

# NewYork-Presbyterian Advances Endocrinology

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## **Domenico Accili, MD**

Chief, Division of Endocrinology  
NewYork-Presbyterian/  
Columbia University  
Irving Medical Center  
da230@cumc.columbia.edu

## **Julianne Imperato-McGinley, MD**

Chief, Division of Endocrinology,  
Diabetes and Metabolism  
NewYork-Presbyterian/  
Weill Cornell Medical Center  
jimperat@med.cornell.edu

## Managing the Challenges of Pregnancy and Diabetes

As the prevalence of diabetes continues to rise around the world, so, too, does diabetes in pregnancy, a clinical focus of **Felicia A. Mendelsohn Curanaj, MD**, Director of the Inpatient Glycemic Management Program at NewYork-Presbyterian/Weill Cornell Medical Center. Dr. Mendelsohn Curanaj's interest in women's hormonal disorders was deepened after serving as a Women's Health Scholar with **Michelle P. Warren, MD**, founder and Medical Director of the Center for Menopause, Hormonal Disorders, and Women's Health at NewYork-Presbyterian/Columbia University Irving Medical Center. "We collaborated with the Department of Obstetrics and Gynecology, conducting research related to amenorrhea and menopause. That exposure after my endocrinology fellowship training helped to advance my knowledge and interest within the subspecialty of women's hormonal disorders."

"The risk of maternal and fetal morbidity is increased in someone with diabetes who



Dr. Felicia A. Mendelsohn Curanaj

is pregnant," says Dr. Mendelsohn Curanaj. "This includes those who develop gestational diabetes as well as those with type 1 or type 2 diabetes prior to becoming pregnant."

"Our goal is to improve glycemic management during pregnancy to reduce the risk of adverse outcomes to both mom and baby. Serious complications, such as macrosomia,

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## Meeting the Pressing Need for Evidence-Based Obesity Care

According to the Centers for Disease Control and Prevention, some 40 percent of Americans struggle with obesity. "The rising obesity rates over the past few decades are what one would normally see for an infectious disease and not necessarily a chronic condition like obesity," says **Judith Korner, MD, PhD**, Director of the Weight Control Center at Columbia University Irving Medical Center. "We're learning that one of the reasons for this is that human genetic makeup is geared towards preventing weight loss and storing fat in order to survive famine, reproduce, and maintain fertility. However, we don't live in times of famine any longer. We don't have to rely on killing the next woolly mammoth in order

to feed our family. So, in this era of plenty, and not-so-healthy plenty, what used to protect us is what's probably killing us now."

Dr. Korner, a renowned expert in obesity and weight loss, founded the Weight Control Center in 2006 to address the need for patients to have their weight issues managed with compassion and accurately treated with evidence-based medicine. She and her team – **Tirissa J. Reid, MD** and **Jamie Mullally, MD** – are board-certified in endocrinology, diabetes, and metabolism and are certified by the American Board of Obesity Medicine (ABOM). Dr. Korner is Vice Chair of ABOM, and Dr. Reid serves on its Board of Directors.

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## Managing the Challenges of Pregnancy and Diabetes (continued from page 1)

an increased need for an operative delivery, birth trauma, and even newborn hypoglycemia after birth can be prevented,” explains Dr. Mendelsohn Curanaj. “Hyperglycemia in the first trimester of pregnancy is associated with higher rates of a wide range of congenital malformations in the baby. A number of studies have even linked maternal hyperglycemia with longterm obesity and diabetes in the child later in life.”

Several tests identify gestational diabetes, including the one-hour glucose challenge test, which is performed between 24 and 28 weeks gestation in most patients. A woman is given 50 grams of oral glucose, and plasma glucose is measured one hour later. If that test comes back abnormal, it is followed up by a three-hour, 100-gram glucose tolerance test.

