

SWEET SUCCESS: A NEWSLETTER for DIABETES AND PREGNANCY

**Region 1
North Coast Region
(415) 476-9877**

**Region 2 and 3
Northeast Region
(916) 733-1705**

**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) 558-3646**

**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 Public Health, Maternal, Child and Adolescent Health Program

Antioxidant Supplementation and Pre-eclampsia Geetha Desai, MS, RD, CDE, CLE

Pre-eclampsia is a disorder of pregnancy characterized by pregnancy-induced hypertension (≥ 140 mmHg systolic and/or ≥ 90 mmHg diastolic blood pressure) and new onset proteinuria (≥ 300 mg protein/dl) occurring in the second half of pregnancy. Pre-eclampsia has several predisposing risk factors including: age < 20 years or > 40 years; high BMI; personal and family history of pre-eclampsia, multiple pregnancy; pre-existing medical conditions such as chronic hypertension, renal disease, autoimmune disease and diabetes. The exact cause of pre-eclampsia, often referred to as a "disease of theories" remains unknown. However, the placenta plays a major role in the pathophysiology of pre-eclampsia. Normal healthy pregnancy is associated with a transient increase in reactive oxygen species production, an increase that is counterbalanced by an increase in antioxidant capacity. It is proposed that in normal pregnancy the embryo develops in a low O₂ environment until completion of embryogenesis to protect differentiation cells from oxidative stress. Thereafter, the maternal intervillous circulation is established following a burst of oxidative stress. While this physiological event plays a role in stimulating normal placental differentiation, it may also serve as

a factor in the pathogenesis of pre-eclampsia, when an imbalance in oxidative stress and antioxidant capacity leads to impaired trophoblast invasion, impaired spiral artery remodeling and an ischaemia-reperfusion type phenomenon leading to chronic oxidative stress in the placental unit.

Pre-eclampsia in pregnancies complicated with diabetes

Diabetes Mellitus and, more specifically, hyperglycemia are associated with increased oxidative stress and antioxidant depletion, which are partly related to the glycemic control. Glycated Hgb levels have been shown to correlate with MDA (Malondialdehyde) levels in mothers with diabetes. Studies have reported higher levels of plasma and erythrocyte-free MDA levels and lower levels of plasma vitamin E, erythrocyte vitamin A and glutathione peroxidase activity in women with diabetes when compared with controls. Corrected total antioxidant capacity is lower and lipid hydroperoxides are higher throughout pregnancies complicated with DM (hyperglycemia) compared with pregnancies that are normal. It has been concluded from studies that oxidative stress is one of several important factors contributing to the unfavorable outcome of a

Continued on page 2

Antioxidant Supplementation and Pre-eclampsia

From page 1

pregnancy complicated by diabetes. In light of the various studies, it is very realistic to say that antioxidant supplementation may reduce pre-eclampsia in low and high-risk women, including pregnancies in women with diabetes.

Increasing evidence suggests that a disruption in the oxidative stress-antioxidant balance in pregnancy is likely to contribute to oxidative stress in pre-eclampsia. The placenta is likely central to this phenomenon. The preliminary study by Chappell *et al.* showed a significantly high reduction in the incidence of pre-eclampsia in women at risk who take vitamin C and vitamin E supplement from mid-pregnancy. This has provided the strongest evidence to date that oxidative stress is implicated in the pathogenesis of pre-eclampsia and that supplementation with antioxidants during pregnancy may prevent or postpone its occurrence. Pre-eclampsia is likely to be a heterogeneous disease and thus it is possible that the pathogenesis of pre-eclampsia may differ in women with different risk factors. The causative factors in women with pre-existing vascular disease, such as diabetes mellitus, may not be the same as that for nulliparous women. Likewise, the causation of early-onset pre-eclampsia (before 34 weeks gestation) may differ from that of pre-eclampsia developing at term. So, taking these factors into consideration, it is possible that antioxidants may

not prevent pre-eclampsia in all patients. Firm recommendations are not available.

