



VIRGINIA • PEDIATRICS

American Academy of Pediatrics • Virginia Chapter

The King's Daughters Milk Bank at CHKD is Named HMBANA's 18th Milk Bank in North America

MICHELLE BRENNER, MD | GENERAL ACADEMIC PEDIATRICS | BREASTFEEDING MEDICINE SPECIALIST
CHILDREN'S HOSPITAL OF THE KINGS DAUGHTERS

IN THIS Issue

Fall | 2014

- 2 PRESIDENT'S MESSAGE
- 2 CHOR-VCU ACCREDITATION FOR ADOLESCENT WEIGHT LOSS SURGERY PROGRAM
- 3 DATES TO REMEMBER
- 4 CME INFORMATION
- 5 CHILDREN'S TRAUMA CENTER AT CHOR RECEIVES NATIONAL VERIFICATION
- 6 EATING DISORDERS AND OBESITY
- 7 EXTREMELY OBESE CHILDREN ARE AT RISK FOR KIDNEY IMPAIRMENT
- 9 IS IT SAFE TO ORDER THAT CT SCAN?
- 10 PREVENTIVE PEDIATRIC CARDIOLOGY: REDUCING THE LOAD THAT YOUNG HEARTS BEAR
- 12 GETTING A GRIP ON "THE DRIP" - UPDATE ON TREATMENT OF GONORRHEA
- 13 CME REGISTRATION AND EVALUATION FORM
- 14 IMPROVEMENTS IN THE CARE OF PATIENTS WITH CYSTIC FIBROSIS
- 17 2015 LEGISLATIVE PREVIEW
- 18 PROMOTING SAFER SLEEP
- 20 WHAT'S THE LATEST WITH THE FLU?



The King's Daughters Milk Bank opened in June of 2014, is one of only 18 non-profit milk banks in North America, a member of the Human Milk Banking Association of North America (HMBANA), and is the first milk bank in Virginia. With overwhelming support from The King's Daughters, the philanthropic organization that founded CHKD, the milk bank went from concept to reality in under 18 months. The King's Daughters is a charitable organization that was founded in 1896 to promote superior pediatric well-

ness for every child in southeastern Virginia. One of the early endeavors of this organization was the Milk and Ice Fund, which operated in the early 1900s collecting pennies to provide milk and ice to local families in need. Upon learning of the hospital's donor human milk treatment program for preterm infants, funding the start up of the milk bank at CHKD became the King's Daughters mission.

Since June, the response from the community has exceeded all expectations. During the first few months of operation, The King's Daughters Milk Bank has initiated the screening process for more than 100 potential donors and has accepted over 35,000 ounces of breast milk. Deliveries to the CHKD NICU preemies began immediately, and the milk bank is ready to provide pasteurized donor milk to other neonatal intensive care units in the state that are currently purchasing donor milk or are interested in starting a donor human milk treatment program.

Donor Screening and Milk Processing:

The milk bank follows strict screening, processing, and testing guidelines that is similar to that of blood banking. The HMBANA guidelines were written with the help of the Center for Disease Control (CDC), the Food and Drug Administration (FDA) and the blood and tissue banking industry. All costs of screening are covered by the King's Daughter's Milk Bank, there is no charge to donors.

How are donors screened?

- Donor mothers are screened verbally and by written survey for lifestyle and medical history.
- The milk bank staff obtains approval letters and prenatal screening results from both the mother's OB-GYN and the donor child's pediatrician.
- Serological screening is performed for HIV 0/1/II, HTLV I/II, Hepatitis B and C and syphilis at a LabCorp facility and at the milk bank's expense.
- After screening, local moms can drop off their milk donation at the milk bank or we will arrange for overnight shipping at our expense.
- YouTube Video on the KDMB Screening Process:
<https://www.youtube.com/watch?v=twVlcTO4Juk&list=UUsItKNXKw-9aqGrmcscC0A>

Why are people excluded from donating human milk?

- Medication use (with a few exceptions)
- Herbal product use (including herbal galactagogues)
- Tobacco product use
- Illegal drug use
- Risk for HIV and hepatitis, including tattoos, body piercings, or acupuncture with non-sterile needles; or the recipient of a blood transfusion within the past 4 months.
- Daily alcohol use

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

Virginia Chapter

About Us

We welcome your opinions and ideas.

Please send comments on articles, ideas for new articles, letters to the editor, suggestions for making Virginia Pediatrics more useful and address changes to:



Virginia Pediatrics

Jane Davis:
Executive Director

2201 West Broad Street, Suite 205

Richmond, VA 23220

• Phone: (804) 622-8135 •

• Fax: (804) 788-9987 •

• email: jdavis@ramdocs.org •

- Next Issue: Winter 2014 •
- Deadline for entries: 12/10/2014 •

Publication of an advertisement in Virginia Pediatrics neither constitutes nor implies a guarantee or endorsement by Virginia Pediatrics or the VA-AAP/VPS of the product or service advertised or of the claims made for the product or service by the advertiser.

Royalty Free Images: Bigstock

... (cont.) *The King's Daughters Milk Bank at CHKD*



How is donor milk processed?

Frozen donor milk is thawed, pooled, homogenized and sealed in tamper evident, BPA-free bottles. The donor milk is then pasteurized (heated to 62.5C for 30 minutes to kill any potential bacteria/viruses). Pasteurized milk is quickly cooled and frozen at -20C. Microbiological cultures are obtained after pasteurization. Only milk that remains bacterial culture negative for 48 hours is dispensed. Pasteurized donor milk bottles are labeled with a batch number for tracking.

The King's Daughters Milk Bank is excited to expand the availability of this precious lifesaving commodity to more preterm infants. For more information about The King's Daughters Milk Bank at CHKD, please visit us at www.CHKD.org/milk or contact us at: **757-668-MILK (6455)**.



President's • MESSAGE

Barbara M. Kahler, M.D. | *President Virginia Chapter | American Academy of Pediatrics*

It's back!

VA-AAP and The Pediatric Alliance are combining to present the first Annual Business Meeting. We have tried to maintain the varied flavor of Art and Business agenda, while opening the conference to all pediatricians.

Talks will include topics such as: the new Bright Futures; discussion of the new statistics from the State Child Fatality Team on Safe Sleep, Conflict Resolution, Human Trafficking, Establishing Peer Review in your office, Postpartum Depression, Social Media, and ICD 10 Coding.

There are several speakers of note: Karen Remley, MD (former Health Commissioner now with Anthem) on Unsafe Sleep, Lt. Gov. Ralph Northam on Advocacy, AAP Representative on the new Bright Futures and more.

Please save the date! May 15-16, 2015. Also keep your eyes open for more from the Chapter as we get closer.

ANNUAL
BUSINESS
MEETING

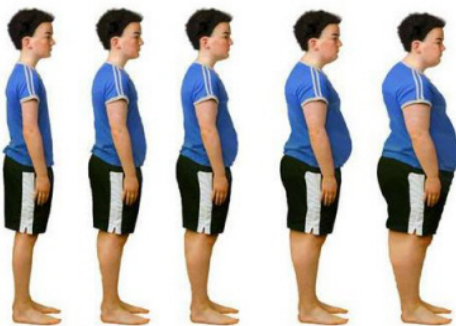
M A Y
15 - 16
2015



Children's Hospital of Richmond at VCU Receives Accreditation for Adolescent Weight Loss Surgery Program

David A Lanning, MD, PhD

*Surgeon-in-Chief, Children's Hospital of Richmond
Virginia Commonwealth University Medical Center*



Metabolic and bariatric surgical procedures have been shown to reduce obesity, improve mortality, and decrease health risks from diseases associated with obesity in adolescent patients. The Children's Hospital of Richmond at VCU's Adolescent Weight Loss Surgery Program at the Healthy Lifestyles Center has achieved accreditation as a Comprehensive Center of Excellence with Adolescent Qualifications through the Metabolic and Bariatric Surgery Quality Improvement Program (MBSAQIP) that is overseen by the American College of Surgeons and the American Society for Metabolic and Bariatric Surgery. We are the only center in the State of Virginia to have achieved this designation that uses rigorous standards and extensive peer evaluation in accordance with nationally recognized metabolic and bariatric surgical standards. Through a multidisciplinary approach, our team of pediatric surgeons, endocrinologists, psychologists, dietitians, exercise physiologist, nurse practitioners, research coordinator, and other pediatric specialists offers comprehensive treatment

for overweight and obese adolescent patients. Our program offers a standard bariatric surgical option as well as a novel surgical approach that does not remove a portion of the stomach, is reversible, and has been associated with very good initial results. Unfortunately, some morbidly obese children do not respond to extensive lifestyle modification programs and have no other treatment option other than bariatric surgery. Fortunately, our Center of Excellence program can now fulfill that need for these children and their families from our region.



Dates to Remember ...

Pediatric General Assembly Day

Thursday, January 29th, 2015

7:30 AM – 2:00 PM

*The home base for the Pediatric General Assembly Day
Hilton Garden Inn*

Located at 501 E. Broad Street In Richmond.

This venue is a flat, 3.5 block walk from the General Assembly Building.

Shuttle service will also be available.

