0 lbs., 14 oz., and made for EVERY INCH

RECOMMEND AQUAPHOR FOR BABY’S SKINCARE NEEDS

Beiersdorf
Data on file. Beiersdorf Inc. ©2017
Infants who are exposed to tobacco smoke during their mothers’ pregnancy or after birth are at increased risk of gastroesophageal reflux (GER), especially of events with bolus movement detected by impedance (GER-imp), according to a French study in 31 neonates referred to a medical center for investigation of suspected GER.

Participants underwent synchronized MII-pH monitoring and synchronized 8- to 12-hour polysomnography. Investigators estimated infants’ exposure to tobacco smoke using a urine cotinine assay. (All the infants were formula fed, which ruled out being exposed to tobacco via their mother’s milk.) Infants with a urine cotinine level below the detection threshold of 1 ng/mL were considered the control group (10 neonates), and those with a urine cotinine level greater than 1 ng/mL constituted the smoking-exposed group (21 neonates).

Investigators also determined the total number, frequency, and mean duration of GER-pH (reflux events detected by the pH electrode only) and GER-imp events. In addition, mothers completed a questionnaire about how many cigarettes they smoked during and after pregnancy and the smoking habits of other household members.

A total of 923 GER events were reported during 304 hours of recording time. All the GER variables were greater in the smoking-exposed group than in the non-exposed group. Only the differences between the smoking-exposed and control groups in the median number and frequency of GER-imp events were statistically significant, however: 29 versus 12 for the median number and 2.6 versus 1.0 events per hour for frequency. Notably, the proportion of GER-imp events with retrograde bolus migration to the most proximate segment was significantly higher in the smoking-exposed group (83%) than in the unexposed group (41%).

Finally, the observed GER pattern associated with smoking exposure was particularly obvious during rapid eye movement (REM) sleep, with the time spent in GER-imp and median number of GER-imp events 2-fold greater in the smoking-exposed group than in the nonexposed group during REM sleep (Djeddi D, et al. J Pediatr. 2018;201:147-153).

This is a small but important study. In explaining their findings of worsened GER in smoke-exposed infants, the authors cite work in adult smokers showing decreased lower esophageal sphincter tone after exposure to nicotine. They acknowledge that their findings need to be confirmed on a larger scale, but in the meantime, I am going to be sure to seek a history of smoke exposure when seeing babies with significant GER.

Michael G Burke, MD, is Chairman, Department of Pediatrics, Saint Agnes Hospital, Baltimore, Maryland.
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## Our Mission
Office- and hospital-based pediatricians and nurse practitioners use Contemporary Pediatrics’ timely, trusted, and practical information to enhance their day-to-day care of children. We advance pediatric providers’ professional development through in-depth, peer-reviewed clinical and practice management articles, case studies, and news and trends coverage.
Testing and Treating for Flu, Strep & RSV is as easy as One, Two, Three.

For these common respiratory infectious diseases, good things come in threes, like our QuickVue Influenza A+B, QuickVue Dipstick Strep A, and QuickVue RSV tests. They require minimal hands-on-time, no special equipment, and no special training. Each with the CLIA-waived workflow of “sample, dip and read” getting practitioner, patient and parent onto a treatment plan in a single office visit.

For the perfect combination of threes for your Flu, Strep A and RSV testing, contact a Quidel Account Manager at 800.874.1517, or visit us online.
Infants who are breastfed exclusively show less hypothalamic stress response than infants who have been breastfed little or not at all, according to a study in 42 healthy, 5-month-old infants and their mothers.

Half of the infants in the study group had been breastfed continuously since birth (high-breastfeeding group), whereas the other half had been breastfed for no longer than 3 weeks or had not been breastfed (low-breastfeeding group). Investigators compared cortisol stress reactivity in the 2 groups of infants by analyzing saliva samples before and 30 minutes after conducting a mother-infant interaction procedure in which the mother is unresponsive to her infant—maintaining a “poker” face and not interacting with the child. (This “still face” has been shown to elicit cortisol reactivity associated with DNA methylation of an important regulatory region of the glucocorticoid receptor gene.)

Infants of mothers in the high-breastfeeding group had less DNA methylation of the glucocorticoid receptor promoter and decreased cortisol reactivity than did infants of mothers in the low-breastfeeding group (Lester BM, et al. *Pediatrics*. 2018;142[4]:e20171890).

**THOUGHTS FROM DR. BURKE**

These researchers used breastfeeding as a proxy for maternal nurturing activity. Using this model, they showed how early maternal behavior can cause modification of gene expression, which has long-term implications for how the child responds to stress. Here’s 1 more reason not only to support new mothers in their efforts to breastfeed but also to watch for medical and social conditions that limit a mother’s ability to nurture her baby.

**PUBLISHED IN PEDIATRICS**

Lots of breastfeeding reduces infant stress

Infants who are breastfed exclusively show less hypothalamic stress response than infants who have been breastfed little or not at all, according to a study in 42 healthy, 5-month-old infants and their mothers.

Half of the infants in the study group had been breastfed continuously since birth (high-breastfeeding group), whereas the other half had been breastfed for no longer than 3 weeks or had not been breastfed (low-breastfeeding group). Investigators compared cortisol stress reactivity in the 2 groups of infants by analyzing saliva samples before and 30 minutes after conducting a mother-infant interaction procedure in which the mother is unresponsive to her infant—maintaining a “poker” face and not interacting with the child. (This “still face” has been shown to elicit cortisol reactivity associated with DNA methylation of an important regulatory region of the glucocorticoid receptor gene.)

Infants of mothers in the high-breastfeeding group had less DNA methylation of the glucocorticoid receptor promoter and decreased cortisol reactivity than did infants of mothers in the low-breastfeeding group (Lester BM, et al. *Pediatrics*. 2018;142[4]:e20171890).
An 11-day-old, full-term male presents to the emergency department (ED) with a 2-day history of decreased range of motion of his right upper extremity.

**History**

This patient was born to a 32-year-old G1P1 mother via induced vaginal delivery at 39 weeks’ gestation. Birth weight was 2955 g (19th percentile); length, 50 cm (44th percentile); and head circumference, 32 cm (9th percentile). Maternal blood group is B Rh-negative, antibody negative. Maternal group B Streptococcus (GBS) was unknown at birth but later noted to be positive by Obstetrics and not treated prior to birth. The patient’s neonatal course was complicated by hyperbilirubinemia, requiring 1 day of phototherapy.

Since discharge from the hospital, the infant has reportedly been moving his arm without difficulty until 2 days prior to presentation. According to the parents, he continues to use his hand and wrist but will not move the elbow or shoulder. There is no known trauma to the right upper extremity and no previous invasive medical procedures aside from a heel stick for routine newborn screening labs along with an uncomplicated circumcision. The family denies erythema, swelling, or increased warmth in the right arm or shoulder. He is acting appropriately, tolerating cows’ milk formula along with breast milk, and having normal wet diapers and stools. Newborn genetic screening is normal.

**Physical exam and laboratory testing**

The initial physical exam reveals temperature of 97.7°F; heart rate, 176 beats/minute; respiratory rate, 31 breaths/minute; blood pressure, 85/56 mm Hg; and SpO2 of 96% on room air. He is in no acute distress and is able to move his right hand and wrist. There are no spontaneous or active movements of the right elbow or shoulder, although there is normal passive range of motion. He has a normal right palmar grasp but an asymmetric Moro reflex with limited range of motion of the right shoulder and right elbow. There is no tenderness, swelling, crepitus, or deformity of the right shoulder.

Laboratory evaluation shows white blood cell (WBC) count of 17,300 x 10⁹/L for age (lymphocytes, 34%; neutrophils, 55%; monocytes, 10%); platelets, 262,000/μL; hemoglobin, 14.6 g/dL; and hematocrit, 43%. Erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) are both elevated at 54 mm/h and 90 mg/L, respectively. Further laboratory tests are unremarkable including serum electrolytes, glucose, urinalysis, and cerebrospinal fluid (CSF) studies.

**Differential diagnosis**

Initial differential diagnosis on admission to the neonatal intensive care unit (NICU) included, but was not limited to, brachial plexus palsy, neonatal stroke, intraventricular hemorrhage,
fracture, nonaccidental trauma, osteomyelitis, herpes simplex virus (HSV) encephalitis, and septic arthritis (Table). Because of concern for acute infection in an 11-day-old infant, the patient was started empirically on intravenous (IV) ampicillin, cefepime, and acyclovir after obtaining urine, blood, and CSF studies. Ampicillin was initiated to cover gram-positive organisms including GBS and _Listeria_, cefepime for _Escherichia coli_ and methicillin-sensitive _Staphylococcus aureus_, and acyclovir for HSV.

Initially, the main differentials were brachial plexus palsy versus acute intracranial process. A head ultrasound was performed, which was negative. Subsequently, magnetic resonance imaging (MRI) of the head and cervical spine was obtained, not under sedation or general anesthesia, and found to be significant for a small subacute subdural hematoma in the posterior fossa bilaterally without significant mass effect. The cervical MRI was poor quality because of movement. The results were discussed with Pediatric Neuroradiology and Neurosurgery and were thought to be secondary to the birthing process and likely not contributing to the decreased range of motion of the right upper extremity.

With negative intracranial pathology as the cause for the acute presentation, there was concern for acute osteomyelitis of the right upper extremity versus brachial plexus palsy. An MRI of the shoulder and neck was obtained for elevated inflammatory markers. The MRI of the neck was negative; however, MRI of the shoulder was significant for increased T2 signal in the right humeral head that extended across the physis into the metaphysis of the right humerus and mild synovial thickening (Figure).

The diagnosis of right acute humerus osteomyelitis was made.

### Discussion

Acute osteomyelitis in the full-term newborn is rare. Most cases described are those associated with a systemic infection, skin infection, complicated delivery, after an invasive operation, or in critically ill patients. Premature infants are at a higher risk in comparison with term infants because of invasive procedures, central line access, and frequent blood draws. Additionally, premature rupture of membranes, transplacental infections, low birth weight, and asphyxia have been linked to increased risk.

Osteomyelitis in neonates has varied clinical presentations but often presents with the inability to move an affected limb, pain with movement, or local swelling and signs of inflammation. Zimmerman and colleagues reviewed literature from 1950 to 2016 of osteomyelitis of the humerus in the newborn and infant. In the 29 cases identified, the median age of symptoms was 14 days with first presentation at 21 days, all of which presented with concern for brachial plexus palsy. A pathogen was isolated in 86% of infants with osteomyelitis of the humerus, most frequently with GBS followed by _S aureus_. Interestingly, _S aureus_ is the most common bacteria usually found in osteomyelitis. However, in osteomyelitis of the humerus, GBS is the most common bacteria.

