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Health is funding the TODAY study (Treatment Options for Type 2 Diabetes in Adolescents and Youth). It will compare different treatment options, including changes in eating habits and physical activity and different combinations of medications, which include metformin and rosiglitazone. Metformin is the only oral medication FDA approved to treat type 2 diabetes in children. Doses range from 1000-2000 mg daily. The main side effects are gastrointestinal in nature and are minimized by taking the medication with food. Metformin is contraindicated in individuals with renal disease or conditions that lead to a hypoxic state (CHF, respiratory distress, sepsis) because of an increased risk of lactic acidosis. It is recommended to stop metformin prior to surgery or any radiological procedure that requires radiocontrast material, until a normal creatinine is confirmed after the intervention. Rosiglitazone is an anti-diabetes medication that decreases insulin resistance, which lowers plasma glucose and insulin levels. It has been used extensively in adults but not in children. It may have an added benefit of preserving beta cell function and ameliorating diabetes, but further studies need to be done.

The TODAY study seeks young people between the ages of 10 and 17 who have had type 2 diabetes for less than 2 years. They will be asked to be more active, eat healthy foods, check their blood glucose, and take metformin or

rosiglitazone twice daily, and visit a study center regularly for 2 to 5 years. Parents and family members will be asked to help the child with TODAY study activities. The children will be given free medical exams, diabetes care, diabetes medication and supplies. Our team consists of a pediatric endocrinologist, diabetes nurse educators and dietician who will help the children stay in good health and learn how to best manage the disease.

In adults with impaired glucose tolerance and at risk for developing diabetes mellitus, lifestyle intervention consisting of walking 25 minutes per day and following a healthy diet and losing an average of 7% of their body weight decreased the risk of progressing to diabetes by 75% (). At this time, we recommend intensive lifestyle interventions that follow the American Academy of Pediatrics guidelines for exercise and diet. After evaluating these children, we refer them to our Healthy Lifestyle Program, directed by Dr. Denise Woodall-Ruff.

** Enrollment for the TODAY Study will continue through April 2007. We hope to recruit 750 participants across the country. The Joslin Diabetes Center is one of twelve sites across the nation. For more information go to www.todaystudy.org or call Kelly Duncan at 315-464-3878.*

Questions? Comments? Contact Thomas Welch MD, Department of Pediatrics, 315-464-5451 or welcht@upstate.edu

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DEPARTMENT
 OF PEDIATRICS

State University of New York
 Upstate
 Medical
 University
 SYRACUSE, NEW YORK

Volume 3, No. 5

OF SPECIAL NOTE

**Frank A. Oski Visiting
 Professor**

October 17-19, 2005

Dr. Aaron Friedman, Sylvia Hanssenfeld Professor and Chair of Pediatrics, Brown Medical School, Hasbro Children's Hospital.

**A. Clement and Hilda
 Freeman Silverman
 Lectureship**

November 9, 2005

Mr. Matt Myers, President, Campaign for Tobacco Free Kids

Husson/Blackman Lecture
 T.B.A.

Calendar

**Pediatric Grand
 Rounds**

Wednesdays, 9:15 to 10:30 a.m., Room 6500, University Hospital, Syracuse

September 7

Thomas Welch, MD, Professor and Chair, Department of Pediatrics, SUNY Upstate Medical University, "Cystic Renal Disease in Children: Some things old and some things new."

September 14

Allan Cunningham, MD, Associate Professor, Division of General Pediatrics, Department of Pediatrics, SUNY Upstate Medical University College of Medicine, "Mrs. White is Refusing Justin's MMR: Vaccine Controversies on the Front Lines"

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Upstate KidStuff

Summer 2005

A Newsletter for Physicians and other Health Care Providers
 Interested in Children's Health

FROM THE CHAIR

Lack of Child Psych Services Prompts CON

Groundbreaking for the Central New York Children's Hospital at University Hospital will occur soon. Since we began planning the hospital a couple of years ago, a major new need has surfaced. The closure of a private psychiatric hospital in our region has precipitated a crisis for the inpatient care of children with emotional disorders.

We are committed to finding a solution to this crisis within the children's hospital, and are approaching the State of New York to approve a certificate of need (CON) to place sixteen child psychiatry beds in the hospital. As an emergency measure, we are also advocating for an increase in the number of licensed pediatric beds within the Hutchings Psychiatric Center.

There has been terrific support for both of these initiatives within the community and from our elected public officials and representatives. Shortly after this newsletter goes to press, several of us will be meeting in Albany with the Commissioner of Mental Health and Senator John DeFrancisco to advance the cause further. I am hoping that the outcome of this meeting will be a clear idea of where these initiatives stand.

Inpatient beds alone will not solve the crisis in child mental health. On the other hand, they will provide us with a needed foundation upon which the larger structure of child and adolescent psychiatric care depends.

