

# Insulin Pump Beats Shots for Pregnant Women

BY SHERRY BOSCHERT  
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SAN FRANCISCO — Pregnant women with type 1 diabetes mellitus in a retrospective cohort study were more likely to improve glycemic control and less likely to deliver by cesarean section if they used insulin pumps rather than self-injections of insulin, according to Dr. Yvonne W. Cheng.

Among the 60 women in the pump group, 25% had hemoglobin A<sub>1c</sub> (HbA<sub>1c</sub>) values below 6%, compared with 13% of the 628 women in the injection group of a retrospective cohort study, she reported in a poster presentation at the annual meeting of the Society for Maternal-Fetal Medicine.

Half of women in the pump group delivered by C-section, compared with a 63% C-section rate in the injection

group, said Dr. Cheng of the University of California, San Francisco, and her associates.

After controlling for the effects of maternal age, parity, ethnicity, body mass index, gestational weight gain, and gestational age at enrollment in the California Diabetes and Pregnancy Program, the study reported women in the pump group were three times as likely to have HbA<sub>1c</sub> values below 6% and were half as likely to have a C-section, compared with the injection group.

The conclusions support results from one previous study in 2004 that found improved glycemic control with use of an insulin pump instead of injections by pregnant women with type 1 diabetes mellitus. Three other studies in 1988, 2000, and 2005 found no significant differences in results among groups, she noted. All the previous studies were smaller than the present study, with only 11-36 patients in the pump groups.

The current study also found that women in the pump group were more likely to be white, to speak English as their primary language, and to have a higher education level than did women in the injection group.

"We need to address the disparity of insulin pump use in type 1 diabetes mellitus patients of different socioeconomic and racial/ethnic groups," the authors commented.

"In nonpregnant diabetics, most people are switching over to pumps" because studies have shown better glycemic control, Dr. Cheng said in an interview. But to be candidates for insulin pumps, women must be able to count carbohydrates and operate the machine, as well as program it.

"It's a very select group of women," she said.

Dr. Cheng has no association with companies that make insulin pumps or injection products. ■

## Diabetes Often Not Managed Well Enough in Pregnancy

BY TIMOTHY F. KIRN  
Sacramento Bureau

LOS ANGELES — Recent research shows that even relatively minor elevations in blood glucose in pregnancy can have severe effects, and that diabetes in pregnant women is not being controlled as well as it should be, Dr. Jorge H. Mestman said at the Obstetrical and Gynecological Assembly of Southern California.

A short time ago, many experts believed that the problems of diabetes in pregnancy had been addressed and that it was easy for patients to do well. But that is not really the case, said Dr. Mestman, director of the University of Southern California Center for Diabetes and Metabolic Diseases.

One study looked at a Danish registry of pregnant women with diabetes and found that this group of patients had elevated rates of stillbirth and congenital malformation relative to the general population, largely because their blood glucose was not under control (*Diabetes Care* 2004;27:2819-23).

Two other studies published within the last 2 years have shown that good glucose control could improve those outcomes, Dr. Mestman said.

One of those studies randomly assigned 1,000 women with gestational diabetes, who were between 24 weeks' and 33 weeks' gestation, to routine diabetes care and education or to routine care plus insulin therapy. The researchers reported that care and insulin therapy reduced the perinatal complication rate to 1% vs. 4% for care and education (*N. Engl. J. Med.* 2005;352:2477-86).

The second study looked at women in a gestational diabetes program who delivered at term, and compared the outcomes of those who had good glucose control and suboptimal glucose control. Good glucose control had a very rigorous

definition in the study—an average fasting glucose level below 95 mg/dL, an average 1-hour postprandial level below 140 mg/dL, and an average 2-hour postprandial level of below 120 mg/dL.

More than one-third of the women with poor control (1,118 subjects) had poor pregnancy outcomes—which included macrosomia, large-for-gestational-age infants, hypoglycemia, jaundice, or stillbirth—compared with only 24% of those with optimal control (2,030 subjects; *Diabetes Care* 2007;30:467-70).

Treatment of the infants in the intensive care unit and cesarean deliveries was also more common in the poorly controlled women.

Although there has been some concern about the use of oral diabetes

drugs in pregnancy being associated with congenital abnormalities and neonatal hypoglycemia, Dr. Mestman said he has reviewed the literature and the experience at his own institution, and concluded that the evidence suggests there is no risk and that what differences have been seen are probably result from glycemic control.

