

We have to set up good habits, provide education and recognize that we need to continuously re-educate the patient. With lifelong conditions, the nature of best outcomes is forever changing as the patient grows and learns how to take care of him or herself. We must set the foundation for lifelong therapy of this disease as we work toward cures.

– *David Repaske, MD*  
*Chief, Endocrinology, Metabolism, and Diabetes*



# Endocrinology, Metabolism and Diabetes



*Standardized insulin protocols for inpatients help reduce medication errors.*

## ENDOCRINOLOGY, METABOLISM AND DIABETES



### Working to Prevent Sudden Death with Adenotonsillectomy and Polysomnography among Children with Prader Willi Syndrome

Children diagnosed with Prader Willi syndrome, a congenital disorder that can cause obesity and mental and behavioral delays, may benefit from early treatment with growth hormone. In an effort to prevent sudden deaths caused by breathing abnormalities during sleep—the risk of which is increased among patients with Prader Willi syndrome taking growth hormone—researchers at Nationwide Children’s Hospital examined whether sleep-disordered breathing could be corrected with a surgery called adenotonsillectomy.

Led by **David R. Repaske, MD, PhD**, chief of the Section of Endocrinology, Metabolism and Diabetes and co-director of the Prader Willi Center, the interdisciplinary team analyzed pre- and post-surgery polysomnography (PSG) tests for 13 pediatric patients with Prader Willi syndrome. PSG detects sleep-disordered breathing, such as obstructive sleep apnea and obstructive hypoventilation.

Following adenotonsillectomy, eight children had complete resolution of their sleep-disordered breathing and three had partial resolution on the PSG. Only two children, both of whom began with severe obstructive sleep apnea, did not improve following the surgery and required further intervention.

“A surprising result of this study was the finding that curing obstructive sleep apneas by adenotonsillectomy sometimes unmasked a new problem: central apnea, which required additional therapy,” says Dr. Repaske.

Although growth hormone can be extremely beneficial in the treatment of Prader Willi syndrome, it can enlarge the tonsils and adenoids, causing obstructive sleep apnea or hypoventilation. Based on this study, regularly monitoring children with PSG and intervening with adenotonsillectomy when appropriate may help cure or ameliorate sleep-disordered breathing that could otherwise result in death.

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Meyer SL, Splaingard M, Repaske DR, Wipf W, Atkin J, Jatana K. Outcomes of Adenotonsillectomy in Patients with Prader-Willi Syndrome. *Archives of Otolaryngology-Head and Neck Surgery*. 2012 Nov 1, 138(11):1047-51. PMID: 23165379.



## Department, Section, and Program Reports

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### ENDOCRINOLOGY, METABOLISM & DIABETES

The Section of Endocrinology, Metabolism and Diabetes at Nationwide Children's Hospital provides comprehensive services for the diagnosis and treatment of pediatric endocrinologic and metabolic conditions. These include type 1 and type 2 diabetes, insulin resistance, and related abnormalities, such as polycystic ovarian syndrome.

#### STAFF PHYSICIANS AND FACULTY



**David R. Repaske, MD, PhD**

Chief

*Professor of Clinical Pediatrics*

#### FULL-TIME NCH FACULTY

Sasigarn A. Bowden, MD

*Associate Professor of Clinical Pediatrics*

Monika Chaudhari, MD

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Rohan K. Henry, MD, MS

*Assistant Professor of Clinical Pediatrics*

Maria J. Henwood-Finley, DO

*Associate Professor of Clinical Pediatrics*

Robert P. Hoffman, MD

*Professor of Pediatrics*

Justin A. Indyk, MD, PhD

*Assistant Professor of Clinical Pediatrics*

Manmohan K. Kamboj, MD

*Associate Professor of Clinical Pediatrics*

Juan F. Sotos, MD

*Professor of Pediatrics*

#### COMMUNITY-BASED FACULTY

William B. Zipf, MD

*Clinical Professor of Pediatrics*

The section evaluates and treats growth hormone deficiency and other pituitary abnormalities, such as hyperprolactinemia, genetic and acquired growth disorders, thyroid abnormalities, disorders of puberty, adrenal disorders including Addison and Cushing diseases and congenital adrenal hyperplasia, calcium and bone disorders including metabolic bone disease such as osteoporosis, and disorders of sexual development including "ambiguous genitalia." The section also evaluates and treats a wide variety of syndromes that involve disorders of growth and/or the endocrine system, from Prader-Willi syndrome and pseudohypoparathyroidism to Turner syndrome and Klinefelter syndrome, among others. The section is a major referral center for children and adolescents in and beyond central Ohio and is a consultative resource for the State of Ohio Newborn

Screening Program for congenital hypothyroidism and congenital adrenal hyperplasia.