References:

1. Brown MA, Lindheimer MD, de Swiet M, Van Assche A & Moutquin JM (2001) The classification and diagnosis of the hypertensive disorders of pregnancy: statement from the International Society for the Study of Hypertension in Pregnancy (ISSHP), *Hypertension in pregnancy* 20, IX-XIV.
2. Martin-Gallan P, Carrascosa A, Gussinye M & Dominguez C (2003) Biomarkers of diabetes-associated oxidative stress and antioxidant status in young diabetic patients with or without subclinical complications. *Free Radical Biology and Medicine* 34, 1563-1574.
3. Peuchant E, Brun JL, Rigalleau V, Dubourg L, Thomas MJ, Daniel JY, Leng JJ & Gin H (2004) Oxidative and antioxidative status in pregnant women with either gestational or type 1 diabetes. *Clinical Biochemistry* 37, 293-298.
4. Chappell LC, Seed PT, Briley AL, Kelly FJ, Le R, Hunt BJ, Parmar K, Bewley SJ, Shennan AH, Steer PJ & Poston L (1999) Effect of antioxidants on the occurrence of pre-eclampsia in women at increased risk: a randomized trial. *Lancet* 354, 810-816.

)⊙(⊙⊙●)⊙(⊙⊙●

Beyond the Numbers: Hidden...In Plain View: Depression Screening and Data Collection *Charlene Canger, MFT, LCSW*

Often the women come to our attention in clinic via a myriad of taxing and irritating behaviors. Schedule their appointments and they don't show. Repeatedly. Develop a stellar meal plan and they don't follow it or, worse yet, they fake it. They may agree to "take responsibility" for their diabetes but the words don't translate into actions. You may get the feeling they're not even thrilled about the pregnancy, much less a diagnosis of diabetes. Secretly you dread seeing the patient's name on the schedule because it means a meeting of surly

comments, stony silences, and opposition to whatever is proposed. The healthcare team seems to be working harder than the mom. With such busy schedules, Sweet Success teams get frustrated and these moms may be sent back to their obstetricians-with the Sweet Success team breathing a quiet sigh of relief. Although there are many reasons for such behaviors, women suffering from depression and anxiety may present in this manner.

Continued on page 3

Beyond the Numbers: **Hidden...In Plain View: Depression Screening and Data Collection**

Continued from page 2

Depression may affect up to 10-28% of the mothers seen in our clinics, if we recall the sobering diabetes and perinatal research findings about maternal depression. Slowly, across the country more attention is being directed at identifying this debilitating, often chronic condition that can impede a woman's care of herself and her family, creating a defeating cycle of hopelessness. Unborn children are not spared from maternal depression as their cortisol levels mimic their mother's and, when born, the little ones are often poorly regulated, are of low birth weight, and are highly associated with obstetrical risks. As the children grow, their development and academic achievement suffers and their emotional dysregulation continues.

Pretty compelling. But busy health professionals don't fare well identifying depression in pregnancy much less when complicated by diabetes. The stigma of mental illness holds a vice-like grip across most cultures. The myth of blissful and stress-free pregnancies persists, and our fears of falling into an abyss of emotional pain if we do pursue discussing the topic with a patient discourages bringing up depression at all. Besides, THEN what do we do??...

Revised Data Form: Screening for Perinatal Depression

Although busy Sweet Success teams have no time to spare, the Revised Sweet Success Data Form will nonetheless ask for additional data: an Edinburgh Postnatal Depression Scale (EPDS) score. The clinical rationale is solid: undiagnosed depression can be expected to impede management of blood sugar, hamper her ability to manage and/or adhere to a treatment regime, negatively affect multiple relationships in a woman's life- including those with her health providers. It is hoped that after the initial learning curve of utilizing the screening tool, the benefit to patient care will reward our efforts when we see research findings replicated in our own clinic settings. We would also be following

recommendations from ACOG, ADA, AHRQ, (see recommended web sites) and APA (American Psychological Association) for screening during pregnancy.

NOTE: One Sweet Success site is now conducting a pilot study on EPDS scores. A patient's adherence to a treatment regimen and high scores for depression, are directly correlated. Poor adherence and a woman's level of depression are linked.

Edinburgh Postnatal Depression Scale (EPDS)

The Edinburgh Postnatal Depression Scale (which, in spite of the name, can be used throughout the entire perinatal period) is a simple, well-validated tool most often used to identify depression in the perinatal population. It is recognized by many disciplines and has been translated and validated in many languages. It is a ten item, self-rated tool that screens for depression and its cohort, anxiety. It assists in identifying suicidality requiring immediate attention by a mental health professional. The tool identifies degrees of the mood disorder from mild to moderate depending on the scoring. And, as with any screening tool, **a careful clinical assessment should follow a suspicious score to confirm the diagnosis.**

Scoring Results

As previously noted, any suicidality identified requires immediate follow-up with a mental health professional for further assessment and intervention. Involved medical providers need to be informed.

