



Sweet Success Update

Fall 2006

Helping Teams Build Dreams

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Guidelines for the Intrapartum Management of Women using Continuous Subcutaneous Insulin Infusion (CSII) Pump Therapy

By Maribeth Inturrisi, RN, MS, CNS, CDE

For most women with type 1 diabetes, CSII is associated with better glucose control than the traditional frequent insulin injections. Basal insulin is delivered continuously and pre-meal boluses can be adjusted to carbohydrate intake. During pregnancy, near normal glucose control can reduce perinatal mortality and morbidity. Labor is a particularly important time to insure maternal normoglycemia to reduce newborn hypoglycemia and avert the need to separate mom and baby for subsequent interventions. Women who use CSII are best managed by continuing the pump without interruption. This guideline is based on the use of CSII for women with type 1 diabetes, with a normal BMI and less than 40 lb weight gain during pregnancy.

CRITICAL POINTS:

1. CSII is safe and effective when blood glucoses are followed closely (using bedside meters) and good judgment is utilized.
2. CBG targets in active labor should reflect normal blood sugars in the non-fed state between 70 mg/dl and 100-110mg/dl.
3. If the patient is not in labor, is being induced and is still eating-1 hour post meals should remain less than 130.
4. IV glucose (D51/2 NS) may be used when CBG is less than 90 but should be administered as a medication using an IV control pump. Glucose containing solutions should be piggybacked to a main line of LR or NS.

PROCEDURE:

1. Have the following equipment available:
Glucose meter should be checked with the central lab for accuracy (see below #2)
 - Strips which have been calibrated to the meter being used
 - Finger lancets
 - Syringe and tubing change for pump (as a back up)
 - Face cloth, soap and warm water (if needed to cleanse patient's hands- no alcohol wipes!!)
 - IV access (saline lock) (IV's are not required for CSII pump therapy in labor but access is important for emergencies)
 - 1000 ml D5 1/2 NS should be readily available
 - Glucose tabs should be readily available
 - Glucagon 1 mg for SC use (should be available in the extremely rare case of profound hypoglycemia)
2. Check the patient's blood glucose on admission with split specimen- part to lab and part to bedside meter- which ever will be used during labor. Send blood stat for glucose as it glycosolates in the tube if not

Sweet Success Update GOAL:

Our goal is to provide useful information and or/ tools to help provide quality diabetes and pregnancy care.

SSEP Contact Information
www.SweetSuccessExpress.com
Or call Debby Rice or M.Joann Henry at or
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Email at ssep1@verizon.net

Conference Contact Info

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Fall Research Conferences:

Sweet Success 2006: Pathways to Progress
Research Conference- November 2-4, 2006,
Orange/Anaheim, CA

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Continued on page 2

processed within 30 minutes. If lab and meter are within 10-15% of each other, the meter can be used safely.

3. Document the following :

- Current pump settings
- Current insulin to CHO ratio for meals and snacks
- Current correction bolus ratio
- Time and content of last meal and last CBG value
- Time and dose of last insulin bolus
- Labor status

4. For women who are:

- Not in labor, unfavorable cervix, being induced, remote from active labor- continue food plan as per Antepartum and check pre and 1 hour post meal glucoses. Continue pump management (usual program) until labor begins.
- Early labor continue as above or switch to clear NON CALORIC liquids (diet Jello, water, diet soda, tea, broth) If switching to clear non caloric liquids CUT BASAL RATES IN HALF. Bolus only if needed for elevated values as described in the table below:
- In active labor continue clear liquids as described above or NPO at which point IV fluids may be necessary as described in the table below:

PUMP ALGORITHM

BG	Insulin pump Bolus	CHO or D5 ½ NS	LR or NS	CBG checks
70	0	glucose tabs to equal 15 grams CHO or 150ml/hr D5 ½ NS	TKO	Q 15 min until above 70 x2
0-89	0	glucose tabs to equal 8-10 grams CHO or 125ml/hr D5 ½ NS	TKO	Q 30 min until above 90 x2
0-110	0	100ml/hr D5 ½ NS (5 Gms CHO/hr)	TKO	Q 1 hour
11-130	0.25 units	100ml/hr D5 ½ NS (5 Gms CHO/hr)	TKO	Q15-30 min
31-150	0.5 units	0/hr	125ml/hr	Q15-30 min
51-180	1.0 units	0/hr	125ml/hr	Q15-30 min
81- 199	2.0 units	0/hr	125ml/hr	Q15-30 min
200 or greater	Consider IV Insulin	Follow your facility's IV insulin protocol	150ml/hr	Q15-30 min

5. Check CBG as close to delivery as possible.
6. Immediately after delivery dry the newborn completely and place it skin to skin at breast and assist with breast feeding. Insure that both mom and baby are dry and warm.
7. D/C any IV D5 (CBG is >100 and mother is able to take fluids and food)
8. Leave the pump at labor basal rates (insulin needs are cut in half postpartum- you have already cut the doses in half for labor so titrate the insulin doses from this basal rate)
9. Check maternal CBG at 30 minutes postpartum Targets should be <100 for fasting and <150 for 1 hour after meals. Do not bolus unless meal or snack is to be taken. Use 1/3 to 1/2 the insulin to CHO ratio that the patient used during pregnancy. Same reduction in correction doses.
10. Check newborn CBG at 30 min after birth while at breast (studies show breast feeding during heel sticks resulted in newborn behaviors indicating less pain)
11. If newborn CBG is < 40 repeat immediately. If still < 40 use 10 cc formula in a syringe and drip into baby's mouth while it is at breast. Repeat CBG in 15 minutes. Repeat entire sequence until CBG greater than 40.

