

DIABETES IN CONTROL.com Newsletter

The Newsletter for Professionals in Diabetes Care

August 15, 2007 - Issue #377

Top Diabetes Stories:

Diabetics Have a 75% B1 Deficiency Leading to Vascular Problems*

<http://www.diabetesincontrol.com/results.php?storyarticle=5045>

Don't Rely on Beta-Blockers to Reduce Blood Pressure*

<http://www.diabetesincontrol.com/results.php?storyarticle=5043>

American Women Are Getting Fatter By At Least 20 Pounds*

<http://www.diabetesincontrol.com/results.php?storyarticle=5040>

Metabolic Syndrome In Kids Increases Adult Heart Risk*

<http://www.diabetesincontrol.com/results.php?storyarticle=5039>

Bone Cells May Be Key to Controlling Diabetes- New Possible Treatment*

<http://www.diabetesincontrol.com/results.php?storyarticle=5038>

Reducing Inflammation Plays Key Role in Type 1 Diabetes Therapy*

<http://www.diabetesincontrol.com/results.php?storyarticle=5037>

Islet Cell Infusion Plus Exenatide Leads to Insulin Independence For Type 1's*

<http://www.diabetesincontrol.com/results.php?storyarticle=5036>

Top-10 Comparison of Diabetes Drugs Give One a Top Grade by Johns Hopkins*

<http://www.diabetesincontrol.com/results.php?storyarticle=5033>

From the editor's desk

Laura Plunkett., BA Psychology recently had a handout for Emergency Room Visits for Kids with Diabetes and the link was lost before many of you had a chance to read it. We have it for you again [click here](http://www.diabetesincontrol.com/results.php?storyarticle=5046)
<http://www.diabetesincontrol.com/results.php?storyarticle=5046>

This week Item #1 is about a new study released that talks about how people with diabetes are Vitamin B1 deficient by up to 75% leading to vascular problems. The question is should diabetics be supplementing their diets with B1 vitamins to prevent the vascular problems? Well we had a chance to ask Dr. Richard K. Bernstein his comments on the study. His reply was that over the years we will find that people with elevated blood sugars will be deficient in other water soluble vitamins, besides just thiamine (VitB1), due to the fact that when our blood sugars are elevated we pee more and when we pee more we loose water soluble vitamins, nothing new. According to him the best way to maintain B1 levels is not to supplement the diet with more vitamins, *"JUST CONTROL YOUR BLOOD SUGARS TO NORMAL LEVELS" and stop peeing as much, can it be any simpler?"*

Some of the world's largest pharma firms have set out what therapeutic areas and specific mechanisms are becoming more important to them, and which will be left by the wayside and we have the inside scoop. [Click here to read Big Pharma's Wish List](http://www.diabetesincontrol.com/results.php?storyarticle=5047)
<http://www.diabetesincontrol.com/results.php?storyarticle=5047>

Dr. Sheri Colberg, author of The 7 Step Diabetes Fitness Plan: Living Well and Being Fit with Diabetes, knows that Walking is the most popular leisure-time physical activity among adults and this week she wants to help motivate your patients by counting steps
<http://www.diabetesincontrol.com/results.php?storyarticle=5048>

The Diabetes Cruise: We are putting together a Diabetes CE/CME cruise for medical professionals for next March, 2008. It is a 9 day cruise to the Caribbean with 20 hours of CME/CE that will teach Dr. Richard K. Bernstein's diabetes treatment methods. This is a once in a lifetime opportunity to learn from Dr. Bernstein his methods to normalize blood sugars. For more information on the cruise click here.
<http://www.diabetesincontrol.com/cruise.php>

Next FREE LIVE WEBCAST: September 19, 2007, we will be having another live webcast and teleconference call with Dr. Richard K. Bernstein, who will answer questions from medical professionals and patients and it is free. Just go to <http://www.diabetes911.net/askdrb/index.php> and register and ask a question if you like!

August 19, 7PM ET on CNBC

Sleep expert Dr. Michael Thorpy talks about sleep disorders associated with diabetes. And, why diabetes isn't easy, from people who know. Plus, Chef Michel Nischan shows us a low-carb, low-fat pizza that isn't missing any flavor! Watch this exciting episode of dLifeTV on: Sundays on CNBC at 7 PM ET, 6 PM CT, and 4 PM PT Check your local listings for details.

We can make a difference!

This Week's Overview:

- Item #2: **Statins Safe and Effective for Children with Familial Hypercholesterolemia**
- Item #4: **Postprandial Hyperglycemia's Related To Abnormal Variations In Blood Pressure**
- Item #5: **New Onset Diabetes More Likely With Metoprolol Than With Carvedilol in Heart Failure**
- Item #11: **Researchers Develop Successful Insulin-Cell Transplants for Type 1 Diabetics**
- Item #12: **No Diet Foods for Kids-Can Lead to Obesity**
- Item #14: **Secondary Failure of Glucose Control With Metformin, Sulfonylurea, or TZD's Monotherapy**
- Item #15: **Metformin and Body Weight**

Check out this weeks **"Test Your Knowledge"** question. This week's question deals with CGMS.
<http://www.diabetesincontrol.com/results.php?storyarticle=5049>

Dave Joffe, Editor-in-Chief

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CE CREDITS

ARE NOW AVAILABLE FOR DM EDUCATE? , COMPREHENSIVE ONLINE DIABETES MANAGEMENT COURSE - DM Educate was created by the University of Pittsburgh, in partnership with Novo Nordisk to provide pharmacy students with the tools to meet the needs of patients with diabetes. Currently 75 colleges and universities throughout the world are registered and using the course. [Learn more here](http://www.diabetesincontrol.com/results.php?storyarticle=4904)
<http://www.diabetesincontrol.com/results.php?storyarticle=4904>

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NEWS FLASH:

Historic Agreement Reached Regarding Diabetes Care in California Public Schools. Children with Diabetes Win Assurance Of Legally-required Services At School; California Department of Education & ADA Announce Agreement on In-School Care for Such Students, Schools to provide aid to diabetics. Settlement entitles California's diabetic kids to care at school, Diabetics win care at schools, and Calif. schools required to give medical help to kids with diabetes. URL: <http://www.dredf.org/healthcare/diabetes.shtml>

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Tools for your Practice:



Journey For Control: Please bookmark this site and stop back in the coming weeks to find Healthy Interactions (Healthyi) and Merck & Co., Inc. (Merck) have partnered to transform how diabetes educators and other healthcare professionals engage patients in learning about diabetes and in making lifestyle modifications that lead to improved self-management. This initiative will involve the use of a series of diabetes Conversation Map tools, which Healthy Interactions and the ADA have been developing since early 2006. If you are a diabetes educator and would like to register for Conversation Map training, go to <http://www.healthyi.com/diabetes/>. Or http://journeyforcontrol.com/journey_for_control/journeyforcontrol/index.jsp

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http://www.medicool.com/diabetes/sample_diasox_trial.php?medid=08032007eria

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ITEMS For The Week:

Item 1

Diabetics Have a 75% B1 Deficiency Leading to Vascular Problems

A thiamine (Vitamin B1) deficiency may be key to vascular problems for diabetic patients.