In an ideal world, with EPDS scores > 10, a mental health professional would be consulted; further assessment done, appropriate referrals made, and a care plan for the Sweet Success team would be developed to assist providers in subsequent sessions with the mother. This also supports the Sweet Success staff in 1) establishing realistic

Continued on page 4

Beyond the Numbers: **Hidden...In Plain View: Depression Screening and Data Collection**

From page 3

treatment goals for the mother (thus reducing provider and patient frustration) and 2) provides specialty consultation for any difficulties that arise in managing the case complexity. A woman with mild-moderate depression scores can benefit from psycho-educational materials and regular follow-up during appointments to determine how she is doing, what she may need, etc.

Interviewing Tips When Reviewing the EPDS:

- If we ask a woman to take time to complete a screening tool or form, provide feedback to her.
- Starting the conversation with “ we ask all moms these questions because depression is common in pregnancy and can make it harder to care for themselves or their families” often works well.
- Use *invitational language* such as “may I ask you some questions so I can understand better what you are experiencing”. This is a respectful style that helps when discussing emotional issues.

Further Training on the EPDS

This is just a brief overview for getting started with the EPDS. Your Behavioral Medicine Specialist can provide more in-depth training for your site so all staff are comfortable with the tool and interviewing techniques. Most importantly, they are available for case consultation for ongoing support. Materials are also available, in addition to translations of the EPDS. Please contact me for copies: ccanger@stanford.edu.

Useful Websites:

To download a copy of the EPDS with scoring instructions:

www.fresno.ucsf.edu/pediatrics/downloads/dinburghscale.pdf

To obtain the most current information on psychotropic drug use in pregnancy and breastfeeding and other relevant resources, visit University of Illinois/Chicago, Department of Psychiatry’s Perinatal Mental Health Project: www.psych.uic.edu/research/perinatalmentalhealth

An excellent resource and to sign up for an electronic newsletter, check out Massachusetts General Hospital site- MGH Center for Women’s Mental Health at:

www.womensmentalhealth.org/

*** **

Sweet Success Data Changes – 2008 **Leona J. Dang-Kilduff, RN, MS, CDE**

Yes the data form for Sweet Success-Diabetes and Pregnancy has changed. We have changed our care and the outcomes we seek. We want to make our data more useful. Our data set is probably the largest data set in the US for diabetes during pregnancy so we want it to be the best it can be. We have made great efforts to include data that we think most of our affiliates can access. We have included you in the process and appreciate all your feedback. We have made every effort to utilize check boxes instead of write

in boxes. This will diminish errors and decrease the time it takes to write versus placing a check.

Our changes begin with the separate question” Is the mother of Hispanic origins”. This is not an ethnicity question. It is one of the data questions asked on birth certificates and other state data forms. What is the rate of diabetes in pregnancy among women of Hispanic origin?

The educational categories have been redefined.

Continued on page 5

Sweet Success Data Changes – 2008

Continued from page 4

We utilize this to identify the level of reading we need for our materials.

New categories of Medical-HMO and Medi-Cal Fee-for Service, were added because the type of Med-i-Cal a woman has affects the reimbursement for services.

The Edinburgh Score has been added. Until now we had no way to quantify antepartum and postpartum depression. This score is covered more thoroughly in Charlene Canger's article, "*Beyond the Numbers: Hidden...In Plain View: Depression Screening and Data Collection*".

Screening levels have been another point of controversy. We have MDs that refer for care at 180 mg/dl on a 50 gram screen verses some that send everyone for a 3 hour Oral Glucose Tolerance Test (OGTT). The same can be said for 1 abnormal test result on the 3-hour OGTT versus will not treat unless there are 2 values elevated. And what is the best practice? With the HAPO study, we are also faced with potentially changing screening guidelines for GDM.

Under diagnosis we now have pre-diabetes, impaired fasting, and impaired glucose tolerance as preexisting conditions. They have been in our data set, but were never clear in our data if it was pre-existing or 1 abnormal on the 3 hour OGTT.

Types of insulins are now listed and can be identified in the treatment question. Another problem question was having affiliate staff re-categorize clients into diagnostic categories at the last clinic visit. Diagnosis does not change at the last prenatal visit but treatment may well have changed

There are more questions postpartum. Questions include weight, postpartum follow-up, treatment, and diagnosis. There are with fewer choices since GDM is no longer a choice postpartum. A real change is a modified version of the

"Adherence Scale". Compliments of Sierra Vista Regional Medical Center, in San Luis Obispo. This scale rates a patients participation in their self-care. We all hate taking responsibility for the patient that never does anything we ask. Now, you can measure it. Of course there is an option to not evaluate a woman's adherence.

