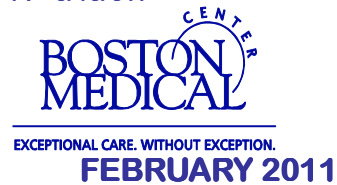


# DIABETES CENTER OF EXCELLENCE

## NEWSLETTER

Section of Endocrinology, Diabetes and Nutrition



NEWSLETTER NO. 5

### NATIONAL NEWS

## Number of Americans with Diabetes Rises to Nearly 26 Million

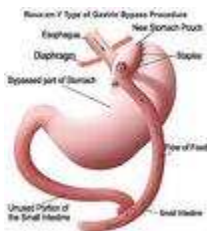
Currently 26 million Americans have diabetes and an estimated 79 million have pre-diabetes according to the CDC. The 2011 estimates are an increase over the 2008 numbers when the CDC reported 23.6 million with diabetes or 7.8% of the population. These calculations represent the first time the hemoglobin A1C has been used as a diagnostic test. The numbers are also increasing because more people are living with the disease and managing it better.

*CDC National Diabetes Fact Sheet, 2011*

## Diabetes Remission with Gastric Bypass

A recent study shows that 76% of people who underwent gastric bypass surgery had full remission of diabetes compared to 50% who underwent lap-band. Remission was defined by achieving glycemic control without medication. The study included 60 patients with diabetes who ranged in weight from normal to moderately obese.

*Arch Surg. 2011;146(2): 149-155. doi:10.1001/archsurg. 2010.316*



## Insulin Therapy for Hospitalized Patients

On February 15, 2011, the American College of Physicians (ACP) published a new Clinical Practice Guideline titled “Use of Intensive Insulin Therapy for the Management of Glycemic Control in Hospitalized Patients”. This guideline, based on a systematic review of the literature, includes recommendations against the use of intensive insulin therapy to strictly control blood glucose to near-normal levels in non-ICU hospitalized patients and in ICU patients – in each case irrespective of whether the patient has diabetes mellitus. The ACP rated these two recommendations as “strong” and indicated the non-ICU recommendation was based on “moderate-quality” evidence and the ICU recommendation on “high-quality” evidence.

The Endocrine Society agrees with these two recommendations in advising against instituting tight control to near normal levels in hospitalized patients. This position is consistent with the guidelines of the American Diabetes Association, the American Association of Clinical Endocrinologists, and the Department of Defense-Veterans Health Administration. Such strict blood glucose targets (80-110 mg/dL) as compared to more relaxed targets, appear to increase the frequency of potentially dangerous hypoglycemic events without any clear offsetting benefits in morbidity and mortality.

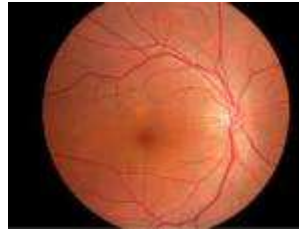
In the third recommendation, the ACP specifies a target blood glucose range for ICU patients of 140-200 mg/dL. In contrast to the first two recommendations, the ACP rated this as “weak,” supported by “moderate-quality” evidence. The Endocrine Society does not agree that the upper limit for ICU patients should be 200 mg/dL but rather supports a lower level of 180 mg/dL. This recommendation is based on several observational and prospective clinical trials that have clearly shown that blood glucose levels above 180 mg/dL are associated with an increased risk of infections, longer hospital stay and mortality.

*Ann Intern Med* 2011; 154:260-267



## Retinal Eye Screening

Thirty percent of Americans with diabetes over the age of 40 may have retinopathy. Remote screening picked up about 83% of people with retinopathy whether or not the photographer had medical training. A non-mydriatic (non-dilated) Retinal Camera is available at the [Diabetes Center of Excellence](#) at BMC to assist in capturing multiple retinal images using advanced video technology. Please put your referrals through Logician. *Arch Ophthalmol.* Pub. Online Dec. 13, 2010, doi:10.1001/archophthalmol.2010.319



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## Walking and Diabetes

The aim of a new study in Australia was to examine the relationship between change in physical activity (measured objectively by pedometer and self-reported questionnaire measures) over a 5 year period. The study showed that walking not only helps to burn calories but can lower the risk for diabetes. Pedometers were provided to 600 patients to measure steps over two consecutive days in 2000 and again in 2005. Those who walked the most after 5 years not only had a lower body-mass-index (BMI) but also had better insulin sensitivity. Experts recommend 10,000 steps/day for those under 65.

