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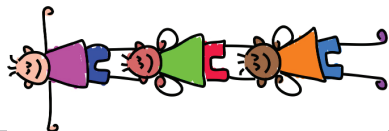
American Academy of Pediatrics • Virginia Chapter



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Virginia Pediatrics
Jane Chappell:
Executive Director
2821 Emerywood Pkwy | Suite 200
Richmond, VA 23294
• Phone: (804) 622-8135 •
• Fax: (804) 788-9987 •
• email: jchappell@ramdocs.org •
• www.virginiapediatrics.org •

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Narrative Medicine: Why Stories Matter

Natasha K. Sriraman, MD, MPH, FAAP, FABM

Associate Professor of Pediatrics | Division of General Academic Pediatrics
The Children's Hospital of The King's Daughters | Eastern Virginia Medical School
Norfolk, VA



"Medicine practiced with narrative competence, called narrative medicine, is proposed as a model for humane and effective medical practice. Adopting methods such as close reading of literature and reflective writing allows narrative medicine to examine and illuminate four of medicine's central narrative situations: physician and patient, physician and self, physician and colleagues, and physicians and society."¹

What is Narrative Medicine? Why is it important? Narrative medicine has been shown to enhance patient-provider communication. As physicians, we listen to our patients' stories. Empathy, active listening, and professionalism, ethics: terms taught to us as 1st-year medical students. Along with our scientific and medical competence, as physicians we continue to learn and build narrative competence, that is, the ability to absorb, interpret and respond to stories, our patients' stories. As appointment times decrease, we as physicians can use narrative skills to help achieve empathetic and effective therapeutic relationships with our patients and their families.

How does Narrative Medicine help us...and our well-being? Physician burn-out is real. Rates of depression and suicide among health-care providers are staggering. Medical students have 15%-30% higher rates of depression than the general population. Roughly, 300-400 physicians commit suicide per year. Rates of depression among women physicians are higher than men as compared to women with other doctorate degrees. Among male physicians, death by suicide is 70% higher when compared to men in other high-powered professions.² Compassion, courage, altruism, these are just a few terms used to describe physicians. However, as we diagnose and treat patients on a daily basis, our levels of stress and even pain increase and can become more intensified. Narrative medicine allows for reflection, a practice that can help us deal with our own emotions as we care for patients facing difficult physical, emotional and even social situations that impact their health and well-being. Reflection can help us identify and interpret our own wide-range of responses to patients.

At the Children's Hospital of The King's Daughters (CHKD), we hope to further study and expand the idea of narrative practice. The "Narrative Medicine for Excellence" Project is a joint venture between William & Mary College (W&M) and Eastern Virginia Medical School (EVMS). Faculty includes W&M professors from the disciplines of English, Africana Studies, and Theatre, EVMS Medical School, EVMS Department of Family Medicine and Department of Pediatrics at CHKD, this collaboration will help us establish a center for narrative practice in our region. Initially, medical school faculty and physicians from Family Medicine and Pediatrics have conducted lectures to interested undergraduate students, with a focus on pre-med students at W&M. In June, two separate seminars were held at on our hospital campus to introduce narrative medicine to faculty physicians, residents and medical students at CHKD and EVMS. In the Fall of 2015, two undergraduate courses will be held at W&M: Narrative Medicine, Stories that Heal. Again, by recruiting pre-med students into these classes, we hope that the concept of narrative medicine will help shape their medical education.

We are excited to introduce and show how narrative medicine can help so many aspects of medical practice.

For more information, please contact Natasha K. Sriraman at NKSriraman@gmail.com

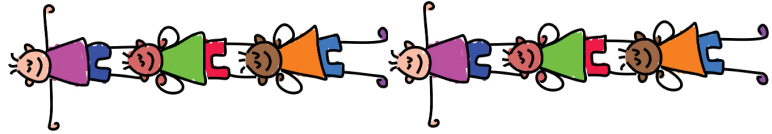
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President's • MESSAGE



Barbara Kahler, MD, FAAP
President Virginia Chapter
American Academy of Pediatrics



Last newsletter we talked about the process of resolutions on their way to the Board. We have recently gotten back from the ALF, where over 140 resolutions were considered. Most were passed by consent. They will all go to the Board. There were several themes this year dealing with everything from immunizations, immigrant children, Epi-pen costs, and the critical pediatrician shortage in Puerto Rico. Please see the *Top 10 resolutions as voted on the last day*:

Resolution 1- Due to low Medicaid reimbursement rates pediatricians in Puerto Rico have been leaving the country, placing more burden on an already overtaxed system. This resolution asks the board to seek payment parity for Puerto Rico and all US territories.

Resolution 2- Asks for medical reasons to be the only reason for vaccine refusal.

Top 10	Res #	District	Calendar	Title
1	LR7	X	Late Resolution – Ref Cmte A	Medicaid Parity for the Children of Puerto Rico and all United States Territories
2	78.79SB	IV & IX	Ref Cmte B	AAP Policy Statement on Personal Belief (Non-Medical) Exemptions for Immunizations
3	80.81SB	IV & VII	Ref Cmte B	Supporting Pediatricians Who Discharge Families Who Refuse to Immunize
4	41	II	Ref Cmte A	AAP Support Planned Parenthood's and Other Providers' Missions to Provide Critical Sexual Health Care Services to Adolescents
5	8SA	I	Ref Cmte A	Protecting the Rights of Children Born to Unauthorized Immigrants in the United States
6	11	VII	Ref Cmte A	Protecting the Well-being of All Undocumented Immigrant Children Detained by United States Officials
7	35	IX	Consent	Mandatory Child Resistant Packaging for all Marijuana (Including Edibles) Sold in States Which Have Legalized Recreational or Medicinal Marijuana
8	33	IV	Consent	AAP Participation and Advocacy for Firearm Safety Research
9	123	VIII	Ref Cmte C	Creation of a Center for Physician and Other Health Care Provider Resiliency
10	44SA	IX	Ref Cmte A	Reducing the High Cost of Epinephrine Auto-Injectors

Resolution 3- Support for practices that discharge non-vaccinators. Also support practices that continue to see these families.