*Thomas R. Welch, MD,
 Professor and Chair
 Department of Pediatrics*

Pediatric Hospitalists

Physicians who trained a decade or more ago will remember how we approached children whose primary care provider did not provide inpatient care. Typically, a rotating schedule of department faculty covered "the floor" for a month or so at a time. For a while, this seemed to be a perfectly acceptable system—indeed, it was the only system most medical centers knew.

Several trends have made such a system less and less tenable. First of all, many primary care physicians are giving up inpatient care. The time demands of daily visits to the occasional hospitalized child do



not fit with the increasing pressure to be productive in the office. A second trend is toward increasing patient complexity. As complicated chronic disorders are more and more common, the inpatient service must be

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www.upstate.edu/peds/kidstuff.shtml


**DEPARTMENT OF
PEDIATRICS**
Calendar *continued*
September 22

Joan Pellegrino, MD, Assistant Professor, Division of Pediatric Neurosciences, Section on Genetics, Department of Pediatrics, SUNY Upstate Medical University College of Medicine,

September 28

Robert Turner, DDS, Small Smiles Dental Clinic of Syracuse

October 5

Michael T. Maziekas, MS, Exercise Science Department, Syracuse University, "The Role of Exercise in the Management of Chronic Disease in Children and Youth"

October 12

Dr. Larry Consenstein, Newborn Services, St. Joseph's Hospital Health Center, Syracuse, NY, "SIDS"

October 19

Oski Visiting Professor: Dr. Aaron Friedman, Sylvia Hanssenfeld Professor and Chair of Pediatrics, Brown Medical School, Hasbro Children's Hospital

October 26

T.B.A.

November 2

T.B.A.

November 9

A. Clement and Hilda Freeman Silverman Lectureship, Mr. Matt Myers, President Campaign for Tobacco Free Kids

SUNY Upstate Medical University is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

SUNY Upstate Medical University designates this continuing medical education activity for a maximum of 1 category 1 credit toward the AMA Physician's Recognition Award. Each physician should claim only those credits that he/she actually spent in the activity.

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prepared for assuming responsibility for children with home ventilators, feeding tubes, indwelling lines, nutritional complexities, and similar issues. The random subspecialist covering such patients every year or two is rarely sufficiently conversant with such problems to feel comfortable with them. Related to this is the need for care coordination with community agencies. As we increasingly move children out of the hospital and into the home to complete their care, coordination with home nursing, social work, schools, and similar agencies becomes essential. The inpatient pediatrician needs to be totally familiar with such resources, and comfortable taking a coordinating role.

For generations, the responsibility for much of this work in academic medical centers fell upon the hands of the housestaff. This, too, is changing. The combination of strict work time limitations, contracting numbers of residency positions, and increasing regulatory requirements for attending supervision have moved the resident into much more of a "learner" role with less autonomy today.

Enter a "new" specialist: the *inpatient pediatrician*. Although a common phenomenon in adult medicine, pediatric hospitalists has just begun to take off. Although the field is not yet recognized with board certification, national organizations and peer-reviewed publications are providing evidence of improved quality of care in a hospitalist model.

The Upstate Medical University Department of Pediatrics has provided a hospitalist program for a few years. Since half our inpatients live outside Onondaga County, the number of patients whose primary care physicians supervise their inpatient care has always been low. When

added to the other trends mentioned above, this was a fertile area for such a program.

John Andrade, MD, our residency director, has assumed most of the hospitalist responsibility over the past few years. Later this year, John will be joined by Melissa Gorczynski, MD. Melissa is a graduate of Upstate, and completed her residency at the Children's Hospital of the King's Daughters in Norfolk, VA. Melissa's recruitment is a bit

of a milestone since she is one of a new breed of pediatricians who has chosen hospital medicine as a career. A couple of our faculty fill out the hospitalist schedule. Tracy Hurteau MD, a former chief resident at Upstate and staff pediatrician in the pediatric emergency department, works part time in the program. Tom Welch, MD, the department chair, also works in the hospitalist rotation. Although a pediatric nephrologist by training, Tom was involved with the development of the hospitalist program at Cincinnati Children's

Hospital Medical Center, and worked in the program before coming to Syracuse. Bob Kanter, MD, and his staff of pediatric critical care physicians are also available to help with the program.

The faculty is assisted by dedicated inpatient pediatric nurse-practitioners, who play a major role in care coordination and communication with referring physicians. Regular communication with referring physicians, as well as timely and complete discharge summaries are major goals of the program.

To refer a child for inpatient care by our hospitalist service, call the **Pediatric Admitting Resident at 315-441-1585**. To speak directly with the hospitalist on service, call the University Hospital Operator at 315-464-5540. For more information speak with **John Andrade or Bob Kanter at 464-5800**.

