin in response to glucose from food).

Socioeconomic status, meanwhile, only was related to acute insulin response. The lower the socioeconomic level of children's families, the greater the acute insulin response.

Researchers say the study suggests that genetic factors may influence the pancreas' function, the ability of the liver to get rid of insulin, or both. Because social and environmental factors also appear to play a role, though, identifying the specific factors at fault also will be important in understanding and preventing the racial and ethnic disparities seen in type 2 diabetes.

In the future, the team hopes to use additional genetic markers to better characterize people's genetic makeup and eventually track down the specific genes that are associated with insulin sensitivity and acute insulin response. *April issue of the journal Diabetes*

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Item 13

Cilostazol Benefit Diabetics With Peripheral Vascular Disease

Cilostazol can induce some beneficial changes in serum lipid profile and plasma fatty acid composition in type 2 diabetics with peripheral vascular disease.

Researchers in Japan report this finding following a three-center investigation of the effects of cilostazol in these patients. The agent is reported to have both anti-thrombotic and cerebral vasodilating effects.

Dr N. Nakamura from The Second Department of Internal Medicine, Hirosaki University School of Medicine, Hirosaki City, Aomori, led this study in association with colleagues from the Toyama Medical and Pharmaceutical University and Inami General Hospital, both in Toyama. Seventeen patients with type 2 diabetes and peripheral vascular disease participated in the study.

Investigators measured for serum concentrations of total cholesterol, triglycerides, high-density lipoprotein-cholesterol, lipoprotein (a), remnant-like particles-cholesterol, apolipoproteins and plasma fatty acid composition.

These measurements were taken before and then at one month, three months and again six months after administration of the cilostazol, which was given in a dose of 200 mg/day.

Overall, the study found the serum triglyceride concentrations were significantly decreased after cilostazol (from 1.31 ± 0.17 mmol/l to 0.86 ± 0.07 mmol/l at six months).

Plasma docosahexaenoic acid levels were significantly increased after the drug ($4.11 \pm 0.26\%$ to $4.94 \pm 0.26\%$ at six months).

These findings indicate cilostazol can induce some beneficial changes in serum lipid profile and plasma fatty acid composition, conclude these authors. *Clinical and Experimental Medicine 2003;2:4:180-184*

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FACT: Diabetics Benefit from Moderate Drinking in Reducing Mortality. Physicians Health Study found that those who drank more alcohol had lower cardiovascular mortality.

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Item 14

Bronx Has Highest Obesity, Diabetes Rates in New York City

Bronxites have the highest obesity and diabetes rates in New York City.

The survey of 10,000 New Yorkers found that 21.8 percent of people in the Bronx are obese, compared with 18.8 percent in Brooklyn, 16.8 percent in Staten Island and 15.4 percent in Queens. Manhattan had the lowest obesity rate, with 11.9 percent of the population considered dangerously overweight.

In addition, 11.8 percent of people in the Bronx are diagnosed with diabetes, an illness closely linked with poor nutrition, lack of exercise and obesity. Citywide, 7.9 percent of the population has diabetes.

Health Department officials said diabetes has become an epidemic in the city, where the rate of the disease has doubled in the last eight years. The national diabetes rate also has doubled in the last few years.

"This is a Code Red situation," said Dr. Joel Zonszein, an obesity and diabetes specialist at Montefiore Medical Center. "The statistics are alarming. And this is, if anything, an underestimation of what's going on."

Zonszein said the high diabetes rate in the Bronx mirrors the borough's increasing Hispanic and African-American populations, "which have the highest rates of the disease," and a declining white population.

The study also found that obesity and diabetes are more prevalent in low-income neighborhoods. In the South Bronx, for example, 13.9 percent of the population has diabetes.

Zonszein said this is, in part, because people living in poorer communities tend to eat more affordable fast foods, which are often high in fat and calories.

"This population is getting these excess calories in their diet, and are working out less, and the body cannot adapt to that," he said.

The doctor stressed that educating people about diet and exercise is crucial, because Type 2 diabetes, the most common form of the disease, can be prevented with lifestyle changes.

Dr. Xavier Pi-Sunyer, an obesity and diabetes specialist at St. Luke's-Roosevelt Hospital in Manhattan, said the negative health effects of obesity are far-reaching and agreed that education is the solution.

"It's not just diabetes -- it's heart disease, stroke, high blood pressure, arthritis," Pi-Sunyer said. "The costs financially and in quality of life are very high. The Department of Health needs to get busy and educate physicians and raise public awareness, much like the tobacco campaigns."

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Item 15

Aspirin's Anti-Clotting Ineffective for those at Greatest Risk

Some people are resistant to the drug's anti-clotting effect, and they may have a threefold higher risk of death, heart attack or stroke.

Millions of Americans rely on an aspirin a day to help keep heart attacks and strokes away. But a new study in the Journal of the American College of Cardiology shows that it doesn't for everyone.

Dr. Eric Topol of the Cleveland Clinic Foundation stated that, "Probably there has been no medicine that has had a greater impact in our field than aspirin, but we took for granted that it worked in everyone,"

"We have to increasingly appreciate that aspirin resistance is real and not turn our backs on it," he said. "And we need to hunt this thing down: the cause, the specific ways to more rapidly screen for it, find its genetic basis -- which is only a theory at the moment -- and protect these patients. They are taking aspirin, but they are not deriving benefit from it. So there are a lot of people out there who have the illusion of being protected by aspirin."

The researchers enrolled 326 patients between January 1997 and September 1999 who had a history of cardiovascular disease but were stable at the time they joined the study. Based on blood tests performed after each patient had been taking 325 mg of aspirin for at least a week, 17 patients (5.2 percent) were found to be resistant to the anti-clotting effect of aspirin. (Typical aspirin therapy uses 81 mg or 162 mg of aspirin daily.)

During an average follow-up period of almost two years, aspirin-resistant patients were more than three times as likely to die or suffer a heart attack or stroke.

If aspirin resistance is related to a genetic mutation, an inexpensive genetic screening test might be possible, but first researchers would need to find the right gene.

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Quote of the Week-----

“We don't see things as they are, we see things as we are.”

----- Anais Nin

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