Winter 2006
Volume 4, Issue 4

NEWSLETTER: DIABETES AND PREGNANCY: *SWEET SUCCESS*

Region 1
North Coast Region
(415) 476-9877

Region 2 and 3
Northeast Region
(916) 733-7053

Region 4
Mid-Coastal California Region
(650) 723-5763

Region 5
San Joaquin/Sierra Region
(559) 244-4546

Region 6.1
Miller Children's Hospital Perinatal Outreach Education Program
(562) 595-7930

Region 6.2
Harbor/UCLA Medical Center South Bay
(310) 222-3651

Region 7
Inland Counties Region
(909) 558-3996

Region 8
Orange County Region
(714) 456-6706

Region 9
San Diego & Imperial Counties
(858) 536-5090

Region 10
Kaiser Permanente System-North
(408) 366-4102

Region 11
Kaiser Permanente System-South
(951) 353-3569

This Project is supported in part by funds received from the State of California, Department of Health Services, Maternal, Adolescent and Child Health Branch

Breastfeeding Coalition: Unlocking Barriers

Keys to Successful Breastfeeding

Summary From November 16, 2006

Jan Dayton RNC, CDE, Nurse Consultant -- Regions 2&3

Medications and Breast Milk
By Dr. Fred Brewer, Pediatrician

While Dr. Brewer covered many classifications of medications and information about how much and to what the medications bind, the focus of this review was on antidepressants during the late 3rd trimester and lactation.

Dr. Brewer stated that while mothers do not desire to take medications while breastfeeding most take at least some whether they are over the counter or prescribed. Women average 3 medications during their hospital stay and 5-8 during pregnancy and lactation. Most medications, over the counter or not, have labels that caution women to "consult with their practitioner" or "safety unknown". Most of these are in actuality safe but it is not unusual that no studies were preformed with lactating or pregnant women. Dr. Thomas Hale and cites that if an infant can be safely given a drug, we know that breastfeeding provides less then a normal infant dosage so this medication should be considered safe.

Dr. Brewer went on to discuss the issues of antidepressants during pregnancy and lactation. Neonatal withdrawal has been reported in several studies when the mothers utilized SSRI's late in the pregnancy. Symptoms of withdrawal cleared within 48 hours. He stressed that untreated depression has effects on the babies as well as the mothers. These effects include poor attachment and early psychomotor development. The neonatal withdrawal symptoms seen in the babies were irritability, difficulty feeding, and rarely respiratory problems. These symptoms usually cleared by 2-14 days and only one of the 313 babies studied needed

Continued on page 3

Beyond the Numbers

Charlene Canger, MFT, LCSW
Social Work Consultant, Region 4

Acupuncture: A Promising Treatment for Depression in Pregnancy. *Manber, R, Schnyder RN, Allen JJ, Rush AJ, Blasey CM. Journal of Affective Disorders (2004) Nov 15; 83(1): 89-95.*

Clinical depression in pregnancy is, unfortunately, as common as it is during other times in women's lives. It is estimated that 5-15% of all women and up to 28% of impoverished women suffer from depression in the perinatal period (pregnancy through one year postpartum). Depression increases during the third trimester and its incidence is as high as or higher than postpartum depression. Recent neonatal outcome studies have raised concerns about psychotropic medication use during pregnancy. The vast majority of women are concerned about the medication's effect on their developing fetus, as are their obstetricians. Depression continues to

Continued on page 2

Beyond the Numbers: Acupuncture: A Promising Treatment for Depression in Pregnancy

Continued from page 1

be under identified in pregnancy in spite of its far-reaching consequences on a woman's ability for self-care, increased risk of premature delivery, low infant birth weight, poor maternal-infant attachment and lack of mutual attunement, and a negative impact on a young child's relational and cognitive development.

Conventional treatment for depression- interpersonal psychotherapy (PT) or cognitive behavioral therapy (CBT) in conjunction with antidepressants- is found to be effective in approximately 50% of treated cases. Even among those who recover from major depression, more than one third demonstrate clinical relapse within 18 months.

With few medically acceptable treatments for depression in pregnancy and the above noted statistics, alternative treatments may be welcomed by individuals and health professionals alike.