In neonates, the most common route of spread is hematogenous and the long bones are more frequently involved. In addition to _S aureus_ and GBS, _E coli, Klebsiella, Proteus_, and, in rare cases, _Candida albicans_ are isolated of osteomyelitis in the newborn. A recent report of salmonella also was reported, although it is extremely uncommon.

It is important to keep a high index of suspicion for a newborn who is not moving an extremity and yet is well appearing with an uncomplicated history and low risk factors. According to Zimmerman and colleagues, more than half (16 of 29) of cases were initially misdiagnosed causing

### Table

**DIFFERENTIAL DIAGNOSIS FOR DECREASED RANGE OF MOTION IN NEWBORNS**

<table>
<thead>
<tr>
<th>Infectious</th>
<th>Anatomic/Trauma</th>
<th>Neoplasm</th>
<th>Neurologic</th>
<th>Endocrine</th>
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<td>Brachial plexus injury</td>
<td>Neuroblastoma</td>
<td>Stroke</td>
<td>Hypothyroidism</td>
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<td>(Erb’s palsy, Klumpke</td>
<td>Leukemia</td>
<td>Intraocular</td>
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<td>HSV encephalitis</td>
<td>palsy)</td>
<td>Ewing sarcoma</td>
<td>hemorrhage</td>
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<tr>
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<td>Clavicular fracture</td>
<td>Osteosarcoma</td>
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<td></td>
<td>Shoulder dystocia</td>
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<td></td>
<td>Nonaccidental trauma</td>
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Abbreviation: HSV, herpes simplex virus.
Author created.
a delay in treatment. Delays in treatment can lead to concurrent septic arthritis, subperiosteal abscess, pyomyositis, deep vein thrombosis, growth arrest, sepsisemia, multiorgan failure, and death.

Osteomyelitis and concurrent septic arthritis have been reported in multiple studies. Montgomery and colleagues identified that concurrent infection was seen in 72% of children with septic arthritis of the shoulder. The same study also concluded that risk factors for concurrent joint and bone infection were: newborn or adolescent ages; humerus involvement; 6 days of symptoms; and infection with methicillin-sensitive Staphylococcus aureus or methicillin-resistant S aureus (MRSA). Thus, it is imperative to not delay treatment and to obtain wound cultures prior to starting antibiotics if osteomyelitis is suspected.

As mentioned previously, GBS is the most-common isolated organism in osteomyelitis of the humerus. Pathogens are becoming resistant to multiple drugs, thus empiric therapy should include a third-generation cephalosporin plus an antistaphylococcal agent, such as oxacillin. If MRSA is suspected, vancomycin should be started while awaiting the results of the wound culture.

Plain X-ray is not sensitive for the diagnosis of acute osteomyelitis. Destruction of the bone is visible up to 7 to 10 days after the beginning of symptoms and only 20% of patients who present in the first 2 weeks will have an abnormal X-ray. An MRI is the modality of choice with bone marrow edema as the earliest feature that can be detected—as early as 1 to 2 days after the onset of infection.

In the present case, the GBS status of the mother was initially unknown. When GBS is proven, the drug of choice is penicillin. In this case, ampicillin and cefepime were chosen as empiric therapy for the patient along with acyclovir to cover for suspected late-onset sepsis. Acyclovir was discontinued once HSV cultures were negative.

An unusual case
The patient was initially healthy and had no known risk factors for infection. He began experiencing symptoms at day 9 of life, making him one of the youngest in literature with osteomyelitis. The patient showed no signs of infection, remained afebrile, had no cardinal signs of inflammation, and had negative cultures.

Street and colleagues described 49 pediatric patients with an average age of 4.2 years with osteomyelitis of the humerus. In this retrospective study, 78% were not using the affected limb and 70% complained of pain. Only 55% of patients were febrile whereas 78% were tachycardic.

In a review article by Zimmerman and colleagues, 17% (5 of 29) of cases presented with fever or irritability. Therefore, it is imperative to suspect osteomyelitis in an afebrile and well-appearing neonate who has decreased movement of an extremity. Of note, the humerus accounts for 8% of osteomyelitis whereas the femur (27%) and tibia (26%) are most often affected.

White cell count, ESR, and CRP were raised in 73%, 74%, and 79% of cases, respectively. The patient in this case had an elevated WBC count, ESR, CRP, and trouble with movement of his right upper extremity but was afebrile and was not fussy or showing signs of pain. Pääkkönen and colleagues reported that WBC count was normal in more than half of their pediatric cases with osteoarticular infections, while CRP and ESR together had a sensitivity of 98%. Therefore, leukocytosis is a poor indicator for the diagnosis of acute osteomyelitis.

Conclusion
Acute osteomyelitis is an uncommon but serious condition in the newborn. In adults, osteomyelitis is usually subacute or chronic and develops secondary to an open injury. On the other hand, in children osteomyelitis is acute and seeds hematogenously.

Acute osteomyelitis in an infant re-
Identify, screen, treat, and advocate for child victims of sex trafficking

Any child can become a victim of human trafficking. Here is practical information to help pediatricians identify these children and provide medical treatment for their complex healthcare issues.

MARY BETH NIERENGARTEN, MA

Human trafficking is a national and global problem involving millions of children, many of whom are the victims of commercial sexual exploitation. Globally, 4.4 in 1000 children are victims of human trafficking, with more than 1 million children victims of commercial sexual exploitation in 2017. In the United States, it is estimated that 244,000 children are at risk for commercial sexual exploitation each year.

“Human trafficking is a public health problem of global magnitude,” says Tania Condurache, MD, MSc, associate professor of Pediatrics, Department of Pediatrics, University of Louisville School of Medicine, Louisville, Kentucky. “Pediatric victims of exploitation are at risk for considerable physical and mental health problems that can affect them throughout their lives.”

Condurache spoke about these problems, along with the role pediatricians can play in screening for and identifying children who are victims of human trafficking and providing medical treatments for common morbidities found among these victims, during a session titled “Modern day slavery: Local and global perspectives on human trafficking” at the American Academy of Pediatrics (AAP) 2018 National Conference and Exhibition in Orlando, Florida, on November 3.

To help identify children at risk of becoming victims of human trafficking, Condurache discussed a number of factors: runaway/thrownaway and homeless youth; children within the foster care system; those with histories of abuse/neglect; those with histories of substance misuse; children with disabilities; youth in the juvenile justice system; LGBTQ youth; and refugees/immigrants/ethnically
marginalized children, especially those who don’t speak English.

For example, in the United States, she cited statistics showing that 1 in 5 teenagers run away from home; 1.3 to 2.8 million children are runaways/thrownaways or homeless; and that 1 in 3 teenagers are lured into prostitution within 48 hours of leaving home. Within 3 months of being away from home, 90% of US children will turn to sex for survival.

Other risk factors include family dysfunction, domestic violence, and financial struggles. Community risk factors include peer pressure, social isolation, gang involvement, high-crime neighborhoods, and poverty.

She also emphasized the types of human trafficking, including commercial sexual exploitation, forced marriages, forced labor, forced begging, child soldiers, selling children, and removal of organs.

Children who become victims of human trafficking face multiple physical and mental healthcare issues, including injuries, infectious diseases, malnutrition, dental problems, skin diseases, untreated chronic conditions, reproductive health problems, substance use/misuse, complex trauma, depression/anxiety, suicide, and self-injurious behaviors.

**How to identify the victims**

What is the role of pediatricians in helping these children? Condurache provided a number of red flags that can alert the clinician that a child may be a victim, including physical signs of abuse (bruises, black eyes, burns, cuts, broken bones/teeth, multiple scars); branding/tattoos; prolonged untreated infection; and poor hygiene. Among the psychologic indicators are children who are overly submissive, hypervigilant, or paranoid; those who exhibit an oversexualized demeanor and behaviors; those who are socially withdrawn attributed to fear of stigmatization; and those who lack life skills.

Important in the assessment of a such a child, Condurache said, is to first establish trust and allow the child to choose a male or female provider. She also emphasized the need to use multidisciplinary resources such as social workers and psychiatrists, and recommended contacting the National Human Trafficking Resource Center (NHTRC) hotline (888-373-7888) to get help in conducting an assessment and how to determine the next steps.

“Pediatricians are in a unique position to identify potential victims of human trafficking and employ multidisciplinary medical and nonmedical resources for their treatment and rehabilitation.”

—Tania Condurache, MD, MSc

**“Pediatricians are in a unique position to identify potential victims of human trafficking and employ multidisciplinary medical and nonmedical resources for their treatment and rehabilitation.”**

AT A GLANCE

**TRAFFICKING**

4.4 in 1000 children are victims of human trafficking globally

1 in 5 teenagers run away from home.

1.3–2.8 million children are runaways/thrownaways or homeless.

90% of US children who leave home turn to sex for survival within 3 months.

1 in 3 teenagers are lured into prostitution within 48 hours of leaving home.
Another key role for pediatricians, Condurache emphasized, is to help these children rehabilitate back to society by providing resources for services that include physical needs (clothing, housing); emotional and psychological support; and legal help and services. This process also includes advocacy to ensure these children receive the comprehensive support they need.

“Pediatricians should advocate for easily accessible, victim-centered, culturally appropriate medical homes for trafficked persons in the United States and abroad,” Condurache said. “They should also raise awareness about human trafficking among their patients and their families through anticipatory guidance and screening questions during their regular visits.”

Condurache ended her talk by providing resources for pediatricians to report suspected sexual exploitation of minors to the appropriate authorities.

**COMMENTARY**

The commercial sexual exploitation of children (CSEC) is a subset of human trafficking and a severe manifestation of sexual abuse that has become an increasingly recognized health issue. The term CSEC is defined as a minor (aged younger than 18 years) who exchanges sexual acts such as survival sex and stripping for remuneration in the form of money, shelter, drugs, or other valued entities.

Our child abuse pediatric clinic has evaluated more than 80 patients who are referred for concern of sex trafficking involvement. Many of our patients have complex medical and psychiatric needs (eg, sexually transmitted infections, suicidal ideation), and frequently present prior to the provider’s understanding their involvement. These medical visits represent opportunities for disclosure and intervention.

We found that more than one-fourth of the presenting concerns during previous medical visits were related to psychiatric issues, strengthening the association between CSEC and mental health problems. Patients seeking medical attention often are not identified because of the lack of provider awareness, and because victims infrequently self-disclose involvement and do not consistently present with evidence of CSEC engagement (eg, found trafficking by law enforcement).

We have identified risk factors that may make youth vulnerable to exploitation (eg, history of sexual abuse) and factors that are consequences of involvement (eg, physical injuries). We see indicators such as runaway behavior, substance abuse, and psychiatric illness as risk factors for and consequences of victimization.