Moreover, a study that compared glyburide with insulin treatment in patients with gestational diabetes reported that the two treatments produced equivalent glucose control and improved outcomes equally (*N. Engl. J. Med.* 2000;343:1134-8).

The advantage of glyburide was that there was much less maternal hypoglycemia, Dr. Mestman added.

Therefore, Dr. Mestman uses glyburide in pregnancy. The key to using this oral agent, he said, is knowing which patients respond well and which will need insulin.

It has been shown that the patients who are not likely to respond to glyburide well enough are those who have a 1-hour glucose challenge test with a blood glucose level above 200 mg/dL, or who have a fasting glucose level above 95 mg/dL, he said. ■

## Weight Gain During Pregnancy, Overweight in Children Linked

BY LORINDA BULLOCK  
Associate Editor

Maternal weight gain that meets or exceeds recommendations made in current guidelines is associated with a fourfold increased risk of having a baby that is overweight in childhood, results of a large prospective study suggest.

Compared with women who had inadequate weight gain as defined by current Institute of Medicine (IOM) guidelines, those who had adequate or excessive gain were at increased risk of having an overweight child (odds ratios of 3.8 and 4.3, respectively).

The current societal trend of more overweight mothers and children is outpacing the IOM's guidelines for gestational weight gain, published in 1990. Since then, "excessive gains have become more common," wrote study investigators Dr. Emily Oken and her colleagues at the department of ambulatory care and prevention, Harvard Medical School, Boston.

The researchers therefore recommended that the guidelines be updated to better reflect today's mothers and children.

The study—which was published in the *American Journal of Obstetrics and Gynecology*—is one of a few that have examined the links between weight gain during pregnancy and child weight outcomes after birth, according to the researchers. Most studies, they wrote, "have not considered gestational weight gain when predicting obesity perinatally."

According to the IOM's standards, women with a normal prepregnancy body mass index (19.8-26.0 kg/m<sup>2</sup>) should gain 11.5-16 kg, and underweight women (BMI less than 19.8 kg/m<sup>2</sup>) should gain 12.5-18 kg. Overweight women (BMI of 26-29 kg/m<sup>2</sup>) should gain 7-11.5 kg, and obese women (BMI of more than 29 kg/m<sup>2</sup>) should gain at least 6.0 kg.

The researchers recruited their participants through Project Viva, a prospective cohort study of pregnant women and their children. Of the 2,128 women who delivered a live singleton infant in that study, Dr. Oken and her colleagues ex-

amined 1,044 mother/child pairs.

Gestational weight gain was calculated as the difference between the last weight recorded before delivery and self-reported prepregnancy weight (*Am. J. Obstet. Gynecol.* 2007;196:322.e1-8).

The mean maternal prepregnancy BMI was 24.6 kg/m<sup>2</sup> and total gestational weight gain was 15.6 kg. A total of 29% of mothers were overweight or obese before pregnancy (BMI greater than 26 kg/m<sup>2</sup>).

According to the IOM's standards, 51% of these women gained excessive weight, 35% gained adequate weight, and 14% gained inadequate weight.

Although the researchers recorded a number of factors including age, income, education, and time between the last pregnancy weight and delivery, they did not include these factors in their final models because adjusting for them did not "appreciably change estimates."

At the time of the analysis, the researchers reported that all the children completed the study visit at age 3 years.

The researchers found the mean child BMI z score was 0.45 units. Nine percent of children were overweight, defined as a BMI of equal to or greater than the 95th percentile. "Children of mothers in all Institute of Medicine weight gain groups, even those with inadequate gain, had mean BMI z scores above the median of the 2000 CDC growth curves, which were primarily based upon U.S. children in the 1970s," they wrote. On bivariate analysis, investigators found "gestational weight gain was directly associated with child overweight (odds ratio 1.3)."

Dr. Oken and her colleagues reported that children of mothers who gained more weight also had somewhat higher systolic blood pressure. Even mothers with "adequate gain" still had a substantially higher risk of having children who were overweight. They also warned that "higher gestational weight gain may cause undesirable birth outcomes such as increased rates of macrosomia and cesarean sections and is associated with higher postpartum weight retention and later risk for obesity in the mother." ■