

Center for Biobehavioral Health Annual Report 2009



**The Research Institute at
Nationwide Children's Hospital**

Letter from Director

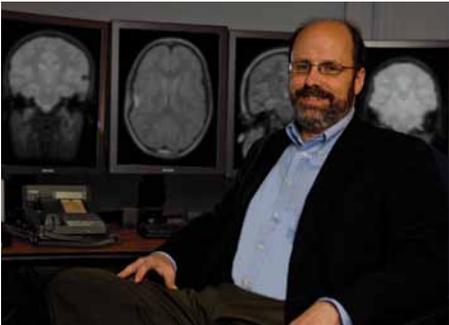
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Dear Colleagues and Friends,

I am very pleased to share with you the Annual Report of the Center for Biobehavioral Health in The Research Institute at Nationwide Children’s Hospital.



The report summarizes the significant growth that has occurred in the Center since its inception in 2003, in terms of external grant funding and scientific publications. More importantly, the report highlights the important research conducted by Center investigators, focused on the interplay between health and behavior in children and their families. I am proud of the accomplishments of the Center to date and look forward to its continued development in the coming years.

One theme that will become increasingly apparent in our research is the translation of research findings into clinical practice, through clinical trials of behavioral interventions designed to promote the health and well-being of children and families. This is a key part of the stated mission of the Center, and one that I am excited about making a reality.

Keith Owen Yeates, Ph.D.
 Director, Center for Biobehavioral Health
 Professor, Department of Pediatrics, Psychology, and Psychiatry
 The Ohio State University

About the Center

The mission of the Center for Biobehavioral Health in The Research Institute at Nationwide Children's Hospital is to improve the health and healthcare of children, adolescents and their families through behavioral research on vulnerable individuals and populations, using a multidisciplinary and biopsychosocial approach. The Center focuses its research on the identification of biological, psychological and social factors associated with developmental risk and resiliency in children and families, and the development of innovative interventions that will promote the health and quality of life of children and their families.

The Center is currently conducting research in a variety of areas related to its mission, including the following:

- Child and family outcomes of pediatric traumatic brain injury
- Social relationships in children with brain tumors
- Assessment and treatment of childhood disruptive behavior
- Impulsive behavior and addiction in teens
- Grief and childhood cancer
- Psychosocial effects of pediatric abdominal pain and gastrointestinal disorders
- Psychoneuroimmunology of adolescent conduct problems

The Center is comprised of the Center Director, Keith O. Yeates, PhD, six additional principal investigators, three affiliate investigators and 37 staff members. Since 2005, the Center has been awarded \$11,289,962 million in external funding (\$14,034,061 total funding), and Center investigators have published 116 articles in peer-reviewed journals.

Center Funding 2005-2009

Annual Awards

(in millions)



*Total funding from 2005-2009 was \$14,034,061 million

Center Peer-Reviewed Publications 2005-2009

Annual Publications



Center Investigators

Director:

Keith Owen Yeates, PhD

Center Faculty:

Cynthia Gerhardt, PhD

Laura Mackner, PhD

Kathleen A. Pajer, MD, MPH

Brady Reynolds, PhD

Jack Stevens, PhD

Kathryn Vannatta, PhD

Affiliate Faculty:

Robert Arendt, PhD

Kelly J. Kelleher, MD, MPH

Kathleen L. Lemanek, PhD



Laura Mackner, PhD, Kathleen A. Pajer, MD, MPH, Keith Owen Yeates, PhD, Jack Stevens, PhD, Cynthia Gerhardt, PhD, Brady Reynolds, PhD, Kathryn Vannatta, PhD (not pictured)

2009 at a Glance

- Center funding reached the highest level thus far with 2009 awards totaling approximately \$3.2 million.
- Center faculty published 28 peer-reviewed journal articles.
- The Center for Child and Family Advocacy (CCFA) and Behavioral Health Services at Nationwide Children's Hospital received a \$1.2 million, 3-year federal grant that will commence a National Child Traumatic Stress Initiative Community Treatment and Services Center. Center Principal Investigator Jack Stevens, PhD, will monitor clinical outcomes and systematically study the need for cultural adaptations to these treatment approaches.
- The Mobile Behavioral Research Lab was deployed and visited 11 locations throughout Ohio and Michigan to conduct research.
- The Center is one of five collaborating institutions that will study effective treatments for childhood traumatic brain injury based on a Rehabilitation Research and Training Center grant from the National Institute on Disability and Rehabilitation Research awarded to Cincinnati Children's Hospital Medical Center.
- Center Principal Investigator Brady Reynolds, PhD, was awarded a 2-year National Institutes of Health Challenge Grant to research Appalachian teen smokers and Web-based treatment programs.
- Center graduate student Christina Salley (working with Kathryn Vannatta, PhD) received the Outstanding Graduate Student Award for 2009 by The Research Institute at Nationwide Children's Hospital.