*The Hilton Garden Inn offers valet parking
and is convenient to several public parking lots.*

For more information go to www.virginiapediatrics.org after January 1, 2015

35th McLemore Birdsong

Pediatric Conference

April 17th – 19th, 2015

Wintergreen Resort, Virginia

Registration opens December 1, 2014

www.cmevillage.com

Annual Business Meeting

May 15th & 16th, 2015

presented by VA-AAP and The Pediatric Alliance

Present

VIRGINIA•PEDIATRICS NEWSLETTER

American Academy of Pediatrics – Virginia Chapter**Continuing Medical Education**

This activity has been planned and implemented in accordance with the Essential Areas and policies of Medical Society of Virginia through the joint sponsorship of Children's Hospital of The King's Daughters and the American Academy of Pediatrics – Virginia Chapter.

Children's Hospital of The King's Daughters designates this enduring material for a maximum of 1.25 *AMA PRA Category 1 Credit(s)*™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Content Director**C. W. Gowen, Jr., MD**

Professor of Pediatrics, Eastern Virginia Medical School
EVMS Foundation Director
Chairman, Department of Pediatrics, EVMS
Senior Vice-President for Academic Affairs, CHKD

CME Committee

Kamil Čák, DMin, BCC, Nancy Leigh Gainfort, RN, BSN, C.W. Gowen, Jr., MD,
Eric Y. Gyuricsko, MD, John Harrington, MD, Rosalind W. Jenkins, Janice Karr,
Jamil Khan, MD, Windy Mason-Leslie, MD, Amy Perkins, Amy Sampson

How to Obtain Credit:

Review the articles on pages 5-14. Complete the attached VA-AAP Newsletter Registration and Evaluation Form and return to the Children's Hospital of The King's Daughters, CME Office, 601 Children's Lane, Norfolk, VA 23507, or 757-668-7122. You may also visit <https://www.surveymonkey.com/s/VAAAPFall2014> and complete online. Please allow 8 weeks to receive your certificate.

Disclosure of Significant Relationships with Relevant Commercial Companies/Organizations

The Children's Hospital of The King's Daughters endorses the Standards for Commercial Support of Continuing Medical Education of the Medical Society of Virginia and the Accreditation Council for Continuing Medical Education that the providers of continuing medical education activities and the speakers at these activities disclose significant relationships with commercial companies whose products or services are discussed in educational presentations.

For providers, significant relationships include large research grants, institutional agreements for joint initiatives, substantial gifts or other relationships that benefit the institution. For speakers, significant relationships include receiving from a commercial company research grants, consultancies honoraria and travel, other benefits, or having a self-managed equity interest in a company.

Disclosures:

The following faculty have disclosed that they do not have an affiliation with any organization that may or may not have an interest in the subject matter of this CME activity and/or will not discuss off-label uses of any FDA approved pharmaceutical products or medical devices.

Richard Brookman, MD
Kerri Carter, MD
Rachel Gow, PhD
Jeffrey Haynes, MD

Edmond Wickman, III, MD, MPH
Greg Vorona, MD
Nianzhou Xiao, MD, MS

The CME committee members and content director have disclosed that neither they nor their spouses or partners have an affiliation with any corporate organization that may or may not have an interest in the subject matters of this CME activity.

None.

Children's Trauma Center at CHoR Receives National Verification

Jeffrey H. Haynes, MD

Director, Children's Trauma Center

Children's Hospital of Richmond at VCU

Objective: Review resources refined and available at a Level 1 ACS verified Pediatric Trauma Center.

ACGME Competencies: Patient Care, Medical Knowledge

Traumatic Injury is responsible for more pediatric deaths than all other childhood diseases combined. The magnitude of this public health problem cannot be understated. In response and to offer the highest level of trauma care, the Children's Trauma Center at CHoR recently undertook external validation by the American College of Surgeons and has been verified as the first and only Level 1 Pediatric Trauma Center in the Commonwealth of Virginia. This designation reflects the highest level of preparedness for all pediatric trauma patients and reflects leadership level efforts in teaching and outreach, prevention and advocacy, research and most importantly continuous performance improvement.

The cornerstone of trauma clinical preparedness at CHoR is instant availability of pediatric specialists in trauma, emergency medicine, neurosurgery, anesthesia, orthopedics, plastic surgery and critical care medicine. In concert with pediatric nursing and support

from respiratory therapy, radiology and the immediate availability of an operating room, the response to the sickest and most injured children is comprehensive.

As a leader in pediatric trauma, education and outreach are essential components of our program to ensure optimal trauma care. Critical trauma care begins on the scene. To support our partners in Emergency Medical Services, we have offered education and training opportunities that reach across the state.

We partner with the Pediatric Emergency Department to offer the Emergency Pediatric Course to area EMS providers, have developed a training video and will speak at the upcoming VA EMS Symposium. We also offer the Emergency Nursing Pediatric Course and the Trauma Nurse Core Course on site at the MCV campus, with openings to area nurses.



Injury prevention is an essential component of our program. CHoR is the state home to Safe Kids Virginia. Risk areas of focus include: child safety seats, traffic safety, distracted driving, burn prevention; and, more recently, unattended children in automobiles. Internally, through a generous grant from the MCVH auxiliary, a multi-sport helmet program has been implemented. Children presenting to the emergency department or admitted to the hospital with injuries from a wheeled sport activity such as biking, roller skating or skate boarding, receive a brand new helmet.



The Children's Trauma Center has contributed to peer-reviewed and published research. Recent publications include analysis of metabolic markers at presentation as indicators of injury in pediatric trauma as well as participation in a national study to develop a clinical predictive rule for abusive head trauma. CHoR contributed the second largest number of patients to this study. Ongoing studies include minimizing radiation in both pediatric blunt abdominal trauma and cervical spine clearance, and the management of isolated closed-head injuries in children. The last two topics will be presented this fall at the Pediatric Trauma Society meeting in Chicago.

The Children's Trauma Center is instantly available as a state wide resource by calling Jeffrey H. Haynes MD, Director, 804-828-3500 or Kelley Rumsey RN, MSN, Program Coordinator at 804-828-2424. Patient referrals and physician consultation are available anytime through the CHoR/VCU transfer center 804-828-2638.



Eating Disorders & Obesity

Rachel Gow, PhD, LCP

Assistant Professor, Department of Psychology

Alexis Aplasca

Melanie Been, MD

Edmond Wickham, MD

Associate Professor of Internal Medicine and Pediatrics

Division of Endocrinology and Metabolism

Director of Research, Comprehensive Pediatric Obesity Research and Treatment Center

Children's Hospital of Richmond at VCU Virginia Commonwealth University

Objective: Discuss the prevalence of eating disorders among adolescents across the weight spectrum. Review the signs and symptoms and recall referral options.

ACGME Competencies: Patient Care

Eating disorders can be present in children and adolescents at any weight. They are most prevalent among adolescents ages 13-18 years, with onset peaking during these ages. Lifetime prevalence estimates among adolescents (ages 13-18 years) are 0.3% for and anorexia nervosa (AN), 0.9% for bulimia nervosa (BN), and 1.6% for binge eating disorder (BED).¹ Although full threshold rates are around 1%, unhealthy attitudes and efforts to control weight, which may not meet diagnostic criteria for AN, BN or BED, are common. By age 20, as many as 12% of children and adolescents meet criteria for eating disorder, not otherwise specified (defined as subthreshold AN, BN, purging disorder, or BED).² Moreover, over half of adolescent girls (55.3%) and a quarter (28.6%) of boys surveyed in Project EAT reported dieting in the past year.³ In the same study, unhealthy weight control behaviors (fasting, eating very little food, using food substitutes, skipping meals, smoking cigarettes) were reported by 60.7% of girls and 27.9% of boys. Extreme weight control behaviors such as purging, using diet pills or laxatives, were reported by 12.6% of adolescent girls and 2.1% of boys.³ Binge eating (eating a large amount of food and feeling a "loss of control" while eating) was reported by 9.9% of girls and 3% of boys.³ Additionally, body dissatisfaction is prevalent among both girls (35%) and boys (18%).⁴ Disordered eating behaviors are associated with a pervasive course and several psychological and medical comorbidities.

Dieting and unhealthy weight control practices are problematic because they are associated with several negative outcomes, including increased risk for weight gain, obesity, and eating disorders in adolescents

and young adults.⁵ Normal weight children who engage in unhealthy weight control behaviors are at increased risk for both disordered eating and obesity in adolescence and as young adults.⁵ Similarly, adolescents who engaged in unhealthy weight-control behaviors were at three times greater risk for being overweight five years later.⁵ These adolescents were also at increased risk for binge eating and compensatory behaviors (e.g., self-induced vomiting and use of diet pills, laxatives, and diuretics) five years later, compared with adolescents not using any weight-control behaviors.

Adolescent patients who are overweight or obese are at significant risk of developing an eating disorder; however, their symptoms are frequently not recognized and go untreated. Compared to their normal weight peers, overweight and obese adolescents engage in more unhealthy weight control behaviors. More specifically, data from Project EAT-16 indicated that 50% of adolescent girls, 69% of overweight adolescent girls, and 76% of obese adolescent girls used unhealthy weight control behaviors. Overweight adolescents reported more binge eating behaviors than their non-overweight peers⁶ and are at elevated risk for BED⁷ and BN⁸ as adults.