Currently, there are 10 pediatric endocrinologists within the section. All are faculty members at The Ohio State University College of Medicine. The faculty physicians collaborate with four advanced practitioners and three pediatric endocrinology fellows in patient care and research.

Annually, an average of 180 patients from infancy through adolescence are diagnosed with diabetes, and treatment is initiated at Nationwide Children's. Approximately 1,500 are followed on a regular basis, 90% of which have type 1 diabetes. Comprehensive services include a multidisciplinary team approach that utilizes the expertise of nurse practitioners, diabetes nurse educators, pediatric dietitians, social workers, therapeutic recreation and behavioral scientists. Initial inpatient education is coordinated with follow-up outpatient education and diabetes management visits. The diabetes program offers comprehensive insulin pump- and continuous glucose-monitoring programs designed to enable patients to effectively utilize state-of-the-art therapy for diabetes. A distinct education program is available for type 2 diabetes patients. Using these approaches, the program has seen an overall improvement in metabolic control in patients with diabetes and a decrease in the number of emergency department visits and hospitalizations for established patients.

The section provides comprehensive evaluation and treatment for a variety of growth disorders and, presently, there are more than 500 patients on growth hormone treatment.

The section collaborates with other divisions at Nationwide Children's to offer several specialty clinics. A Metabolic Bone Disease Clinic is offered in collaboration with the Section of Nephrology, a Cystic Fibrosis Clinic is offered in collaboration with the Section of Pulmonary Medicine, both the Prader-Willi Clinic and the Turner Syndrome Clinic are staffed by genetics and endocrinology, and the Endocrinology Section collaborates with hematology/oncology in the care of patients in the Bone Marrow Transplant Clinic. The section also participates in research and the clinical care

of patients in the multidisciplinary Duchenne Muscular Dystrophy Clinic. Additional multidisciplinary specialty clinics include type 2 diabetes, thyroid nodule, and high-risk diabetes clinics.

Members of the Section of Endocrinology, Metabolism and Diabetes are actively involved in research to identify optimal treatments and improve patient care. Research interests include innovations in care for diabetes and hypoglycemia in type 1 diabetes and insulin resistance as well as research projects investigating effects of diabetes on the cardiovascular system. The section is also investigating several aspects of the unique pathophysiology of Prader-Willi syndrome patients, and faculty members are working to identify optimal care for congenital adrenal hyperplasia. Additional research interests include calcium/metabolic bone disorders; pediatric osteoporosis; disorders of the adrenal gland; endothelial function and puberty, growth and overgrowth disorders; and the role obesity plays in pediatric endocrinologic and metabolic conditions.

Investigators are involved in several multicenter trials, including a trial examining growth hormone treatment for disorders involving short stature.

## RESEARCH FUNDING (OVER \$50,000) AWARDED

July 2012 – June 2013

### Bowden, Sasigarn

*A Multicenter, Randomized, Double-blind, Placebo-controlled Study to Evaluate the Efficacy and Safety of Study Drug A in Combination with Study Drug B or Study Drug C*  
Industry Sponsor  
\$63,970

## PUBLICATIONS

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## FAST FACTS

July 2012 – June 2013

Total Discharges: 538

Inpatient Discharges: 447

Observation and Outpatient-in-a-Bed Discharges: 91

Total Patient Days\*: 688

Average Length of Stay\*: 1.7

Average Daily Census\*: 2.2

Inpatient Consults: 355

Total Clinic Visits: 11,279

Canal Winchester Endocrinology: 264

Dublin Endocrinology: 1,723

East Broad Endocrinology: 806

Endocrinology Clinic Visits: 6,184

Westerville Endocrinology Clinic Visits: 2,096

Lima Endocrinology Clinic Visits: 66

Prader-Willi Clinic Visits: 86

Springfield Endocrinology Clinic: 44

Turner's Syndrome Clinic Visits: 10

\*Excludes Observation and Outpatient-in-a-Bed Cases.