



Diabetes Team News

Inside this issue...

- Dr. Cogen's Corner 1
- Psychology Team News 2
- Blood Glucose Monitoring 3
- Patient Perspective 4
- Gene Therapy 6
- Welcome! 7



Dr. Cogen's Corner

Hey Sports Fans! I wanted to give you the latest update regarding our future Diabetes Complex at Children's National Medical Center. Mark your calendars for July 5, 2009, Diabetes Day at Nationals Ball Park. We would love to have your presence at the game in support of the Diabetes Complex. It will be a day of events and opportunities for fund-raising as well as rooting for the Nats and the new slugger Adam Dunn. Please make every effort to show your enthusiasm for your diabetes program! Thus far we have raised \$3.1 million (goal: \$5 million). When we reach \$3.75 million, we will be able to start construction onsite at Children's National.

Other updates:

-Educational Resources: If you are not already aware, I would like you to take the opportunity to reading my blogs at www.healthcentral.com. I write for the "Diabetes" site (experts) as well as for "Diabeteens" (box noting what physicians are saying about type 1 diabetes). Thus far, I have written more than 40 blogs that cover all aspects of diabetes, including medical, nutritional, psychosocial, and research concerns. Feel free to write comments and let me know what issues or concerns you would like me to address in future blogs.

-Latest research: Exciting times are ahead: Research is accelerating at a rapid rate. Two areas look very promising: 1. prevention of Beta cell destruction with *monoclonal* antibodies, and 2. development of pluripotent stem cells that can transform into mature pancreatic B cells. Of most excitement is the latest discovery that embryos are *not* necessary as a stem cell source. Scientists have coaxed other cells (such as pancreatic exocrine cells responsible for digestion) to *transform* into Beta cells (endocrine cells responsible for insulin production) by using gene transfer in *mice*. Check out the latest research paper written by the University of Pittsburgh group for other methods of gene transformation into functioning beta cells. It is my opinion that future therapy may be a combination of medications that will help to prevent and delay destruction of existing B cells in association with the provision of ongoing supplies of new functioning beta cells that produce insulin. Finally, scientists are also working to develop an eventual diabetes vaccine.

Happy Spring,

Dr. C

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Diabetes Team News

News and Helpful Tips from the Psychology Department

TEEN GROUP SCOOP

The diabetes psychology team led a diabetes group for teenagers and their parents in the fall. The group was five weeks long and included 12 adolescents between the ages of 11 and 15. Teens met as a group each week to discuss diabetes-related topics including nutrition, exercise, communication, problem-solving, and stress management. Fun activities and healthy snacks were incorporated into each session. Parent support group met separately from teens to discuss parenting strategies related to diabetes. Teens and their parents provided overall positive feedback about the group. A group reunion will be planned in the spring. The diabetes psychology team is in the process of organizing a diabetes group for older teens (ages 15-18). If interested, contact Angela Fletcher, Psy.D. at 202-476-2231 or anfletch@cnmc.org.

TIPS TO STAY ACTIVE AND AVOID WINTER BLUES

Depression is a serious condition that affects thoughts, feelings, behavior, and can impact social and family relationships. Anyone can experience depression, but individuals with diabetes may be at greater risk. Depression is more common in the winter months. Some basic recommendations to stay active during the winter months include:

Do something FUN: Find an activity you and your child enjoy like arts and crafts, traveling, cooking, reading, or simply spending time friends or family.

Get some EXERCISE: Get you and your child involved in some exercise like hiking or cross-country skiing, dancing, walking, swimming, or yoga. Getting the heart pumping can positively affect your mood. For additional ideas to get exercise see the following web site www.diabetes-exercise.org

See the LIGHT: Don't stay indoors when it's cold out -- bundle up and get some rays. Natural sun can improve your mood, so get you and your child out of the house as much as possible during the daylight hours; even it's a short trip.

Rely on SUPPORT: Let friends and family help you! If you're feeling sad, call up a loved one and schedule a time to get together and talk; that's what friends are for.