Resolution 4- Support for Planned Parenthood and their efforts to provide critical sexual health services.

Resolution 5- Protection for the rights of children born in the USA.

Resolution 6- Protection of all undocumented children in detention. Based on the less than adequate conditions in which these children are kept.

Resolution 7- Mandatory childproof packaging of all Marijuana products. Based on toxic ingestions in states where marijuana is legal.

Resolution 8- Encourage firearm safety research. The CDC currently is not allowed to pursue this research.

Resolution 9- Ask the Board to develop a Center for Resiliency for providers. This is in an effort to help providers deal with burnout.

Resolution 10- Work to reduce the high cost of epinephrine injectors. Costs in \$400-500 range out of pocket.

For further discussion of these and the other resolutions, see the following link: <https://www.aap.org/en-us/my-aap/alf/Pages/Presentations-and-Handouts.aspx>

Thank you for your great ideas and support! *Barbara Kahler*

Pediatric Cardiac Intensive Care at UVA

William Harmon, MD

Assistant Professor of Pediatrics

University of Virginia



Pediatric Critical Care Services at the University of Virginia have expanded significantly in recent years in order to meet the needs of the most medically complex children both in central Virginia and across the broader Commonwealth. The Department of Pediatrics continues to recruit medical specialists to bring world-class care directly to Charlottesville so that families can stay close to home while receiving the absolute best of care. Pediatric Cardiology and Pediatric Congenital Heart Surgery represent one example of our broad commitment to excellence and child health development here at UVA. Roughly one in 110 children is born with a significant congenital heart defect. Heart problems in children can vary in severity from minor issues at best, to severe life-threatening illness at their worst. UVA has a long history as a pediatric cardiovascular center and is equipped to offer all levels of cardiac support. Over the past several years a number of pediatric specialists have been hired to expand our pediatric cardiovascular services and we now offer a separate Pediatric Cardiac Intensive Care (PCICU) team which focuses their efforts on the care of infants, children, teens and young adults with all forms of acquired and congenital heart disease. Our PCICU team provides 24/7 in-house attending coverage and is led by Dr. William Harmon and Dr. Debbie Frank, who are both specially trained in the provision of pediatric cardiac intensive care.

Seven other intensivists, together with nurse practitioners and house staff assist in the around the clock specialized care for these challenging patients.

Our heart surgery team has been led by Dr. Jay Gangemi who was recently joined by new partner, Dr. Mark Roeser. Our surgical program is a high-volume center that offers all levels

of surgical care including complex repairs of neonates with single ventricle disease. Surgical outcomes including length of stay and risk adjusted mortality are excellent and exceed national benchmarks. Quality of life and support for children and families remain a central focus of our team. We are actively involved in home monitoring programs and routinely involve the broad services of our child development teams to help every child and their families reach their highest potential.

Although most children with heart problems do well, some will need specialized interventions such as a heart transplant. UVA is the only pediatric heart transplant center in state of Virginia and we have offered this option to more than two dozen children over the past few years. The commitment to transplantation also requires the ability to provide mechanical support options for those with failing heart function. At UVA we have the ability to provide mechanical support options using ECMO (extracorporeal membrane oxygenation) for short term heart and/or lung failure. We also have successfully used a number of VADS (ventricular assist devices) to bridge children to transplant, including Heartware, Berlin Excor, Centrimag and PediMag devices.

Teamwork and success of our program is best illustrated through the story of an 11

month old girl who just recently received a heart transplant here at UVA. This young lady presented to an emergency room in our community with weight loss and breathing problems. A chest x-ray showed her to have an enlarged heart so she was referred to UVA for further evaluation and treatment. She was found to have dilated cardiomyopathy with a very weak left ventricle. After several weeks of receiving care in our pediatric intermediate care unit the baby's status eventually declined and she was transferred to our pediatric cardiac ICU. As often happens in babies with cardiomyopathy, her heart function continued to worsen over time and she required escalating care including multiple vasoactive infusions and mechanical ventilatory support. At this point she was evaluated for and listed as a heart transplant candidate. As she showed relatively intact right ventricular function, operative palliation was attempted using a pulmonary artery band. This technique has been shown to improve the hemodynamic status for some patients with left heart failure by creating more favorable inter-ventricular interactions. This was not a long term solution for this patient, who decompensated several days after undergoing the PA banding. As a result, the PA band was removed and she was placed on a rotary flow left ventricular assist device. After several days of stabilization her LVAD was changed out to a longer term support device (the Berlin Excor) to await a heart offer. Wonderfully, a heart became available just a few days later and she was successfully transplanted. The baby is now doing very well and is learning how to walk, taking her first few tentative steps!

This baby is just one example of success that has resulted from UVA's focused investment and teamwork to benefit the children of Virginia. We look forward to helping you and your patients as we move together toward a bright future.