*FDA panel says Avandia offers benefits to people with type 2 disease, **but**.....*

<http://www.diabetesincontrol.com/results.php?storyarticle=5045>

Thornalley and co-workers report that the thiamine concentration in blood plasma was decreased 76 per cent in type 1 diabetic patients and 75 per cent in type-2 diabetic patients.

Researchers at Warwick Medical School, University of Warwick, have discovered that deficiency of thiamine -- Vitamin B1 -- may be key to a range of vascular problems for people with diabetes. They have also solved the mystery as to why thiamine deficiency in diabetes had remained hidden until now.

Diabetes is increasing in incidence in the U.S. and elsewhere and one of the most significant health problems associated with the condition are vascular complications: microvascular complications, such as damage to the kidney, retina and nerves in arms and legs; and macrovascular complications, such as heart disease and stroke.

The University of Warwick researchers, led by Professor Paul Thornalley, have shown conclusively that diabetic patients are thiamine deficient in blood plasma. They were also able to solve the mystery of what was happening to thiamine in diabetic patients and connect it more closely to vascular complications in diabetic patients.

In a paper entitled "High prevalence of low plasma thiamine concentration in diabetes linked to a marker of vascular disease," published in *Diabetologia* on 4th August, the team found that thiamine concentration in blood plasma was decreased 76% in type 1 diabetic patients and 75% in type 2 diabetic patients.

This significant decrease had been previously masked as the conventional way of assessing levels of thiamine status was to measure the activity of an enzyme called transketolase in red blood cells. Past studies had seen normal activity of this enzyme and assumed normal levels of thiamine when in fact the normal enzyme activity was due to increased amounts of two proteins THTR-1 and RFC-1 that help transport thiamine into red blood cells. The increased levels of these proteins were a direct response to there being a deficiency of thiamine in the body.

The researchers found that the decreased availability of thiamine in vascular cells in diabetes was linked to a marker of microvascular and macrovascular complications. It likely reflects problems in endothelial cells (endothelial cells line the body's entire circulatory system) and increased risk of atherosclerosis (chronic inflammation in the artery walls).

The researchers found that the decreased plasma thiamine concentration in clinical diabetes was not due to a deficiency of dietary input of thiamine. Rather it was due to a profound increased rate of removal of thiamine from the blood into the urine.

The researchers feel that important areas for future study are: confirmation of low plasma thiamine concentrations in diabetic populations of other countries independent of local diet; the evaluation of thiamine and thiamine derivatives to correct low plasma thiamine concentration in diabetes, reverse vascular dysfunction and prevent vascular complications; and investigation of the mechanism of increased removal of thiamine from the blood into the urine in diabetes.

Published on-line ahead of print, doi: 10.1007/s00125-007-0771-4

"High prevalence of low plasma thiamine concentration in diabetes linked to a marker of vascular disease" P.J. Thornalley, R. Babaei-Jadidi, H. Al Ali, N. Rabhani, A. Antonysunil, J. Larkin, A. Ahmed, G. Rayman and C.W. Bodmer

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<http://www.diabetesincontrol.com/rebuilder/index.php>

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Item 2

Statins Safe and Effective for Children With Familial Hypercholesterolemia

Statin therapy is safe and effective for children with heterozygous familial hypercholesterolemia (HeFH), according to new findings.

<http://www.diabetesincontrol.com/results.php?storyarticle=5044>

Dr. Barbara A. Hutten from Academic Medical Center, Amsterdam, The Netherlands, states that, "When a child has been diagnosed with heterozygous familial hypercholesterolemia, statin treatment should be considered for all children older than 8 years."

Dr. Hutten and colleagues performed a meta-analysis on safety outcomes of randomized placebo-controlled trials which evaluated statin treatment in children and adolescents with HeFH. Compared with placebo, statin therapy reduced total cholesterol a mean 25% and LDL cholesterol a mean 30%, the authors report.

Smaller decreases in ApoB were associated with statin therapy, as were significant increases in HDL cholesterol and ApoA1.

Statin therapy was not associated with an increased risk of an adverse event, the report indicates, and there were no differences in the number of children with marked elevations in lab values between statin and placebo groups.

Height increased slightly more in the statin group than in the placebo group, the investigators say, but there were no significant differences between the groups in sexual development.

"Based on our meta-analysis, we cannot draw any conclusions with respect to a preferred statin for children," Dr. Hutten said. "The number of studies in children is relatively low and not all types and doses of statins have been studied in children as of yet."

"Even though the meta-analysis shows that statin treatment seems safe in children and adolescents, long-term - or actually life-long - safety still needs to be investigated," Dr. Hutten explained. "It is unknown whether the risk reduction at later age differs between various types of statins used during childhood."

"For their actual decision of starting treatment, physicians should balance benefit and risk, based on the personal situation and the risk profile of each individual child, which depends on family history, lipid profile, lifestyle, etc.," Dr. Hutten said. "Also, patients' and/or parents' preferences may play a role in the decision when to start treatment."

"Furthermore," Dr. Hutten cautioned, "the minimal age of children in the studies included in the meta-analyses was 8 years, and we cannot make any recommendations for children below this age."

Arterioscler Thromb Vasc Biol 2007;27:1803-1810.

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DID YOU KNOW:

#41- U.S. slips in rankings of life expectancy: Americans are living longer, but not as long as people in 41 other countries. For decades, the United States has been slipping in international rankings of life expectancy, as other countries improve health care, nutrition and lifestyles. Countries that surpass the United States include Japan and most of Europe, as well as Jordan, Guam and the Cayman Islands. It's mainly because of 2 reasons, (1) 45 million Americans don't have health insurance and (2) OBESITY: American adults have one of the highest obesity rates in the world. Nearly a third of U.S. adults 20 years and older are obese, while about two-thirds are overweight.