At Stanford's Department of Psychiatry and Behavioral Sciences, Dr. Robin Manber is the principal investigator for a randomized, controlled pilot study to determine if acupuncture holds promise as a treatment for depression during pregnancy. Sixty-one pregnant women, all well-educated and Caucasian, met the DSM IV-TR criteria for major depressive disorder and were given the Hamilton Rating Scale for Depression. Subjects needed to be less than 28 weeks gestation at their initial session. They were randomly assigned to one of three treatments over an eight week acute phase: active specific acupuncture treatment, an active control, non-specific acupuncture treatment, and a 25 minute massage all provided twice a week during this phase. Acupuncture treatments were standardized, but individually tailored with an assessing acupuncturist overseeing the treatment plans.

By the end of this acute phase, the results were statistically higher (more effective) for the specific acupuncture treatment (69%) than for massage (32%), or with an intermediate non-specific acupuncture treatment rate (47%). All the women who responded to the acute phase of all treatments combined had significantly lower depression scores at 10 weeks postpartum than non-responders. Although the ongoing study is limited by its small sample and the homogeneity of the subjects, acupuncture is seen as a promising treatment for depression during pregnancy.

Brief note on acupuncture and Chinese medicine: Acupuncture treatments derive from the principles of Chinese medicine. Depression, as we understand it, does not exist as a disease category in Chinese medicine because it does not focus on diagnosis and treatment of disease as Western medicine does. Rather Chinese medicine's emphasis is on prevention and the detection of energetic imbalances within the body. Health is viewed as a balance between yin and yang forces, which depends on the proper circulation of the vital energy of "qi" along energetic pathways or meridians. Within a Western explanatory model of health or disease, many different symptoms are subsumed under a diagnosis of major depression, such as changes in sleep or eating patterns, anhedonia, helplessness, etc. By contrast, Chinese medicine views these symptoms as signifying different patterns of disharmony, requiring different treatments. ♥♪♫♥♪♫♥♪♫

Data Training

Data training for "Online Submission and Real-time Access". Training has started. If you missed them please contact your Regional Coordinator or Lisa Bollman (Data Goddess) at: DLBollman@PerinatalPrograms.org

Breastfeeding Coalition: Unlocking Barriers - Keys to Successful Breastfeeding

Continued from page 1

supportive care to manage the symptoms. Symptoms were most often associated with Paxil usage in the mother.

It is difficult to measure and assess problems with SSRI's begun during lactation. Prozac and Celexa had the highest levels measured in mother's milk. A study by University of Iowa concluded that Paxil and then Zoloft are the preferred drug of choice. Dr. Hale lists the preferred drug choices as Zoloft, Paxil, Lexapro, Effexor, and Prozac. Dr Brewer noted that Dr. Hale also stated Wellbutrin has little transfer into milk, but may decrease the milk production. Luvox has minimal transfer. Celexa transfers from 0.4% to 4% of maternal dose into the breast milk. Basically, there is no data suggestive of any long-term problems in breast fed infants. In fact these babies had fewer problems with attachment and are more resilient.

A final quote from Dr. Hale says, "Recommend antidepressants for depressed breastfeeding mothers. The risks to the infant of not medicating the mother are simply too high". ☺ ☺ ☺ ☺

Guidelines: When Insulin Pumps Patients Are Admitted

Leona Dang-Kilduff, RN, MS, CDE and Maribeth Inturrisi, RN, CNS, MS CDE

Adapted from an Animas Corporation Handout

What should hospital staff know:

- The patient you have is knowledgeable and well trained. If possible this patient should perform all the necessary task for her insulin pump therapy.
- Only rapid acting insulin is in the insulin pump. Interruption, without alternative insulin can result in diabetic ketoacidosis (DKA).
- Basal insulin is a continual dose of insulin based on individual insulin needs throughout the day.
- Bolus insulin is the dose programmed by the patient prior to meals. Meal bolus is based on carbohydrate in a meal and pre-meal blood glucose.
- All pumps have multiple alarms. Your patient can troubleshoot problems.
- All pumps have a technical assistance phone number on the back. They are available 24 hours per day. Please feel free to call if needed.