Women with either type 1 or type 2 diabetes considering pregnancy should begin by focusing on glycemic management and a healthy lifestyle prior to becoming pregnant, notes Dr. Mendelsohn Curanaj, who stresses the need for close monitoring of glucose levels. “We will work with the woman ahead of time so that we can reduce risks and improve outcomes for both her and her baby. We can use continuous glucose monitoring [CGM] systems that measure the glucose level of subcutaneous interstitial fluid throughout the day and night. Some devices have predictive alarms to alert patients of impending hypoglycemia based on glycemic trends. This allows patients to actually prevent hypoglycemia, rather than react to an event that has already occurred. CGMs have been shown to reduce hemoglobin A1c, reduce time in hypo- and hyperglycemia ranges, and improve neonatal outcomes.”

Table 1: Glucose Targets for Pregnant Women – ADA Recommendations	
Gestational Diabetes or Pre-Existing Type 1 or Type 2 Diabetes Mellitus	Treatment Goal
Preprandial glucose, mg/dl	<95
1-Hour Postprandial glucose, mg/dl	<140
2-Hour Postprandial glucose, mg/dl	<120

“Given that the recommendation for pregnant women with diabetes is to check their blood glucose levels four to eight times per day, and that there is a significant risk for hypo- and hyperglycemia due to mounting insulin resistance during pregnancy, CGMs are helpful to achieve glycemic goals during this challenging time,” says Dr. Mendelsohn Curanaj. “Maintaining in-target glucose levels during pregnancy is essential – the recommended targets for glucose management are even lower than they would be outside of pregnancy.” [See Table 1]

According to Dr. Mendelsohn Curanaj, any woman who has had gestational diabetes also has her own increased risk of developing type 2 diabetes later in life. “About 50 to 70 percent of women with gestational diabetes will go on to develop

type 2 diabetes sometime in the next 25 years of their life. It is important to continue following these women to monitor them for the development of diabetes and to help them maintain a healthy lifestyle that includes planning meals and regular physical activity.”

In the August 2018 issue of *Current Diabetes Reports*, Dr. Mendelsohn Curanaj, **Dr. Tiffany Yeh**, and **Dr. Michele Yeung** at Weill Cornell Medicine published a review of the literature regarding inpatient glycemic management of the pregnant patient. Based on published guidelines from various societies, they reviewed the diagnostic criteria for diabetes in pregnancy; types of therapies available to prevent hyperglycemia; and strategies for reaching inpatient glycemic targets during the peripartum period.

Table 2: Insulin Requirements in Pregnancy	
<9 weeks gestation	insulin requirements increase
10-14 weeks gestation	period of increased insulin sensitivity; insulin dosage may need to be reduced accordingly
14-35 weeks gestation	insulin requirements typically increase steadily
>35 weeks gestation	insulin requirements may level off or even decline

“Caring for pregnant patients with type 1 diabetes is especially challenging as insulin sensitivity fluctuates throughout pregnancy due to physiologic changes, particularly during labor and delivery and immediately postpartum,” says Dr. Mendelsohn Curanaj. “Providers should be aware of the varying insulin requirements at different stages of pregnancy and how to reduce hypoglycemia and avoid diabetic ketoacidosis [DKA].” [See Table 2]

Dr. Mendelsohn Curanaj stresses the need for collaboration among the patient, her endocrinologist, obstetrician, and diabetes educator/dietitian. “Management involves a combination of medical nutrition therapy, physical activity if medically appropriate, and pharmacologic agents if needed. Guided by an interdisciplinary team with in-depth knowledge of the latest management principles, it is possible to achieve euglycemia during this critical time of a mother and baby’s life.”

### Reference Article

Yeh T, Yeung M, Mendelsohn Curanaj FA. Inpatient glycemic management of the pregnant patient. *Current Diabetes Reports*. 2018 Aug 15;18(10):73.