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<http://www.diabetesincontrol.com/ads/atkins/dest.shtml>

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Item 3

Don't Rely on Beta-Blockers to Reduce Blood Pressure

Research favors other drugs to control hypertension. While high blood pressure patients taking beta-blockers have a reduced risk of stroke of 16 percent to 22 percent compared with a placebo, the other hypertension drugs reduce that risk by an average of 38 percent.

<http://www.diabetesincontrol.com/results.php?storyarticle=5043>

Doctors should stop routinely using beta-blockers to control high blood pressure, said researchers who reviewed dozens of previously published studies and found that other hypertension pills work better and cause fewer side effects.

For decades, beta-blockers and diuretics, also known as water pills, constituted the cornerstone of treatment for the 50 million Americans with high blood pressure. But a growing body of medical evidence shows that diuretics and newer blood-pressure medications are superior to beta-blockers at reducing high blood pressure, which can lead to heart attacks and strokes, said researchers.

"We in medicine like to say that we practice evidence-based medicine," said Dr. Franz H. Messerli, an author of the study and a cardiologist at St. Luke's-Roosevelt Hospital in New York. "What's the evidence here" for continued use of beta-blockers to treat hypertension, Messerli asked. "Zero. To my way of thinking, this is pretty alarming."

Heart specialists not involved with the study predicted that it is likely to accelerate a shift in hypertension treatment from beta-blockers, which can cause side effects such as fatigue and sexual dysfunction. Still, those doctors as well as the authors of the study emphasized that there is strong evidence to support prescribing beta-blockers for patients who have suffered a heart attack or those with a progressive weakening condition called heart failure.

Data from IMS Health, a healthcare information company, show that from January through June of this year, more than 75 million prescriptions were written for various beta-blockers, widely available in generic form. The statistics do not indicate which conditions the doctors were treating.

European medical societies have already begun urging physicians to abandon beta-blockers as a high blood-pressure medication, specialists said. "I think this paper is going to be fairly influential, although I think the trend had already started before this of moving away from beta-blockers as a first-line treatment of hypertension," said Dr. Joseph Carrozza, chief of interventional cardiology at Beth Israel Deaconess Medical Center. "The side effects are probably the worst" of any medication used to treat high blood pressure, he said.

Cardiologists said there is no clear culprit for the heavy use of beta-blockers. Early research suggested that the drugs had promise in treating high blood pressure, though they were often used with diuretics, which turned out to provide much of the benefit.

Also, beta-blockers have been around for decades and in recent years, their patents had expired, so they were relatively inexpensive, doctors said.

"This is just another example of why we need to do continuing follow-up research on classes of medicine," said Alan Goldhammer, deputy vice president for regulatory affairs at PhRMA, a leading pharmaceutical industry association.

One possible limitation in the new research: It was based on previous studies that looked at older beta-blockers, rather than some recently introduced formulations. Still, Drs. Ilke Sipahi, a cardiologist at the Cleveland Clinic, said "until further data comes out, I think it's prudent not to use beta-blockers as a first-line treatment of high blood pressure."

In patients with high blood pressure, once-flexible blood vessels have turned rigid, meaning more pressure is needed to propel blood through veins and arteries. To treat the condition, doctors use four major classes of high blood pressure pills: beta-blockers, diuretics, calcium-channel blockers, and ACE inhibitors.

Beta-blockers, sold under trade names such as Lopressor and Tenormin, work by blocking the effect of the hormone adrenaline on the heart. As a result, the heart slows down and does not have to work as hard. That's especially useful in the treatment of patients who have suffered heart attacks and those whose hearts chronically malfunction.

While beta-blockers reduce blood pressure, the other drugs do so more effectively and with fewer complications, the authors of yesterday's study said.

For example, the researchers cite an earlier analysis of 10 medical studies involving elderly patients with high blood pressure. About two-thirds of the patients taking diuretics had their blood pressure controlled, compared with less than one-third of the patients on beta-blockers.

Diuretics, among the most affordable drugs patients can take, reduce blood pressure by helping the body excrete excess water and sodium. They are widely regarded as the preferred first-line treatment for blood pressure patients, because of their low cost and mild side effects.

The later-generation drugs -- calcium-channel blockers and ACE inhibitors -- relax blood vessel walls, allowing blood to flow more smoothly.

While high blood pressure patients taking beta-blockers have a reduced risk of stroke of 16 percent to 22 percent compared with a placebo, the other hypertension drugs reduce that risk by an average of 38 percent.

Conversely, beta-blockers are powerfully beneficial for patients who have suffered heart attacks, substantially reducing the chances that they will soon die.

Beta-blockers also may work well for patients whose high blood pressure is not controlled by the other medications. Patients should not stop taking blood pressure drugs without first talking to their doctor. "We have the luxury now of a lot of drugs, and we can use the different ones for different situations," said Dr. Aram V. Chobanian, former dean of the Boston University School of Medicine. "The more we find out about these individual drugs, the more we will know about what specific patient populations they should be used in."

Journal of the American College of Cardiology Aug. 27th, 2007

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Item 4

Postprandial Hyperglycemia's Related To Abnormal Variations In Blood Pressure

The researchers concluded that abnormal variations in blood pressure were associated with postprandial hyperglycemia, but not fasting hyperglycemia.

<http://www.diabetesincontrol.com/results.php?storyarticle=5042>

A group of researchers led by Dr Frank Pistrosch of the University Hospital Dresden, Germany, evaluated the relationship between variations in diurnal blood pressure and glucose levels in patients with type 2 diabetes. A total of 107 patients with hypertension and type 2 diabetes underwent 24-hour ambulatory blood pressure monitoring. The researchers also created a diurnal blood glucose profile for each patient based on multiple measurements taken under standardized conditions. Measurements were taken before breakfast, 2 hours after breakfast, before lunch, 2 hours after lunch, before dinner, 2 hours after dinner, at 10:00 p.m., at midnight, and at 3:00 a.m. the following day.

The researchers found that 73% had nocturnal nondipping. Nondippers, compared with dippers, had greater postprandial glucose excursions (59.5 vs 40.7; p=0.02), but similar levels of HbA_{1c} and fasting plasma glucose. Patients with nocturnal nondipping had higher urinary protein excretion and a lower day/night heart rate ratio. Postprandial hyperglycemia was an independent predictor of nocturnal nondipping in a multivariate analysis.

The researchers concluded that abnormal variations in blood pressure were associated with postprandial hyperglycemia, but not fasting hyperglycemia, indicating that treatment for postprandial hyperglycemia may restore blood pressure variations.