Talk to a PROFESSIONAL: The winter blues can be a symptom of a more serious problem, such as depression. Don't be afraid or embarrassed to make an appointment with a therapist if you don't start to feel better.

Angela A. Fletcher, Psy.D.

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Diabetes Team News

Blood Glucose Monitoring Tips

Blood glucose mentoring can be used to determine how well you are controlling your diabetes and to adjust your medication. When you record your numbers, it helps your diabetes care team to act on the results and provide the best possible care. The number of tests that you complete per day will be determined by your Endocrinology Team.

Some tips for finger testing:

- Use a new lancet each time (old lancets can tear your skin, and of course cause you more pain)
- Select the depth setting on your sampler – remember to always check this prior to testing, for a less painful stick, dial down to the lowest setting needed to get an adequate sample.
- Wash your hands and massage your finger tip (it is not necessary to use alcohol)
- Pick a spot on the side of your finger tip
- Hold the lancing device against your finger
- After testing apply pressure to the site (this prevents bruising and soreness)
- Use all your fingers (rotate fingers as this gives your fingers time to heal between tests)
- You can test on your forearm to give

your fingers a rest, but, before you try this, read your owners manual or speak to your health-care professional.

- Remember to dispose of your lancet appropriately, your Health care team will give you the guidelines for your state.

Please note that the higher the number of your lancet needle, the smaller the gauge, e.g a lancet with 33 gauge will be smaller than a lancet with 28 gauge, so remember to choose the smallest gauge.

Some lancets we use in our practice are:

- BD Ultrafine - gauge 33
- Accucheck Multiclix - gauge 30
- Pelikansun customized electronic lancing device (this is the newest addition to our practice that patients have been requesting). No gauge size because you individualize the parameters for each finger stick using about 30 comfort settings.

Cynthia Medford, RN, CDE, CPN

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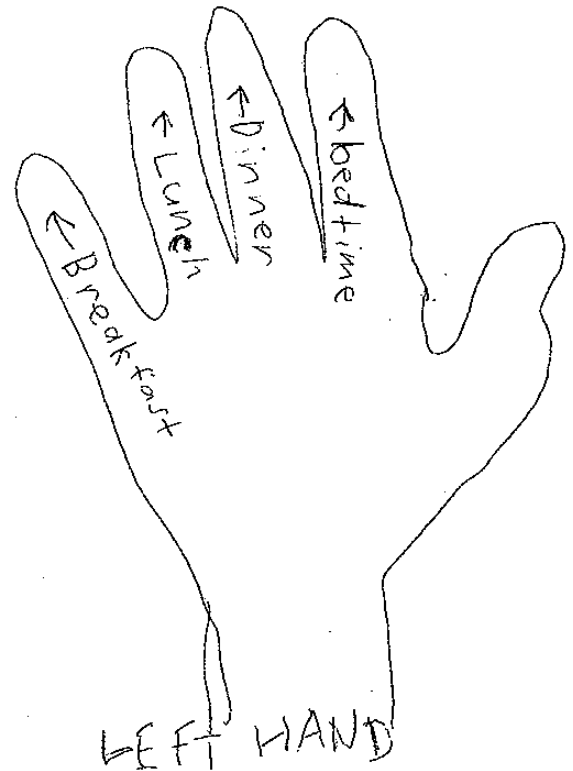
Diabetes Team News

My name is Myles. I'm an eight year old boy who lives in Maryland/ Washington, DC with my mom, dad, and two older sisters. I am in third grade Norwood School. I play baseball, soccer, football and ice hockey. I am a huge fan of the Washington Capitals.

In April 2007 I was diagnosed with Type 1 diabetes. I learned how to count my carbs, get two insulin shots a day, and measure my blood glucose level four times a day.

After a while it started to bother me that I might be doing the finger prick in the same place every time so, I came up with a system to keep that from happening. On even days of the month all of my finger pricks and shots go on the right side of my body. On odd days they go on the left. I use my pinkie for breakfast, ring finger for lunch, middle finger for dinner and pointer finger at bedtime. For example, my birthday is June 24th. I would use my right hand pinkie to check my blood glucose level before breakfast and do my insulin shot on the right side of my body.