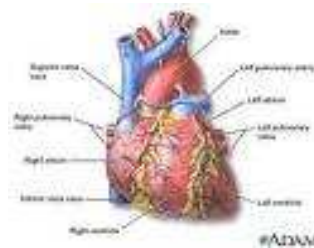
*BMJ 2010; 341:c7249 doi:10.1136/bmj.c7249*



## Almonds and Type 2 Diabetes

The recent findings of a scientific study from Loma Linda University on the disease prevention benefits of almond consumption reinforces the importance of nutritional approaches to maintaining healthy blood sugar levels. The study, one of the first of its kind to quantify prevention data, illustrates that consuming an almond-enriched diet may help improve insulin sensitivity and decrease LDL-cholesterol levels in those with pre-diabetes. The group took in 20% of their total daily calories from almonds compared to a group with no dietary instruction. The nutrients in almonds such as fiber and unsaturated fat have been shown to help reduce LDL-cholesterol levels, increase insulin sensitivity, and increase beta-cell function, all of which can help to prevent the development of type 2 diabetes and reduce the risk of cardiovascular disease.

*J Am Nutr 29:4; 433-a, June 2010*



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## Rising Incidence of Heart Disease and Diabetes in South Asia

The World Bank reported that South Asia is facing a health crisis, with rising rates of heart disease, diabetes and obesity. South Asians (Bangladesh, India, Nepal, Pakistan, Afghanistan, Maldives, Bhutan and Sri Lanka) experienced their first heart attack at the age of 53, six years earlier than people elsewhere. Heart disease is the leading cause of death for South Asians from 15 to 69. Many poor people in these countries pay for most of their care out of their savings or by selling their possessions and then find themselves in a poverty trap.

Diabetes.co.uk, Global Diabetes Community, July 2010



## Depression and Diabetes

A systematic review and meta-analysis was recently published. Investigators looked at 11 studies up to September 2009, including a total of 48,808 cases of type 2 diabetes without depression at baseline. The relative risk was found to be 1.24 for the random effect model. The conclusion was that compared to control without diabetes, patients with type 2 diabetes have a 24% higher risk of developing depression. The mechanism remains unclear.

*European Depression in Diabetes (EDID) Research Consortium, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK*



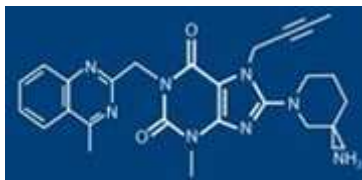
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## *Linagliptin*\* – Investigational Drug

*Linagliptin* belongs to a class of DPP-4 inhibitors and is currently in late stage development as a once-daily, single-dose oral tablet for diabetes. Data from the *linagliptin* late stage clinical trials were presented at the 46<sup>th</sup> Annual Meeting of the European Association for the Study of Diabetes (EASD). The studies include two phase III trials:

- *linagliptin* monotherapy in type 2 diabetes patients for whom metformin therapy is inappropriate
- *linagliptin* as an add-on therapy to a sulphonylurea for those with uncontrolled type 2 diabetes

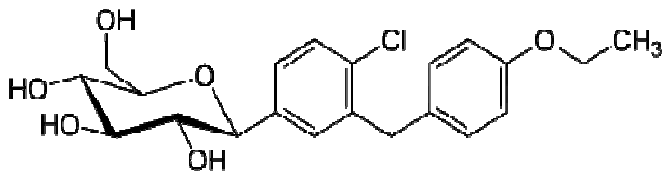
In addition, a study was presented at the congress which investigated *linagliptin* in a special patient population with different degrees of renal impairment.



*Linagliptin*

## **Dapagliflozin\* – Investigational Drug**

Dapagliflozin is the first drug in a new class of sodium glucose co-transport inhibitors (SGLT). SGLTs encompass a family of membrane proteins that are responsible for the transport of glucose, amino acids, vitamins, ions, and osmolytes across the brush-border membrane of proximal renal tubules as well as the intestinal epithelium. SGLT2 is a high-capacity, low-affinity transporter expressed chiefly in the kidney. It accounts for approximately 90% of glucose reabsorption in the kidney and has now become the focus of great interest in diabetes. SGLT2 inhibitors block the reabsorption of filtered glucose leading to glucosuria. This mechanism holds potential promise for patients with type 2 diabetes in terms of improvement in glycemic control. Additionally the glucosuria associated with SGLT2 inhibition is associated with caloric loss, and could provide a potential benefit of weight loss for type 2 patients. Long term safety data is still lacking and head to head trials are still underway.



**Dapagliflozin**

*\*Both Linagliptin and and Dapagliflozin are not FDA approved.*

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## **Scientists discover insulin-receptor gene variant in diabetes type 2 patients with European ancestry.**

A gene variant, present in some people with type 2 diabetes of white European descent, has been identified. This variant could potentially be a future target for treatment, according to a 2011 [study](#) in the Journal of the American Medical Association. Investigators looked at people with and without diabetes in 6,500 Italian patients, 2,000 US residents, and 400 French people. They found that about 7 to 8 percent of the study participants with type 2 diabetes had one of four *HMGA1* gene variants. The Italian group variant represented a 16-fold higher risk in people with type 2 diabetes. Only 0.6% percent of the control group carried *HMGA1* defects. The *HMGA1* findings "mark the first time an important protein has been identified as a genetic culprit in type 2 diabetes," said study co-author Ira D. Goldfine, MD, of the University of California San Francisco.