There are more questions regarding the mother's health and complications during and after her pregnancy. We have all had to deal with multiple or concurrent problems during a pregnancy and we know it impacts the outcomes. Now we can enter this information. I personally think this will explain some of those poor outcomes.

Type of labor was added. We hope this will be easy to answer since most women know if they were induced or not. Though we may not have obtained this information for the first part of this year, 2008.

The reason for Cesarean delivery was narrowed down to the most common reasons that were being entered in the last few years. It is now in a check box format.

Baby NICU admissions needed to be clearer. Some facilities admitted all babies of women with DM or GDM for observation. Not all babies are treated some are observed only. So the question of admission beyond the transition stage becomes appropriate for these facilities. The reason for neonatal admissions and congenital defects have been condensed to the most common responses, based on the previous data form and put into a check box format. Of course a fill in space is always available.

The very last question has to do with the source of the data, e.g. charts, patient recall and so on.

The state data form was submitted to the California Committee for the Protections of Human Subjects' and exemption from review is

Continued on page 6

Sweet Success Data Changes – 2008

From page 5

being sought. No identifiers will be collected with the data. This makes data collection and seeking local permission to collect data easy for many sites. This will provide IRB coverage for free standing clinics and will also expedite the IRB process for larger facilities.

The CDAPP data consultant Lisa Bollman, RNC, CPHQ

DLBollman@aol.com has set up packets of instructions, forms, the survey monkey site and trainings for data collection. The hard copy materials will be arriving soon, along with a CD

with forms. All sites will be notified of trainings once they are set.

Forms to request the CDAPP data set are available and can be obtained through Lisa Bollman, or your regional staff.

The new 'Survey Monkey' site is up and all Sweet Success affiliates will have access by the time they receive this newsletter.

For more information feel free to contact me at leonad@stanford.edu



Fetal Surveillance in Diabetes and Pregnancy Leona J. Dang-Kilduff, RN, MS, CDE

In addition to the childbirth education provided to the woman and her support person, the Sweet Success educator may be responsible for explaining fetal monitoring to the pregnant woman with diabetes. Fetal monitoring recommendations are similar for a woman with preexisting diabetes and for a woman with GDM. Any woman diagnosed with GDM during early pregnancy should be treated as if she had preexisting diabetes. A woman's glycemic control is one but not the only factor that can effect the fetus risk.

First Trimester

An **ultrasound** is recommended to confirm dates and to document viable pregnancy if needed.

HgbA1c is recommended for any woman with preexisting DM, pre-diabetes or suspected DM pre-dating the pregnancy. These are the women that presented early in pregnancy (before 20 weeks), with elevated HgbA1c (above lab normal range), with significant elevations on the 50 gram load screening (200+ mg/dl). Women with suspected preexisting diabetes will continue to be called GDM until a diagnosis can be confirmed

postpartum. For the sake of this article these women will be referred to as pre-existing abnormal glucose. An HgbA1c is utilized to assess and counsel per risk of birth defects.

Second Trimester

Expanded maternal Alpha-fetoprotein, between 15-20 weeks is recommended. Women with pre-existing abnormal glucose tend to have more false positive results than the normal population.

A targeted or Level II ultrasound is

recommended for any women with pre-existing abnormal glucose. This exam is to identify major malformations. It is performed between 17 to < 24 weeks gestation.

A **Fetal echocardiogram** is performed between 18 to < 24 weeks gestation in women with pre-existing abnormal glucose. It is used to rule out cardiac abnormalities and it is more sensitive than an ultrasound.

Third Trimester

Fetal Movement (kick counts), begin at 26-32 weeks and continue until delivery. This test is a

Continued on page 7

Fetal Surveillance in Diabetes and Pregnancy
Continued from page 6

maternal assessment of fetal activity. Kick counts are an inexpensive, non-invasive means of monitoring fetal well-being.

Non-stress test (NST) Provides information on the fetal well-being and placental functioning. Women without medication treatment and no high risk factors can begin non-stress testing at term. If medication is being used to control blood glucoses and the woman is without vasculopathy, testing begins weekly at 32 weeks. Women with vasculopathy, HTN, uncontrolled diabetes or ketoacidosis should begin twice-weekly BBP in conjunction with NST or Doppler flow testing needs to be instituted.

Amniotic Fluid Index (AFI) is used to assess the volume of amniotic fluid as an indirect, semi-qualitative measure of fetal well-being. It is used in the diagnosis of oligo- or polyhydramnios. This test provides information on uteroplacental function. Many sites are now utilizing an amniotic fluid index (AFI) with the NST (**modified NST**). This combination demonstrated a lower stillbirth rate when compared to NST alone. With twice weekly testing this rate to 1.4/1000. In this study, all the stillbirths occurred > 4 days from the last NST (Kjos, 1995). In women with complicated or uncontrolled diabetes the modified NSTs primary value is in preventing unnecessary interventions.