Present

VIRGINIA PEDIATRICS NEWSLETTER
American Academy of Pediatrics – Virginia Chapter

Continuing Medical Education

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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

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Kamil Cak, DMin., C.W. Gowen, Jr., MD,

Eric Y. Gyuricsko, MD, John Harrington, MD, Rosalind Jenkins,

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Dietary Therapy For Managing Medically-Refractory Epilepsy in Children

J. Nicholas Brenton, MD

Assistant Professor of Neurology & Pediatrics
University of Virginia

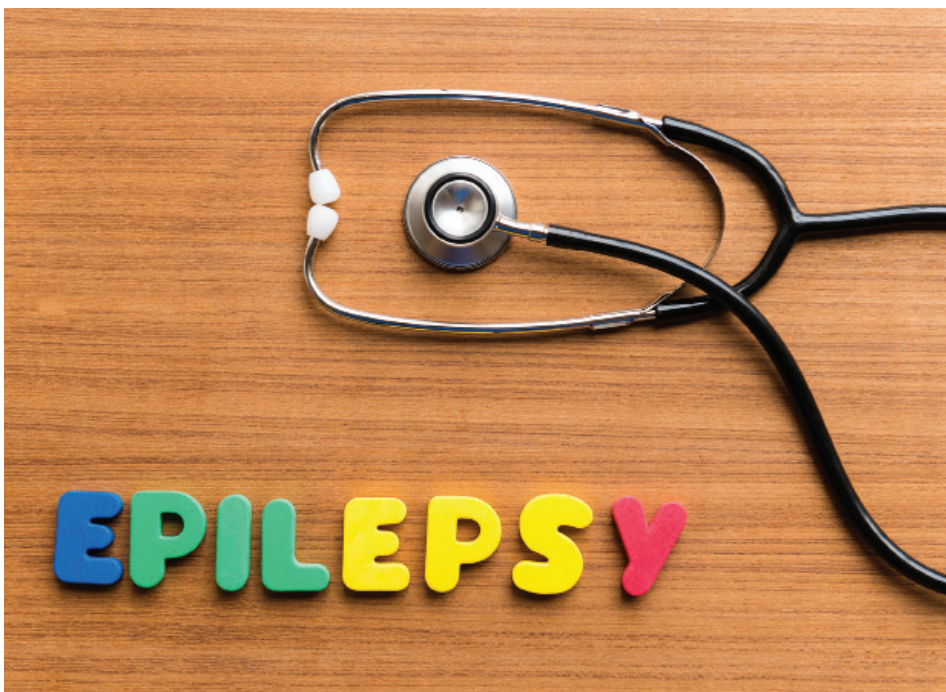
Objective: Readers will be able to discuss the use and employment of diet therapy (as opposed to medication/surgery).

ACGME Competencies: Patient Care, Medical Knowledge

The majority of pediatric patients diagnosed with epilepsy will respond to initial treatments with an anti-seizure medication(s). However, approximately 20%–30% of patients will go on to develop what is called “medically-refractory epilepsy” (ie, failure to maintain seizure-freedom with adequate trials of at least two anti-seizure medica-

carbonyhydrate (ketogenic diet) as a means to treat epilepsy. This diet soon fell out of favor as a larger arsenal of anti-seizure medications was introduced. The ketogenic diet was brought back into the public light in the 1990’s as a valid form of treatment for epilepsy, which, in large part was secondary to the publicized, made-for-television movie,

widely-recognized of these options. Diet therapy with the ketogenic diet and its various forms has been shown to be beneficial in treating a variety of epilepsy syndromes in children with frequent, medically-resistant seizures. Preliminary studies have shown that the ketogenic diet is effective in treating patients with surgically and medically refractory status epilepticus as well ⁽⁷⁾.



The classic ketogenic diet remains the most widely-used dietary treatment for children with epilepsy. The primary goal is to produce systemic ketosis by mimicking a starvation state while, at the same time, ensuring that the body receives all of the adequate nutrients for growth and development. A classic ketogenic diet is typically started at a ratio of 3:1 or 4:1 [ie, grams of fat to grams of carbohydrate + protein], where 80-90% of the child’s caloric intake comes from fat. Efficacy of diet appears to be independent of seizure type and age. Randomized, controlled trials and meta-analyses have shown that ≥50% of children with medically-refractory epilepsy have a >50% reduction in seizures on the ketogenic diet ^(8,9).

Originally, seizure reduction via the ketogenic diet was thought to be secondary to serum acidosis/ketosis; however, seizure reduction has not been shown to correlate with degree of acidosis or ketosis achieved. Animal models are showing dietary mechanisms are much more complicated and may work by: enhancing mitochondrial function, altering neuronal function and/or neurotransmitter release, and/or providing glucose stabilization^(10,11). The diet appears to have both anti-seizure and antiepileptic effects, as the potential disease-modifying effects of the diet may last months after the diet is discontinued.

tions) ⁽¹⁾. For this population of medically-refractory patients, child neurologists often will consider “alternative” or non-pharmacologic treatments such as diet therapy and/or surgical interventions (ie, vagal nerve stimulator or epilepsy surgery) as a means of treating seizures.

Modifying a patient’s diet as a method of preventing seizures is not a new concept. In fact, the father of Western medicine, Hippocrates, utilized fasting as a means of “purification” to treat seizure disorders. In the 1920’s, a time where relatively few anti-seizure medications were available, Dr. Russell Wilder from the Mayo Clinic first proposed a diet that is high in fat and low in

Do No Harm. This movie was based on the true story of a young boy who experienced complete recovery from daily seizures on the ketogenic diet – only after trying and failing all available anti-seizure medications in addition to enduring a futile brain surgery ⁽²⁾.

Over the past several years, variations of the ketogenic diet have been created in efforts to increase a child’s tolerance and adherence to the diet. All of these dietary options have a common theme: high fat, adequate protein, and low carbohydrate. The spectrum of diet options includes the classical ketogenic diet, modified Atkins diet, and low glycemic index diet ⁽³⁻⁶⁾. The classic keto-genic diet is perhaps the most common and

The side effects for a child on a ketogenic diet are not to be minimized. Side effects may include constipation, nausea/vomiting, diarrhea, reflux, hyperlipidemia, metabolic acidosis, and kidney stones. Rare side effects on diet therapy include acute pancreatitis,

... cont. Dietary Therapy For Managing Medically-Refractory Epilepsy in Children



cardiomyopathy, leukopenia, and increased susceptibility to infection. Initiation of a ketogenic diet is often contraindicated in patients with hepatic failure, certain inborn errors of metabolism (i.e., carnitine palmitoyltransferase I and II deficiencies, fatty acid oxidation defects, porphyrias), and those patients actively receiving propofol. The medical-nature and potential adverse events associated with this diet necessitates that a ketogenic diet “team” follow every child utilizing this diet for seizure-control⁽¹²⁾.