Pediatric primary care providers are at the frontline and have the opportunity to identify eating pathology and provide critical early intervention. Indeed, early intervention with eating disorders is associated with the best long-term outcomes. Regardless of weight status, providers are encouraged to be aware of signs of disordered eating. For example, if a patient loses weight rapidly,

inquire about methods used. Is he or she exercising excessively or skipping meals? In general, patients can be screened by asking about eating patterns, meal skipping, feelings of loss of control or guilt with eating, comfort with their appearance, and teasing. Potential signs of eating disorders are rapid weight loss, extreme dietary restriction (eliminating food groups), excessive, driven exercise, binge eating, compensatory behaviors (e.g., vomiting, laxative use), unhealthy emphasis on weight/shape, negative body image, psychological changes (e.g., reduced social interaction, rigidity, irritability), and physical sequelae of starvation. Obtaining parent's perspective is also important given the typical reluctance of patients to admit these problems. When symptoms of disordered eating are present or suspected, arrange a psychiatric and nutrition evaluation. See Table 1 for inpatient admission criteria. When communicating with patients and families about further evaluation, frame it as consultation, avoid blame, and highlight restoration of health not weight as the goal of treatment.

Additionally, medical providers are uniquely positioned to help prevent unhealthy eating attitudes and behaviors when discussing weight status with patients. Given the numerous efforts to reduce obesity, there is a risk of inadvertently encouraging overly restrictive eating behaviors or body dissatisfaction through the language used. Focus on being healthy versus losing weight. Promote family-wide changes in eating and activity habits instead of identifying a child or adolescent as the primary agent of change.

Given the significant prevalence of disor-



continued from page 6...



dered eating in children and adolescents, the Healthy Lifestyles Center (HLC) at Children's Hospital of Richmond at Virginia Commonwealth University has expanded its focus to include a dedicated eating disorders clinic. The HLC provides comprehensive outpatient treatment for children, adolescents and their families with a wide range of eating and weight-related problems. The team includes psychologists, dietitians, exercise physiologists, and pediatric specialty providers. Recently, Rachel Gow Ph.D, a clinical psychologist, and Alexis Aplasca, MD, a pediatric psychiatrist, developed a new eating disorder clinic within the HLC which offers evidence-based treatments including family-based therapy, cognitive behavior therapy, and dialectical behavior therapy.

Table 1. Adapted from Table 7 of the November 2010 AAP Policy Statement on Identification and Management of Eating Disorders in Children and Adolescents⁹

- Not responding to appropriate outpatient management
- Less than 75% Expected Body Weight (EBW)
- BMI of ≤ 13
- Complete refusal to eat
- Temperature less than 96°F or 36°C
- Heart rate less than 50 (daytime) or less than 45 (nighttime)

- Systolic blood pressure less than 90mmHg
- Orthostasis (HR increase by 20 bpm, SBP or DBP decrease by 10 mmHg on standing)
- Arrhythmia, including prolonged QTc (0.45 or greater)
- Syncope
- Significant dehydration (low urinary output, poor perfusion)

References

1. Swanson SA, Crow SJ, Le Grange D, Swendsen J, Merikangas KR. Prevalence and correlates of eating disorders in adolescents: Results from the national comorbidity survey replication adolescent supplement. *Archives of General Psychiatry*. 2011;68(7):714-723.
2. Stice E, Marti CN, Shaw H, Jaconis M. An 8-year longitudinal study of the natural history of threshold, subthreshold, and partial eating disorders from a community sample of adolescents. *Journal of abnormal psychology*. 2009;118(3):587.
3. Neumark-Sztainer D, Wall M, Larson NI, Eisenberg ME, Loth K. Dieting and Disordered Eating Behaviors from Adolescence to Young Adulthood: Findings from a 10-Year Longitudinal Study. *Journal of the American Dietetic Association*. 7// 2011;111(7):1004-1011.
4. Bearman SK, Presnell K, Martinez E, Stice E. The skinny on body dissatisfaction: A longitudinal study of adolescent girls and boys. *Journal of Youth and Adolescence*. 2006;35(2):217-229.
5. Neumark-Sztainer D, Wall M, Story M, Standish AR. Dieting and unhealthy weight control behaviors during adolescence: associations with 10-year changes in body mass index. *J Adolesc Health*. Jan 2012;50(1):80-86.
6. Neumark-Sztainer D, Story M, Hannan PJ, Perry CL, Irving LM. Weight-related concerns and behaviors among overweight and nonoverweight adolescents: implications for preventing weight-related disorders. *Archives of Pediatrics and Adolescent Medicine*. 2002;156:171-178.
7. Fairburn CG, Doll HA, Welch SL, Hay PJ, Davies BA, O'Connor ME. Risk factors for binge eating disorder: A community-based, case-control study. *Archives of General Psychiatry*. 1998;55(5):425-432.
8. Fairburn CG, Welch SL, Doll HA, Davies BA, O'Connor ME. Risk factors for bulimia nervosa: A community-based case-control study. *Archives of General Psychiatry*. 1997;54:509-517.
9. Rosen DS. Identification and management of eating disorders in children and adolescents. *Pediatrics*. Dec 2010;126(6):1240-1253.



Extremely Obese Children are at Risk for Kidney Impairment

Nianzhou Xiao MD, MS

Pediatric Nephrology

Children's Hospital of Richmond at VCU

Objective: Discuss obesity related kidney injuries. Interpret results of albuminuria test precisely and consider appropriate referral if indicated.

ACGME Competencies: Patient Care, Medical Knowledge, Practice-based Learning and Improvement.

Childhood obesity is becoming a worldwide epidemic. Most recent data suggest that the prevalence of extreme obesity, defined as an absolute BMI >35 kg/m² or > 120 th percent of the 95th percentile, is increasing and now affects 4-6% of U.S. children and adolescents. Recently, the American Heart Association issued a scientific statement on associated risk factors and treatment approaches for extremely obese children. The statement specifically focused on immediate and long-term risks including cardiovascular disease, metabolic complications, obstructive sleep apnea, nonalcoholic liver disease, musculoskeletal and behavior problems. Notably, it did not address the issue of obesity-associated kidney dysfunction.

Obesity, and particularly extreme obesity, has important pathophysiologic consequences for the kidney. Multiple studies demonstrate strong associations between obesity and high prevalence of chronic kidney disease (CKD). Obesity-associated focal segmental glomerular sclerosis has been well-described in adolescents and adults. It is also well-documented that obesity during adolescence is associated with a higher prevalence of CKD and other co-morbidities in adulthood, making obesity a huge public health burden. Glomerular filtration rate (GFR) and albuminuria are commonly used to assess kidney functions.

Extremely obese youth often have normal to abnormally elevated GFR rather than declined ones. The Teen-Longitudinal Assessment of Bariatric Surgery (Teen-LABS) consortium studied about 250 extremely obese adolescents and reported hyperfiltra-

... continued from page 7

tion (GFR > 150 mL per/min/1.73 meter square of body surface area) in 7.9% of the participants at baseline. Clinicians tend to pay very close attention to patients with relatively low GFR readings but not much to ones with elevated rates. Hyperfiltration is a proposed mechanism of early glomerular injury occurring in a number of conditions, including diabetes, hypertension, and obesity. It has been postulated that hyperfiltration associated with obesity precedes a subsequent decline in GFR. Furthermore, hyperfiltration precedes the development of albuminuria/proteinuria in patients with diabetes and hypertension.

mg/gm and <300 mg/gm; macroalbuminuria was defined as ACR \geq 300 mg/gm. Studies have suggested that albuminuria contributes to progressive renal damage by inducing tubulointerstitial damage although the underlying mechanism is not fully understood. Kidney Disease Improving Global Outcome (KDIGO) guidelines 2012 classify CKD based on albuminuria category and GFR category. According to Teen-LABS, 17% of the extremely obese adolescents had albuminuria. This rate is significantly higher than previously reported prevalence of albuminuria in teens indicating that extremely obese adolescents are at a much higher risk for kidney injuries and CKD progression.

Screen for albuminuria in the extremely obese children and adolescents will help to reveal early kidney impairment. Presence of albuminuria can be diagnosed non-invasively and there are available interventions to relieve proteinuria, at least partially. To test for albuminuria, KDIGO suggests using urine ACR rather than reagent strip urinalysis for total protein because the former is more accurate. If a extremely obese patient is positive for albuminuria, a Pediatric Nephrology referral should be considered. The specialist will assess the patients and order an even more accurate test, checking albumin excretion in a timed urine sample. If indicated, treatment for proteinuria will be initiated.

Obese children have a higher prevalence of hypertension and kidney stones than their lean peers. Hypertension is well known to cause kidney damage. In adults, hypertension is one of the leading causes of kidney failure. 45% of Teen-LABS subjects were hypertensive at baseline. If hypertension is diagnosed, a pediatric nephrology referral will be very beneficial for the patient. Patients may need antihypertensives and regular follow up. The obese population also carry a higher prevalence for kidney stones. The origin of nephrolithiasis in obese young patients is multifactorial. Contributing factors include a higher intake of calcium and oxalate rich foods, a lower fluid intake and higher urinary calcium, citrate, uric acid, sodium and creatinine than normal weight youth. Recent studies have indicated that dyslipidemia contributes to the increased risk for nephrolithiasis as well. While we are still learning about the pathophysiologic changes that the human body undergoes in the face of obesity, more and more evidence has shown that better control of co-morbidities is essential improving the patient's long-term outcome.