When a patient presents with these problems, pediatricians should have a conversation about potential CSEC involvement. Pediatricians have the opportunity to begin with a general discussion, focusing on the patient’s knowledge about sex trafficking, progressively asking more questions after affirmations from the patient. This funnel approach may be effective in diminishing discomfort, shame, and guilt, thereby providing a safe environment for disclosure.

Engaging in an open, nonjudgmental conversation with youth pertaining to specific issues relevant to the patient demonstrates that the pediatrician is trusted, open-minded, and professional, with the patient’s health and safety as the priority. A medical home can then be established through follow-up visits and collaboration with other community professionals to care for the multifaceted needs of these youth.

Amy P. Goldberg, MD, FAAP, is associate professor of Pediatrics, Warren Alpert Medical School of Brown University, Lawrence A. Aubin Sr. Child Protection Center, Hasbro Children’s Hospital, Providence, Rhode Island.

**ALLERGY/IMMUNOLOGY**

**NIAID guidelines on peanuts may apply to other foods**

Recommendations for the early introduction of peanut into children’s diets might apply to other potential food allergens as well.

Mary Beth Nierengarten, MA

Currently, the only guidelines on the early introduction of foods in children to prevent food allergy is specific to peanuts. In 2017, the National Institute of Allergy and In-
fectious Diseases (NIAID) issued the Addendum Guidelines for the Prevention of Peanut Allergy in the United States that provides very specific guidelines on the early introduction of peanuts.1

The updated guidelines were changed based on the results of the Learning Early About Peanut (LEAP) allergy study, a groundbreaking trial because of its methodologic rigor and solid science, according to Michael Pistiner, MD, MMSc, FAAP, pediatric allergist and director of Food Allergy Advocacy, Education, and Prevention at MassGeneral Hospital for Children Food Allergy Center, Harvard Medical School, Boston, Massachusetts, who says that the NIAID guidelines are consistent with the findings of LEAP and were written to apply to all babies.

“This study was a good first step forward when it comes to allergy and food introduction in general,” he says. “Since then, there have been other people looking at and thinking about other food allergens, such as eggs, which seem to have a similar trend.”

However, he emphasizes that no consensus recommendations yet exist for any other food allergy introductions except for the NIAID guidelines on peanuts.

Pistiner spoke on the recommendations of the NIAID guidelines at the American Academy of Pediatrics (AAP) 2018 National Conference and Exhibition in Orlando, Florida, in a session titled “Beyond peanuts: Early introduction of foods to prevent food allergy” on November 3. His talk also provided some practical advice on how pediatricians can approach early introduction of other potential food allergens in children.

More study is needed

During his session, Pistiner explained what is known about peanut allergies (ie, the NIAID’s Addendum Guidelines) and other trends in the introduction of food allergies that as of yet have no firm consensus on timing and approach.

“All pediatricians and allergists are waiting for more hard recommendations from the NIAID [for early introduction of other potential food allergens], so until then, we use our best efforts and judgments based on the available science.”
—Michael Pistiner, MD, MMSc, FAAP

Given that the only solid recommendations come from the guidelines on peanuts, Pistiner detailed that the current NIAID Addendum Guidelines apply to all infants and are divided into 3 main groups:

1. **Children at high risk of developing a peanut allergy, defined as those with severe eczema and/or egg allergy:** These kids should be screened either by an allergist using skin testing or using peanut-specific immunoglobulin E (IgE) blood testing prior to the introduction of peanuts. The goal in these kids is to introduce peanuts at 4 to 6 months of life.

2. **Children with mild/moderate eczema:** These kids don’t need to be screened, with a goal of introducing peanuts at age 6 months at home.

3. **Kids without higher risk:** These kids can be fed peanuts when the parents/family feel it is appropriate culturally. No screening is necessary.

Pistiner emphasizes that pediatricians need to take these guidelines seriously. “Implementing these NIAID Addendum Guidelines for the Prevention of Peanut Allergy in the United States does help pediatricians approach the introduction of other foods as well,” he says. “Having a system to educate families and getting access to allergists who can answer important questions about eczema and other allergies can expedite the appropriate care of these kids and give the opportunity for early introduction of foods that go beyond peanuts that are developmentally appropriate,” he notes.

In his talk, Pistiner provided some practical advice about how to introduce these other foods by talking about what he does and some of the research trends. One tip for pediatricians and families is to make sure that the form of the food is developmentally appropriate. For example, he said to keep in mind that loose nuts and some other forms can be a choke risk. “The NIAID’s Guidelines offer easy tips to safely introduce developmentally appropriate forms of peanuts,” he told attendees.

**REFERENCE**
COMMENTARY
The presentation given by Michael Pistiner, MD, MMSc, FAAP, highlights an emerging and important area of food allergy prevention that all pediatricians need to better understand. Prior infant feeding recommendations advised that infants avoid allergenic foods such as peanuts and eggs until they were aged at least 2 years. Those recommendations were based upon expert opinion without supporting evidence.

During the past few years, new evidence reverses that prior thought process. Instead of avoiding food allergy by delaying introduction, clinical trials have now demonstrated that early introduction of peanut (and likely egg) to infants prior to 12 months of age can substantially decrease food allergy development.

New guidelines published by the National Institute of Allergy and Infectious Diseases (NIAID) in 2017 recommend active introduction of peanut to all infants prior to age 1 year, beginning around 4 to 6 months. Infants with moderate-to-severe eczema and/or existing egg allergy are at highest risk to develop peanut allergy, and guidelines recommend a peanut allergy test in this select cohort prior to introduction. All other infants should have peanut introduced into their diet without any testing. Of note, other countries including Australia and the United Kingdom do not advocate for any testing prior to introduction because of concern for limited resources, overuse of allergy testing, and potential for misinterpretation of test results.

This new information contradicts prior recommendations and long-held beliefs by parents and pediatricians. For reasons not fully understood, rates of food allergy among children have doubled over the past decade. This is our opportunity as pediatricians and allergists to halt the rise in food allergy and potentially prevent a generation of infants from developing food allergies at all.

Implementation of these guidelines will require a sustained multidisciplinary effort to help reverse firm beliefs from parents and pediatricians. In addition to education and awareness campaigns, pediatricians will need to actively discuss these recommendations with families at all well-child visits during infancy. Pediatricians will also need to maintain vigilance for infants with moderate-to-severe eczema who are at greatest risk to develop food allergy, and also the group most likely to benefit from early and sustained introduction.

Dr. Pistiner’s presentation highlights the evidence surrounding these current recommendations and the need to adopt a new approach to actively try and impact the food allergy epidemic on a population level, and provides practical tips for pediatricians to implement in their practice as soon as possible.

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COMMUNICATIONS/MEDIA
Positives and negatives of digital media for children

The intrusion of digital media into the lives of children is causing concern for parents about how best to guide use of this omnipresent technology.

MARY BETH NIERENGARTEN, MA

Over the last 10 years, digital media has evolved rapidly. In 2011, 10% of children aged younger than 2 years used mobile devices, a number that grew to 38% in 2013. By 2015, 97% of low-income children aged younger than 4 years used these devices, with 75% owning their own device.

“This rapid increase in children’s use of digital media is causing great concern for parents who question how best to guide their children in the use of this omnipresent technology.

“Digital media is a highly polarized topic in our society, especially regarding how it might be affecting children,” says Jenny Radesky, MD, FAAP, assistant professor, Developmental Behavioral Pediatrics, University of Michigan Medical School, Ann Arbor, Michigan. “Therefore, it is important that pediatric providers try to meet parents and families where they are and understand their motivations for using media and how it fits into their day.”

To help pediatricians discuss these issues with parents and children, Radesky says that it is important to talk about positive and negative effects of digital media on the developing child.
In a session titled “Digital media and children: The good, the bad, and the unknown” that Radesky presented at the American Academy of Pediatrics (AAP) 2018 National Conference and Exhibition in Orlando, Florida, on November 6, she reviewed the rapid adoption of mobile and interactive media and both the positive and negative influences on early childhood development as well as recommendations for parents to help navigate the best use of this technology with their children. In addition, she highlighted several areas that remain unknown about the effect of digital media on children. Her talk focused on children aged from birth to 8 years.

The good and the bad

Among the good aspects of digital media for children, Radesky said in her session, are apps that provide well-designed content that has been shown to improve developmental outcomes, such as content from Sesame Street, Between the Lions, and Blue’s Clues. She cited evidence from a randomized trial of Daniel Tiger’s Neighborhood, an app for preschoolers, that showed that when viewed with parents, the content improved social-emotional abilities such as the ability to calm down and control anger. She also cited the benefits of video chat that allows parents to stay connected with their children.

Her own personal favorite positive uses of digital media, she said, include skyping; learning about things you wouldn’t have access to in real life; dancing to music; making stop-motion videos; finding the right program for the right emotion; and movie night.

Radesky focused much of her talk on the bad aspects of this technology and its effect on sleep, executive functioning, parent-child interaction, and inappropriate content/design. She cited data showing that earlier introduction to digital media is linked to lower executive function and social skills; that parent-child interaction is reduced when the TV is on (this can lead to less sustained/complex play and fewer language-enriching play activities that affect vocabulary development); and poorer sleep associated with longer duration of viewing digital media because of increased arousal, with sleep particularly disturbed when children view violent content.

To this last point, Radesky emphasized the need to be aware of inappropriate content/design of many digital media. In particular, she discussed a concept called

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“[I]t is important that pediatric providers try to meet parents and families where they are and understand their motivations for using media and how it fits into their day.”
—Jenny Radesky, MD, FAAP

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**AT A GLANCE**

**DIGITAL MEDIA**

- **95%** of teens aged 13-17 report having a smartphone or access to one.¹
  - In 2012, only 41% of teens had a smartphone.²

- **45%** of teens 13 to 17 say they are online on a “near-constant” basis.¹

- **54%** of teens said if parents knew what actually happens on social media, they’d be a lot more worried about it.²

**Teens’ favorite way of communicating 2012 vs 2018³**

- **49%** in person
- **33%** texting
- **16%** social media
- **10%** video chatting

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“persuasive design” in which technology is designed to interact and manipulate human psychology. Such design offers social rewards, token rewards, and variable reinforcement that take advantage of subconscious biases to grab one’s attention and rouse emotions.

A main goal of Radesky’s talk was to help parents understand this concept of persuasive design to be able to help guide their child toward appropriate content. She says that pediatricians need to “empower the parents to avoid manipulative design that is not helping them as a parent.”

To assist parents, Radesky recommends that pediatricians talk about mobile device use if and when it occurs during the office visit (by parent or child) so that they can discuss how the interactive media is affecting attention, emotions, and thinking, and help raise awareness of how to create a better “tech-life balance” within families.

Finally, during the office visit, Radesky encourages pediatricians to provide resources to parents to help them establish a good balance with the use of digital media in their family, and provide information on the AAP Family Media Use Plan (www.healthychildren.org/English/media/Pages/default.aspx) and Common Sense Media (www.commonsensemedia.org/) websites as visual aids.