I hope this is helpful for everyone with diabetes.





Gene Therapy

Exciting promise in gene research therapy for type I diabetes

We live in an exciting time where more is known about the genes that make up the human body than ever before. Starting in 1990, the National Institutes of Health sponsored an international effort to map all of the genes of the human body. This project was completed in 2003 and the resulting map has been utilized as the keys to unlock many diseases. The manipulation of genes holds much promise for the treatment of chronic diseases, such as type I diabetes.

In type I diabetes, the insulin producing cells of the pancreas in the human body are destroyed by the body's immune system, which mistakenly recognizes these cells as an enemy like a virus or bacteria that should be attacked and destroyed. The difficult challenge for researchers is to develop techniques to counter this mistaken reaction. Promising research by Douglas Melton and his team from Harvard University centers around the innovative concept of genetically reprogramming existing pancreatic cells into insulin producing cells by inserting specific genes. Using mice, Melton's team reprogrammed exocrine pancreas cells, which function in the digestion of food, into endocrine pancreatic cells, which produce insulin. This cutting-edge research was published online in August 2008 in the journal *Nature*.

Melton's team had to perform many steps in the genetic reprogramming process. Melton and his team first needed to determine the specific genes that were responsible for producing insulin. They studied insulin producing cells and were able to narrow down the gene pool. Then they used a trial and error approach, destroying one gene at a time and analyzing the effect of the specific gene loss on insulin production by the cell. After exhaustive work, Melton and his team identified three genes which were necessary for insulin production in pancreatic cells.

The next step in the research was to take a "friendly" virus to insert these three genes into the pancreas cells involved in food digestion, that were not targeted to be destroyed by the body's own immune system. Over the next ten days, with the activation of the newly inserted genes the cells gradually transformed into insulin producing cells! The genes actually transformed the cell's function from food digestion to insulin production.

Another approach in the treatment of type I diabetes involves giving the patient specialized immune proteins (monoclonal antibodies) at diagnosis. The goal is to preserve the few remaining insulin producing cells at diagnosis and slow or even prevent their destruction over the next few months. This crucial period of time is known as the "honeymoon period" where the body is still making small amounts of insulin. Kevan Herold and his research group from Columbia University tested this theory in humans and found that those patients given monoclonal antibodies for 12 or 14 days with recent onset type I diabetes had better hemoglobin A1C levels at 2 years than patients who did not receive the treatment. In addition, Herold's team found that patients treated with the monoclonal antibodies naturally produced significantly more insulin in response to food than patients not receiving the antibodies.

The key to treating type I diabetes may be a combination of both approaches, with Melton's technique of reprogramming cells and Herold's technique of inducing self-tolerance of insulin producing cells. While these two studies are encouraging, it is important to stress that these potential treatments are still in preliminary stages and future research needs to focus on long-term viability and safety. With further research, the repro-

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Gene Therapy (cont'd.)

process discovered by Melton and his team in mice could possibly be used in humans with type I diabetes. However, there is a big leap between successful research with mice and successful application with humans. It is the hope that with future research studies human pancreatic cells involved in food digestion could be transformed through gene therapy to produce insulin and reduce or even stop the need for insulin injections.

Irena Glick, 4th year medical student
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School of Medicine

Welcome Dr. Mehra!

Rinku Mehra, MD, is a native of Northern Virginia, specifically Fairfax. She attended the University of Virginia for both undergraduate and medical school training. She completed her pediatric residency at Rush University Medical Center in Chicago, Illinois. Dr. Mehra completed her Pediatric Endocrinology Fellowship at the University of Iowa and spent an additional year there after her fellowship to serve as the Director of the Pediatric Weight Management clinic. While in her fellowship she earned awards and presented at national and regional meetings for her research in pediatric obesity and diabetes. She and her husband moved back to the Northern Virginia area to be closer to their immediate family. She is seeing patients in Fairfax and DC.

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