It is still unclear if kidney impairment occurring in extremely obese youth are reversible. Our nephrology division is conducting research in learning how obesity causes kidney injuries and whether patients can recover from those injuries after weight loss. With the current understanding of obesity related kidney impairment, we advocate for early and proactive weight control in youth. Children's Hospital of Richmond provides a full spectrum of weight control options to pediatric patients, from the Healthy Lifestyles Clinic to bariatric surgery. Our Pediatric Nephrology specialties and the Pediatric Endocrinology team offer integrative care to address different aspects of healthcare needs obese children may have.

Suggested reading:

1. Kelly, A.S., et al., Severe obesity in children and adolescents: identification, associated health risks, and treatment approaches: a scientific statement from the American Heart Association. *Circulation*, 2013. 128(15): p. 1689-712.

2. Vivante, A., et al., Body mass index in 1.2 million adolescents and risk for end-stage renal disease. *Arch Intern Med*, 2012. 172(21): p. 1644-50.
3. KDIGO 2012 clinical practice guideline for the evaluation and management of chronic kidney disease.
4. Inge, T.H., et al., The effect of obesity in adolescence on adult health status. *Pediatrics*, 2013. 132(6): p. 1098-104.
5. Xiao, N., et al., Kidney Function in Severely Obese Adolescents Undergoing Bariatric Surgery. *Obesity*, in press.
6. Mann, J., et al., Albuminuria as a predictor of cardiovascular and renal outcomes in people with known atherosclerotic cardiovascular disease. *Kidney International* (2004) 66, S59-S62

Albuminuria is a sign of glomerular diseases and a marker for progression of CKD. There are two categories of albuminuria: Microalbuminuria was defined as having a urine Albumin to Creatinine Ratio (ACR) \geq 30



"Is it safe to order that CT Scan?"

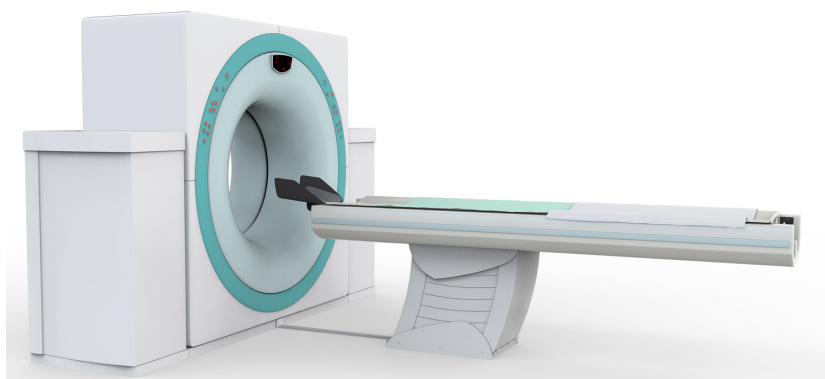
Gregory A. Vorona, MD

Pediatric Radiology

Children's Hospital of Richmond at VCU

Objective: Discuss the controversy of providing specific risk estimates for the use of ionizing radiation in pediatric computed tomography, and to introduce CT radiation-dosage optimization strategies.

ACGME Competencies: Patient Care, Medical Knowledge, System-based Practice.



An estimated 4.25 million pediatric computed tomography (CT) examinations are performed each year in the United States. Head CT is the most common pediatric CT examination performed, with an estimated 2.2 million of these studies performed annually in this country.¹

As a pediatric imaging modality, CT has many advantages. It can be performed very quickly (seconds), which minimizes or negates the need for sedation, and which makes it particularly very useful in emergent situations. It allows for the characterization of structures which are not visible by ultrasound. It also is the best imaging modality to assess the integrity and configuration of osseous structures. Unlike MRI, there are no safety concerns for potential ferromagnetic objects within (i.e. foreign body) or around (i.e. support apparatus) the patient during imaging. CT is also more accessible at most institutions compared with MRI, facilitating patient access.

A legitimate concern regarding the use of pediatric CT imaging comes from the understanding that children exposed to ionizing radiation are more susceptible to developing some (but not all) types of cancers compared with adults. There is strong evidence that for approximately 25% of cancers (i.e. leukemia, brain tumors, thyroid cancer, and breast cancer), children are particularly radiosensitive.²

At the radiation doses currently used in pediatric medical imaging, the risk of a child developing cancer from a CT examination is currently unknown, but (if present at all) is believed to be very small. The potential risk is understood to relate to many different factors including the age of the patient, the

sex of the patient, the body part being imaged, and the configuration/settings of the CT unit.

There have been no randomized controlled studies that have firmly established if the radiation doses from medical imaging are high enough to cause cancer in children, and if they are, to quantitate a "safe" level of radiation exposure. Our general estimates of risk from low-dose radiation exposure (which is what the radiation doses from CT fall under) come primarily from the government's 2006 BEIR VII report.³ This report disproportionately weighed the information obtained by following the Japanese atomic bomb survivors (the Life Span Study), as the authors felt that this was the most consistent and reliable information that they had available.

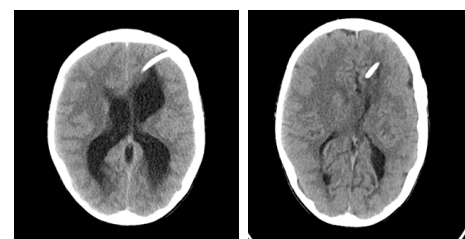
There are many limitations to the meaningful application of the risk models published in BEIR VII to the radiation doses used in routine medical imaging, but a discussion of these limitations is outside the scope of this article. For this reason the American Association of Physicists in Medicine recently published a policy statement discouraging the use of these predictions, as they "are harmful because they lead to sensationalistic articles in the public media that cause some patients and parents to refuse medical imaging procedures, placing them at substantial risk by not receiving the clinical benefits of the prescribed procedures."⁴

Some authors, nonetheless, have attempted to use the information in BEIR VII to generate risk models for pediatric CT use. One recent publication projected that pediatric CT use will cause approximately 4,870 cancers annually in the USA, based on

the estimated pediatric CT radiation doses within the authors' healthcare systems from 2001 through 2011. The authors projected that a head CT would cause one future solid cancer in every 570 girls < 5 years of age who are scanned, one future solid cancer in every 6130 girls between 5-9 years of age who are scanned, and one future solid cancer in every 9,020 girls 10-14 years of age who are scanned. The projected risks for leukemia also increased with younger patients, though were significantly less than those provided for developing solid cancers.¹ Other recent studies, which did not make projections from BEIR VII but rather followed large groups of patients that underwent CT imaging as children, have projected lower risks.^{5,6}

Simply reducing the radiation dose of a CT study is sometimes a reasonable strategy to minimize the potential risks of a scan, although this strategy needs to be weighed against the possibility of obtaining a sub-diagnostic or non-diagnostic study. All other things being equal, lowering the administered radiation dose will result in CT images with more image noise, and therefore will have the potential to obscure the detail necessary to make the appropriate findings/diagnosis.

In response to the concern about the potential carcinogenic effects of the ionizing



CT #1

CT #2

continued from page 9...

radiation used in medical imaging, there has been significant interest among the major CT manufacturers to develop (and market) new technologies to optimize CT radiation dosage. Examples of hardware innovations include more sensitive CT detector elements and an improved ability to focus ("collimate") the x-ray beam to the region of interest. Examples of software innovations include the ability to modulate the intensity of the x-ray beam to a patient's specific size, the ability to modulate the intensity of the x-ray beam over certain anatomic structures (i.e. eyes and breasts), and improved software which is capable of more effectively reconstructing raw data obtained at lower radiation doses.

Many of these new radiation dose-optimizing technologies are not "standard" when a radiology department or outpatient imaging center buys or updates a CT unit. Rather, they are options which can be purchased and can be quite expensive. There is no direct economic incentive to purchase these options, as both the government and private insurers do not currently consider these factors when determining reimbursement for imaging (i.e. a "low-dose" scan and

a "high-dose" scan both will be reimbursed the same). This makes it challenging for some outpatient imaging centers and hospitals to justify making the capital investment in these technologies.

At Virginia Commonwealth University, we have invested in keeping our CT scanners updated with the most recent radiation-dose optimization software that our manufacturer (Siemens) has to offer. This includes their software to modulate the administered radiation dose based on patient size (CARE Dose and Care kV), software to minimize radiation dose to the most sensitive organs (X-Care), and improved image reconstruction software (Sinogram Affirmed Iterative Reconstruction – SAFIRE). We are actively incorporating this software into our routine pediatric imaging protocols. We also are in the process of installing an institution-wide patient radiation dose monitoring and tracking system.