American Journal of Hypertension 2007;20:541-5

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FACT:

Insulin Grown in Plants Relieves Diabetes in Mice, Holds Promise for Humans: Capsules of insulin produced in genetically modified lettuce could hold the key to restoring the body's ability to produce insulin and help millions of Americans who suffer from insulin-dependent diabetes, according to University of Central Florida biomedical researchers. Professor Henry Daniell's research team genetically engineered tobacco plants with the insulin gene and then administered freeze-dried plant cells to five-week-old diabetic mice as a powder for eight weeks. By the end of the study, the diabetic mice had normal blood and urine sugar levels, and their cells were producing normal levels of insulin.
University of Central Florida

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Item 5

New Onset Diabetes More Likely With Metoprolol Than With Carvedilol in Heart Failure

New onset diabetes in patients with chronic heart failure is more likely to develop with metoprolol than with carvedilol, according to new findings

<http://www.diabetesincontrol.com/results.php?storyarticle=5041>

Previous studies have shown carvedilol to have a more favorable effect on glucose metabolism than other beta blockers have, the authors explain.

Dr. Christian Torp-Pedersen from Bispebjerg University Hospital, Copenhagen, Denmark and colleagues in the Carvedilol or Metoprolol European Trial (COMET) investigated whether carvedilol was associated with a different incidence of new onset diabetes compared with metoprolol in more than 3000 patients with chronic heart failure.

Patients taking carvedilol were 22% less likely to develop new onset diabetes than patients taking metoprolol, the authors report. New onset diabetes was diagnosed in 119 out of 1151 (10.3%) of patients taking carvedilol, versus 145 out of 1147 (12.6%) of patients taking metoprolol.

Diabetes-related adverse events were also 22% less likely to occur among carvedilol patients: 122 events versus 149 events.

Metoprolol remained an independent predictor of new onset diabetes in a multivariable model that included body mass index, hypertension, functional class, and other factors.

Patients treated with metoprolol also showed a significant trend for an increase in random blood glucose levels over the course of the trial, the investigators write.

Treatment with carvedilol was associated with a nonsignificant risk reduction for mortality compared with metoprolol for diabetic and nondiabetic patients, the researchers note.

In a multivariate analysis, however, treatment with metoprolol and a diagnosis of diabetes were independently associated with greater all-cause mortality.

"This study demonstrates that treatment with carvedilol is associated with less development of new onset diabetes in patients with heart failure compared with treatment with metoprolol tartrate," the authors conclude. "The study further demonstrates that not only is the prevalence of diabetes high in patients with heart failure but also the incidence is high, amounting to 10-15% over 5 years."

Heart 2007;93:968-973.

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<http://www.diabetesincontrol.com/annodyne/index.php>

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Item 6

American Women Are Getting Fatter By At Least 20 Pounds

You are not the only one! It has become more socially acceptable for women to carry a few extra pounds, according to a new study. The weight of the average woman increased by 20 pounds, or 13.5 percent, during the period of 1976 to 2000.

<http://www.diabetesincontrol.com/results.php?storyarticle=5040>

Florida State University Assistant Professor of Economics Frank Heiland and Federal Reserve Bank of Boston Economist Mary Burke are the co-authors of a paper published in the academic journal Economic Inquiry that argues that the ballooning weight of the population has led even more collective weight gain as our perception of what is considered a normal body size has changed.

"This is a social force that we are trying to document because the rise in obesity has occurred so rapidly over the past 30 years," said Heiland, who also is affiliated with FSU's Center for Demography and Population Health. "Medically speaking, most agree that this trend is a dangerous one because of its connection to diabetes, cancer and other diseases. But psychologically, it may provide relief to know that you are not the only one packing on the pounds."

The paper, "Social Dynamics of Obesity," is the first to provide a mathematical model of the impact of economic, biological and social factors on aggregate body weight distribution. It also is one of the first studies to suggest that weight norms may change and are not set standards based on beauty or medical ideals.

Many economists believe that people eat more -- and thus gain weight -- when food prices drop, but that's just part of the story behind the nation's dramatic weight gain since the late 1970s, according to the researchers. The full price of a calorie has dropped by about 36 percent relative to the price of consumer goods since 1977, but prices leveled off in the mid-1990s. And yet American women continued to get bigger.

Heiland and Burke's "social multiplier" theory offers a potential reason why: As Americans continue to super-size their value meals, the average weight of the population increases and people slowly adjust their perceptions of appropriate body weight. Given that these changes in perception may come about gradually, Heiland and Burke suggest the nation's battle of the bulge may extend into the future.

Heiland and Burke studied body weights among American women in the 30- to 60-year-old age bracket from 1976 to 2000. Using data from the National Health and Nutrition Examination Survey, they found that the weight of the average woman increased by 20 pounds, or 13.5 percent, during that period. There was disproportionate growth among the most obese women as the 99th percentile weight increased a hefty 18.2 percent, from 258 to 305 pounds.

The researchers also looked at self-reports of women's real weights and desired weights. In 1994, the average woman said she weighed 147 pounds but wanted to weigh 132 pounds. By 2002, the average woman weighed 153 pounds but wanted the scales to register 135 pounds, according to data from the Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System.

The fact that even the desired weight of women has increased suggests there is less social pressure to lose weight, Heiland said, citing a previous study that 87 percent of Americans, including 48 percent of obese Americans, believe that their body weight falls in the "socially acceptable" range.

While it seems thinness is increasingly idealized in popular culture -- images of waif-like models and stick-thin celebrities are everywhere -- there is a gap between the cultural imagery and the weights that most people consider acceptable for themselves and others, according to Heiland.

Biological forces also play a role in the rise of obesity. An additional pound of body weight is more likely to be fat, which does not metabolize calories nearly as well as muscle tissue, Heiland explained. Therefore, any increase in calorie consumption -- say, one more cookie each day -- leads to greater weight gain among an initially heavier person.

The researchers focused this study on women partly because their weight gains have been so dramatic, Heiland said, citing a whopper of a statistic: 33.2 percent of American women over age 20 are classified as obese, according to 2001-2004 National Health and Nutrition Examination Survey data. However, men also have become heavier, and the researchers believe the same economic, social and biological forces are to blame.

Source: Florida State University

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Item 7

Metabolic Syndrome In Kids Increases Adult Heart Risk

Adults who had so-called metabolic syndrome when they were children have a substantially increased risk of having heart disease in their 30s, researchers report.