**COMMENTARY**

The rapid-fire pace at which changes have occurred regarding media in the last 25 years astounds even the most up-to-date pediatric clinician. Placed in the context of the fact that the first iPad was released in 2010, in 2011 fewer than 1% of children aged younger than 8 years owned their own tablets, and yet by 2017 nearly half—42%—of children had a tablet of their own.

This growth in any other dimension of our medical lives would be called an epidemic and panic would ensue, yet the amount of research dollars spent examining the incredible impact of media on child development pales in comparison.

In her presentation, Dr. Radesky explores both sides of the media puzzle: the positive impact on learning and exploration as well as the potential negatives of cyberbullying and digital media addiction. She also expands on the recent phenomenon of “persuasive design” in which marketing tries to attract the user to engage in more media time; for example, the “people who liked this also liked” technique. This presentation is based on the recent AAP Policy Statement on “Media and Young Minds,” which Dr. Radesky co-authored with Dimitri Christakis, MD, MPH, FAAP.

**OTOLARYNGOLOGY**

**Use guidelines to diagnose pediatric sleep apnea**

Pediatricians must evaluate various clinical guidelines to determine the best individualized treatment for sleep apnea in their patients.

MARY BETH NIERENGARTEN, MA

Sleep disordered breathing (SDB) is a common problem in children that requires accurate diagnosis and treatment to avoid its far-reaching negative impacts on the child and family. To this end, pediatricians should routinely screen their patients for significant symptoms of SDB, says Scott E. Brietzke, MD, MPH, pediatric otolaryngologist, Joe DiMaggio Children’s Hospital at Memorial, Hollywood, Florida.

This is what Brietzke and Juan C. Martinez, MD, FAAP, medical director, Division of Pediatric Pulmonology, Cystic Fibrosis, and Sleep Medicine, and director of the Pediatric Sleep Laboratory at Joe DiMaggio Children’s Hospital, Hollywood, Florida, advised attendees at the American Academy of Pediatrics (AAP) 2018 National Conference and Exhibition in Orlando, Florida, in their session titled “Pediatric sleep apnea: Evaluation and management” held on November 6.

Recent publication of 3 guidelines by 3 associations—the American Academy of Pediatrics (AAP), the American Academy of Otolaryngology–Head and Neck Surgery (AAO-HNS), and the American Academy of Sleep Medi-
cine (AASM)\(^3\)\(^4\)—attests to the importance of providing guidance to clinicians on the challenges of evaluating and managing SDB in children. Along with comparing/contrasting the 3 guidelines, the co-presenters discussed controversies in management.

Evaluate each guideline for each patient

Brietzke highlights that the guidelines differ significantly in their recommendations for similar problems. “These differences are based largely on the point of view of that specialty in its interaction with pediatric SDB patients,” he says.

To help pediatricians navigate these differences in their clinical assessment and management of a child with potential SDB, Brietzke says “it is instructive and useful to compare/contrast the different guidelines to optimize the overall management of pediatric SDB patients.”

One of the controversies highlighted by Brietzke is how to identify which children should undergo sleep studies. Although overnight polysomnography (PSG) is the gold standard for assessing pediatric SDB, he emphasizes that the study has limitations and does not always capture well some negative aspects of SBD.

“Overnight PSG is a limited resource and should be used judiciously where it can make a real impact on the management of the patient,” he says.

Brietzke also stresses that pediatric SDB is more than just the Apnea-Hypopnea Index (AHI) measured on an overnight PSG. “Mild forms of SDB including snoring and mild obstructive sleep apnea based on PSG may still have a significant negative impact on the patient and should not be discounted,” he says.

Overall, the session was devoted to ensuring that pediatricians appreciate the varied viewpoints offered by the 3 different pediatric SDB guidelines so that they have a better understanding of the optimal management of SDB in their patients.

“This can particularly be useful in developing a more pragmatic, judicious use of overnight PSG as well as considering the medical versus surgical management of pediatric SDB patients,” Brietzke says.

FOR REFERENCES VISIT CONTEMPORARYPEDIATRICS.COM/AAP-2018-SLEEP-APNEA

COMMENTARY

This year the AAP’s National Conference and Exposition featured experts in Pediatric Sleep Medicine who discussed updates and multiple guidelines for the diagnosis and treatment of obstructive sleep apnea (OSA) in children. The technical and resource challenges, as well as the presence of multiple guidelines, often leave pediatricians struggling to choose the best approach for their patient. Drs. Brietzke and Martinez offered a special session that highlighted strategies to differentiate and navigate the guidelines to individualize the best options for your patient.

Good quality sleep is essential for children. It plays an important role in growth, brain development, and behavior. Obstructive sleep apnea results in poor quality sleep and is defined (ERS 2017) as a syndrome of upper airway dysfunction during sleep.\(^1\) It is characterized by snoring and/or increased respiratory effort secondary to increased upper airway resistance and pharyngeal collapsibility.

In the general population, prevalence rates of OSA in children range between 1% to 5%. However, with additional awareness and the advent of the obesity epidemic, more children are being screened and diagnosed with OSA.

The AAP recommends an attended in-laboratory polysomnogram or sleep study as the gold standard for diagnosis. A sleep study is a multichannel recording that monitors physiologic parameters during sleep.

WHO IS AT RISK?

- **CHILDREN WITH LARGE ADENOIDS AND/OR TONSILS:** These conditions are a common cause of OSA in otherwise healthy children.
- **CHILDREN WITH OBESITY/OVERWEIGHT:** In young obese preschoolers referred for sleep evaluation, prevalence of OSA is reported at 36.3%. Affected children were sleepier than those without OSA in this age group—an important factor during this critical phase of neurocognitive development.

  Obesity and overweight in children aged younger than 5 years continues to rise, increasing in number by about 10 million since 1990. Current estimates of obesity and overweight in this age group approximate 40 million worldwide!

  Obstructive sleep apnea is also more prevalent in obese adolescents, with rates of 25%—a 4- to 5-fold increase compared with nonobese teenagers.

- **OTHER CHILDREN AT RISK:** Those with neuromuscular disease, craniofacial dysmorphology, and children with genetic syndromes such as trisomy 21, Prader-Willi syndrome, and Beckwith-Wiedemann syndrome also are at increased risk for OSA.
Sleep studies are expensive and resources limited, especially in pediatrics. These studies are both time and labor intensive. There are limited numbers of pediatric sleep labs that can offer family-friendly resources with pediatric-trained sleep physicians, technicians, equipment, and an environment where children can be safely studied. Staffing requirements may be higher and must be appropriate to the special needs and age of each individual child. Given the rising need to study infants and children at risk for OSA, resource allocation is a priority.

In infants and young children, untreated OSA is associated with growth delay. In addition, brief, resolved, unexplained events (BRUEs) and apparent life-threatening events (ALTEs) have been reported. Young children with OSA are more likely to have daytime sleepiness, similar to adults with OSA, whereas hyperactivity is more common in school-aged children along with reports of poor school performance, memory, and focus. Poor quality of life is frequently reported. Cardiovascular complications can include systemic hypertension and, in severe cases, cor pulmonale. Long-term sequelae of these complications are well known.

Lastly, a recent study of healthcare utilization in pediatric OSA demonstrated higher healthcare utilization at least 2 years before treatment, suggesting that sleep disordered breathing may have been present before clinical concern about the diagnosis was recognized. Following treatment, healthcare utilization decreased. However, it remained higher in children with OSA when compared with controls.

Obstructive sleep apnea is about more than just snoring. It is a multisystem disease that often requires a multispecialty team approach. Early identification can result in early diagnosis and treatment and may avoid the negative consequences described in untreated OSA. Heightened awareness to the problems and consequences of OSA will help pediatricians to screen for OSA and to make appropriate referrals.

Mary Cataletto, MD, FAAP, is professor of Clinical Pediatrics, School of Medicine, Stony Brook University, Stony Brook, New York, and associate director, Pediatric Sleep Medicine, NYU Winthrop Hospital, Mineola, New York.

REFERENCE

SUBSTANCE USE

Talk with teens about performance-enhancing substances

To help student athletes perform at their best, emphasize balanced nutrition and conditioning, discourage supplements and stimulants.

MARY BETH NIERENGARTEN, MA

“If you get the basics down, the tricks have very little incremental gain,” says Bernard Griesemer, MD, FAAP, adjunct clinical faculty, Department of Sports Medicine and Athletic Training, Missouri State University, Springfield, Missouri, “and if you don’t get the basics down, the tricks provide only incremental gain.”

This is the key message that Griesemer wants pediatricians to know about the escalating use of performance-enhancing substances (PES) by student athletes. Speaking in a session titled “Performance-enhancing substances in teens: The cost of superpowers” at the American Academy of Pediatrics (AAP) 2018 National Conference and Exhibition in Orlando, Florida, on November 4, Griesemer emphasized the need to return to the basics to ensure safe and effective ways for student athletes to perform at their best. In his talk, he also discussed the adverse effects of PES in children and highlighted the need for pediatricians to educate both parents and athletes on the lack of clear and strong evidence of these drugs.

Basics are best

Dividing his session into 3 parts, Griesemer first spoke on the importance of the basic ergogenic aids for young athletes, including pre- and post-event meal planning,
adequate training, conditioning, and training relative to a student’s physiologic maturity based on the Tanner score. Underlying these basics are a balanced diet and fluid management, particularly the need for good hydration prior to, during, and after an event.

Using these guidelines, Griesemer said becoming a student athlete is pretty basic. “Practice, practice, practice,” he advised, and “eat a good breakfast.”

He suggested that pediatricians ask parents and kids a few basic questions to help guide the conversation about the needs for basic conditioning and training, such as: “What sport are you playing?”; “How old are you?”; “How physically mature are you?”; “What position do you play?”; and, “How long are you playing?”

**Adverse effects of PES**

During the second part of his talk, Griesemer focused on the growing use of PES by student athletes, including dietary supplements such as energy drinks, creatine, protein and amino acid supplements, multivitamins, and methylphenidate. He also discussed the growing use of methamphetamine, human growth hormone, and anabolic androgenic steroids.

For example, Griesemer said that the use of anabolic androgenic steroids has increased substantially, and that within the population of children who use these drugs, 75% are not using them for athletic performance but for aesthetics. He emphasized the danger of these drugs, particularly if given during a child’s growth spurt. “If these kids get something laced with anabolic steroid in it inadvertently, it will stunt their growth rate,” he said.

“So, some of this stuff is now appropriate to general pediatricians who are not even dealing with athletics and the athletic population,” he said. “It’s just the general population of kids and it is getting younger down to the middle school years.”