The two images represent head CT examinations performed within less than twenty-four hours of one another. The patient is a 10 year old male who presented to the Emergency Department with concern for ventriculoperitoneal shunt failure, and who

was found to have hydrocephalus. The second study was performed after shunt revision. Although both studies were performed using the same CT unit (Siemens Somatom Definition Flash), the second study also utilized tube-current modulation (CARE Dose) and improved image reconstruction software (SAFIRE), resulting in an approximately 44% reduction in radiation dose relative to the first study. Please notice that there is no significant difference in image quality between the two examinations.

References

1. Miglioretti DL, Johnson E, Williams A, et al (2013) The use of computed tomography in pediatrics and the associated radiation exposure and estimated cancer risk. *JAMA pediatrics* 167:700-707.
2. United Nations Scientific Committee on the Effects of Atomic Radiation (2013) Sources, Effects, and Risks of Ionizing Radiation; Scientific Annex B - the Effects of Radiation Exposure in Children. United Nations Publications.
3. Radiation Research Studies Council (2006) Health Risks from Exposure to Low Levels of Ionizing Radiation: BEIR VII Phase 2. National Academies Press.
4. The American Association of Physicists in Medicine (2011) AAPM Position Statement on Radiation Risks from Medical Imaging Procedures.
5. Pearce MS, Salotti JA, Little MP, et al (2012) Radiation exposure from CT scans in childhood and subsequent risk of leukaemia and brain tumours: a retrospective cohort study. *Lancet* 380:499-505.
6. Mathews JD, Forsythe AV, Brady Z, et al (2013) Cancer risk in 680,000 people exposed to computed tomography scans in childhood or adolescence: data linkage study of 11 million Australians. *BMJ (Clinical research ed)* 346:f2360.

Preventive Pediatric Cardiology: Reducing the Load that Young Hearts Bear

Kerri Carter, MD

Assistant Professor Division of Pediatric Cardiology
Children's Hospital of Richmond at VCU

Objective: Recall the scope of cardiovascular complications related to pediatric obesity, with a focus on hypertension. Explain the specialty of preventive pediatric cardiology.

ACGME Competencies: Patient Care, Practice-based Learning and Improvement, Medical Knowledge



One out of every three children and adolescents in the United States is overweight or obese. The gravity of these disease states is ever more obvious with the increasing prevalence of weight-related comorbidities that were once reserved for adults. The rising rates of dyslipidemia and primary hypertension underscore the growing need for preventive cardiovascular care for pediatric patients. In the adult population with obesity and the metabolic syndrome, the atherosclerotic cards have, for the most

part, been dealt with, and the goals of therapy shift toward slowing progression and secondary prevention of adverse outcomes. With the rare exception of the homozygous type of familial hypercholesterolemia, the fatty streaks and endothelial dysfunction seen in pediatric and early adolescent patients are reversible. With that thinking in mind, our pediatric patients are at a bit of a physiologic advantage in that primary prevention is still possible.

Overwhelming evidence demonstrates that not only are risk factors for cardiovascular disease easily identifiable in childhood, the development and progression of atherosclerotic disease is clearly related to the number and severity of cardiovascular risk factors present.

Those risk factors include:

- Overweight and obesity
- Insulin resistance and diabetes
- Elevated triglycerides
- Low HDL levels
- Hypertension
- Smoking and secondhand smoke exposure

Among the factors listed above, obesity tracks most strongly into adulthood, with close to 85% of pediatric patients with a BMI in the 95-99th percentile going on to be obese in adulthood, and ALL severely obese children (BMI greater than the 99th percentile) going on to be obese adults.

In the ideal situation, risk reduction in childhood will result in reduced disease burden in adulthood. This has clear implications for not only life expectancy and quality of life, but also population-wide implications for

... continued from page 10

the utilization of medical resources and the immense cost associated with obesity and cardiovascular disease.

The prevalence of overweight and obese children has shifted the differential diagnosis of pediatric hypertension to a great degree. While our old textbooks stressed that pediatric hypertension was typically secondary in etiology, the majority of hypertensive patients in pediatric clinics today will leave

Like a bodybuilder's bicep, repetitive heavy lifting leads to hypertrophy and stiffening of the muscle. That bulging bicep equates to an increasing wall thickness of the left ventricle. This left ventricular mass, measured relatively easily and reliably by transthoracic echo and indexed to body surface area, has accepted normal values, above which we diagnose true left ventricular hypertrophy. Those measurements can be tracked over-time as a surrogate marker of relative blood

children with elevated blood pressures are particularly suited for evaluation by preventive pediatric cardiology in association with the Healthy Lifestyles Center of CHoR. The clinic provides a unique opportunity for exposure to multiple pediatric subspecialties - including cardiology, endocrinology, nutrition, health psychology and exercise science - that share a common, family-based and collaborative approach to pediatric weight management and associated issues.



with a diagnosis of essential hypertension that is oftentimes weight-related. Given that children and adolescents are generally "asymptomatic" while hypertensive, it can be a challenge to convey the importance of blood pressure management and compliance with therapy. The cardiovascular interaction and the concept of systemic blood pressure as afterload and a major determinant of cardiac work is a difficult concept for families to grasp. The comparison I frequently use is of a biceps muscle and a dumbbell - the heavier the dumbbell, the harder it is for the muscle to lift the weight.

pressure control and response to therapy. Like the earliest manifestations of atherosclerotic disease, hypertension-related left ventricular hypertrophy is reversible if blood pressure control is achieved.

Any child with 3 separate instances of blood pressure measurements greater than the 95th percentile for their age, sex and height should have a workup initiated and be referred to a pediatric hypertension specialist - pediatric cardiology or nephrology depending on the patient's history and comorbid conditions. Overweight or obese

For questions about pediatric obesity and preventive pediatric cardiology issues or referrals, please call 804-628-1725; or 804-828-2476.

References:

- *The 4th Report on the Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents. Pediatrics.* 2004; 114; 555
- *Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents, Summary Report. Pediatrics.* 2011; 127: S213-S256

www.virginiapediatrics.org

Getting a Grip on "the Drip": Update on Treatment of Gonorrhea

Richard R. Brookman, MD

Professor and Chief, Division of Adolescent Medicine
Children's Hospital of Richmond at VCU

Objective: Describe the changing antimicrobial resistance of *Neisseria gonorrhoea*. Discuss the latest CDCP recommendations for treatment of gonorrhea. Outline an approach to addressing the continuing epidemic of gonorrhea.

ACGME Competencies: Patient Care, Medical Knowledge



Gonorrhea was known to the ancient Egyptians and referred to in the Hebrew Old Testament. Hippocrates described the stenosis of infected urethras and Galen supplied the name ("flow of semen.") Early treatments included astringents, urethral irrigations (silver nitrate, mercuric chloride, potassium permanganate), cold baths, and even leeches applied to the saphenous veins. The use of condoms for prevention was advised as early as 1732. The causative organism was identified by Neisser in 1879.

Neisseria gonorrhoeae is notorious for developing antibiotic resistance. The first effective antibiotic treatment was sulfonamides in the 1930s but resistance was reported by the 1940s. Penicillin was effective and used for several decades starting in the 1940s, but required increasing doses over time such as 3.5 grams of amoxicillin PO or 4.8 million units of procaine penicillin IM. In the 1970s, Beta-lactamase producing strains appeared and by the 1980s, *N. gonorrhoeae* was considered resistant to penicillins as well as to tetracyclines, which had been the common alternative to penicillins. Fluoroquinolones were recommended by the Centers for Disease Control and Prevention (CDCP) but resistance to these appeared in the 1990s in East Asia and in the 2000s in the U.S. Cephalosporins, both IM and oral have been the mainstay of treatment for

gonorrhea for the last two decades. However, there now are strains resistant to oral cephalosporins and a few reports of resistance to ceftriaxone.

The CDCP implemented a Gonococcal Isolate Surveillance System in 1986. In 2011, resistance to tetracyclines was

reported for 23%, to fluoroquinolones for 13%, and to penicillins for 12% of isolates. Of concern is that resistance to cefixime was reported to 3.8% isolates from men having sex with men (MSM) and 1.4% from men having sex with women (MSW), and resistance to ceftriaxone was reported in 1.0% isolates from MSM and 0.4% from MSW.

In 2012, the CDCP issued new recommendations for treatment of gonorrhea. The preferred treatment is ceftriaxone 250 mg IM plus either azithromycin 1 gram PO once or doxycycline 100 mg PO twice daily for 7 days. One alternative is cefixime 400 mg PO plus azithromycin 1 g PO. This could be an option for expedited partner therapy in those states that permit this. Another alternative is azithromycin 2 grams PO but this is likely to cause GI upset. Both alternatives require a test of cure within one week, which must be done by culture since the DNA probe tests would still be positive this soon after treatment. If there is a treatment failure after either alternative, the patient should be given ceftriaxone 250 mg IM plus azithromycin 2 grams PO and an ID consult should be obtained.

There are several challenges in addressing the problem of antibiotic-resistant gonococcus. Spectinomycin, long an effective alternative treatment, has been unavailable

in the U.S. since 2006. Since the advent of the nucleic acid amplification tests, there has been a reduced capacity of laboratories to perform cultures. Pharmaceutical companies have shown reduced interest in developing antibiotics and only one new antimicrobial for gonorrhea currently is under investigation. Finally, resistance of *N. gonorrhoeae* to azithromycin has been reported in some foreign countries and one case was reported in Hawaii in 2012.