<http://www.diabetesincontrol.com/results.php?storyarticle=5039>

The metabolic syndrome is a cluster of risk factors -- such as high blood pressure, obesity and high blood sugar levels -- that together increase the likelihood of developing heart problems or diabetes.

Individual components of metabolic syndrome are known to track from childhood into adulthood, but the association between metabolic syndrome in childhood and cardiovascular risk later in life has not been established, Dr. John A. Morrison and his associates explain in the medical journal *Pediatrics*.

The researchers analyzed data, collected between 1973 and 1976, on levels of blood glucose, triglycerides, "good" cholesterol, body weight, and blood pressure in 771 children aged 5 to 19 years.

Thirty-one of these kids had at least three abnormal factors and were classified as having metabolic syndrome, Morrison, at Children's Hospital Medical Center in Cincinnati, Ohio, and colleagues report.

The original group was followed-up between 22 and 31 years later. Twenty-one of the 31 subjects with metabolic syndrome as children had the condition in adulthood.

In the entire adult group, there were 17 cases of cardiovascular disease; six of these occurred in the group that had childhood metabolic syndrome -- a rate almost 15 times higher than among subjects without metabolic syndrome as children.

Increases in weight were the main factor driving in the development of metabolic syndrome, Morrison's team found. The findings, they stress, "underscore the importance of weight management in early and middle adult years."

Pediatrics, August 2007.

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Dr. Philip A. Wood has written a book for healthcare professionals and students of medicine, nursing, pharmacy, and graduate studies, as well lay people interested in understanding the influences of genetics, nutrition, activity level and drugs on diseases associated with excess fat such as obesity, insulin resistance, metabolic syndrome and type 2 diabetes. The book is composed of short, readable chapters with helpful figures to further explain the mechanisms discussed. For further information please click here.

http://www.amazon.com/exec/obidos/tg/detail/-/0674019474/qid=1132176956/sr=8-1/ref=pd_bbs_1/002-7853569-1175265?v=glance&s=books&n=507846

Item 8

Bone Cells May Be Key to Controlling Diabetes- New Possible Treatment

Researchers at Columbia University in New York have discovered that certain bone cells produce a hormone called osteocalcin, which influences beta-cell proliferation and controls the metabolism of blood sugar (glucose) and fat deposits through previously unknown mechanisms.

<http://www.diabetesincontrol.com/results.php?storyarticle=5038>

The skeleton has long been seen as an inert scaffolding that gives the body shape and stability. But now researchers say bones appear to secrete a hormone that helps regulate sugar and fat — and that could have major implications for preventing or treating Type 2 diabetes.

“It is very exciting conceptually because it's a new function for an organ,” senior author Dr. Gerard Karsenty said.. “It's also very exciting potentially from a medical point of view because it could be a treatment for Type 2 diabetes.”

In work in laboratory mice, the scientists show that bone-forming cells called osteoblasts release osteocalcin, which in turn increases both the secretion of insulin and insulin sensitivity. It also boosts the number of insulin-producing cells in the pancreas while reducing stores of fat.

All in all, that means the collection of femurs, ribs, clavicles and other bones that make up our skeleton aren't merely a framework for our various tissues, but an endocrine organ that helps control energy metabolism, said Dr. Karsenty, head of genetics at Columbia's school of medicine.

“These results uncover an important aspect of endocrinology that was unappreciated until now,” he said.

Dr. Karsenty and his colleagues, studied lab rats that had been genetically altered so their bodies did not produce osteocalcin. “We realized that in the absence of osteocalcin, the mice were developing Type 2 diabetes and were overweight — not obese, but with increased fat mass — on a normal diet, which is rather unusual,” he said.

Most treatments for diabetes bump up insulin secretion to regulate blood sugar, but the problem is they also decrease insulin sensitivity, defined as the degree to which cells respond to a particular dose of insulin by lowering blood glucose levels.

While osteocalcin raises insulin production, it also bolsters insulin sensitivity at the same time, making it a potentially ideal treatment, said Dr. Karsenty, whose team is testing out injections of the hormone on different species to see if it could prevent or eliminate Type 2 diabetes.

“If it were (to work), the next species after that would be human beings.”

Published in August 10th edition of the journal Cell

FACT:

Poll Results Not So Sweet for Diabetes Drug Avandia: A majority of healthcare professionals responding to an online survey, said that they will not prescribe rosiglitazone (Avandia) for their patients with type 2 diabetes,

and one in four believe that the drug should be pulled off the market. Although 36% of the respondents say they will continue to prescribe rosiglitazone for select patients, in accordance with the FDA panel's recommendation, 55% said they will no longer prescribe the drug. And 23% said that it should be taken off the market entirely. The spring 2007 publication of a meta-analysis showing that rosiglitazone carries a 43% increase in the relative risk of heart attack in patients with type 2 diabetes touched off the firestorm that resulted in the special FDA hearing. The beleaguered drug held 37% of the US oral anti-diabetic market in 2006. It is possible, however, that clinicians may soften their current negative stance on rosiglitazone over time.

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Item 9

Reducing Inflammation Plays Key Role in Type 1 Diabetes Therapy

Researchers at Beth Israel Deaconess Medical Center (BIDMC) have found that a triple combination therapy consisting of both tolerance-inducing and anti-inflammatory properties is successful in abolishing adverse autoimmunity against insulin-producing cells in a mouse model of Type 1 diabetes.

<http://www.diabetesincontrol.com/results.php?storyarticle=5037>

The findings, which appear in the Online Early Edition of the Proceedings of the National Academy of Sciences (PNAS) this week, offer a possible new prototype for therapies to restore normal blood glucose levels in diabetes patients and suggest a previously unrecognized role for inflammation in the disease.

"Type 1 diabetes is known to develop as a consequence of autoimmune destruction of insulin-producing pancreatic beta cells," explains senior author Terry Strom, MD, Director of the Transplantation Research Center at BIDMC and Professor of Medicine at Harvard Medical School. "But in addition to the long-recognized role of T-cell-dependent immune-system-mediated islet destruction, this work reveals for the first time that a form of inflammation in fat and muscle [is also acting to] prevent insulin from disposing blood glucose into tissues that require glucose."

Formerly known as juvenile-onset or insulin-dependent diabetes, Type 1 diabetes develops when the body's immune cells attack and destroy its own pancreatic beta cells. Without beta cells, the body is unable to produce insulin, a hormone needed to convert glucose into energy. To prevent the development of serious complications, more than 21 million individuals with Type 1 diabetes, primarily children and young adults, must receive as many as three injections of insulin each day.