Given the escalating use of PES, Griesemer emphasized the need for pediatricians to talk directly and candidly to parents and their children. “They should spend most of the time telling kids and parents what works,” he said, “and emphasize the lack of quality control of the performance-enhancing products.”

Griesemer added that anytime a child or parent comes in with a PES or a question about one, the only ethical answer a pediatrician can give is “I don’t know.”

In the third part of his talk, Griesemer discussed what is on the horizon in terms of newer PES and the emergence of selective androgen receptor modulators (SARMs) and genetic engineering. “These are what worry us about the next group of athletes coming through,” he said.

The main message of Griesemer’s talk was a return to his opening statements. “Sticking to the basics is the biggest bang for the littlest buck,” he said. “These other PES are not reasonable. They offer very little incremental gain.”

**COMMENTARY**

Dr. Griesemer highlights several important shifts in adolescent use of performance-enhancing substances (PES), and we need to broaden our understanding of “performance enhancement.” Traditionally, this term has been used to describe substance use for the purpose of improving sport performance, and we have focused our education efforts on young athletes. However, recent data suggest that many nonathletes are using PES for purposes completely unrelated to sport.

The concept of “performance enhancement” now encompasses attempts to improve cognitive or academic performance, which typically involves use of over-the-counter stimulants or diversion of stimulants prescribed for attention-deficit/hyperactivity disorder (ADHD). A 2013 analysis of national data from high school seniors found that almost 10% admitted to nonmedical use of prescription stimulants.

In addition, much PES use is driven by efforts to improve appearance, which reaches far beyond the athletic population. Stimulants and other substances marketed as “thermogenic aids” are often used in attempts at weight loss. Efforts at building muscle mass may involve use of sports supplements such as creatine, or illicit drugs such as anabolic steroids or human growth hormone (HGH). Terminology is evolving to reflect this pattern, and the term “appearance and performance-enhancing substances” (APES) is finding its way into common parlance.

Although the pattern of adolescent PES use appears to be changing, the results of PES use are as ineffective as ever. Studies looking at “best-case scenarios” of PES impact on sports performance show gains that are trivial compared with those that are seen with normal growth and development.

—Michele LaBotz, MD, FAAP
not enhance academic success. Given this lack of benefit, pediatricians need to emphasize to their patients that efforts at appearance and performance enhancement through use of illegal drugs (such as HGH or anabolic steroids) or of dietary supplements (from an industry where 70% of supplement manufacturers were not compliant with generally recognized good manufacturing processes, as found in a 2013 study) are not worth it, and will not increase the likelihood of the desired result.

— Michele LaBotz, MD, FAAP, is clinical assistant professor, Tufts University School of Medicine, Boston, Massachusetts, and member, Council on Sports Medicine and Fitness, American Academy of Pediatrics.

SPORTS MEDICINE

Physical literacy: New paradigm for fighting physical inactivity

A generation of inactive children is headed toward a lifetime of preventable pathologies unless clinicians enact a fundamental shift in attitudes toward exercise and physical activity.

CHERYL GUTTMAN KRADER

Current guidelines on physical activity for children and adolescents recommend accumulating at least 60 minutes of moderate to vigorous physical activity (MVPA) daily. The majority of children and adolescents, however, are not meeting this goal.

Furthermore, efforts to spark an ongoing interest in active play, outdoor games, and sport activities are falling short of expectations. In addition, school districts are considering physical education an expendable curriculum component, and parents are chauffeuring their kids everywhere.

Collectively, these issues have resulted in a generation of boys and girls who are weaker, slower, and heavier than previous generations, and who also are at long-term risk for a lifetime of preventable pathology, said Avery Faigenbaum, EdD, FACSM, FNSCA, in a session titled “Promoting physical literacy to combat physical inactivity” at the American Academy of Pediatrics (AAP) 2018 National Conference and Exhibition in Orlando, Florida, on November 4. Faigenbaum discussed physical literacy as a new conceptual approach to overcoming the growing problem and consequences of physical inactivity.

“The World Health Organization now recognizes physical inactivity as the fourth leading risk factor for mortality from noncommunicable diseases, and the economic costs associated with physical inactivity are staggering. A change in current attitudes and pediatric healthcare practices is urgently needed because our current strategies are suboptimal,” says Faigenbaum, professor of Pediatric Exercise Science, Department of Health and Exercise Science, College of New Jersey, Ewing, New Jersey.

“Yet we remain stuck in the mindset that is grounded in guidelines that focus solely on accumulation of at least 60 minutes of MVPA daily,” Faigenbaum says. “Simply asking boys and girls to ‘walk to school’ or ‘play sports’ is not enough. We need to expand our conceptual approach to combat physical inactivity so we are better prepared to identify and treat youth who are physically inactive before they proceed too far down the path to chronic disease.”

Physical literacy defined

Faigenbaum explains that the term “physical literacy” refers to attributes and behaviors that influence physical activity throughout the life course. Young persons who are physically literate value human movement, understand the importance of physical activity, and participate in a variety of exercise and sport activities with energy and enthusiasm.

“Importantly, literacy in the physical sense is not just about participating in daily bouts of MVPA. It is also about moving proficiently in a variety of physical activities with confidence, competence, and enthusiasm because when children are equipped with those characteristics, it is more likely they will participate in the recommended amount of MVPA,” Faigenbaum says.
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The pediatrician's role
Efforts to enhance physical literacy should start early in life and focus on developing and reinforcing fundamental movement skills in a supportive environment. Whereas active free play is important, regular exposure to different exercise and sport activities with qualified instruction is needed to enhance physical literacy and facilitate ongoing participation in a variety of physical activities in different settings, Faigenbaum suggests.

Pediatricians have a role in educating patients and their families about the benefits of an active lifestyle and educating, guiding, and encouraging patients to attain a high level of physical literacy. Specific strategies to enhance physical literacy in youth include teaching movement skills, monitoring progress, inspiring innovation, teaching cooperative play, and having fun.

When faced with an inactive patient, pediatricians should consider providing a referral to a qualified youth fitness professional who can spark an ongoing interest in active games and sport activities while enhancing physical literacy, Faigenbaum says.

“\textit{It is never too early to establish a positive attitude to physical activity and thus facilitate the development of physical literacy.}”
—Margaret Whitehead, PhD

COMMENTARY
Dr. Avery Faigenbaum's views in his presentation “Promoting physical literacy to combat physical inactivity” are both timely and important for pediatricians who can play a very significant part in counseling parents about the central role of physical activity in the life of young children.

It would seem to be the case that previous efforts to promote activity either through the lens of physical fitness and disease prevention or from the perspective of cultivating high-level performance have not been successful. Dr. Faigenbaum’s focus on valuing physical activity and, as a result, participating in a range of activities with energy and enthusiasm sows the seeds of a different approach.

Key to participation, as set out in texts on physical literacy, is the importance of personally meaningful and rewarding experiences in physical activity. These experiences should foster the self-respect and self-confidence that provide a sound basis for developing a genuine motivation to continue in participation. Positive experiences that are personally meaningful lead the participant to value physical activity.

Physical literacy is grounded in a monist approach to human nature and takes up many tenets of existentialism and phenomenology. The definition of physical literacy describes the concept as a human disposition in which the individual has the motivation, confidence, physical competence, knowledge, and understanding to value and take responsibility for engaging in physical activities for life.

PHYSICAL INACTIVITY AT A GLANCE

Only 1 in 3 US children are physically active every day.\(^2\)

Number of hours a day US children now spend more in front of a screen\(^1\) (eg, TV, videogames, computer).

Provide daily physical education for all students.\(^3\)

As Dr. Faigenbaum suggests, strategies that foster this commitment need to be identified and enacted. Significant here are approaches that:
- Boost self-belief and motivation;
- Employ differentiation to meet the needs of individuals;
- Involve participants in a range of activities with sufficient time to master particular physical challenges;
- Devolve some responsibility to participants; and
- Chart an individual’s progress without comparison with others.

Physical literacy is relevant and valid to all throughout life. However, early involvement in physical activity is very important to lay the ground for future participation. There is a temptation, in the interests of safety, for parents to ring-fence physical activity in preschool-aged children. This is regrettable as these young children need time and space to foster physical competence and establish confidence in this field. Moreover, writers such as Sally Goddard Blythe, MSc, identify the role of movement in all-round human development. Active children use movement to explore the world, find out about their human potential, and develop self-assurance.

It is never too early to establish a positive attitude to physical activity and thus facilitate the development of physical literacy. There is little doubt that a lifelong commitment to physical activity can make a positive contribution to human flourishing.

—Margaret Whitehead, PhD, visiting professor, University of Bedfordshire, Luton, United Kingdom.

ADOLESCENT HEALTH

Jump in STIs among teens raises red flags

Pediatricians should intensify screening for sexually transmitted infections (STIs) among all adolescent patients, whether or not they self-report being sexually active.

CHERYL GUTTMAN KRADER

Rates of sexually transmitted infections (STIs) among adolescents and teenagers are continuing to increase. As frontline providers for this population, pediatricians have the opportunity and responsibility for addressing the growing epidemic, said Diane Straub, MD, MPH, FAAP, at the American Academy of Pediatrics (AAP) 2018 National Conference and Exhibition in Orlando, Florida.

In a session titled “Recognizing and managing sexually transmitted diseases in adolescents” on Saturday, November 3, Straub described trends in STI epidemiology and reviewed current guidelines for screening, treatment, and prevention.

“Adolescents and teens with signs and symptoms of STIs are more likely to be seeking care from their pediatricians than at STI or Department of Health clinics,” said Straub, professor of Pediatrics and division chief, College of Medicine Pediatrics, University of South Florida, Tampa, Florida.

“It is important that pediatricians ask patients about sexual activity, provide high-intensity prevention counseling at all clinical visits to sexually active patients, and follow guideline recommendations for screening, testing, and treatment,” she said.

Available data indicate that among adolescents and teenagers, the incidence and prevalence rates are rising for all STIs and particularly for chlamydia, gonorrhea, and syphilis. “Considering Youth Risk Behavior Survey data on sexual activity rates, the trend does not seem to be explained by an increase in sexual activity in this age group. Rather, it may be related to a lack of condom use,” Straub said.

“If pediatricians are not following guidelines about high-intensity prevention counseling and do not do appropriate screening and testing for STIs, STI rates will continue to go up.” —Diane Straub, MD, MPH, FAAP

“If [we] are not following guidelines about high-intensity prevention counseling and do not do appropriate screening and testing for STIs, STI rates will continue to go up.” —Diane Straub, MD, MPH, FAAP
ing and treating asymptomatic males would likely decrease rates in females. For human immunodeficiency virus (HIV), it is recommended that routine screening be performed for all individuals aged 13 to 64 years in all healthcare settings. The frequency of follow-up screening should be determined by risk, she said.