Featured Research

Impulsive Behavior in Teen Smokers

Adolescent smoking continues to be a public health problem in the United States. Center Principal Investigator Brady Reynolds, PhD, focuses much of his research on the relationship between smoking and impulsivity, specifically delay discounting. Delay discounting is an individual's preference for a smaller, immediate reward rather than a larger reward that is delayed for a period of time. Part of his initial research was to develop the Experiential Discounting Task—a computerized program that measures delayed discounting. The measure is currently being used in several research projects across the country, and two of Dr. Reynolds' 2009 publications were based on collaborative projects utilizing this measure at the National Institutes of Health (NIH) and the University at Buffalo.

In an effort to improve sampling and to reach target populations, a mobile research lab was created. Data collection began in January 2009 in the Ohio Appalachia region, and the lab thus far has been continuously collecting data from 11 locations throughout Ohio and Michigan.

In 2009, Dr. Reynolds co-authored six papers involving impulsivity and delay discounting. Key findings from the



research revealed the following:

- Children of smokers discount more by delay (i.e., discount more impulsively) than children of nonsmokers. This finding indicates delay discounting may be an additional risk factor for early smoking among youths already at increased risk of smoking because their parents smoke.
- Stress is a widely recognized risk factor for the initiation and escalation of cigarette smoking during adolescence. From a cross sectional study of adolescent smokers and nonsmokers, delay discounting was found to mediate the relationship between measures of stress

and cigarette smoking status. This finding indicates delay discounting may be a behavioral mechanism by which stress increases risk of smoking.

“Based on our findings involving delay discounting, campaigns to prevent adolescents from smoking are likely to be more effective if they emphasize short-term consequences to smoking, as opposed to long-term consequences,” said Dr. Reynolds. “This strategy would seem to be especially important for those adolescents most at risk of smoking.”

Future research involving the mobile lab includes the recent award of a 2-year NIH Challenge Grant. The study will determine the efficacy of a web-based contingency management program for smoking cessation, with 70 adolescent cigarette smokers recruited from Appalachian Ohio, using a two-group randomized-control design. The study also will examine relations between pre-treatment assessments of three dimensions of impulsive behavior and outcomes at both the end of treatment and follow-up at six weeks.

Traumatic Brain Injury

Center Director, Keith Yeates, PhD, has devoted nearly 20 years to conducting research at Nationwide Children's Hospital focusing on childhood brain injuries. By studying brain development and outcomes of brain injury, Dr. Yeates

and his team work to help physicians and families understand the risk factors associated with traumatic brain injuries and their expected outcomes, and also to foster the development of interventions designed to promote better outcomes.

In 2009, Dr. Yeates co-authored eight journal articles on the topic of brain injuries. Some of his work focuses on mild traumatic brain injury (MTBI)—also referred to as concussion—which is a very common medical problem among children and adolescents. Center researchers are discovering that multiple physical and psychosocial factors play a role in how children will recover from MTBI. MTBI often results



in postconcussive symptoms. Postconcussive symptoms include somatic, emotional, and cognitive complaints, such as headaches, fatigue, irritability, and difficulties with memory and attention.

Dr. Yeates is also interested in children's social development following brain injuries. An ongoing study in the Center for Biobehavioral Health is focused on social outcomes related to traumatic brain injury.

"A lot of traumatic brain injury research has focused on kids' cognitive skills, but the things that are most troublesome to kids and to their families have to do with how kids do behaviorally and socially," said Dr. Yeates. "If you look at long-term predictions of how people turn out as adults, their social relationships as kids are better predictors of quality of life than school performance is."

Findings from recent publications revealed the following:

- Some children are at risk for persistent postconcussive symptoms following MTBI, and researchers may be able to begin to identify the children who are most at risk.
- Children with higher cognitive ability are at less risk for poor outcomes compared to children with lower cognitive ability when they have a concussion or MTBI.

- The outcomes of TBI are especially poor in young children, even those from supportive home environments.