Previous attempts to treat existing Type 1 diabetes were primarily focused on restoring immune tolerance, which in healthy individuals is achieved when immune system cells "turn off" so as not to overreact and attack one's own cells. In individuals with Type 1 diabetes, the process of immune tolerance fails to work properly, thereby permitting the self-destruction of the body's beta cells.

But lead author Maria Koulmanda, MSc, PhD, director of Non-Human Primate Research in BIDMC's Transplantation Research Center, wondered if there might also be a role for inflammation in the disease process.

"We knew that in cases of type 2 [non-insulin dependent] diabetes, a form of inflammation in muscle and fat prevents insulin from triggering the transfer of glucose from the blood into important insulin-sensitive tissues," explains Koulmanda, who is also Assistant Professor of Surgery at HMS. "We thought that in addition to autoimmune destruction of insulin-producing cells, there might also be inflammation-induced insulin resistance [in type 1 diabetes.]"

To test this hypothesis, the authors administered a "cocktail" of three separate agents (rapamycin plus agonist IL-2- and antagonist-type, mutant IL-15-related Ig fusion proteins) in a NOD (non-obese diabetes) mouse model of type 1 diabetes. The therapy regimen, which included two novel immunoglobulin-fusion proteins, was aimed at both increasing tolerance and decreasing inflammation.

As predicted, following two to four weeks of treatment, the mice that had received the triple therapy maintained normal levels of blood sugar. In contrast, the control group of diabetic mice did not survive, despite receiving insulin.

The authors then conducted a molecular analysis which confirmed that the treatment had eliminated insulin resistance and relieved inflammation in the animals' fat and muscle tissues.

"Although the treatment halted the progressive loss of insulin producing cells, the restoration of normal blood glucose levels actually was the result of inflammation being ablated in fat and muscle cells," explains Strom. "By blocking the inflammation, we were able to restore the animals' abilities to respond to insulin."

"Our findings are very promising," adds Koulmanda. "Type 1 diabetes is a serious disease requiring that children and young adults take insulin two to three times a day."

And, she adds, despite this arduous therapy, insulin treatment does not prevent the occurrence of serious late-arising complications, including kidney failure, blindness and widespread cardiovascular disease.

"In clinical practice, it is not currently possible to identify when and if an individual will develop type 1 diabetes," says Koulmanda. "Therefore, it is urgent to identify treatments that can restore normal blood glucose levels in patients with new-onset diabetes before insulin-producing cells are totally destroyed. We hope that our findings offer new hope in the long search for a cure of type 1 diabetes."

The findings, appeared in last week's Online Early Edition of the Proceedings of the National Academy of Sciences (PNAS)

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Item 10

Islet Cell Infusion Plus Exenatide Leads to Insulin Independence For Type 1's

A new drug therapy for three months is showing great promise in returning patients with type 1 diabetes to insulin independence.

<http://www.diabetesincontrol.com/results.php?storyarticle=5036>

Diabetes researchers at the University of Miami Miller School of Medicine were able to re-establish long term insulin independence in diabetes patients who underwent a supplemental islet cell infusion while being treated with exenatide at the same time.

Patients at UM's Diabetes Research Institute received exenatide, for at least three months and continued to receive it after the supplemental islet infusion. "Our research suggests that supplemental islet infusions during treatment with exenatide are more successful in achieving and maintaining insulin independence," said Raquel Faradji, M.D., lead author of the study and assistant director of the clinical islet transplant program at the Diabetes Research Institute. "This may be due to improved islet function and perhaps an increase in the amount of islets. Given the shortage of donor pancreases, exenatide may help achieve and maintain insulin independence in more islet transplant recipients using only one donor pancreas."

Transplants using islet cells are currently considered the most promising method for curing diabetes. During the procedure islets are separated from a donor pancreas and infused into the liver of a patient with diabetes. In the liver, within a short time, they begin to produce insulin.

The four patients who underwent the supplemental islet infusion in 2006 while taking exenatide were compared to a control group of five patients who underwent a supplemental infusion without the drug treatment. Only one patient without the drug treatment remained insulin independent after one year, while all the patients in the drug-treated group were insulin independent at one year.

"All of the patients had achieved insulin independence after their initial islet cell transplants, but eventually developed graft dysfunction and had to go back on insulin," said Faradji. "To be able to re-establish insulin independence with a supplemental infusion is a big step forward, and we now need a larger trial to see if using exenatide is making the difference."

Source: University of Miami Miller School of Medicine

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Item 11

Researchers Develop Successful Insulin-Cell Transplants for Type 1 Diabetics

Researchers at Johns Hopkins have found a way to overcome a major stumbling block to developing successful insulin-cell transplants for people with type 1 diabetes.

<http://www.diabetesincontrol.com/results.php?storyarticle=5035>

Traditional transplant of the cells, accompanied by necessary immune-suppressing drugs, has had highly variable results, from well- to poorly tolerated. Part of the problem, the Hopkins researchers say, is an inability to track the cells, so-called pancreatic beta cells, once they're inside the body.

Now a new technique encapsulates the insulin-producing cells in magnetic capsules, using an FDA-approved iron compound with an off-label use, which can be tracked by magnetic resonance imaging (MRI). The product, tested in swine and diabetic mice, also simultaneously avoids rejection by the immune system, likely a major reason for transplant failure.

"We're really excited because we can track where we put the cells and make sure their protective housing stays intact and that the cells don't move. This could solve the mystery of why current transplantation techniques work only for so long," says one of the study's authors, Aravind Arepally, M.D., assistant professor of radiology and surgery at Hopkins.

Type 1 diabetes, the most common childhood sort, causes a person's immune system to destroy the pancreatic beta cells that make insulin. Without insulin, blood sugar levels can become dangerously high and lead to complications that include blindness or kidney failure. Careful monitoring of blood sugar levels paired with insulin injections can manage the condition, but transplanting healthy beta cells holds more promise for the moment-to-moment fine-tuning of insulin levels, says Arepally.

Current experimental cell transplantation techniques are done "naked and blind," only lasting a short period of time, according to co-author Jeff Bulte, Ph.D., a professor of radiology and chemical and biomolecular engineering at Hopkins. The unprotected transplanted cells are vulnerable to attack by the recipient's immune system, and researchers cannot see the cells to figure out why they stop making insulin after a while.