The ketogenic diet team is often a team composed of a pediatric neurologist, dietitian, and pediatric neurology nurse. Given the complexity of the diet initiation (and potential associated side effects), diet therapy with the classic ketogenic diet is often initiated in the hospital under the watchful guidance of the ketogenic diet care team. The classic ketogenic diet is a very specific, medical diet in which every ingredient in the child’s diet is carefully calculated and

must be weighed on a measuring scale with 0.1 g accuracy. Foods that are rich in fat (ie, vegetable oil, butter, mayonnaise, avocado, heavy whipping cream) are main staples of the diet and are incorporated into many meal types. For children with a gastrostomy tube, there are specialized ketogenic formulas that replace standard feeding tube formulas. During the inpatient stay to initiate a classic ketogenic diet, not only is the ketogenic team watching for potential side effects of a high fat diet, but this also allows for time to provide intensive teaching of the caregivers on how to calculate, weigh, design meals, and manage the diet at home.

Dietary treatments are an important and sometimes overlooked option for the management of patients with medically-resistant seizures and appear to be particularly effective in certain childhood epilepsy syndromes. In particular, diet therapy should strongly be considered for those pediatric epilepsy patients that have experienced significant adverse events from drug therapy.

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PARDS, APRV and ECMO: The Alphabet of Severe Pediatric Respiratory Failure

Gary Fang, MD

Assistant Professor of Pediatrics

University of Virginia Children's Hospital

Objective: Readers will be able to explain the new pediatric ARDS guidelines. Describe the treatment and support of severe respiratory failure.

ACGME Competencies: Patient Care, Medical Knowledge, Systems-based Practice



rates mean airway pressure in its derivation and thus accounts for ventilation strategy. There was also acknowledgment that the use of noninvasive ventilatory strategies has also grown such that the OSI, or oxygen saturation index, can also be used to classify ARDS. Patients' lung disease can therefore be classified as mild ($4 \leq \text{OI} \leq 8$), moderate ($8 \leq \text{OI} \leq 16$), or severe ($\text{OI} \geq 16$) ARDS. The new definition also removes the need for "bilateral infiltrates", stating that any new infiltrate can qualify, but does retain the qualification for absence of left ventricular dysfunction.

Acute respiratory distress syndrome (ARDS) is a clinical syndrome that was first described in 1967 by Ashbaugh et al. It involves severe respiratory failure characterized by hypoxia, acute onset and carries a mortality rate as high as 26%. As our understanding of ARDS grew, new definitions were created to allow for better classifications for research purposes. These have subsequently undergone several revisions, but there have never been true pediatric definitions or guidelines. Recently the Pediatric Acute Lung Injury Consensus Conference (PALICC) published new guidelines in hopes of better defining and assessing our treatment of ARDS in children.

The new Berlin definition of ARDS was mostly different in that it eliminated the acute lung injury (ALI) group in favor of graduated levels of severity (mild, moderate, severe). The biggest concerns of the PALICC with the adult recommendations focused on the use of PaO_2 and P/F ($\text{PaO}_2/\text{FiO}_2$) ratios in the guidelines. First, with a move toward limiting blood draws common in pediatrics, PaO_2 s will be less available. Second, given the variability in ventilation strategies in pediatrics, the P/F ratio that does not take ventilator support into account would be less reliable for comparison. The consensus conference thus recommended using oxygenation index (OI) for diagnostic purposes as it incorpo-

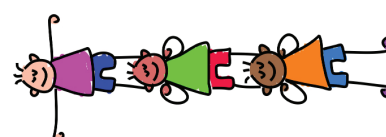
Luckily for most pediatricians, severe respiratory failure remains an uncommon diagnosis with an estimated incidence of 2-3 cases/100,000/year. However, despite its low numbers, it still carries a relatively high mortality and thus remains a focus of intensivists nationwide. Much of our knowledge of treatment of severe respiratory failure or ARDS comes from adult studies and is refined through experience. Treatment is mostly supportive at this time, but we have evolved through many different eras of care. Initial strategies of high ventilatory support with high plateau pressures and large tidal volumes (10-12 ml/kg) have now given way to high PEEP (>10 cm/H₂O) with low tidal volume (4-6 ml/kg) strategies. We may very well be entering a new era of care where different ventilatory strategies (airway pressure release ventilation [APRV] and high frequency ventilation) and advancing technologies such as extracorporeal membrane oxygenation (ECMO) may change the way we care for patients with severe respiratory failure. APRV is a specialized ventilatory mode that eschews the normal I:E ratio in favor of spending most of the respiratory cycle in inspiration. Rather than the normal 1:3 or 1:4 I:E ratio for the respiratory cycle, APRV uses a $>6:1$ ratio. This allows maintenance of a higher mean airway pressure which aids in oxygenation. Essentially, it is like a high CPAP level with brief 'releases' which lead to tidal

volume changes and thus gas exchange. In contrast to inverse ratio pressure control, a patient is allowed to breathe anywhere within the respiratory cycle. Reportedly, from adults who experienced various forms of mechanical ventilation, it is one of the more comfortable modes with which to breathe.

ECMO is essentially cardiopulmonary bypass that is performed outside of the operating room. Using a mechanical pump (the "heart"), blood is removed from the patient's body and flowed through an oxygenator (the "lungs") and then returned. The technology has advanced to the point that the entire circuit takes about as much space as standard ventilators used in ICUs. There are even transport ECMO circuits that are not much larger than a toolbox. Experience has grown over the years such that survival to discharge for pediatric respiratory cases from ECMO is near 60%.