Discussing STI treatment, Straub highlighted the issue of increasing resistance of gonorrhea to standard antibiotics. Consequently, the current recommendation is to use combination therapy including intramuscular ceftriaxone and either oral azithromycin or doxycycline. Straub also emphasized the need for partner treatment. Although this varies by STI, in general all partners in the past 60 days or the most recent partner should be evaluated for STIs and presumptively treated for the specific STI.

Straub also reviewed Expedited Partner Therapy (EPT), a strategy that aims to facilitate treatment for sex partners of a patient diagnosed with chlamydia or gonorrhea. In EPT, the index patient is given prescriptions or medications to give to his or her partner(s).

“Optimally, partners would be evaluated clinically in a healthcare setting, particularly young men who have sex with men, but that is challenging considering partners might not have access to healthcare or at least not in a setting where they would feel comfortable coming to be evaluated for an STI,” Straub said.

“EPT aims to overcome that obstacle, and there is good evidence to support that it should be considered in situations where you think the partner(s) will not be treated. However, pediatricians should know their state laws on cases where you think the partner(s) will not be treated. They would feel comfortable coming to be evaluated for an STI,” Straub said.

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“EPT aims to overcome that obstacle, and there is good evidence to support that it should be considered in situations where you think the partner(s) will not be treated. However, pediatricians should know their state laws on cases where you think the partner(s) will not be treated. They would feel comfortable coming to be evaluated for an STI,” Straub said.

Medications should be accompanied by treatment instructions, appropriate warnings (eg, allergy, pregnancy), general health education on STIs, and a recommendation to pursue personal medical evaluation, particularly women with symptoms of pelvic inflammatory disease. Straub also pointed out that the newest recommendation for intramuscular injection for gonorrhea complicates this process, so providers should weigh the likelihood of partners obtaining treatment and consider using alternative oral therapy for treatment, particularly for the heterosexual partner(s) of the index patient.

**COMMENTARY**

Sexually transmitted infections (STIs) in adolescents continue to be a serious public health problem. As described by Dr. Diane Straub in a session titled “Recognizing and managing sexually transmitted diseases in adolescents” at the AAP 2018 National Conference and Exhibition, there is evidence that the rates of STIs are increasing among adolescents.

During her presentation, Dr. Straub made several salient points. One is that asymptomatic adolescents often are not diagnosed and treated at health department STI clinics, but rather by their pediatrician. Thus, pediatricians have an opportunity to identify not only symptomatic infections, but asymptomatic infections as well. This would require intensifying screening of adolescents.

Screening only adolescents who self-report being sexually experienced runs the risk of missing many adolescents who truly are sexually experienced but report otherwise. Adolescents’ self-report of sexual risk behavior is notoriously inaccurate, with a bias to underreport sexual risk-taking behavior (eg, frequency of noncondom sex and number of sex partners).

Conducting an annual biological screen for STIs is one strategy for capturing the great portion of the STI iceberg—the hidden portion that is not likely to be observed on a clinical exam. Including STI biological screening during annual examinations for school would help normalize STI screening by reducing any associated stigma. It can utilize recent advances in noninvasive strategies for the most prevalent STIs and provide an opportunity for pediatricians to engage adolescents in a discussion about healthy sex and STI preventive behaviors.

Although there are guideline recommendations for STI screening, testing, and treatment, it is critical that these guidelines be adopted and utilized. As already noted, asking adolescents whether they are sexually experienced is not likely to lead to an accurate response. Quite to the contrary, it is likely to lead to a self-report bias, severely underestimating the proportion of adolescents who have had sex. Thus, while pediatricians can test for STIs as recommended, a negative test result should not be interpreted to mean that the adolescent is not engaging in sex.

Sexual health counseling needs to start early, before adolescents make the decision to become sexually active. As Dr. Straub points out, lack of condom use may account for increasing STI rates among adolescents. If that is true, then pediatricians are well positioned to provide intensive sexual health promotion counseling. Whether an adolescent is sexu-
ally active or purports to not be sexually active, preventive counseling should be implemented early and often as adolescents age. Providing preventive counseling is more likely to be effective when implemented prior to adolescents’ engaging in sexual risk situations.

In an era when an STI or HIV can result in lifelong infection and potentially death, we need a more aggressive strategy—one that is systematic, coordinated, and clearly articulated. Pediatricians are on the front lines in the war on STIs. Although they have the basic tools, pediatricians may benefit from increasing their knowledge about preventive counseling and behavior change strategies for motivating adolescents to adopt and sustain use of condoms during sex, as well as from training to hone their implementation skills. In sum, we need the pediatric equivalent of a full-court press or we run the risk of an expanding STI epidemic among adolescents.

—Ralph J. DiClemente, PhD, is professor and chair of the Department of Social and Behavioral Sciences and associate dean of Public Health Innovation at the College of Global Public Health, New York University (NYU), New York, New York. He is also an affiliated scientist at the NYU Center for Drug Use and HIV/HCV Research.

MENTAL HEALTH

How to identify warning signs in suicidal youth

Pediatricians are in a unique position to identify risk factors for suicide and provide anticipatory guidance and interventions to patients and families.

CHERYL GUTTMAN KRADER

The rate of youth suicide has been rising yearly for more than a decade. By recognizing individuals at risk and providing anticipatory guidance, interventions, and referrals, pediatricians are well positioned to help reverse this trend, said Michael A. Shapiro, MD, at the American Academy of Pediatrics (AAP) 2018 National Conference and Exhibition in Orlando, Florida.

Shapiro is assistant professor, Department of Psychiatry, University of Florida (UF), and clinical director, UF Health Child Psychiatry and Psychology Clinic-Springhill, Gainesville, Florida. He formerly was medical director of the Adolescent Inpatient Unit at UF Health Shands Psychiatric Hospital, Gainesville.

On November 3, in a session titled “Suicide risk in youth,” Shapiro discussed the scope of the problem of youth suicide, outlined ways to identify those at risk, and provided advice on effective communication style and acute management.

“Pediatricians are not expected to fill the role of a child psychiatrist or psychologist, but they need to know which youth are at risk, when to refer to a mental health specialist, and how to talk to kids and parents about suicide. Pediatricians are usually the first health professional that a depressed or suicidal youth will confide in,” says Shapiro.

Recognizing risk factors

The increasing rate of suicide in the pediatric population is occurring across all demographic groups, but it has been increasing particularly in the black community and in the 10- to 14-year-old age group. Certain social history findings are also associated with increased risk, including homelessness; being in child welfare, foster care, or juvenile justice systems; being a victim of abuse or bullying; and identifying as a gender/sexual minority (LGBTQ).

“Low connectedness with parents or poor family interaction is a common theme in these risk groups and something to watch for,” Shapiro says.

He notes that having a parent with depression is also a significant risk factor that should be explored but something that pediatricians might not think to ask about.

In addition, Shapiro emphasizes that professionals may have to treat suicide and nonsuicidal self-injury (NSSI) as unique problems in addition to depression. “Although there are some shared risk factors, suicide and NSSI appear to have distinct risk factors, and some cases of suicide occur outside of depression,” Shapiro says.
Screening and management

Clinicians can screen patients for suicide risk by asking a series of questions that become more intrusive with each affirmative response. To start the questioning, older children can be asked, “Do you ever get so upset that you wish you were dead?” Because younger children may not know what “dead” means, they should be asked instead about wishing they could disappear or go away. Positive responses can lead to further questions. “Pediatricians should not worry that asking questions to screen for suicide will lead to suicide thoughts or attempts,” Shapiro points out.

In his session, Shapiro also discussed the utilization of evidence-based suicide risk assessment tools, including the Columbia Suicide Severity Rating Scale (C-SSRS) that can be downloaded for no cost online (http://cssrs.columbia.edu).

In addition, Shapiro reviewed elements to include in a safety plan that suicidal youth and their families can use in the event of a suicidal crisis. He cautioned not to ask patients to enter into a “no-harm” contract. “No-harm contracts do not work and might hinder the individual’s willingness to share concerns should he or she have a problem in the future,” Shapiro cautions. “Prescribing an antidepressant medication is also not a solution for acute management of suicide risk,” he says.

COMMENTARY

Suicide rates in children and adolescents have increased over the last decade. Particularly concerning are recent increases in 10- to 14-year-olds. As many suicidal youth are not seen by mental health professionals, pediatricians often are the first line for identification and management of at-risk patients. Therefore, it is essential that pediatricians are informed about the potential risk factors and management strategies for young persons at risk for suicide.

In his session “Suicide risk in youth” at the AAP’s 2018 National Conference, Dr. Michael Shapiro details the role of the pediatrician in suicide prevention. One key message is the importance of screening. As Dr. Shapiro states, there is no evidence that asking about suicide will lead to thoughts about suicide. In fact, in interviews with children with and without psychiatric diagnoses, youth overwhelming
support screening in non-psychiatric settings.

Many adolescents seen by pediatricians will know someone with a mental health concern even if they do not experience symptoms themselves. Screening by a pediatrician can be one method of normalizing discussions on mental illness and suicide risk to reduce stigma.

As mentioned by Dr. Shapiro, the Columbia-Suicide Severity Rating Scale (C-SSRS) is one method of screening. The Ask Suicide-Screening Questions (ASQ) Toolkit, which was developed at the National Institute of Mental Health (NIMH), is publicly available (www.nimh.nih.gov/labs-at-nimh/asq-toolkit-materials/index.shtml) for professionals in medical settings who want to screen for suicide risk. Helpful resources for following up on positive responses to screening items are also available on the same online site.

Suicide prevention is not limited to only psychiatrists and psychologists and requires everyone in the healthcare system—pediatricians, nurses, social workers, and mental health professionals alike—working together to help at-risk youth.

— Elizabeth Ballard, PhD, is a clinical psychologist and director of Psychology and Behavior Research and also director of Predoctoral Training in the Experimental Therapeutics and Pathophysiology Branch of the Intramural Program at the National Institute of Mental Health (NIMH), Bethesda, Maryland.

**RHEUMATOLOGY**

**Carefully monitor patients on biologic response modifiers**

Be vigilant for infectious complications in children who are prescribed biologic response modifiers for various immune-mediated diseases.

CHERYL GUTTMAN KRADER

Biologic response modifiers (BRMs) are a growing part of the armamentarium for rheumatologists and subspecialists who treat immune-mediated diseases. The increased use of these agents extends into the pediatric population where they are most commonly used for the management of inflammatory bowel disease and juvenile idiopathic arthritis.

Although it is unlikely that pediatricians will be prescribing a BRM, it is important for them to understand the complications associated with BRM therapy because as frontline providers, pediatricians have an important role in helping to manage risk, said H. Dele Davies, MD, MS, MHCM, FAAP, at the American Academy of Pediatrics (AAP) 2018 National Conference and Exhibition, Orlando, Florida.