### For More Information

Dr. Felicia A. Mendelsohn Curanaj • fam9025@med.cornell.edu

## Meeting the Pressing Need for Evidence-Based Obesity Care (continued from page 1)

Along with registered dietitian and certified diabetes educator **Jamie Leskowitz, MD, RD, CDN, CDE**, they offer strategies for weight loss and evaluate patients for weight-related health risks, such as insulin resistance, diabetes, Cushing's disease and Cushing syndrome hypothyroidism, polycystic ovarian syndrome, high blood pressure, and elevated cholesterol. The team also screens for sleep disorders, for example, obstructive sleep apnea, that is common in individuals with excessive weight, and also addresses postmenopausal and postpartum weight management.

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— Dr. Judith Korner

The Center meets a pressing need for patients whose weight issues are frequently unmet by their primary care physicians. “People with obesity will go to their doctor, but most of the time their weight isn't discussed,” says Dr. Korner. “Often the patient can't be weighed because the scale doesn't go above 350 pounds. And many physicians are not trained to help the obese patient.”

“We are trained to treat the patient in a supportive environment,” adds Dr. Korner. “There's no blame; we're just helping them to deal with this problem. We also look at the whole patient, starting with a comprehensive endocrinological evaluation to see if there are any medical reasons for the weight gain, including medications that may cause weight gain, as well as discuss factors that might make it more difficult for that patient to lose weight.”

“We also coordinate care across many medical and surgical disciplines, for example, individuals requiring weight loss prior to joint replacement surgery and those requiring weight loss in order to be listed for organ transplantation,” continues Dr. Korner. In addition to assisting patients in maintaining a healthy diet, the team provides guidance in increasing physical activity and offers stress management, mindfulness, and problem-solving therapy to help them cope with emotions that have led to weight gain in the past.

### Studying Obesity from Many Perspectives

Research is a key component of the Weight Control Center. Dr. Korner is the principal investigator of an NIH-funded study to understand the hormonal regulation of appetite and energy balance. “One way we do this is by comparing the changes in hormones and other circulating proteins in people who lose weight by diet or by bariatric surgery,” says Dr. Korner. “If we can figure out why surgery is so effective, then new medical treatments may be discovered that could mimic the effects of surgery. When people lose weight with surgery, conditions like



Dr. Judith Korner

diabetes also improve. We're trying to understand mechanisms other than just weight loss that drive the improvement in glucose regulation after surgery.” In collaboration with another member of the Endocrinology Division, **Paul Harris, PhD**, and one of the Endocrinology fellows, **Rachel Arakawa, MD**, a translational investigation underway is examining the role of dopamine metabolism in glucose tolerance. Based on evidence in mice, this study will address the hypothesis that modulation of gut dopamine production underlies some of the metabolic benefit of bariatric surgery.

In other investigations, the team is collaborating with **Wendy K. Chung, MD, PhD**, a clinical and molecular geneticist in the Columbia University Institute for Genomic Medicine. “We're looking at people who have certain genetic mutations in pathways in the brain that regulate energy,” says Dr. Korner. “Some individuals who have these mutations may qualify for this potential hormonal therapy.” The researchers have also conducted a pilot study to determine whether the response to drug therapy for obesity is affected by allelic variation in the dopamine and opioid receptors. In a similar vein, there is an ongoing collaboration with **Sharon Wardlaw, MD**, a neuro-endocrinologist who is studying biomarkers in cerebrospinal fluid that are associated with body weight and that may predict response to drug therapy for weight loss.

In addition, they have been working with Columbia cardiologist **Angelo B. Biviano, MD, MPH**, to determine the effect of weight loss on outcomes of treatments for atrial fibrillation. “We've also been talking with the gastroenterology and bariatric surgery groups at Columbia about potential endoscopic bariatric devices,” says Dr. Korner. “We used to think of smoking as being the leading cause of preventable, premature death, but now it is obesity. The best way is to try and prevent it, but the fact is that we have to treat it as well. And that's what we're trying to do.”

#### For More Information

Dr. Judith Korner • jk181@cumc.columbia.edu



NewYork-Presbyterian Hospital  
525 East 68th Street  
New York, NY 10065  
[www.nyp.org](http://www.nyp.org)