ECMO was initially used mostly in neonates for meconium aspiration and PPHN (persistent pulmonary hypertension of the newborn), but its usefulness has grown throughout the hospital to include both pediatric and adult cardiac cases. The ECMO team consists of 12 highly skilled and dedicated specialists who staff the hospital 24 hours a day. This allows for immediate responses to emergencies and the ability to meet the growing demand for services. The service has continued to grow and in the past year performed its first two interhospital transports of pediatric patients on ECMO.

Pediatric ARDS remains a severe disease process with a high morbidity and mortality. Its treatment requires highly specialized and experienced care at pediatric centers with experience in treating it. Hopefully with new definitions, more research will lead to improved therapies and outcomes for this burdensome disease. ECMO programs can be challenging to initiate and maintain, but will be important for patients to have access to in the future.



Sudden Infant Death Syndrome (SIDS) and Other Sleep-Related Infant Deaths: Common misconceptions about safe sleep recommendations

Rachel Y. Moon, MD

Professor of Pediatrics and
Division Head of General Pediatrics
University of Virginia

Objective: Readers will be able to recognize most common risk factors in Virginia sudden and unexpected infant deaths; and explain the risk factors and protective factors for sleep-related deaths, identify barriers to safe sleep practice and propose strategies for overcoming said barriers.

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



commonly seen risk factors in these 119 deaths were soft sleep surface (73%), tobacco smoke exposure (71%), prone or side sleeping (59%), never received breast milk (59%), bedsharing (57%), and in utero smoke exposure (50%). The CFR Team determined that 95% of these deaths were definitely or probably preventable, and that 90% were related to an unsafe sleep environment.

Clearly, the problem has not gone away in Virginia, nor has it gone away in the rest of the country. Why? Why

Many, including health care providers, think that SIDS is a problem that has gone away – that the Back to Sleep campaign was successful, and that babies don't die in their sleep anymore. Unfortunately, this is not true. There are fewer babies dying of SIDS than there were 20 years ago, but the rate of sudden and unexpected infant death (SUID), which includes SIDS, accidental suffocation, strangulation, entrapment, and ill-defined deaths, has remained fairly constant since 2000. Annually, approximately 4000 U.S. infants die in their sleep. The risk factors for SIDS and these other SUIDs are remarkably similar and include prone (stomach) and side sleeping, soft sleep surfaces, soft and loose bedding, bedsharing, in utero and environmental exposure to tobacco, absence of breastfeeding, and pacifier nonuse.

According to the 2014 report from the VA State Child Fatality Review (CFR) Team, there were 119 sleep-related infant deaths in 2009: 82 SUIDs, 17 ill-defined deaths, and 20 asphyxial deaths, which included suffocation in soft bedding, mechanical or positional asphyxia, overlay, and wedging between the bed and the wall or headboard. The most

don't parents do what we tell them to do? In our research, in which we talked with hundreds of parents about what their beliefs and practices, we have found that there are a lot of misconceptions about what is safe and what isn't safe. Here are the most common ones:

Misconception: Babies are more likely to choke when they are on the back.

Reality: Parents often worry that their infant is more likely to choke or aspirate when on the back. This is particularly true if they have been told that their baby has "reflux."

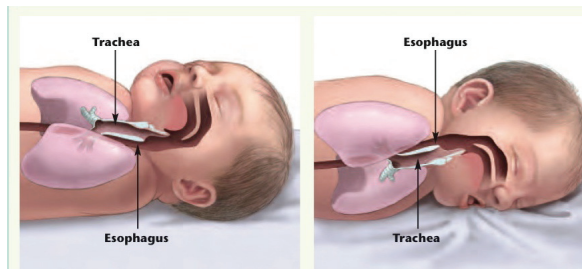
However, remind them that every baby will occasionally have reflux (i.e., spitting up). We all have a gag reflex that keeps us from choking. When the baby gags, it means that he is protecting himself from aspiration. It is also anatomically more difficult to aspirate when one is supine than when one is prone. As you can see in the picture, when one is prone, the esophagus is on top of the trachea. If a baby spits up while prone, the food is more likely to fall into the trachea purely because of gravity. However, if one is supine, the food must go up against gravity to enter the trachea. It's actually harder for a baby to choke when he is lying on his back.

Misconception: Babies sleep longer and better on their stomachs.

Reality: Infants who sleep prone do in fact sleep longer and more deeply. Their arousal thresholds are higher, i.e., it is more difficult for them to wake up. This is likely why the prone position is dangerous. Brainstem studies show that most SIDS victims have an arousal defect. Since SIDS may be the result of the inability to arouse, we want to make sure that we do not put babies into situations that make it even harder for them to arouse. If a baby is prone, she may be so deeply asleep that she can't wake to save herself. Even though a baby sleeps longer and "better" on the stomach, it is exactly this quality that makes prone sleeping dangerous.

Misconception: Sleeping with my baby is the best way for me to know that she is safe.

Reality: The safest place for a baby to sleep is in a crib, bassinet, or portable crib close to the parents' bed. This decreases the risk of SIDS by half and is the



From NICHD, NIH.

... (cont.) Sudden Infant Death Syndrome (SIDS) and other sleep-related infant deaths

most likely to prevent suffocation, strangulation, and entrapment that can occur if the baby is in the parents' bed. If the baby's sleep area is placed next to the parents' bed, this also allows for easy access for feeding and for monitoring the baby.

Misconception: It is safe to nap with my baby on the couch.

Reality: No! The couch or sofa is probably one of the most dangerous places for a baby to sleep, with or without the parent. Parents or other caregivers should not lie down on a couch with a baby or feed a baby on the couch, sofa, or other heavily cushioned chair, if there is a chance that they may fall asleep with the baby. It is less dangerous to feed the baby in bed than on a sofa or armchair.