Borrowing a phrase from a T-shirt I once received from the American Social Health Association, in the face of continuing antibiotic resistance, a multi-faceted approach is necessary to "Zap the Clap." I propose the following:

Trap the Clap – diagnose early using routine testing with the nucleic acid amplification test (urine is adequate for screening).

Zap the Clap – use CDCP recommended treatments and preferably treat on-site.

Map the Clap – determine sexual contacts and facilitate partner notification, testing, and treatment.

Rap about the Clap – educate everyone about transmission and prevention of gonorrhea and other STIs encourage repeat testing in 3 months (for possible reinfection).

Wrap against the Clap – promote consistent, correct condom use.

References

1. Centers for Disease Control and Prevention. CDC Grand Rounds: The growing threat of multidrug-resistant gonorrhea. *MMWR* 2013; 6:103-106.
2. Centers for Disease Control and Prevention. Update to CDC's Sexually Transmitted Diseases Treatment Guidelines, 2010: Oral cephalosporins no longer a recommended treatment for gonococcal infections. *MMWR* 2012; 61:590-594.

VA-AAP NEWSLETTER REGISTRATION AND EVALUATION FORM

(Fall 2014)

You have the opportunity to claim up to 1.25 AMA PRA Category 1 Credit(s)™.

To claim CME credit, please complete the survey below.

NAME: _____

Mailing Address: _____

E-mail Address: _____

For this activity, how many hours of CME are you claiming? _____ (Max. ____ hours)

As a result of reading the articles, will you make any changes in your practice? ☐ Yes ☐ No

Please list up to 3 strategies that you plan to implement as a result of reading the articles? (*answer required for credit*)

1. _____

2. _____

3. _____

If you will not make any practice changes, did this activity reinforce your current practice of pediatrics? ☐ Yes ☐ No
Please explain:

How could this activity be improved?

Future Topic Requests (optional):

	Excellent		Average		Poor
Overall, how would you rate this activity?	5	4	3	2	1

This CME activity will expire on November 30, 2015.

Please send form to: Rosalind Jenkins, c/o CHKD, 601 Children's Lane, Norfolk, VA 23507

Please allow up to 8 weeks to receive your certificate.

Improvements in the Care of Patients with Cystic Fibrosis

Michael S. Schechter, MD, MPH

Division Chief Pediatric Pulmonary

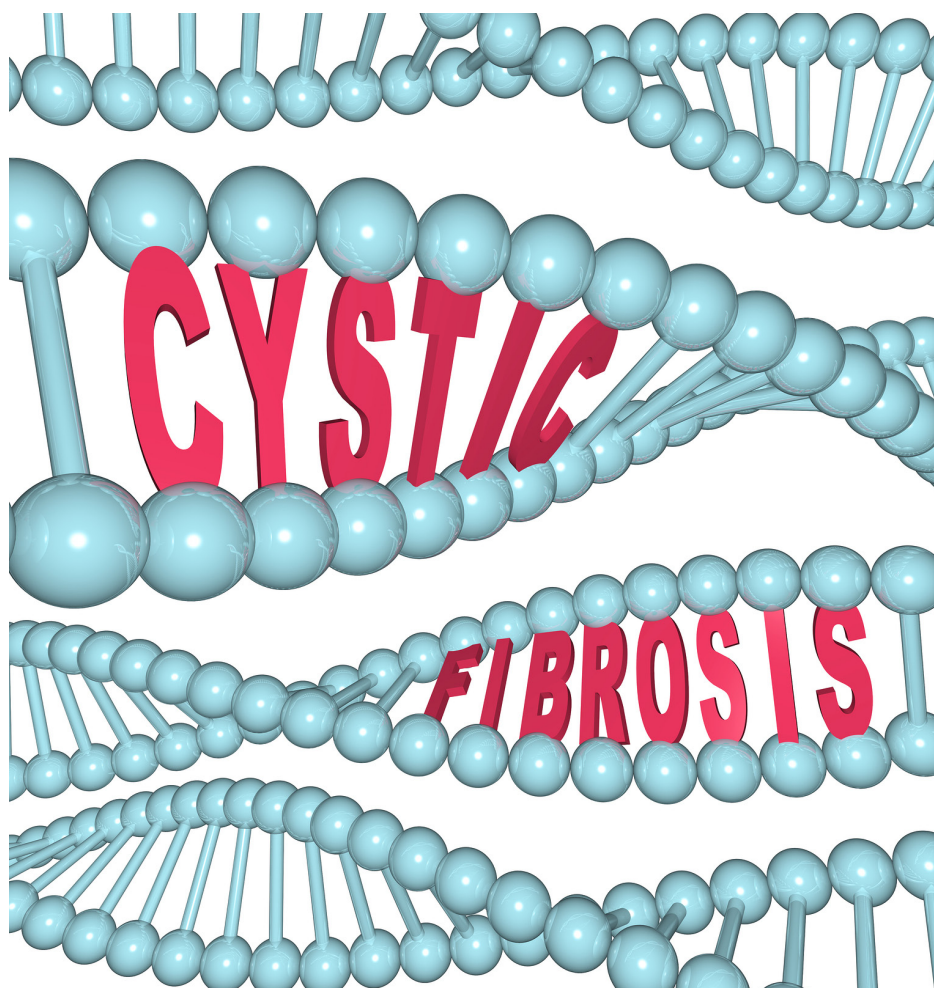
H. Joel Schmidt, MD

Associate Professor Pediatric Pulmonology

Children's Hospital of Richmond at VCU

The face of CF is different right now than it was just a short time ago: our patients are being diagnosed much earlier due to newborn screening; they have lung function

How did we get here? The Cystic Fibrosis Foundation has been an irresistible force in support of the science that has led to the development of a number of new treatments,



that, on average, remains in the normal range throughout childhood and adolescence; their nutritional status is close to the normal range (as measured by BMI percentile); and nearly half of them are over the age of 18 years.

The median expected age of death for patients with cystic fibrosis has increased steadily over the last 5 decades (see the figure p. 6) and in 2012 was 41.1 years

and also (and perhaps more importantly) in support of a host of clinical innovations that have led to a dramatic improvement in the care that CF patients receive.

Five examples of the newest of the new advances illustrate this point:

1. **New treatments**

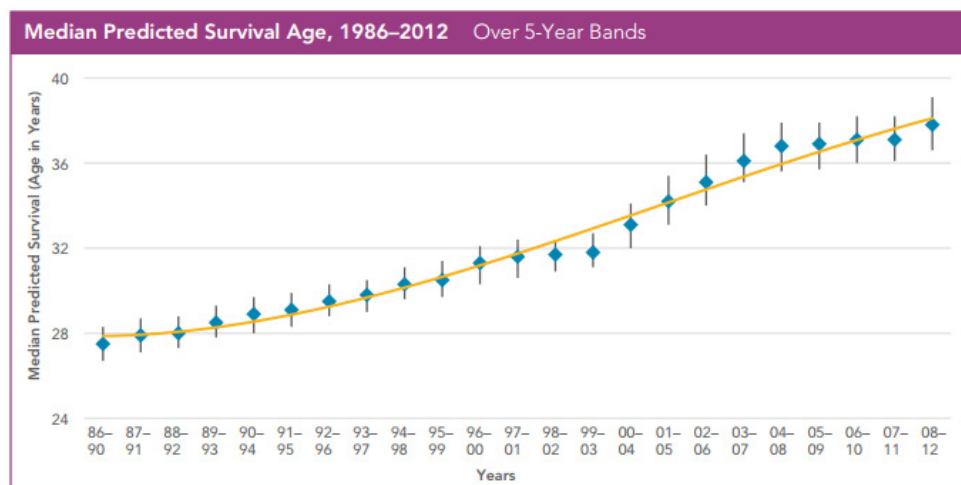
Several new inhaled antibiotics and medications that promote airway clearance have

been introduced in the last 2 decades, but this process has accelerated over the last decade due largely to the development of the CF Foundation **Therapeutic Development Network**, supporting a clinical research infrastructure that allows CF centers all over the country to collaborate in clinical trials. The current buzz among CF patients centers around the development of new drugs that correct or potentiate the dysfunctional CFTR (cystic fibrosis transmembrane conductance regulator) molecule and approximate a “cure.” These drugs are mutation specific: for example, patients with the G551D mutation who are given the drug **Ivacaftor (Kalydeco®)**, a pill they take twice a day, experience a dramatic drop in their sweat chloride along with a significant improvement in lung function and weight. Ivacaftor works by improving (“potentiating”) the function of defective CFTR molecules that have located to the apical cell surface of the airway epithelial cells but do not transport chloride and sodium adequately. Unfortunately, only about 4-5% of CF patients in the US have a mutation that is potentiated in this way by Ivacaftor. However, current trials are evaluating the impact of **Lumacaftor**, a drug that corrects CFTR function of patients who have the most common CF mutation, F508del. Abnormal CFTR molecules with this mutation are destroyed in the cytoplasm, but treatment with Lumacaftor allows the F508del CFTR to position itself correctly at the cell surface, where it can be further potentiated by the coadministration of Ivacaftor. The CF community is closely tracking the results of the Lumacaftor clinical trials because nearly 50% of CF patients are homozygous for the F508 del mutation and an additional 40% are heterozygotes.