REFERENCES

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3. Cook et al. Use of Continuous Subcutaneous Insulin Infusion (Insulin Pump) Therapy in the Hospital. *The Diabetes Educator.* 2005; 31: 849-857.
4. Yasser Y. El-Sayed, Deirdre J. Lyell New Therapies for the Pregnant Patient with Diabetes. *Diabetes Technology & Therapeutics.* Dec 2001, Vol. 3, No. 4: 635-640.

Conference Info

Sweet Success 2006: Pathways for Progress Annual Research Conference

There is still time to register for the Sweet Success 2006: Pathways for Progress research conference will be held on November 2-4, 2006 at the DoubleTree Hotel in Orange, CA. For information call 800-732-2387 or register on line at www.proedcenter.com

SAVE THE DATE

Mark your Calendar for the Sweet Success 2007: Charting a Course for Excellence annual research conference on November 1-3, 2007, Orange, CA

METFORMIN AND BREASTFEEDING

Gerald G. Briggs from Miller Children's Hospital in Long Beach, California, and colleague conducted a study and published the results in the *Journal of OB/GYN* in June 2005. They found that it is safe for women who take metformin for diabetes to breastfeed. To investigate, the team measured the levels of metformin in the blood and breast milk of five women and measured the blood glucose levels in three of their infants. The investigators conclude: "Although additional data are required, we conclude that metformin is compatible with breastfeeding."

Diabetes drug levels in breast milk is significant. *Obstetrics and Gynecology* June 2005.



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SSEP Receives Support from LifeScan and Medtronic Diabetes

SSEP has a vested interest in improving the quality of care provided to women with diabetes related to pregnancy and their children. We are taking an even more comprehensive and systematic approach to providing our services because we believe our activities are fundamental in providing education to health care teams across the nation. It is the diabetes educators at the grass roots of America that have the power to help these mothers and their families develop healthier lifestyles and build a healthier society. To accomplish this, SSEP must have support.

Each year, SSEP receives vital support through sponsorships, grants, contributions and/or awards. These gifts are of particular value because they provide targeted resources for key activities allowing us to fulfill our mission as a charitable organization. Contributing partners are our most valued supporters. To show our gratitude, SSEP recognizes companies that have generously supported our cause over the years in our newsletters. We wish to honor two such institutions in this issue.

The first company that SSEP wishes to thank is LifeScan, a Johnson and Johnson Company. LifeScan is a leading maker of blood glucose monitoring systems for home and hospital use to help improve the quality of life for people with diabetes. They were among the first companies to support the out-of-state Sweet Success activities by providing grants and sponsorships to further the SSEP Mission. They have been an unwavering sponsor of Sweet Success Express and SSEP since 2000 and are a major contributor to our success.

The second company we wish to recognize is Medtronic Diabetes, a world leader in insulin pump therapy and continuous glucose monitoring systems. Their products assist thousands of people with diabetes lead healthier and more normal lives. Medtronic Diabetes is a sponsoring partner in 2006 and has generously supported the out-of-state Sweet Success activities during several years since 2000. We extend our heartfelt gratitude to them for their support.

It is through the continued generous support of companies such as LifeScan and Medtronic Diabetes that enables SSEP to develop current education materials and provide expanded services. We could not do it alone.

SSEP is proud to have LifeScan and Medtronic Diabetes as supporting partners during 2006.

A 1c & ANEMIA

Typically the A1c measures higher in the patient with anemia. Many of the current meters will also give warnings about incorrect BG readings with conditions such as anemia where the hematocrit is not in normal ranges. If you google "anemia affects A1c" you will get clinical studies to support this.

Sweet Success 2006: Pathways for Progress

research conference will be held on November 2-4, 2006 at the DoubleTree Hotel in Orange, CA. The conference is designed to provide current, clinically applicable information to health care professional from programs that provide diabetes and pregnancy care. The pre-conference workshops will present Continuous Blood Glucose Monitoring and Nonverbal Integrated Communication in Clinical Encounters.

The two-day main conference will emphasis new pathways to decrease the onset and morbidity levels of diabetes in mothers and their children through education, prevention and early, consistent interventions. The keynote speakers are Dr. Boyd Metzger and Dr. Francine Kaufman. Brochures are available at www.proedcenter.com.

SSEP Partnering with National Diabetes Education Program

It's Never Too Early... to Prevent Diabetes

Women with a history of gestational diabetes mellitus (GDM) have an increased life long risk of developing type 2 diabetes, and their children are at increased risk for obesity and diabetes.

The good news from the National Diabetes Education Program (NDEP) is that *It's Never Too Early to Prevent Diabetes*. Women who have had GDM can prevent or delay type 2 diabetes, and help their children lower their risk for the disease.

It's Never Too Early to Prevent Diabetes. A Lifetime of Small Steps for a Healthy Family, the latest diabetes prevention message from the NDEP, offers tips to help women with a history of GDM take small steps – losing a small amount of weight by making healthy food choices and being more physically active – to earn big rewards – preventing or delaying the disease, and helping their children lower their risk for diabetes.

The *It's Never Too Early to Prevent Diabetes. A Lifetime of Small Steps for a Healthy Family*, tip sheet in English and the *Nunca es muy temprano para prevenir la diabetes. Pequeños pasos de por vida para una familia sana*, tip sheet in Spanish is available from the NDEP.

For more information, visit www.ndep.nih.gov or call 1-800-438-5383.

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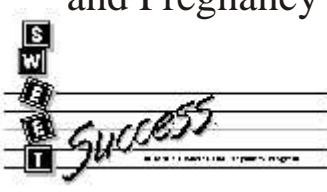
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 Annual Research Conference
 Orange, CA - November 2-4



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