Misconception: Bumper pads keep babies from injuring themselves.

Reality: Bumper pads were originally invented to prevent injury due to head entrapment. However, because there are now regulations for the maximum distance between crib slats, bumper pads are no longer necessary. In addition, bumper pads have been blamed for infant deaths. Babies can become entrapped between the mattress and the bumper pad, suffocate against bumper pads, or become strangulated with bumper ties. There is no evidence that bumper pads protect against serious injury in young infants. Because they are not necessary for safety and because they may contribute to asphyxial deaths, they are not recommended for infants.

When we do not talk about safe sleep, parents assume that it is either not important or does not apply to them. Parents are more likely to follow safe sleep recommendations if multiple providers talk about them. If the message is consistent, and if the recommendations make sense. Thus, it is important to talk to parents about safe sleep and to make sure that any concerns or misconceptions are addressed.

Medical Complications of Eating Disorders: What every practitioner should know

Julia Taylor, MD, MA
Nancy McLaren, MD
Assistant Professor of Pediatrics
University of Virginia

Objective: Readers will be able to recognize the importance of diagnosis and treating eating disorders of all shapes and sizes and in all populations.

ACGME Competencies: Patient Care, Medical Knowledge, Systems-based Practice



A 15 year male presents to your clinic for a well child check. Mom has concerns about his focus on exercising and eating "healthy". In reviewing his growth chart, at his last visit, his BMI was 30 (98th%) and you had

provided some nutritional guidance on portion sizes. His current BMI is 23 (82nd%) and he has lost approximately 50lbs in the past 4 months. His heart rate is 69 and his blood pressure is 112/67. You inquire about his intake over the past 24hours and he shows you his spreadsheet of "calories in and calories out", with a net goal of 1000 calories

per day. What is going on here and what do you do to help this child and family? Pediatricians are often the initial point of contact with the medical community for children and adolescents with eating disorders (EDs). Parents or guardians may express concerns to the provider about a child's change in eating behavior or increased weight and shape concerns. It is important to validate their concerns and to look into them as possible predictors of an ED. Children and adolescents with EDs can be normal weight, overweight, or underweight. And can present with a variety of disordered eating behaviors including restriction of food groups or quantities such as in Anorexia Nervosa, overeating and resultant purging as in Bulimia, binge eating only and the new DSM -10 diagnosis of ARFID (avoidant restrictive food intake disorder.) Excessive exercise as a way of controlling weight as a purging mechanism also can be part of an ED. Rapid weight loss, marked weight gain, significant fluctuations

in weight, failure to gain expected weight, or delayed/interrupted pubertal development should all prompt an inquiry about possible ED behaviors. Other red flags should include new onset amenorrhea, bradycardia, excessive exercise, syncope, heart palpitations and problems with constipation. It is important to remember that EDs do not only affect females, as is illustrated by this case presentation.

EDs are serious, sometimes life-threatening illnesses with significant medical complications that can affect nearly every organ system in the body¹⁻³. Anorexia nervosa, in particular, has the highest mortality rate of any psychiatric disorder. In addition there are often significant accompanying mental health concerns that also require attention. Up to a third of deaths related to EDs are the result of suicides. Without a high degree of suspicion, EDs and their complications can easily be missed, even by experienced providers.

... (cont.) Medical Complications of Eating Disorders

Table 1. Medical Complications of Eating Disorders in Children & Adolescents

	Food Restriction or Exercise Overcompensation	Purging: Vomiting & Laxative Use
Neurologic	Structural and functional brain abnormalities, seizures, decreased neurotransmitters	Structural and functional brain abnormalities, seizures
HEENT	Dry eyes, dry lips	Sialadenitis, dental erosions/caries, gingivitis
Cardiovascular	Bradycardia, Hypotension, Orthostatic changes, EKG abnormalities: low voltage; T Bradycardia, Hypotension, Orthostatic changes, EKG abnormalities: low voltage; T wave inversions; ST segment depression, prolonged QTc. Dysrhythmias. Pericardial effusions. Mitral valve prolapse.	Use of ipecac: irreversible myocardial damage and a diffuse myositis.
Respiratory	Weakness of respiratory muscles	Rare: aspiration pneumonia
FEN/GI	Dehydration. Total body sodium and potassium depletion caused by starvation. Gastroparesis. Constipation. Hypercholesterolemia. Abnormal liver function test results. SMA syndrome. Refeeding syndrome.	Hypocalcemia. Hypomagnesemia. Hypokalemia. Hyponatremia. Hypochloremic alkalosis. Esophagitis. GER. Mallory-Weiss tears. Rare: esophageal or gastric rupture
Endocrine	Euthyroid sick syndrome. Amenorrhea. Osteopenia. Delay or disruption of pubertal development. Impaired linear growth. Hypercortisolemia	Amenorrhea, Delay or disruption of pubertal development.
Hematologic	Leukopenia. Anemia. Iron deficiency, Thrombocytopenia, Easy bruising	
Renal	Increased blood urea nitrogen concentration. Increased risk of renal stones. Edema.	With Laxatives: Depletion of potassium bicarbonate, Increased risk of renal stones. With laxative withdrawal, may get fluid retention. Hyperuricemia. Leg edema.

Some of the complications included in Table 1 will resolve with weight restoration and elimination of vomiting and laxative abuse, but the reversibility of other complications (dental erosions, osteopenia/osteoporosis,

and structural brain changes) are less clear and may have longer term effects. The most

recent Society for Adolescent Health and Medicine position statement⁴ on EDs emphasizes the role of the medical provider as a critical member of the interdisciplinary treatment team for patients with EDs. Medical providers are essential in the timely diagnoses of EDs, monitoring for medical complications, and referring to other levels of care. While most children and

adolescents can effectively be managed in the outpatient setting, it is important for pediatricians to be familiar with local, state, and regional resources to help in caring for

their patients with eating disorders.