Under the leadership of Dr. Joel Schmidt, the VCU CF center is proud to be a member of the Therapeutic Development Network and actively participate in a number of studies of these and other new drugs and therapies.

continued on page 15...

... (cont.) *Improvements in Cystic Fibrosis Care*



2. Attention to Improving the Quality of Care for CF Patients

Citing numerous studies that showed deficiencies in the utilization of evidence-based treatments and large variations in the outcomes of care, the Institute of Medicine famously concluded in 2001, “Between the health care we have and the care we could have lies not just a gap, but a chasm.” The CF Foundation responded by developing a strong Quality Improvement infrastructure and ethos, pioneering programs to assist CF care centers to define optimal care, to introduce methods to improve their systems in order to ensure the consistent delivery of that care, and to measure the impact of these efforts on disease outcomes such as lung function. CF Foundation initiatives include a widely available and transparent patient registry that provides individualized patient reports, benchmarking of best care practices, active involvement of patients and their families in improvement initiatives, and dissemination of improvement methodologies among CF healthcare professionals. While the impact of recent scientific and therapeutic advances in CF should not be underestimated, one could easily argue that healthcare improvement strategies that have been tested and adopted in CF care centers over the last decade have had a much more profound role in the improvement of life and predicted survival for people with CF. Moreover, the aggregate effects of these combined efforts may be transferrable to improving care for others with serious chronic illnesses.

Dr. Michael S. Schechter, the CHOR@VCU

Pediatric Pulmonary Division Chief, has been a leader in the CF Foundation Quality Improvement program since its outset, and has introduced novel efforts at other CF Centers that have led to dramatic improvements in average patient lung function and nutritional measures as well as the success rate of hospital treatment of pulmonary exacerbations. He has recently received funding from the CF Foundation to create a model of how specific **Quality Improvement bundles** can be introduced to new CF care centers, using VCU as a case study, with the goal of disseminating these approaches throughout the national CF care network.

3. Attention to transition

Transition of young adults from pediatric to adult medical care has become an important priority of CF care, given the changes in outcomes and the age demographic of the population noted earlier in this article. The CF Foundation has been proactive in preparing centers for the increasing numbers of young adults in need of specialized adult-oriented care by creating specialized clinical fellowships for physician providers and mandating establishment of adult CF programs. In fact, providers who work with youth with other chronic health conditions and special health care needs have looked to the CF literature for guidance in approaching transitional care. To maintain accreditation, CF care centers must establish an adult program when the center population includes more than 40 adult patients, with the expectation that >90% of patients past their 21st birthday receive care from the adult program.

Health care transition represents a component of the overall developmental process of becoming an adult, and recent efforts have focused on broadening the scope of health care transition from simply the transfer of care between pediatrics and adult medicine to a comprehensive health delivery system that supports this developmental process. Transition planning needs to start early and to anticipate developmental changes in the early adult years related to relationships, employment, and decision-making, as well as taking on increasing responsibility for medical self-management. The stage is set in childhood for the developmental and psychosocial challenges common to all adolescents as they work to acquire independent life skills, challenges that are magnified in the setting of a chronic illness. Furthermore, the timing of transfer to adult CF care coincides with a dynamic period in adolescence often complicated by awkward and inconsistent attempts to assert autonomy that lead to difficulty with adherence and disease self-management.

Last year, VCU welcomed the arrival of our first dedicated adult CF physician, Dr. Naumann Chaudary, who has established an independent adult program within the center staffed by its own team focused on adult care. With the help of our pediatric program social worker (Dena Wertz) and psychology intern (Adrienne Borschuk) we have developed a transition program that begins in early adolescence, targeting life skills as well as disease management skills.

4. Attention to Adherence

Despite the advances in science and care, heavy treatment burden remains a significant challenge for many living with CF. Just as in every other chronic disease, families and children with CF face a number of barriers to successful completion of the tasks necessary to benefit from available CF therapies. Recent research has underlined this problem: adherence to treatments prescribed to our CF patients - defined by the “Medication Possession Ratio (MPR)”, which just measures prescriptions filled, not medications actually taken - averages around 50%; it is highest in 6-10 year olds and then drops progressively with age. Unsurprisingly, research shows that CF patients with lower MPR have more hospitalizations, more hospital costs, and worse lung function. To address this problem, the

... (cont.) Improvements in Cystic Fibrosis Care

CFF has partnered with key stakeholders in the CF community to create a **Success with Therapies Research Consortium** for the purpose of understanding the barriers to adherence and studying interventions to enhance successful disease self-management and improve health outcomes among individuals with CF. The VCU CF Center is one of 15 CF centers around the US that will be participating in this exciting new initiative, which we expect will provide insights into methods for increasing adherence and disease self-management not just for CF patients but for all children and families with chronic disease who struggle to be successful in their daily medical regimen.

5. Attention to mental health screening

People with any chronic illness are at increased risk for depression and anxiety. Aside from being important comorbidities that increase pain and suffering, mental health disorders have direct and indirect consequences for the management and outcomes of chronic disease. Depressed patients are less adherent with medical and dietary regimens; more likely to cancel or miss clinic appointments, have increased health care utilization and higher health care costs, and are more likely to engage in risky behaviors, such as smoking, drinking and drug use.

Recently, the CF Foundation funded a national screening study to estimate the prevalence and impact of symptoms of anxiety and depression in adolescents and adults with CF and in parent caregivers of children and adolescents. This study was eventually expanded to European countries and Australia. Elevated symptoms of depression were found in 10% of adolescents with CF, 19% of adults, 37% of mothers, and 31% of fathers. Elevations in anxiety were found in 22% of adolescents with CF, 32% of adults, 48% of mothers and 36% of fathers. Overall, elevations were 2-3 times the rates reported in community samples. An international consensus guidelines panel was convened as a result of these findings, and has recently recommended annual screening for anxiety and depression in our patient population and their parents.

Here at VCU, we are fortunate to have long-standing psychology and social work support in our CF Center, so mental health screen-

ing has been done regularly for a number of years. Patients who screen positive are provided with different individual counseling and therapy options, as well as referral for medication as indicated. Participation in group cognitive behavioral therapy (CBT), which has been shown to be very effective in other groups of patients with chronic disease,



but has not been an option in CF because infection control considerations prevent

people with CF from physical proximity with each other. A promising alternative option may be **Project UPLIFT**, a distance-based (telephone or internet) approach to group CBT, which has been effective in other groups and which we hope to evaluate in CF patients in collaboration with Dr. Nancy Thompson, a psychologist from Emory University who created the intervention.

6. Newborn Screening

After evaluating evidence from a handful of American states and foreign countries that had pioneered the performance of CF newborn screening, a Workshop co-sponsored by the Centers for Disease Control and Prevention and the CF Foundation published an evaluation of the benefits and risks and concluded with a recommendation that universal screening of newborns for CF be instituted. At this point, all states in the U.S. perform newborn screening (NBS), and the vast majority of patients are now being diagnosed in early infancy. There are several different approaches to CF NBS, but in Virginia we are currently using the "IRT/DNA method". Immunoreactive trypsinogen (IRT) is measured from blood obtained at 1-2 days of age; if the IRT level on the initial bloodspot is elevated (96%ile), that same blood spot is tested for CFTR mutations from a pre-defined panel of the 24 most common mutations. While most patients will be discovered to have 2 of these mutations, if even one mutation is found, the infant is referred for sweat testing (because there are about 2000 additional mutations that are not tested for). The positive predictive value of a positive sweat test if only one mutation is initially found is 10%, so most of those patients will be carriers and not have CF, but a high enough percentage will have the disease that sweat testing must be done as soon as possible. The sensitivity of CF NBS

is 96-98%, so pediatricians must be aware that a rare patient may screen negative and will have to be diagnosed later in life based upon symptoms.

The introduction of CF NBS has been one more innovation that has contributed to improved CF outcomes. Early diagnosis allows us to institute early nutritional interventions to prevent malnutrition and pulmonary treatment to delay the development of lung infection and bronchiectasis. Research has shown that CF NBS leads to improved nutritional status; improved pulmonary status, better cognitive function, fewer hospitalizations, decreased risk of life-threatening complications and death in infancy, reduced treatment costs, reduced parental distress, and opportunities for genetic counseling.

There are some unintended negative consequences, however. We are identifying carriers in families that need to understand the genetic implications but also must be reassured (after being frightened that their infant might have a serious genetic disease) that the child will actually be healthy after all. We are also starting to find a group of infants who have previously unidentified mild abnormalities of CFTR function that may or may not have future implications. These children, who typically have borderline elevated sweat tests and the presence of CFTR mutations that have mildly compromised function, are being grouped into the diagnosis of "CFTR-related metabolic syndrome." It is recommended that they be followed for the development of CF symptoms; most will never manifest any, but an occasional one may acquire *Pseudomonas* in their airway, or show signs of chronic sinus disease, recurrent pancreatitis, or congenital bilateral absence of the vas deferens later in life.