Dos and Don'ts:

- Do not discontinue use of the pump without first giving another source of fast acting insulin
- Do not remove the insulin cartridge/reservoir from the pump while the infusion set is attached to the patient.
- Do not discontinue the pump during times of stress and illness

Patients who want to remain on their insulin pump will need:

Written orders to stay on their insulin pump

The order needs:

- The order needs type and strength of insulin used by patient.
- Target blood glucoses
- Frequency and timing of self-blood glucose monitoring (minimum of 6X per day)
- Basal and bolus amount, supplemental basal rates and supplemental bolus amounts need to be documented
- Directions for alternate source of rapid acting insulin if needed
- Frequency of infusion set and infusion site changes (client may need to bring her own supplies)
- Name of person that can assist with pump (e.g. spouse)
- Staff needs access to physician for consultation, and other important members of the health care team, if needed

*Do not expose the pump to MRI, CT-Scan, and X-rays. The pump should be left outside of the room during these procedures.

*Hypoglycemia is treated with the usual protocols unless specific orders have been written to supercede the usual protocol.

*For DKA: Follow MD protocols, Attempt to identify the cause of DKA, such as poor troubleshooting, illness, malfunction or other causes. Treat DKA per protocol.

*For policies and procedures when utilizing the insulin pump, please feel free to contact:

Maribeth - maribeth.inturrisi@nursing.ucsf.edu or Leona - leonad@stanford.edu.

Glucose Abnormalities and Diabetes Prevention: After GDM

Contributions from the CDAPP Nurse Consultants

Summarized by Leona Dang-Kilduff, RN, MSN, CDE

John O'Sullivan originally did his work with GDM to identify women who would develop diabetes. Interestedly when he went back he realized many of these women had poor obstetric outcomes, and gestational diabetes (GDM) was born. Now years later, we twist this back to the beginning. If we know who will develop diabetes, shouldn't we try and prevent diabetes in this population? An article by Kim and associates reviewed 28 studies from 1965-2001 to determine the risk. In studies that examined women 6 weeks postpartum to 28 years postpartum after the index pregnancy, the cumulative incidence of diabetes ranged from 2.6% to over 70%. Cumulative incidence of type 2 diabetes increased markedly in the first 5 years after delivery and appeared to plateau after 10 years. An elevated fasting glucose level during pregnancy was the risk factor most commonly associated with future risk of type 2 diabetes. Women of various ethnicities progressed to type 2 diabetes at similar rates once they had GDM.

So what are the factors associated with diabetes after GDM? Fasting hyperglycemia on OGTT, obesity, and early gestational age (<24 weeks); During the GDM pregnancy, the need for insulin, excessive weight gain and delivery of a macrosomic infant all contribute to an increased risk of future diabetes. Postpartum factors that increase the risk for subsequent GDM and overt diabetes include failure to lose pregnancy weight and maintain a normal BMI, diagnosis of IGT or IFG (pre-diabetes) on the postpartum oral glucose tolerance test and use of progesterone only contraception in breastfeeding

So what can be done? First, any woman that had GDM is at high risk for diabetes, but she can reduce her risk. Screening to identify glucose abnormalities postpartum will identify women that need immediate treatment for Type 2 diabetes or Pre-diabetes. Approximately 34-38% of women that were tested had persistent glucose abnormalities postpartum. Of these women only 1/3 had abnormal fasting. Missing 2/3 of the women with abnormalities is not an acceptable sensitivity for any laboratory test. So the 2 hour 75 gram OGTT is the recommended test.

With abnormal results what can be done? First any women with type 2 DM should start treatment to prevent complications of DM. Next any woman with pre-diabetes or DM that might be planning a pregnancy needs to be counseled for preconception care and referred is recommended for any women not using birth control.
There are research studies that are recruiting women for lifestyle and/or pharmaceutical intervention. These are always an option. I am personally aware of some practioners that are intervening with Insulin sensitizing Oral Hypoglycemic Agents before women receive a diagnosis of DM. Thereby delaying onset of DM, by reducing the workload on the beta cells. Women with GDM have higher risk of dyslipidemias and therefore cardio-vascular disease. Approximately one third of the women with a history of GDM will have abnormal lipid profiles. Of course the dyslipidemias are a component of the Metabolic Syndrome. So screening for dyslipidemias is recommended at 1 year post delivery.