EDs require a team-based approach to care with most teams consisting of at least a medical provider, mental health provider, and nutritionist. They are joined by the family as a key component of the team. Family based therapy (FBT) has the largest body of supporting evidence for the treatment of young people with anorexia nervosa, but also shows promise in the treatment of bulimia nervosa¹. In FBT, the medical provider monitors the patient's health status and communicates findings to the rest of the team to aid in decisions about appropriateness of the current level of care⁵.

Patients with EDs who are

showing no substantial progress, continue to lose weight, have few local resources, or have developed unstable medical complications may warrant referral to a clinic that specializes in EDs. Some children and adolescents will require more focused and frequent outpatient follow up (once or twice a week), intensive outpatient programming (for example spending 3-4 hrs/day and one meal, three times per week in individual and group therapy and nutrition counseling sessions), partial hospitalization (5-7 hrs and 1-2 meals/day, 5days/week), inpatient stabilization (1-2 week hospitalization for weight and electrolyte stabilization), or residential treatment (prolonged, intensive experience with 24hrs supervision by trained staff). Medical providers should therefore also be familiar with suggested hospitalization criteria for patients with EDs, which were updated in 2015 (See Table 2). They need to be able to recognize the failure of outpatient treatment and feel comfortable making a recommendation for a higher level of care. A referral to providers with expertise in the treatment of eating disorders can provide additional support for the primary care pediatrician and the family and enhance the treatment outcome for the patient. Because of the serious medical complications that are associated with EDs in children and adolescents, pediatricians must remain vigilant during both the process of diagnosing and managing patients with EDs. They are the front line in recognizing the illness and initiating timely interventions. Their detailed assessment and initiation of care and, when needed, referral to an expert, can ensure the best possible treatment and outcome for the patient.

Resources:

- Source. Golden, Neville H., et al. "Update on the medical management of eating disorders in adolescents." *Journal of Adolescent Health* 56.4 (2015): 370-375.
1. Campbell K, Peebles R. Eating disorders in children and adolescents: State of the art review. *Pediatrics*. 2014;134(3):582-592. doi: 10.1542/peds.2014-0194 [doi].
 2. Katzman DK. Medical complications in adolescents with anorexia nervosa: A review of the literature. *Int J Eat Disord*. 2005;37(S1):S52-S59. doi: 10.1002/eat.20118.
 3. Mehler PS, Brown C. Anorexia nervosa—medical complications. *J Eat Disord*. 2015;3(11).
 4. Society for Adolescent Health and Medicine, Golden NH, Katzman DK, et al. Position paper of the society for adolescent health and medicine: Medical management of restrictive eating disorders in adolescents and young adults. *J Adolesc Health*. 2015;56(1):121-125. doi: 10.1016/j.jadohealth.2014.10.259 [doi].
 5. Golden NH, Katzman DK, Sawyer SM, et al. Update on the medical management of eating disorders in adolescents. *Journal of Adolescent Health*. 2015;56(4):370-375.

Table 2

Indications supporting hospitalization in an adolescent with an eating disorder

One or more of the following justify hospitalization:

- ① ≤75% median body mass index for age and sex
- ② Dehydration
- ③ Electrolyte disturbance (hypokalemia, hyponatremia, and hypophosphatemia)
- ④ EKG abnormalities (e.g., prolonged QTc or severe bradycardia)
- ⑤ Physiological instability
 - Severe bradycardia (heart rate <50 beats/minute at daytime: <45 beats/minute at night)
 - Hypotension (<90/45 mmHg)
 - Hypothermia (body temperature <96°F, 35.6°C)
 - Orthostatic increase in pulse (>20 beats per minute) or decrease in blood pressure (>20 mm Hg systolic or >10 mm Hg diastolic)
- ⑥ Arrested growth and development
- ⑦ Failure of outpatient treatment
- ⑧ Acute food refusal
- ⑨ Uncontrollable bingeing and purging
- ⑩ Acute medical complications of malnutrition (e.g. syncope, seizures, cardiac failure, pancreatitis, etc.)
- ⑪ Comorbid psychiatric or medical condition that prohibits or limits appropriate outpatient treatment (e.g. severe depression, suicidal ideation, obsessive compulsive disorder, type 1 diabetes mellitus)

EKG = electrocardiogram; QTc = Corrected QT interval.

VA-AAP NEWSLETTER REGISTRATION AND EVALUATION FORM

(Spring 2016)

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

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

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

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*Visual System Assessment in Infants, Children, and Young Adults by Pediatricians. PEDIATRICS Volume 137, number 1, January 2016

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AAP President-elect Candidates Named!



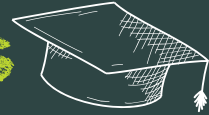
*The AAP National Nominating Committee has selected
Michael T. Brady, M.D., FAAP, of Columbus, Ohio,
and
Colleen A. Kraft, M.D., FAAP, of Cincinnati,
as candidates for AAP president-elect.*

Look to upcoming issues of AAP News for ongoing coverage of the candidates, including profiles and position statements.

VOTING WILL BEGIN OCT. 21 AND ENDS NOV. 21, 2016.

www.virginiapediatrics.org

Today's Lesson: **Healthy Students are Better Students**



Healthy Eating + Physical Activity = Improved Academic Performance



Students who eat **breakfast** have better attention and memory.



Only **38%** of all teens eat breakfast every day.

Good job!

Needs improvement



After just **20** minutes of physical activity, brain activity improves.