To address both of these challenges, the research team captured beta cells in tiny porous capsules made from a mixture of alginate, a gooey material made from seaweed, and Feridex, a magnetic iron-containing material visible under MRI. They then used a machine that oozes droplets of this mixture to surround and encapsulate individual islet clusters each containing about 500 to 1,000 insulin-producing beta cells. Once the cells are encapsulated, the shell hardens, creating a "magnetocapsule" that measures less than 1/128 of an inch across.

"They're tiny spheres with nano-scale pores just big enough to let the good stuff out but keep the bad from getting in," says lead author Brad Barnett, medical student and Howard Hughes fellow at Hopkins. The openings in the magnetocapsule are so small that the body's immune system sentinels cannot reach and attack the transplanted cells.

The team first transplanted magnetocapsules into the abdomens of mice engineered to develop diabetes. Blood sugar levels in the animals returned to normal within a week and stayed that way for more than two months. In contrast, more than half of untransplanted diabetic mice died, and the rest had very high blood sugar levels.

To mimic human transplantation, the researchers then implanted magnetocapsules into the livers of swine with the help of MRI fluoroscopy, special reflective screens and a computer monitor that provide real-time imaging. The liver was chosen, rather than the usual pancreatic home of beta cells, because it contains many blood vessels that can deliver insulin quickly to the rest of the body.

"Getting the magnetocapsules into the right place requires hand-eye coordination normally required when playing video games," says Arepally. The team threaded a long needle-like tube into a large vein near the upper thigh and guided the tube upward, across and into a neighboring blood vessel, ending in the body of the liver.

The pigs underwent MRI and blood tests three weeks after magnetocapsule transplantation. MRI showed that the magnetocapsules remained intact in the liver, and blood tests revealed that the cells were still secreting insulin at levels considered functional in people.

"We hope that our magnetocapsules will make tissue-type matching and immunosuppressive drugs problems of the past when it comes to cell-based therapies for type 1 diabetes," says Bulte.

The work will be published online this week in Nature Medicine. Source: Johns Hopkins Medical Institutions

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DID YOU KNOW:

McDonald's Logo makes food yummier, kids say: Anything made by McDonald's tastes better, preschoolers said in a study that powerfully demonstrates how advertising can trick the taste buds of young children. Even carrots, milk and apple juice tasted better to the kids when they were wrapped in the familiar packaging of the Golden Arches. The study had youngsters sample identical foods in McDonald's wrappers and unmarked wrappers. The unmarked foods always lost the taste test. Study author Dr. Tom Robinson said the kids' perception of taste was "physically altered by the branding." The Stanford University researcher said it was remarkable how children so young were already so influenced by advertising. The research, appearing in August's Archives of Pediatrics & Adolescent Medicine, was funded by Stanford and the Robert Wood Johnson Foundation.

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Item 12

No Diet Foods for Kids-Can Lead to Obesity

A new study reveals low-calorie foods and drinks made to taste like high-calorie foods and drinks may actually lead to overeating and obesity. If you hope to curb the obesity epidemic in your children, don't feed them diet foods or drinks.

<http://www.diabetesincontrol.com/results.php?storyarticle=5034>

Researchers from the University of Alberta suggest animals learn to associate how food tastes with how much energy it provides. Experiments with rats revealed snacks perceived as low calorie can lead to overeating at regular meals, while snacks perceived as high calorie did not lead to overeating. Study author and sociologist David Pierce, Ph.D., says the same might be seen in children.

"This is a possible behavioral mechanism for understanding how it is that a diet drink or diet foods could make you a little overweight," said Dr. Pierce. Previous studies have suggested a link between diet soda consumption and a higher risk of obesity, diabetes and heart disease.

Researchers trained young rats to associate certain flavors with caloric content. Once trained, the researchers observed the rates given snacks flavored with the low-calorie signal would proceed to eat more food than they needed at regular meals. The effect was seen in lean and genetically obese rats, which suggests diet foods may lead to more serious consequences for children who are already overweight.

"I think what it really says is that the best thing to do with children is to give them nutritious foods," Dr. Pierce said, noting that well-balanced diets should correspond to the child's level of daily activity.

OBESITY, 2007;15:1969-1979

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Item 13

Top-10 Comparison of Diabetes Drugs Give One a Top Grade by Johns Hopkins

A type 2 diabetes drug taken orally and in widespread use for more than a decade has been found to have distinct advantages over nine other, mostly newer medications used to control the chronic disease, according to a study by researchers at Johns Hopkins.

<http://www.diabetesincontrol.com/results.php?storyarticle=5033>

In their report, the Hopkins team found that metformin, first approved by the U.S. Food and Drug Administration in 1995 (and sold as Glucophage, Riomet and Fortamet), not only controlled blood sugar levels but also was less likely to cause weight gain and more likely than others to lower bad cholesterol levels in the blood.

Researchers say these health benefits are important because they can potentially ward off heart disease and other life-threatening consequence from diabetes. More than 15 million Americans have type 2 diabetes.

"Sometimes newer is not necessarily better," says lead study author Shari Bolen, M.D., an internist at Hopkins. "Issues like blood sugar levels, weight gain and cost could be significant factors to many patients struggling to stay in good health," says Bolen, an instructor at The Johns Hopkins University School of Medicine.

In what is believed to be the largest drug comparison of its kind, the scientists showed that all of the commonly used oral medications worked much the same at lowering and controlling blood sugar levels, and were equally safe. But metformin stood out because it offered the same level of effectiveness without lowering glucose measurements too much, and it did so for a lower price.

Metformin was found to lower LDL or bad cholesterol by about 10 milligrams per deciliter of blood, while newer medications studied, such as pioglitazone (Actos) and rosiglitazone (Avandia), or so-called thiazolidinediones, were found to have the opposite effect, increasing levels of the artery-clogging fat by the same amount.

Researchers say the main drawbacks to metformin are digestive problems and diarrhea. Previous reports have found evidence that the medication leads to the buildup of lactic acid in the blood in people with moderate kidney or heart disease, and they note that it should not be prescribed to anyone with either of these conditions. The main advantages to both newer thiazolidinediones were a small increase in HDL or good cholesterol, and less too-low blood sugar levels than three other older, cheaper drugs studied -- glimepiride (Amaryl), glipizide (Glucotrol), glyburide (Micronase, DiabBeta, Glynase PresTab) -- known as second-generation sulfonylureas.

Annual treatment with metformin or the sulfonylureas, they note, costs on average \$100, roughly one-fourth the cost of oral diabetes medications FDA-approved since then, including the two newer thiazolidinediones, both approved in 1999. (Their price is expected to drop once generic versions become available.)