Centers Collaborate in Mental Health Research

The Center for Biobehavioral Health and the Center for Innovation in Pediatric Practice in The Research Institute at Nationwide Children's Hospital share the goal of improving pediatric mental health services. Helping to lead the effort from the Center for Biobehavioral Health is Principal Investigator Jack Stevens, PhD.



An innovation currently in use, developed by a team led by Kelly Kelleher, MD, MPH, and William Gardner, PhD, from the Center for Innovation in Pediatric Practice is "Health eTouch." Health eTouch is a Web-based system that allows patients and/or family members to answer questions via touch screen technology in medical office waiting rooms. This technology has recently helped clinicians gather critical health information related to an adolescent's risk for substance abuse,

injury, depression and suicidality—allowing clinicians to quickly initiate appropriate treatment or counseling for their adolescent patients. Currently, the Health eTouch system is being used in a project headed by Dr. Stevens in Nationwide Children's Emergency Department to screen for home safety concerns. Face-to-face screening is often not feasible in this busy clinical setting.

Investigators also are collaborating on antidepressant research. Limited research exists on parents' perceptions of pediatric antidepressant use. As one of the first studies to measure perceptions of parents regarding the risks and benefits of antidepressant use among children and adolescents, Dr. Stevens found that parents view counseling as beneficial and having few risks, whereas antidepressant medications were perceived as both risky and beneficial. Other findings in the study include the following.

- African American parents often had less favorable views of antidepressants relative to parents of other ethnicities. They viewed these medications as both less beneficial and more risky.
- A substantial portion of parents reported concerns regarding the safety of antidepressants; many parents perceived antidepressants as precipitating suicidal ideation.

- Many parents expected a higher level of physician monitoring of pediatric antidepressant use than is offered and available in most communities.

Pediatric Cancer

Center Principal Investigators, Cynthia A. Gerhardt, PhD and Kathryn Vannatta, PhD, study risk and resilience factors associated with family adjustment to bereavement and childhood chronic illnesses, such as cancer. Annually, more than 12,000 children under the age of 20 are diagnosed with cancer in the United States.



The five-year survival rate for childhood cancer exceeds 75 percent, and among young adults, an estimated one in 640 are survivors of childhood cancer. Although these children survived cancer, they are not immune to the late effects often caused by cancer or its treatment, such as organ damage, functional impairment, secondary malignancies, and lower overall quality of life.



In 2009, Dr. Gerhardt and Dr. Vannatta co-authored three papers on cancer survivorship issues: (a) the extent to which stress, coping, and temperament accounted for differences in the adjustment of children in the first year of treatment for cancer; (b) differences in externalizing behavior and substance use among childhood cancer survivors and comparison peers during adolescence; and (c) early family predictors of distress among survivors of childhood cancer and comparison peers during the transition to emerging adulthood

Findings from recent publications revealed the following:

- Most children are able to cope with their diagnosis without experiencing high levels of depression or anxiety, but cancer-related stress and negative affect may be linked to early signs of distress.
- Cancer survivors and peers exhibit similar behavior problems and substance use during adolescence.
- Improving the adjustment of parents near diagnosis may help reduce distress in long-term survivors. Furthermore, minimizing the impact of initial treatment and the severity of long-term physical problems may be beneficial to survivors' later adaptation.

Collaborations

The Center for Biobehavioral Health maintains relationships with many external organizations because of the strong commitment to growth and transfer of knowledge.

External Collaborations

- The Hospital for Sick Children, Toronto, Canada
- University of Colorado Health Sciences Center
- Vanderbilt University School of Nursing
- Cincinnati Children's Hospital Medical Center
- Dana-Farber Cancer Institute, Boston
- University of Colorado Health Sciences Center
- Medical College of Wisconsin
- Baylor College of Medicine
- Brigham Young University
- University of Maryland
- Case Western Reserve University
- The Teaching Research Institute of Western Oregon University
- University of Oregon
- Royal Children's Hospital, Melbourne, Australia

Internal Collaborations

- Nationwide Children's Hospital Center for Family and Child Advocacy
- Centers of Emphasis in The Research Institute at Nationwide Children's Hospital
 - o Injury Research and Policy
 - o Innovation in Pediatric Practice
 - o Perinatal Research
 - o Cardiovascular and Pulmonary Research
 - o Childhood Cancer
- Clinical Divisions at Nationwide Children's Hospital
 - o Neurology
 - o GI
 - o The Heart Center
 - o Neonatology
 - o Hematology/Oncology
 - o Pulmonary
 - o Psychiatry
 - o Psychology

2009 Publications

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