The Past, Present, and Future of CF Care

The CF story over the last 50 years has been one of successful improvement in Quality of Life and longevity due to innovative approaches to the development of new therapies and to ensuring that patients actually get all of the therapies available. We have tried, in this article, to illustrate just some of the reasons why we believe that patients with CF and their families can expect that this record of improvement will continue well into the 21st century.

2015 Legislative Preview

Aimee Seibert, Chapter Lobbyist

Budget Overview

The 2014 legislative session adjourned in March without a budget because of an impasse between the two houses over Medicaid Expansion. By June, it looked like we were at a standstill and would start the new fiscal year without a budget. However, Senator Phil Puckett (D) resigned his seat and the power in the Senate shifted back to the Republicans, causing the new leadership to collaborate with the House and align against Medicaid expansion. At the same time, the legislature learned we were facing an estimated \$1.55 billion revenue shortfall. The General Assembly came back in a special session mid-June and passed a compromise budget, without Medicaid expansion and that included over \$800 million in spending cuts over the biennium.

As the summer progressed, we learned we are facing an even bigger budget shortfall (a total of \$2.4 billion) than previously projected. The legislature came back in September for because they had not adjourned Sine Die to debate Medicaid Expansion, make additional budget cuts and vote on judicial appointments. Governor McAuliffe, the House and Senate all came together to support a bipartisan budget agreement that closed a \$346 million gap this fiscal year (FY15) and will address the \$536 million gap for Fiscal Year (FY) 16.

Governor McAuliffe will present his additional budget cuts and amendments to the House Appropriations and Senate Finance committees in December. The fiscal environment does not look like it will improve anytime soon and we will be facing more budget cuts for the foreseeable future.

Tanning

For the third year in a row, we will be working on indoor tanning legislation that will ban indoor tanning for all minors under the age of 18. Similar legislation has successfully made it through the Senate in the past, but never in the House. However, three Republican legislators on the House Commerce and

Labor committee indicated last session that they will support a full ban in 2015. This also continues to be a priority of MSV and we are hopeful that the legislation will be successful this year!

Smoking in Cars

We will continue to work on legislation to prohibit smoking in cars with children under the age of eight. We made significant progress last year when this bill successfully passed out of the House subcommittee for the first time. We have been able to garner more support for this bill every year and we will continue to work with fellow stakeholders on this important legislation.

Liquid Nicotine

In 2014, we supported legislation to ban the sale of e-cigarettes for minors. Vapor products are now included in the definition of tobacco and minors are prohibited from purchasing them. Throughout Virginia and the country, there has been a rapid increase in poisonings from liquid nicotine, which is used to re-fill e-cigarettes. Liquid nicotine can be harmful or even deadly in certain amounts, if ingested or absorbed by the skin. Children are especially susceptible to this and sometimes mistake the flavored liquid for something they can ingest. We are looking into legislation for 2015 that would require child-resistant packaging on liquid nicotine containers. Other states have passed similar legislation.



Epinephrine in Schools

As you know, we passed legislation a few years ago to require public schools to have auto-injectable

epinephrine under standing orders. Legislation will be filed this year to amend the language, to account for private schools that educate public school children. This will guarantee that the law will protect all public school students in Virginia.



Breastfeeding License Plate

Dr. Sriraman is working with the State Breastfeeding Task Force to introduce legislation to create a license plate that will promote breastfeeding. They are in the process of signing up people to purchase the plate. We will need at least 450 people signed up in advance before the legislation can be filed and considered for passage.

Early Childhood Coalition

We continue to be a member of the Early Childhood Coalition, which is facilitated by Voices for Virginia's Children and includes stakeholders interested in childcare safety, Virginia Pre-School Initiative, and funding for early intervention and home-visiting programs. The Coalition will be developing their recommendations soon for the 2015 session. One of the recommendations will likely be restoring funding cuts to Early Intervention and Home-Visiting programs.

Prior Authorization

Finally, we will be partnering with MSV and other physician specialty groups to likely introduce legislation to alleviate the current burden on physicians having to navigate the health insurance companies maze of prior authorization processes for pharmaceuticals. This is a huge area of frustration with pediatricians, especially when their patients change health plans and then the process to prescribe certain drugs changes dramatically.

As always, we know there will be additional bills filed that we will support or oppose and as your legislative team, we will be ready to alert you and education the legislature on VA AAP's position on bills.

Promoting Safer Sleep

While the incidence of SIDS has decreased since the launch of the Back to Sleep campaign in 1992, the number of infant deaths resulting from accidental suffocation, asphyxia, and entrapment has increased in recent years¹. In 2011, the American Academy of Pediatrics expanded its recommendations to promote a safer sleep environment for infants.

However, a recent study presented at the Pediatric Academic Societies annual meeting in Vancouver, British Columbia indicated that a significant number of parents continue to engage in high-risk sleeping behaviors.² Of the 1,030 mothers surveyed, almost 20 percent reported sharing a bed with their infant and 10 percent reported routinely putting their infant to sleep on their stomach.

Physicians and hospital staff should set a clear example of safe sleep practices in the inpatient setting. Parents and caregivers are more likely to model the actions demonstrated by their healthcare providers rather than follow verbal instructions. Encourage caregivers to follow the ABC's of safe sleep: Alone, Back, Crib.

See page 19 for more details.

Sleep Safety

ALONE | BACK | CRIB

The ABC's of Safe Sleep



Promoting Safer Sleep



The ABC's of SAFE SLEEP



- The safest place for an infant to sleep is in the same room as their caregiver but not in the same bed.
- Infants should be placed on their backs to sleep and their tummies to play.
- Use a crib or bassinet that meets current safety standards
- Provide a firm sleep surface.
- Keep loose bedding, bumpers, and toys out of the crib.
- Do not let an infant overheat.

In addition to promoting safe sleeping environments, healthcare providers must also convey to parents the importance of practicing Tummy Time while their infant is awake to support motor development³ and prevent positional plagiocephaly and torticollis.

Tummy Time



Founded in 1985, Pathways.org empowers parents and health professionals with free educational resources on the benefit of early detection and early intervention for children's motor, sensory, and communication development. For more information, visit www.pathways.org or email friends@pathways.org. Pathways.org is a 501(c)(3) not-for-profit organization.

References:

[1] Task Force on Sudden Infant Death Syndrome. *SIDS and other sleep-related infant deaths: expansion of recommendations for a safe infant sleeping environment*. 2011; 128(5): 1030-39.

[2] Colson E, et al. *Reports of infant sleep behaviors from a national sample of mothers: the study of attitudes and factors affecting infant care (SAFE)*. Platform session presented at: Pediatric Academic Societies Annual Meeting; 2014 May 3-6; Vancouver, British Columbia.

[3] Pin T, Eldridge B, and Galea MP. *A review of the effects of sleep position, play position and equipment use on motor development of infants*. *Development Medicine and Child Neurology*. 2007; 49: 858-67.

What's the Latest with the Flu

November 2014

Flu activity <http://www.cdc.gov/flu/weekly/summary.htm> remains low at this time in the United States, however, one pediatric death has already been reported. This first reported death serves as a reminder of how important these preparation strategies are. Vaccination remains the most important step in protecting against influenza.



Everyone needs an influenza vaccine each year. It takes about two weeks after vaccination to develop antibodies for protection against influenza. Anyone who plans to visit or travel during this holiday season should get vaccinated now. Some practices have reported delays in receiving shipment of vaccine. For more information, see the **AAP Influenza Vaccine Supply Update** <http://www.aap.org/en-us/professional-resources/practice-support/Vaccine-Financing-Delivery/Pages/Private/Influenza-Vaccine-Supply-Update.aspx#sthash.kmK0eBWq.dpuf>. Log-in required.

Of note, flu is more likely to cause severe illness in pregnant women than in women who are not pregnant. Studies show that a confident and routine recommendation to get vaccinated from a health care provider is influential. Pediatricians play a crucial role in promoting vaccination to help keep women and

their newborns healthy. Influenza vaccination is recommended in any trimester for all women who are pregnant or who plan to become pregnant during the influenza season. See the Centers for Disease Control and Prevention (CDC) **Letter to Providers: Influenza Vaccination of Pregnant Women** <http://www.cdc.gov/flu/pdf/professionals/providers-letter-pregnant-2014.pdf> for strategies to promote vaccination.

The United States is also currently experiencing a nationwide outbreak of enterovirus-D68 (EV-D68) associated with severe respiratory illness. For more information on EV-D68, see the **AAP enterovirus-D68 page** <http://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Children-and-Disasters/Pages/Enterovirus-D68.aspx>.

Also, be sure to check out the new 2014-2015 AAP Online Flu Courses <http://pedialink.aap.org/visitor> "Influenza Office Testing and Vaccinating Egg-Allergic Children" and "Prevention and Control of Influenza: 2014-2015". These courses deliver important information for clinicians to help keep children healthy this flu season. Each brings you up to date in less than an hour and qualifies for American Medical Association (AMA) Physician's Recognition Award (PRA) Category 1 Credit(s)™.



For more detailed influenza information, see the **AAP Red Book Online Influenza Resource page** <http://aapredbook.aappublications.org/site/flu/> or the **CDC FluView** <http://www.cdc.gov/flu/weekly/>. All What's the Latest with the Flu messages will be **archived** www.aap.org/disasters/flu.