As we increasingly
move children
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Type 2 Diabetes, Metabolic Syndrome, and the TODAY Study

Roberto Izquierdo, MD, pediatric endocrinologist

Type 2 diabetes and metabolic syndrome, once considered adult diseases, are now striking children and teenagers at an alarming rate. Children as young as 8 years are being diagnosed, with the average age being 13. A major concern is that patients diagnosed in childhood and adolescence will develop macrovascular and microvascular complications such as renal and cardiovascular disease in young adulthood. This rise in type 2 diabetes and metabolic syndrome is temporally related to the increase in obesity in children. It is more common in children of certain ethnic/racial groups (American Indian, Hispanic, African Americans, Asia/Pacific Islander) and in those with a family history of type 2 diabetes. In most cases the disease starts with excess weight gain and insulin resistance, a state in which muscle and fatty tissue do not respond properly to the actions of insulin and as a response the pancreatic beta cell secretes more insulin. This results in a normal plasma glucose with a high serum insulin level. With time, the beta cells fail to secrete enough insulin to overcome the insulin resistance, and plasma glucose begins to rise above the normal fasting and postprandial ranges (impaired glucose tolerance) to a state of diabetes in which clinical symptoms appear.

Presenting "Susan"

Susan is a 14-year-old Caucasian girl who went to her pediatrician with a vaginal yeast infection. She has nocturia twice a night and has been experiencing thirst frequently. She had not lost weight.

Her past medical history was unremarkable and she was not taking any medications.

Her mother and maternal aunt were diagnosed with diabetes at ages 35 and 42 years, respectively. Review of systems revealed that she had two periods in the past year. She had menarche at age 12 and her menstrual cycles have always been "irregular."

Susan's height was 63 inches, weight 180 lbs, and a BMI 32 with centripetal obesity. She was normotensive, but had moderate severe acanthosis nigricans that extended to the lateral neck.

A urinalysis revealed the presence of trace amounts of ketones and 500 mg/dl of glucose.

How Should We Approach Susan?

The best and easiest screening test for the diagnosis of diabetes mellitus is a fasting plasma glucose. A level of 126 mg/dl or higher suggests diabetes and a level of 100-125 mg/dl suggests pre-diabetes. In fact, Susan's fasting glucoses were 148 and 137 mg/dl.

Susan was diagnosed with type 2 diabetes mellitus. Supportive evidence for this includes obesity, a strong family history of diabetes, and acanthosis nigricans (a sign of insulin resistance). She did not have weight loss, which is commonly seen in patients with type 1 diabetes. Her urinalysis showed only a trace amount of ketones, which is unusual in patients with type 1 diabetes who often have significant ketosis and spill a large amount of ketones in their urine. Occasionally, it is difficult to distinguish between type 1 and type 2 diabetes. In these circumstances, serum antibodies to GAD 65, ICA 512, and insulin, which are commonly present in type 1 diabetes, may help point us in the proper direction.

In Susan, oligomenorrhea was very suggestive of polycystic ovarian syndrome, and further evaluation confirmed PCOS. As much as a third of patients with polycystic ovarian syndrome have insulin resistance and up to a 10% have frank diabetes mellitus.

Other conditions that may need to be addressed include hypertension, steatohepatitis, and dyslipidemia. The most common lipid abnormalities seen in these patients include low HDL cholesterol and elevated triglyceride levels. LDL cholesterol may or may not be elevated. Many of our children with type 2 diabetes have elevated ALT and AST that end up being secondary to a "fatty liver" on further evaluation. The long-term consequences of hepatic steatosis is a concern. Susan had candidal vulvovaginitis, which occurs frequently in females with diabetes, because moderate hyperglycemia impairs the cellular immune response.

A New Approach: The TODAY Study*

Because type 2 as a childhood disease is relatively new, there are no large-scale studies to suggest the best treatment options. That is why the National Institutes of

—continued on back page

Criteria for the Diagnosis of Diabetes

- Symptoms of diabetes plus causal plasma glucose concentration > 200 mg/dl. Causal is defined as any time of day without regard to time since last meal. The classic symptoms include polyuria, polydipsia, and unexplained weight loss.

OR

- Fasting plasma glucose > 126 mg/dl. Fasting is defined as no caloric intake for at least 8 hours.

OR

- 2-hour plasma glucose > 200 mg/dl during an oral glucose tolerance test (OGTT). The test should be performed using a glucose load containing the equivalent of 75-gram of anhydrous glucose dissolved in water.
- In the absence of unequivocal hyperglycemia with acute metabolic decompensation, these criteria should be confirmed by repeat testing on a different day. The OGTT is not recommended for routine clinical use.

Testing for Type 2 Diabetes in Children

- Criteria: Overweight (BMI > 85th percentile for age and sex, weight for height > 85th percentile, or weight > 120% of ideal for height)

PLUS

Any two of the following risk factors:

- 1 Family history of type 2 diabetes in the first- or second-degree relative
- 2 Race/ethnicity (American Indian, African-American, Hispanic, Asian/Pacific Islander)
- 3 Signs of insulin resistance of conditions associated with insulin resistance (acanthosis nigricans, hypertension, dyslipidemia, PCOS)

- Age of initiation: age 10 years or at onset of puberty if puberty occurs at a younger age
- Frequency: every 2 years
- Test: Fasting plasma glucose preferred