"When you are dealing with an epidemic like diabetes, it is important for people to weigh their treatment options with their physician and to make informed decisions about which medication best suits their needs," says Bolen. In the study, Bolen and her colleagues reviewed the scientific evidence from 216 previous studies and compared each drug for its clinical effectiveness, risks and costs. In addition to metformin, the thiazolidinediones and sulfonylureas, drugs included in their analysis were repaglinide (Prandin), miglitol (Glyset), acarbose (Precose), and nateglinide (Starlix).

Among the team's other findings were that glimepiride, glipizide, and glyburide led more frequently to too-low blood sugar levels than the other drugs. The sulfonylureas and acarbose appeared to have no effect on bad cholesterol. And except for metformin and acarbose, drug treatment led to an increase in weight from 2 to 11 pounds.

Researchers also noted the increased risk of heart failure, albeit small (less than three people in a hundred), in people taking thiazolidinediones who did not have a history of heart disease. They also caution that despite recent reports about the potential for increased risk of heart attack from rosiglitazone, there is not yet sufficient information to verify the finding.

Annals of Internal Medicine, Source: Aug 2007

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FACT:

ESRD, costs grew by 57 percent between 1999 and 2004: "The cost implications are staggering," Dr. Foley states. "The most recent estimates showed that Medicare costs for ESRD reached \$20.1 billion, while non-Medicare costs rose to \$12.4 billion." Costs for the care of ESRD patients now account for 6.7 percent of total Medicare expenditures. The study entitled, "End-Stage Renal Disease in the United States: An Update from the United States Renal Data System" is available online at <http://www.asn-online.org> under Media, 2007, and in print in the October issue of the *Journal of the American Society of Nephrology (JASN)*.

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Item 14

Secondary Failure of Glucose Control With Metformin, Sulfonylurea, or TZD's Monotherapy

Which drugs are the ones to sustain good control, the longest?

<http://www.diabetesincontrol.com/results.php?storyarticle=5032>

The purpose of the study was to examine glycosylated hemoglobin (A1C) values longitudinally in patients who newly started metformin, sulfonylurea, or thiazolidinedione monotherapy; in a subset of patients whose A1C values were 7% or greater before starting therapy (baseline) and who achieved A1C goal (A1C < 7%) during therapy, rates of secondary failure (i.e., A1C value returned to \geq 7% during therapy) were compared for each drug.

The study was a four-year retrospective analysis. An administrative database from a large health care plan was used. Patients who filled at least one prescription for metformin (5453 patients), sulfonylurea (2373), and thiazolidinedione (1590) therapy, respectively, between January 1, 2001, and March 31, 2004, were enrolled. Measurements included patients' demographic and clinical characteristics, baseline A1C values, changes in A1C values (last available result during follow-up minus baseline value), and A1C values before and after the addition of an antidiabetic drug other than the index drug (therapy intensification) were documented. Mean age was 50.7 years; 5027 (53.4%) were men. Mean baseline A1C value was 8.4%, and about 70% of patients had an A1C value of 7% or greater before starting therapy. Mean follow-up was 1.9 years, and mean decrease in A1C values was 1.47% (to 6.91%).

The probabilities of attaining A1C goals were similar for patients receiving metformin, sulfonylurea, or thiazolidinedione therapy. The rate of therapy intensification among patients taking metformin (24.7%) was lower than that of patients taking a sulfonylurea (30.1%, $p < 0.001$) but similar to that of those taking a thiazolidinedione (24.6%). Secondary failure occurred in 36.3% of patients; mean time from the start of therapy to its failure was about 1.51 years. Patients receiving a sulfonylurea were 1.25 (95% confidence interval [CI] 1.05-1.50) times more likely than patients receiving metformin to experience secondary failure, whereas failure rates were similar for thiazolidinediones and metformin (odds ratio 0.78, 95% CI 0.62-0.99).

From the results it was concluded that in the subset of patients assessed for secondary failure, although treatment initially reduced A1C values, more than one third experienced failure. Real-world studies of A1C goal attainment must follow patients on a long-term basis to assess the maintenance of glycemic control over time.

Pharmacotherapy. 2007 Aug;27(8):1102-10.

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Item 15

Metformin and Body Weight

Where most other diabetes medications cause weight gain, metformin can cause weight reduction.

<http://www.diabetesincontrol.com/results.php?storyarticle=5031>

Most patients with type 2 diabetes are overweight or obese, overweight or obesity increases the risk of developing type 2 diabetes and obesity per se is strongly associated with multiple cardiometabolic risk factors. However, many antidiabetic treatments increase body weight. The oral antidiabetic agent, metformin, has been evaluated in hundreds of clinical studies in diverse patient populations during approximately five decades of clinical use.

This review summarizes the effects of metformin on body weight, with special reference to studies of longer duration (>=6 months) as both diabetes and obesity are long-term conditions.

Approximately half of studies in drug-naive type 2 diabetic patients demonstrated significant weight loss with metformin compared with baseline or comparator drugs, although pooled analyses have suggested no significant effect versus placebo.

Similarly, metformin has been shown to induce weight loss in obese nondiabetic populations, although studies of long duration in this population are scarce. Metformin does appear to mitigate the adverse effects of insulin on body weight.

The weight-neutral or weight-sparing effects of metformin constitute a therapeutic advantage in diabetes management where other first-line oral antidiabetic treatments often promote clinically significant weight gain.

[Int J Obes \(Lond\). 2007 Jul 24;](#)

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Quote of the Week!

"All progress occurs because people dare to be different."

.....Harry Millner

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Richard K. Bernstein's New Book, Diabetes Solution 2007 is available. Containing new and revised information, this new book is on special at <http://www.diabetes911.net>. Also Dr. Bernstein's New 5 CD Set "Secrets to Normal Blood Sugars" is available. Recorded Individually For Type 1 and Type 2 Diabetes, These "LIVE" 5 CD Sets Contain The Personal Diabetes Education Program taught by Dr. Bernstein to his patients.

LIVE WEBCAST:

Dr. Bernstein will participate in another 60 minute Tele-Seminar on September 9, 2007, at 7:00 PM CST, 8:00 PM EST and 5:00 PM West Coast time, that we invite you to attend, and ask your patients to attend. In addition to calling in, this upcoming call will also be broadcast through a LIVE web-cast on the Internet. Don't miss it. Click here to register for this free teleconference.
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