Progression from pre-diabetes to diabetes is approximately 8-12%\yr., but can be reduced, by up to 58%, when lifestyle changes are adhered to. These lifestyle changes also apply to any woman that has a history of GDM. These lifestyle changes are detailed below.

First, encourage physical activity. The general recommendations are to participate in moderate levels of exercise, 5 days per week for ½ to 1 hour per day, above their normal baseline. It has been documented that physical inactivity post partum is associated with poor physical function, poor vitality and depressive symptoms, as well as the increased risk for development of Type 2 diabetes research done in four independent clinical trials in Sweden, China,

Continued on page 7

Early Hyperglycemia and Vascular Resistance: Effects on the Fetus

Leona J. Dang-Kilduff, RN, MSN, CDE

Early pregnancy hyperglycemia may be one of the causes of multiple complications seen in later pregnancy. In this brief article, only the increase in vascular resistance will be examined. Hyperglycemia > than160 mg/dl is thought to disrupt the utero-placental and feto-placental blood flow. This single change is thought to produce other pregnancy pathology such as spontaneous abortions, preeclampsia, oligohydramnios and restricted fetal growth.

In some diabetic pregnancies an increased resistance is noted with hyperglycemia of > 160 mg/dl. This is 'some' but not all pregnancies. This may be a function of exposure. A very short blip in blood glucose control is probably not enough of an exposure to cause these complications. It is hypothesized that some yet unidentified genetic factor plays a role in both protection and susceptibility with early hyperglycemia. It has been long since proven that exposure to hyperglycemia does not always produce birth defects.

With hyperglycemia larger amounts of glucose than normal, are attached to proteins (glycosolated) resulting in advanced glycalation end products (AGE). This one simple process leads to defects in both the embryo and the placenta. For example, the utero-placental blood flow may be compromised by too shallow an implantation of the trophoblast. This shallow implantation decreases or lowers the nutrients, oxygen, and so on, that normally crosses the placenta. Couple this with vascular damage that many women with pre-existing diabetes or metabolic syndrome have and the transfer across the placenta is even more diminished.

In the placenta it can result in dysfunctional placental villi or narrow placental blood vessels. The villi are the foundation of the attachment to the placenta and blood vessels. The blood vessels can become stiff due to the AGE products and cross-linking. The extra cellular matrix proteins which are seen with the AGE process results in narrower blood vessel lumens in the placental bed. This limits the exchange across the placental bed of oxygen and nutrients.

The placental villi tend to enlarge and overgrow with diabetes. Due to the greater mass and overgrowth of parenchymal tissue (basic placental tissue) results in a reduction of space with in the placenta. This tissue literally crowds itself out and thereby limits blood flow, again.

Hyperglycemia promotes an imbalance in local prostacycilin/thromboxane production, which again favors vasoconstriction. Hyperglycemia also reduces trophoblast estradiol production, which effects uterine vasculature resistance and perfusion.

Placental prostacylin and thromboxane production is often imbalanced in diabetes. This imbalance favors the production of prostaglandins causing vasoconstriction. Prostaglandins are used to stimulate labor so this is a potential cause of the increased incidence of preterm labor seen in women with diabetes during pregnancy.

Chronic decreased oxygen transfer due to vasoconstriction and hyperglycemia stimulated erythropoietin and thereby hemoglobin production. This process also increases the fetal iron demand, to make more red cells. The excess fetal hemoglobin production results in an increased incidence of polycythemia and hyperbilirubinemia.

Insulin resistance in itself acts to increase insulin needs, increase vascular resistance and tone. So, insulin resistance alone without early hyperglycemia is also associated with an increased incidence of preeclampsia and maternal hypertension.

So what can be done to prevent or reduce this vascular resistance? So, health care providers should make every effort to decrease hyperglycemia in early pregnancy. Since the number of > 160 mg/dl is associated with the above changes, keeping any woman with either type 1, type 2 or pre-diabetes below this value could potential advert or reduce all of these complications. This of course has not been accomplished after years of preconception counseling. Most women do not plan their pregnancies or maybe they don't receive appropriate counseling and referral. This can also be accomplished by utilizing non-pregnant targets of < 160 post meals, so if an accidental pregnancy occurs she is already within an acceptable target range. Some Finland and Sweden are advocating this intervention. Whatever the cause, any health care provider that takes care of any woman with type 1, type 2, pre-diabetes, or a history of gestational diabetes should consider testing between pregnancies and routinely controlling blood glucoses to targets less the 160 mg/dl.