## **Tour de Cure**

Ride on May 22, 2011.

Start Location: Pingree School - South Hamilton, MA

Register today to take the ride of your life.

For Info: 617-482-4580 x3487

The Tour de Cure is a series of fundraising cycling events held in 43 states nationwide. The tour is a ride, not a race, with routes designed for everyone from the occasional rider to the experienced cyclist. The North Shore Tour de Cure is a one-day cycling celebration bringing together cyclists of all ages and levels to support the mission of the American Diabetes Association. Choose from four fantastic route options – from a 15 mile ride through charming countryside and nearby parks to the more challenging and new 100 mile Grand Fondo, an epic ride through the North Shore.



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## **New England Classic 150 & 500+**

Ride on July 9-10, 2011 or July 9 – 15, 2011!

Start Location: Parker Chomerics Woburn, MA

For Info: 1-888-DIABETES x3456

The New England Classic offers you your choice of a memorable weekend or an entire week of cycling, adventure, and fun in historical settings of New England's seacoasts and bold mountain ranges. Enjoy your adventure on the cycling vacation of your choice, while you make a difference in the fight against diabetes.



## PEOPLE IN THE NEWS

### Maria McDonnell, MD:

A woman with severe lupus nephritis and difficult to control diabetes mellitus. Buhaescu I, Rhee S, York MR, McDonnell M, Perkel PA. *Arthritis Care Res* (Hoboken), 2010 Nov15. Epub ahead of print.

Elevated proinflammatory cytokine production by a skewed T cell compartment requires monocytes and promotes inflammation in type 2 diabetes. Jagannathan-Bogdan M, McDonnell ME, Shin H, Rehman Q, Hasturk H, Apovian CM, Nikolajczyk BS. *J Immunol*. 2011 Jan 15;186(2):1162-72. Epub 2010 Dec. 17.

### James L. Rosenzweig, MD:

Comparison of diabetes control among Haitians, African Americans, and non-Hispanic whites in an urban safety-net hospital. Vimalananda, VG, Rosenzweig JL, Cabral HJ, David MM, Lasser KE. *Diabetes Care* 2011 Jan;34(1):58-60. Epub 2010 Oct 26.

Facing type 2 diabetes in the healthcare reform era. Fendrick, A M, Bush, MA, Niebyiski, B, Brunetti, LI, Campbell, RK, Dunaif, A, Fatodu, H, Miller, M, Rosenzweig, JL, Triplitt, C, Yarnall, WJ. *Am J Manage Care*. 2010;16:S303-S322

### Served as a collaborator on the following study:

National Kidney Foundation consensus conference on cardiovascular and kidney diseases and diabetes risk: an integrated therapeutic approach to reduce events. Bakris G, Vassalotti J, Ritz E, Wanner C, Stergiou G, Molitch M, Nesto R, Kaysen GA, Sowers JR; CKD Consensus Working Group. *Kidney Int*. 2010 Oct;78(8): 726-36. Epub 2010 Aug 18.

### Neil Ruderman, MD:

Activation of AMP-Activated Protein Kinase (AMPK) Prevents Lipotoxicity in Retinal Pericytes. Cacicedo JM, Benjachareonwong S, Chou E, Yagihashi N, Ruderman NB, Ido Y. *Invest Ophthalmol Vis Sci*. 2011 Feb 23. Epub ahead of print

Decreased AMP-activated protein kinase activity is associated with increased inflammation in visceral adipose tissue and with whole-body insulin resistance in morbidly obese humans. Gauthier MS, O'Brien EL, Bigomia S, Mott M, Cacicedo JM, XuXj, Gokoe N, Apovian C, Ruderman N. *Biochem Biophys Res Commun*. 2011 Jan 7;404(1):382-7. Epub 2010 Dec. 3.

**Elliot Sternthal, MD:**

**Served as a collaborator on the following study:**

The prevalence and predictors of an abnormal ankle-brachial index in the Bypass Angioplasty Revascularization Investigation 2 Diabetes (BARI 2D) trial. Singh PP, Abbott JD, Lombardero MS, Sutton-Tyrell K, Woodhead G, Venkitachalam L, Tsapatsaris NP, Piemonte TC, Lago RM, Rutter MK, Nesto RW, Bypass Angioplasty Revascularization Investigation 2 Diabetes Study Group. *Diabetes Care*. 2011 Feb;34(2):464-7.