A discussion of infectious complications associated with BRMs was a focus of his session titled “Biologic response modifiers: What they are and why you should know.” The session took place on Monday, November 5.

“Children who will be started on a BRM need to be carefully evaluated prior to initiation using a thorough history and appropriate screening tests to determine their level of risk and to guide decisions about ongoing follow-up and care,” says Davies, professor of Pediatric Infectious Diseases and Public Health, College of Medicine, University of Nebraska Medical Center, Omaha, Nebraska.

Davies says there is an increased risk for any type of infection in children on a BRM and that the risk for different types of infections varies across the different classes of BRMs. Most importantly, there is an increased risk for the development or reactivation of serious infections caused by *Mycobacterium* spp., certain viruses, and fungi. Mycobacterial infections can be caused by both *M. tuberculosis* and nontuberculous strains. The most common viral infections that occur in children on BRMs include herpes simplex virus, varicella-zoster virus, Epstein-Barr virus, and hepatitis B.

**Importance of vaccination**

Immunizations are an important component of the strategy to prevent infectious complications in children on a BRM. It is recommended that children continue to receive all inactivated and subunit vaccines per the routine immunization schedule. If the child has not yet started a BRM, Davies says, “It is important to be
aware that live vaccines should be given at least 4 weeks before starting on a BRM and never to a child who is on a BRM without first consulting with an infectious diseases specialist.”

Also, before starting on a BRM, all children should be screened for tuberculosis (TB) and other opportunistic infections when appropriate. Depending on the child’s age, the screening for TB should be done using either the tuberculin skin test or with the interferon-gamma release assay. In addition, the possibility of endemic fungal infections (ie, Coccidioides, Histoplasma, and Cryptococcus) should be considered based on geographic region or residence or a travel history.

In maintaining vigilance for infections in patients on BRMs, pediatricians need to recognize that atypical presentations are more likely in immunosuppressed individuals. For example, the risk of extrapulmonary tuberculosis is increased in immunosuppressed patients compared with nonimmunosuppressed hosts.

“Be aware of this difference when you are doing your evaluation and workup in a child on a BRM. For example, TB in this population is more likely to be extrapulmonary,” Davies says.

Davies also points out that children being treated with a BRM are often receiving concomitant therapy with another immunosuppressive agent, such as a corticosteroid or methotrexate.

“The recommendations for evaluation, immunization, and management for these children are no different than for patients on a BRM alone other than the need to have an even higher level of alertness to infectious complications because of their elevated risk,” Davies says.

COMMENTARY

Indications for biologic response modifiers (BRMs) continue to expand, and these agents are being used to treat immune-mediated diseases in an increasing number of children. The BRMs have been an exponential advance in the management of diseases that have historically been a cause of significant morbidity and even mortality. With any treatment, however, benefit is accompanied by potential risk, and BRMs are no exception to this rule.

Treatment with BRMs in pediatric patients is managed by various subspecialists, including allergists, dermatologists, gastroenterologists, neuroimmunologists, and rheumatologists. As primary care providers, however, pediatricians should know the unwanted consequences associated with these agents so that they can best manage risk and enable children to safely remain on what represents highly effective therapy. In his session “Biologic response modifiers: What they are and why you should know” at the AAP’s 2018 National Conference, Dr. H. Dele Davies discussed the important topic of BRM-related risk and provided specific guidelines for patient care.

Biologic response modifiers manipulate the immune response in specific ways, which vary depending on the agent used, and these effects have implications for susceptibility to infection as well as host response to infection and vaccines. As reviewed by Dr. Davies, it is important for pediatricians to have a lower threshold to evaluate symptomatic patients for infectious causes and be aware that atypical presentations are more likely in immunocompromised hosts.

Dr. Davies also discussed the need to screen patients for tuberculosis and for opportunistic fungal infections when appropriate based on geographic area of residence. He gave important recommendations for vaccinations, including timing of administration relative to BRM initiation; immunization with vaccines that are not part of a routine protocol (eg, the 23-valent pneumococcal vaccine); and avoidance of live vaccines for patients on BRMs.

Dr. Davies made the critical point that the immune status of children who are on a BRM may be even further compromised secondary to concomitant treatment with another immunosuppressive medication. Adding to his caution, it should be emphasized that children with an autoimmune condition should be considered immunocompromised even in the absence of their receiving immunosuppressive therapy.

—Fatma Dedeoglu, MD, is director, Autoinflammatory Clinic, Rheumatology Program/Division of Immunology, Department of Medicine, Boston Children’s Hospital, and assistant professor of Pediatrics, Harvard Medical School, Boston, Massachusetts.
NEUROLOGY

Sleep management is crucial for infants and young children

Pediatricians can uncover important health problems by asking parents a few simple questions about their child’s sleep habits and behaviors.

CHERYL GUTTMAN KRADER

Sleep has important implications for health and development in children. Therefore, it is essential that pediatricians know the features of normal, safe, and healthy sleep, ask about children’s sleep habits, and provide guidance to address existing problems.

At the American Academy of Pediatrics (AAP) 2018 National Conference and Exhibition in Orlando, Florida, Renée Shellhaas, MD, MS, FAAP, discussed the risks associated with abnormal sleep, safe sleep policies, and the detection and management of common sleep issues in infants and young children. The informative session titled “Rock-a-bye baby: Basic sleep management” took place on November 3.

“Sleep is a topic that is not well covered in most residency training programs,” says Shellhaas, clinical associate professor of Pediatrics, University of Michigan, Ann Arbor, Michigan, “but being knowledgeable about sleep is important for pediatricians because it will enable the discovery and management of sleep problems. In our practices, we need to ask about sleep and to teach parents about safe and healthy sleep.”

Sleep affects children’s health

Shellhaas reviewed research showing that sleep problems have deleterious consequences for children of all ages. Studies in premature infants show that sleep-wake cycling is a marker of brain function, and that babies with normal sleep-wake cycling have better development than those with abnormal sleep physiology.

Other research demonstrates that infants with parent-reported snoring are likely to have worse cognitive and behavioral scores later in life compared with infants who are not snorers. Frequent awakening during the night among infants and toddlers also has been shown to be associated with lower development scores. In young children, short sleep duration is associated with increased risk for obesity, Shellhaas points out.

In her session, Shellhaas also highlighted that abnormal sleep is particularly common and potentially even more negatively impactful in children with certain diagnoses. For example, trisomy 21, cerebral palsy, and myelomeningocele all are associated with an increased risk for sleep-disordered breathing.

“In children with these disorders, pediatricians can uncover an important health problem by asking a few simple questions about sleep,” she says. “Make it routine during the well-child exam to ask about snoring and pauses in breathing, and if these problems are present, refer the child for a sleep study.”

Safe sleep for babies

Shellhaas also reviewed current recommendations regarding safe sleep for babies that advocate placing children alone in a crib in a supine position. She notes, however, that the AAP recommendation that babies should sleep in the same room as the parents for the first months of life can jeopardize adherence to these recommendations because infants who sleep in the same room as their parents are more likely to end up bedsharing.

“Furthermore, it is known that sleep consolidation is poorer when infants do not sleep alone in a separate room,” Shellhaas says.

Although it is important to counsel all families about safe sleep, pediatricians should know that racial/ethnic minorities and people with a lower education level are less likely to follow safe sleep guidelines.

“There are also some interesting data showing that parents are more likely to position their baby prone—on the belly—if the child was positioned on his or her side when laid to sleep by staff in the hospital after birth. It is important that safe sleep be modelled to parents from the beginning,” Shellhaas says.

Pediatricians are well positioned to advise families about behavioral sleep interventions for infants and
young children. Serving in this role, it is important that clinicians know there is evidence-based research showing that “cry it out” and graduated extinction methods are effective and do not have long-term adverse psychologic consequences for the child.

“Familiarity with the available data in this area will allow pediatricians to talk confidently and accurately with families about sleep behavior training,” Shellhaas says.

**COMMENTARY**

Evidence clearly shows that normal and sufficient sleep is critical for healthy child development and family well-being. Considering the importance of safe and healthy sleep, information presented by Dr. Renée Shellhaas in the session “Rock-a-bye baby: Basic sleep management” has great value for pediatricians.

Shellhaas covered a range of important topics. Her review of safe sleep recommendations included helpful insights on families who might be targeted for more intensive counseling to achieve adherence with current guidelines. Discussion of strategies to promote evidence-based detection and management of common sleep difficulties also was included. As frontline providers, pediatricians have an essential role identifying affected children and providing intervention or referral as appropriate.

Although many pediatricians generally ask about sleep duration and habits, other areas are less frequently addressed. Obstructive sleep apnea, presenting in an estimated 2% to 3% of children, is often underidentified. The AAP’s “Clinical practice guideline: Diagnosis and management of childhood obstructive sleep apnea syndrome” recommends that screening be included in all routine health maintenance visits.¹

Shellhaas also discussed problematic night wakings in older infants and toddlers, a common concern for parents of young children. In counseling parents on behavioral sleep interventions, it is important for clinicians to be aware of a variety of diverse approaches that can be used to help children fall asleep independently and return to sleep after night wakings. Offering parents choices is empowering, and the likelihood of successful intervention is increased when parents are allowed to select a method they think best fits the baby’s temperament and their personal preferences and values.

—Sarah Morsbach Honaker, PHD, CBSM

**REFERENCE**


<~2% to 3% of children have obstructive sleep apnea that often is underidentified.>

— Sarah Morsbach Honaker, PHD, CBSM
Best tech for Pediatrics

Catch up with the latest innovative technology products from this past year for your pediatric practice.

ANDREW J SCHUMAN, MD, FAAP

This year marks my 30th year of writing about medical technologies and medical practice for Contemporary Pediatrics. I’ve authored close to 200 articles, and I look forward to writing many more!

This year there is much to present, so, without further ado, let’s delve into this year’s Best Tech!

Deformed ears
As pediatricians, we often encounter newborns who have external ear deformations, typically from in utero positioning of the fetus. Although we comfort parents by telling them that over time the ear deformations will reshape, in point of fact, many do not.

The former chief of Plastic and Reconstructive Surgery at Children’s Hospital of Philadelphia, Pennsylvania, Scott P. Bartlett, MD, has introduced a new ear molding system that facilitates reshaping ears by pediatricians in as little as 2 weeks. Because the flexibility of the newborn ear changes rapidly due to waning levels of maternal estrogen, the reshaping process must begin as soon as possible, usually within the first 2 weeks of life.

The InfantEar system (TalexMedical LLC; Malvern, Pennsylvania), shown left, looks like an arts and crafts kit. After shaving, a plastic base plate is positioned and fastened behind the ear. Velcro “conformers” are attached to the base plate and the deformed ear, reshaping it. A rim piece is placed over the conformers, and then a silicone matrix material is applied, and the area covered with a secure cap that is removed 3 weeks later.