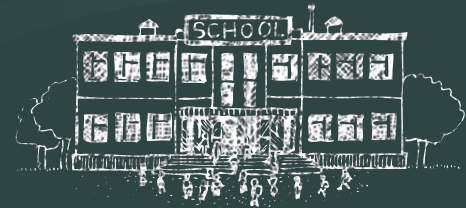


Only **25%** of high school students are active for the recommended 60 minutes each day.

What is the right answer?

☒ **Schools:** Kids spend **2000** hours every year in school, which makes that the smart place to encourage kids to eat right and get moving.

☒ **Wellness Programs:** Programs like **Fuel Up to Play 60** empower students to take actions like starting breakfast programs and walking clubs. Community leaders, businesspeople and health professionals can also assist schools in providing opportunities.



Extra credit:

- ☒ Read *The Wellness Impact: Enhancing Academic Success Through Healthy School Environments* at NationalDairyCouncil.org
- ☒ Learn more about how **Fuel Up To Play 60** is helping schools to take action at FuelUpToPlay60.com



Camp Holiday Trails

A Camp for Children with Special Health Needs



Camp Holiday Trails is a camp for children with special medical needs and autism. It is an extraordinary place where campers can have fun, challenge themselves, and take safe risks – without having to worry about being different or excluded because of their individual needs. We offer several sessions during the summer in addition to our year-round programming. Thank you for helping us spread the word!



Now accepting applications for campers, medical staff and volunteers! The link to applications is on our website.

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THE DONALD W. LEWIS PEDIATRIC UPDATE 2016

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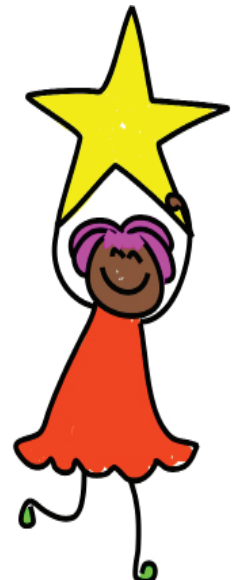
10TH ANNUAL PEDIATRIC AND ADOLESCENT SPORTS MEDICINE UPDATE FOR PRIMARY CARE

June 16, 2016

8 a.m. – 4 p.m.

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Behavioral Health Resources for Medical Personnel - Fairfax County, Virginia

At-Risk in Primary Care is a CME-approved* online training simulation that prepares primary health care providers to:

- Screen patients for mental health and substance abuse disorders,
- Perform brief interventions using motivational interviewing techniques, and
- Refer patients to treatment.

The learning experience is structured around a series of interactive, dynamic clinical scenarios in which participants engage in role-play practice conversations with virtual patients, choosing actions to move the scenario along and receiving real-time feedback.

In the course of the training, participants learn to recognize risk factors and warning signs of alcohol and substance use disorders, depression, post-traumatic stress disorder, generalized anxiety disorder, and suicidal thoughts; screen patients using evidence-based tools; apply motivational interviewing tactics to build patients' trust and increase adherence; engage in collaborative treatment planning with patients; apply best practices in follow-up care; and reduce liability through proper documentation.

The simulation was developed in collaboration with the New York City Department of Health and Mental Hygiene and is currently utilized in NYC, Maryland, North Dakota, and Oklahoma to train over 10,000 physicians. **At-Risk in Primary Care** is approved for 1.50 CME AMA PRA Category 1 Credits™ and 1.50 ANCC CNE contact hours.

*CME = Continuing Medical Education

Practice Exposure Therapy is an online learning experience for mental health providers to learn why and how to apply prolonged exposure (PE) therapy with adult patients suffering from post-traumatic stress disorder (PTSD).

Participants engage in simulated therapy sessions with fully-animated virtual patients who act like real patients suffering from PTSD. Patients include a military veteran, a victim of childhood abuse, and a survivor of sexual assault.

Participants learn to recognize symptoms of PTSD and suitable treatment options; identify patients for whom PE is appropriate; practice conversations with virtual patients to present treatment options, address their concerns and engage them in the treatment; use breathing relaxation techniques with patients; structure and direct in vivo and imaginal exposure; promote patients' full emotional engagement; and practice provider self-care techniques.

Practice Exposure Therapy is approved for 6.0 American Psychological Association (APA) continuing education credits (CE) and was developed by Kognito in collaboration with the New York City Department of Health and Mental Hygiene.

more info: http://resources.kognito.com/pc/AtRisk_PCP_Overview_March2014.pdf

AT-RISK in PRIMARY CARE

Screening, Brief Intervention, and Referral Skills for Primary Care



Behavioral Health Training for Medical Personnel

www.fairfaxcounty.gov/csb/bhmedical

Online, interactive training for medical professionals to better recognize and address patients' mental health and substance use issues.

Plus (for mental health providers) a course on prolonged exposure therapy for PTSD.



At-Risk in Primary Care and **At-Risk in the ED** are CME-approved online training simulations that prepare primary health care and emergency department providers to:

- Screen patients for mental health and substance abuse disorders,
- Perform brief interventions using motivational interviewing techniques, and
- Refer patients to treatment.

The learning experiences are structured around a series of interactive, dynamic clinical scenarios in which participants engage in role-play practice conversations with virtual patients, choosing actions to move the scenario along and receiving real-time feedback.

Practice Exposure Therapy is an online learning experience for mental health providers to learn why and how to apply prolonged exposure (PE) therapy with adult patients suffering from post-traumatic stress disorder (PTSD).

These courses are available online 24/7, are offered free of charge, and can be done whenever your busy schedule allows. Each training can be completed, if needed, in more than one sitting.

Go to www.fairfaxcounty.gov/csb/bhmedical to learn more.

At-Risk in Primary Care and At-Risk in the ED are each approved for 1.50 CME AMA PRA Category 1 Credits™ and 1.50 ANCC CNE contact hours. Practice Exposure Therapy is approved for 6.0 American Psychological Association (APA) continuing education credits (CE).