Fetal Biophysical Profile (BPP) Is recommended for high-risk pregnancies. These should start at 32-36 weeks and continue until delivery. It is performed as a backup to NST to further assess fetal well-being. Fetal biophysical profile consists of an NST and real time ultrasound observations to evaluate fetal breathing movements, gross movement, extension and flexion of extremities and amniotic fluid index.

The **Contraction Stress Test (CST)** is rarely used now. It is utilized for at-risk patients. For multiple pregnancy or high-risk conditions

(chronic hypertension, fetal growth restriction, poorly controlled diabetes). This test evaluates the fetal heart rates response to contractions. A negative test has no late or significant variable deceleration. A positive test has late decelerations occurring with 50% or more of the contractions. If this is utilized it can be started at 32-34 weeks when NST is non-reassuring (usually utilized in place of a BPP).

Amniocentesis is used if delivery is planned before 38 weeks, or if EDC is not well-established and/or sub-optimal blood glucose control.

Doppler flow is used to evaluate uteroplacental function for high-risk patients. Potential compromised uteroplacental function is seen with preeclampsia, chronic hypertension, fetal growth restriction, and poorly controlled diabetes.

An **Ultrasound** is recommended at 37-38 weeks for estimated fetal weight. It is used to estimate fetal weight in women who have planned a vaginal delivery. It should also be utilized at any time during the pregnancy for suspected abnormal fetal growth. Ultrasound exams can assist in the diagnosis of macrosomia. IUGR, poly- or oligo- hydramnios.

ଋତୁ ଶିକ୍ଷା ସମାପ୍ତ

**On behalf of healthy
mothers and babies!! We
thank you for all your
hard work, time and
caring!!**



Sweet Success: A Diabetes and Pregnancy Newsletter

<u>Title</u>	<u>Page</u>
--------------	-------------

Antioxidant Supplementation and Pre-eclampsia	1-2
---	-----

<i>Beyond the Numbers: Hidden... In Plain View: Depression Screening and Data Collection</i>	2-4
--	-----

Sweet Success Data Changes – 2008	4-6
--------------------------------------	-----

Fetal Surveillance in Diabetes and Pregnancy	6-7
--	-----

Conferences	8
-------------	---

California Diabetes and Pregnancy Program

On the web at:
[www.llu.edu/llumc/
sweetsuccess](http://www.llu.edu/llumc/sweetsuccess)

Conferences

February 6-7, 2008. Affiliate Training. Loma Linda University Children's Hospital, Loma Linda, CA. For information call Terry Kramer at (909) 558-3936.

February 8, 2008. Insulin Pump Use in Pregnancy. Loma Linda University Children's Hospital, Loma Linda, CA. For information call Terry Kramer at (909) 558-3936.

February 11, 2008. Advanced Diabetes and Pregnancy "Multicultural Clientele". St. Jude Medical Center, Fullerton, CA. For more information call 714-456-6706 or email rbening@uci.edu.

February 12-13, 2008. Affiliate Training, St. Jude Medical Center, Fullerton, CA. For more information call 714-456-6706 or email rbening@uci.edu.

March 5th (6:30 PM) or 6th (8:15 AM), 2008. Diabetes and Pregnancy Guest speaker Lois Jovanovic, MD. 1 CME. Please RSVP to the caldiabetes web site at:

[www.caldiabetes.org/events.cfm?#
event_356](http://www.caldiabetes.org/events.cfm?#event_356)

March 14-15, 2008. Comprehensive lactation care II: Honoring Cultural, Social and Physical Diversity. Berkeley CA. For information call Anne Garrett at (650) 573-29955 or Sue Wirth (510) 524-6917.

March 14-15, 2008. Comprehensive Lactation Care II. Berkeley CA. For information: SWAGconferences@aol.com Anne Garrett 650-573-2955 Sue Wirth 510-524-6917

April 8-9, 2008, Harbor/UCLA Affiliate Training. For more information: Ana Sandoval Ph: 310-222-3651 asandoval@labiomed.

April 10-12, 2008. California Dietetic Association. Los Angeles, California. For information go to: www.dietitian.org/

June 6-10, 2008. American Diabetes Association 68th Scientific Sessions. San Francisco, CA. For information go to <http://professional.diabetes.org>



California Diabetes and Pregnancy Program