Is Coffee Healthy or Not?

Summarized by Geetha Desai, MS, RD, CDE, CLE

Recent studies suggest that coffee (regular and decaffeinated) may offer a variety of health benefits against diseases such as cancer and diabetes. The case for coffee's ability to protect against diabetes is strengthened by several recent studies. In the Iowa Women's Health Study, more than 28,000 women were followed for 11 years. The women who drank four or more cups of coffee daily were about 20% less likely to develop diabetes. Their was only a 30% to 40% less likely development of diabetes among those who drank decaf coffee.

A study in Finland linked consumption of 3 to 6 cups of coffee per day with a 25% lower risk of diabetes. In both studies, benefits were seen after adjusting for other diabetes risks, such as weight, diet, and activity level. Researchers are working to understand the potential advantage of decaf versus regular coffee.

Potential increased risk of high blood pressure and heart disease has been one of the long-standing concerns about coffee. Recent studies confirm that caffeine can raise blood pressure, but this effect is observed with soft drinks containing caffeine, not coffee. Laboratory studies suggest that perhaps coffee's healthful compounds can counterbalance the blood-pressure raising effects of caffeine.

Coffee does warrant some cautions, however. Both regular and decaf coffee relax the muscle that keeps stomach acids from rising into the throat, so those with heartburn or reflux disease (GERD) are encouraged to avoid or strictly limit coffee. Studies now suggest it is unnecessary for pregnant women to completely avoid caffeinated coffee. Until the impact of caffeine is more clearly understood, however, many experts suggest that pregnant women limit their daily caffeine from coffee, soft drinks and other sources to about 300 mg, the equivalent of three cups of regular coffee.

Source:

Diabetes in Control, Nov, 2006

AADE Pregnancy/Reproductive Health Specialty Practice Group

Are you a member of the American Association of Diabetes Educators?

What specialty practice group do you belong to?

The Pregnancy/Reproductive Health Specialty Practice Group may be for you. This group is a great resource of experts in diabetes self-management training for reproductive health affected by diabetes. Their goals are:

- **Aggressive and timely diabetes care and self-management training for the reproductive family;**
- **Preventing the onset of diabetes in women of childbearing capacity;**
- **Preventing the onset of diabetes in children of pregnancies complicated by diabetes.**

Membership is only $15 per year.

For more information on joining contact:

Elaine Simon, RN, MSN, FNP, CDE
Chair
ersimon@ucsd.edu
858-536-5090

-or-

Maribeth Inturrisi, RN, CNS, MS, CDE
Chair elect
maribeth.inturrisi@nursing.ucsf.edu
415-476-9877

☺☹ ☺

Glucose Abnormalities and Diabetes Prevention

Continued from page 4

Finland, and the US, demonstrated that a physically active lifestyle plays an important role in the prevention of Type 2 diabetes. Exercise increases insulin sensitivity, assist with weight loss and lipid abnormalities.

Women with GDM have been provided information about healthy eating that encourages making better food choices. They are encouraged to plan meals and snacks, choosing foods that are low fat, low sugar and high fiber, and reducing portion sizes. All of these are lifelong skills to continue beyond pregnancy and will affect both her health and those of her family. Healthy eating for the newborn begins with breast milk encourage at least 6 months. Breastfeeding assist women with weight loss and reduces blood glucoses.

Along with healthy eating is weight reduction for women that are over weight. A reduction in 5-10% of body weight significantly reduces the risk of diabetes and future GDM.

Stress and depression are associated with diabetes due to the increase in stress hormones (catecholamine). These hormones decrease glucose tolerance by reducing insulin sensitivity. So stress reduction is one more component of lifestyle modifications.

Recognize and avoidance of medications that can increase insulin resistance. The one medication that comes to mind with our women is progesterone. Progestin only birth control when breastfeeding more then doubles the rate of diabetes in women with a history of GDM.

Multiple, (or more) pregnancies, after the first GDM pregnancy increase the diabetes rate. The theory behind this is that each pregnancy stresses the beta cells and eventually burn them out. So, limiting pregnancies after first few pregnancies as a GDM is protective.

Smoking is implicated in the development of diabetes, so avoid smoking.

Other research implicating risk reduction activities for diabetes are on the horizon. It will benefit both the women with a history of GDM and their health care providers to follow this research. Examples of these are, sleep apnea leading to an impaired glucose tolerance; and caffeine (see article in this newsletter) and moderate alcohol intake. But we still don't recommend increasing the intake of caffeine and alcohol.

RECOMMENDATIONS FOR PRACTIONERS:
Evaluate glucose tolerance

- Individualize immediate in hospital and at home postpartum glucose monitoring based on risk factors.
- Use a 75 gm 2° OGTT 4-12 weeks postpartum to reclassify all women with GDM
- If the OGTT is normal, repeat at 1 year from delivery and every three years thereafter.
- Encourage women to obtain OGTT before conceiving again.
- Women with frank diabetes do not need to be screened but should be referred for preconception care. She should also be counseled per glucose control
- If normoglycemic preconception, follow up with 3 hr OGTT on first presentation for prenatal care and again at 24-28 weeks.
- If pre-diabetes is diagnosed, (IGT, IFG) refer for aggressive lifestyle change (RD/MNT/exercise) and /or insulin sensitizers. The OGTT should be repeated at 1 year from delivery and yearly thereafter.
- Women with pre-diabetes should consider preconception care, if blood glucose testing did not normalize with lifestyle interventions.
- If diabetes is diagnosed (see table 14), refer to Primary Care Provider (PCP) or endocrinologist for immediate follow up.
- Evaluate for metabolic risk factors at 1 year from delivery and yearly thereafter. This includes lipid screening. Recommendations are to follow the guidelines from the United States Public Health Service which includes lipids, waist-hip ratio and blood pressure.

⌘⌘⌘⌘⌘

Table of Contents

Topic	Page
Breastfeeding Coalition Unlocking Barriers	1,3
Beyond the Numbers: Acupuncture: A Promising Treatment for Depression in Pregnancy	1-2
When Insulin Pump Patients are admitted to the Hospital	3-4
Glucose Abnormalities and Diabetes Prevention	4,7
Early Vascular Resistance: Effects On the Fetus	5
AADE Pregnancy and Reproductive Specially Practice Group	6
Is Coffee Healthy or Not?	6
Conferences	8

CALIFORNIA DIABETES AND PREGNANCY PROGRAM

On the web at:

www.llu.edu/llumc/sweetsuccess

THE DIABETES AND PREGNANCY NEWSLETTER: *SWEET SUCCESS*

Winter 2006; 4 (4)

Conferences/Events

January 17 - 18, 2007
Sweet Success Current Standards of Practice in Diabetes and Pregnancy, Loma Linda, CA.
Call 909-558-3646 for more information.

February 23 - 25, 2007
54th Annual Advanced Postgraduate Course. American Diabetes Association, New York, New York.
For more information go to: professionaleducation@diabetes.org

February 27 - 28, 2007
Diabetes and Pregnancy Affiliate Training, Santa Ana, CA.
Call 714-456-6706 for more information.

March 28 - 29, 2007. Diabetes and Pregnancy Affiliate Training, Harbor-UCLA Medical Center - call for info 310. 222-3651

April 17, 2007
Sweet Success Advanced Affiliate Training, San Francisco, CA.
Call 650-498-5347 or email: leonad@stanford.edu for more information.

April 2007
Sweet Success: Diabetes and Pregnancy Affiliate Training; *and* Sweet Success Advanced Training.
Call San Diego at (858) 536-5090 or email: ersimon@ucsd.edu for more information.

June 5 - 6, 2007
Diabetes and Pregnancy Affiliate Training. Long Beach, CA
Call 562-595-7930 or email: cfagen@memorialcare.org for more information

June 22 - 26, 2007
American Diabetes Association 67th Scientific Sessions. Chicago, Illinois.
For more information go to: professionaleducation@diabetes.org

August 1 - 4, 2007
American Association of Diabetes Educators. 34th Annual Meeting, St. Louis, Missouri