A gallery of before and after pictures can be found on the InfantEar webpage: www.infantear.com/gallery. Each tray treats 1 ear and costs $550, but typical reimbursement exceeds $2000. The company will train interested physicians to use the device.

FebriDx is in your future
Pediatricians wish to remain diligent when it comes to avoiding antibiotic misuse. FebriDx (see page 30) was developed by the RPS Diagnostics team (Sarasota, Florida) led by Robert Sambursky, MD, to identify a clinically significant infection and distinguish a host immune response from viral and/or bacterial pathogens in acute upper respiratory infections (URIs). The FebriDx test is a lateral flow immunoassay that combines both C-reactive protein (CRP) and myxovirus resistance protein A (MxA) in a painless fingerstick. The CRP test has been found to have a nonspecific elevation in the presence of both bacterial and viral infections, whereas MxA is highly specific to a wide range of viral infections. The combination of MxA and CRP results in a very sensitive and specific test that distinguishes bacterial from viral respiratory infec-
Most recently, a multicenter US trial showed that FebriDx had a 95% sensitivity, 94% specificity to identify host response to a bacterial infection, and a 99% negative predictive value (NPV) to rule out a significant bacterial infection in febrile patients. These results indicate that the FebriDx device may dramatically reduce the prescription of unnecessary antibiotics. Best of all, FebriDx is inexpensive and anticipated to cost approximately $15. It takes 30 seconds to run and 10 minutes to result.

Today, FebriDx is already available in Canada and Europe, and Sambursky anticipates that the US Food and Drug Administration (FDA) will begin clinical trials in the spring of 2019. Hopefully, under the Breakthrough Device Program (see “How the 20th Century Cures Act will impact patient care,” page 32), the FDA will expedite the approval process and this device may be in the hands of pediatricians next year.

Point-of-care WBC fingerstick test
Most pediatricians are familiar with the HemoCue (Brea, California) hemoglobin analyzer (shown right). This device became available decades ago and rapidly supplanted the noisy hematocrit spinner as pediatricians preferred the quick and silent operation of the HemoCue. In Europe, physicians have been using a point-of-care fingerstick white blood cell (WBC) analyzer from HemoCue for some time. In minutes, the analyzer provides a total WBC count and a 5-part differential with percentages of neutrophils, lymphocytes, eosinophils, basophils, and monocytes.

In the United States, HemoCue markets a total WBC analyzer (without differential) that is not Clinical Laboratory Improvement Amendments (CLIA) ‘88 waived (ie, classified as “moderately complex” by the FDA). The device costs about $1000, and tests run about $3, with reimbursement running about $8. HemoCue will soon apply to the FDA for approval of a device similar to the European model with a 3-part differential. I believe having a waived point-of-care, WBC assay will reduce the prescription of unnecessary antibiotics, much like the FebriDx device.

bling has arrived
If you are a regular reader of these Best Tech articles, you know that I’ve frequently praised a high-tech pediatric vision screener developed by David Hunter, MD, PhD, chief of Ophthalmology at Boston Children’s Hospital, Massachusetts. The blinq. device (shown right) uses polarized laser light to conduct a 2-second “neural performance scan” of the fovea to accurately detect binocularity associated with as little as 1-degree misalignment, detecting amblyopia, microstrabismus, and strabismus in children. A previous study showed that a prototype of the current device detected amblyopia and strabismus with a sensitivity of 97% and specificity of 98%, substantially better than existing screeners.

Hunter formed a company called
Rebion (Boston, Massachusetts) to commercialize the blinq’s technology. The device will be available in the first quarter of 2019 with a price that will be announced at launch. The device is much quicker than existing vision screeners and, more importantly, will avoid the substantial overreferral rate to pediatric ophthalmologists associated with existing technology. As the blinq device will be billed under a different code than current screeners, testing will likely be paid at a higher rate. It is anticipated that the device will pay for itself in a matter of months while saving considerable healthcare costs.

A painless phlebotomy device?
Seventh Sense Biosystems (Medford, Massachusetts) markets a novel painless TAP blood collection system (top right) that is only 1.5 inches in diameter. The TAP uses a ring of 30 microneedles to puncture the skin of the arm and collects 100 microliters of capillary blood in 1 to 7 minutes. At present, TAP has approval only for drawing a lithium heparin sample in patients aged 18 years and older when used in conjunction with point-of-care hemoglobin A1C assays.

I’ve tried the device, and it collects blood painlessly and the patient never sees any needles. Such a device would be a boon to pediatric practice and I am optimistic that the FDA will eventually approve the use of the TAP system in pediatric patients for a variety of point-of-care systems that can analyze capillary blood specimens.

SnapMD for telehealth
The American Academy of Pediatrics (AAP) has selected SnapMD (bottom right) as a “Telehealth Technology Provider” for members interested in adopting telehealth to improve patient care and facilitate healthcare access. I’ve been using telehealth for some time and find it extremely useful for managing patients with attention-deficit/hyperactivity disorder (ADHD), depression and anxiety, acne, rashes, conjunctivitis, and follow-up for acute visits. Telehealth visits are reimbursed by insurance companies in my state of New Hampshire and patients love the convenience. The AAP has negotiated excellent rates for member pediatricians for enrollment in SnapMD along with waiver of a setup fee, as part of the AAP Member Advantage Program.

SnapMD (Glendale, California) will customize the system to your specifications and include your practice logo and color scheme in the application. SnapMD supports video visits/conferencing among as many as 6 individuals and can connect with remote diagnostic devices. To access information regarding the AAP’s SnapMD Member Advantage Program, visit www.snap.md/aap_member_advantage/aap-landing.html.

Hearing screening
When I started my practice decades ago, I used an otoacoustic emissions (OAE) screener from Bio-Logic Systems called the AuDX. It was quick and easy to use, and now OAE hearing screeners have become a staple of pediatric practice. According to the AAP’s Bright Futures guideline, hearing screening should be done yearly beginning at age 4 years through age 6 years, and again at ages 8 and 10 years.

Natus Medical (Schaumburg, Illinois) has acquired Bio-Logic Sys-
Bio-Logic AuDX handheld, battery-powered, portable screener tests both ears at once, and can be upgraded to include pure tone audiometry.

It can take years for medical devices to receive approval by the US Food and Drug Administration (FDA). In comparison, the process is streamlined in Canada and Europe. As a consequence, physicians in other parts of the world now utilize devices in the primary care setting years before they are available in the United States.

This is likely to change as the FDA recently began implementation of the 20th Century Cures Act (signed into law in December 2016) via its “Breakthrough Device Program,” which was developed to fast-track approval of technologies that have a significant positive impact on patient care.

In February of 2018, the FDA gave approval for Banyan Biomarkers (San Diego, California) to release its new diagnostic test to screen for intracranial bleeding in the setting of traumatic brain injury. The FDA approval process took less than 6 months for this new technology. This is wonderful news for medical device developers, and ultimately will benefit primary care physicians and pediatricians who like to write about medical technology!

— Andrew J. Schuman, MD, FAAP

First CLIA-waived Lyme antibody test

The Sofia 2 Fluorescent Immunoassay Analyzer (FIA; Quidel Corporation; San Diego, California), below, is a point-of-care device that quickly identifies patients with strep, influenza, and respiratory syncytial virus (RSV) infections. This year, Quidel received CLIA-waived status from the FDA to market its new Lyme FIA assay that qualitatively detects immunoglobulin (Ig) M and IgG antibodies to *Borrelia burgdorferi* from fingerstick blood. Results are available in as little as 3 minutes, negative results reported in 15 minutes. Positive antibody tests will need to be followed up with a diagnostic Western blot test.

In conclusion

Whew! What a great year for medical technology and innovation! If you’d like to learn more about any of the technologies briefly presented here, please visit www.medgizmos.com for video reviews and a webinar detailing the “Must Have Gadgets and Technology: 2018.” (For the webinar, click on “New ‘Best Tech 2018’ webinar in our software area.”)

— Andrew J. Schuman, MD, FAAP
Parents of picky eaters need education and understanding

Taking time to talk to distressed parents is the first step to providing help.

RACHAEL ZIMLICH, RN, BSN

Tackling the issue of picky eaters is common across the span of childhood and is also a common concern raised among parents who rely on the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).

Parents may have a hard time finding food choices that appeal to their children and experience guilt over picky eating habits. In an editorial published in the Journal of Nutrition Education and Behavior, Julie Reeder, PhD, MPH, MS, CHES, senior research analyst for the Oregon Health Authority WIC Program, Portland, Oregon, chair of the American Public Health Association (APHA) Food and Nutrition Section, and associate editor of the Journal of Nutrition Education and Behavior, highlights 2 recent studies addressing picky eaters and cooking training programs.

The editorial,¹ which focuses primarily on picky eating, emphasizes the role of parental guilt, noting that it is internalized much more by mothers than fathers. “In fact, mother’s concern explained the relationship between perceived fussy eating and nonresponsive feeding practices,” Reeder notes.

In one of the studies, focusing on maternal and paternal responses to picky eating, researchers dove into the relationship between parents and their picky eaters.² The takeaway was that the concerns of the parents, particularly mothers, about their child’s eating habits can provide great insight and some ideas for interventions. Taking the time to really talk to parents about what their child is eating and not eating, and what factors play a role in this, is the first step to providing help, Reeder notes.

The other study reviewed in the editorial discussed a 6-week cooking class for low-income parents and their children focused on vegetable preparation.³ The 2-hour classes taught the parent and child how to prepare a dish and then sent them home to replicate the recipe. The study addressed problems with cooking confidence, knowledge, and access, and found improvements in how parents felt about cooking with vegetables, the variety they used, and how much they used vegetables in home meals after the courses were complete.

Parents need guidance

Addressing picky eating is difficult for all parents, but Reeder explains how managing this issue differs among low-income parents and WIC participants.

“First, WIC staff are well versed in addressing these concerns, giving you a reliable partner to help address these issues with families. Taking time to meet your local WIC staff, inquiring how they address these topics with families, as well as coming to agreement about your shared messaging and resources can help families receive consistent advice and support,” Reeder says, adding some advice to pediatricians.

“Updating your knowledge of the food items offered in the current WIC packages can also help shape your conversations with families in WIC, as it is likely those foods will be in their household.”

Pediatricians can offer families guidance on new food ideas and strategies to help children try new foods.

“The second way it differs is that for families with a limited income, the common adage of it taking 10 or 12 times of introducing a new food before a child accepts it, and therefore to just keep buying and offering no matter if they eat it, may not seem realistic,” Reeder says. “Lower-income families are quite thrifty shoppers and are not likely to purchase foods they know their children won’t like

³[217x356] MARIA NOVICK@STOCK.ADOBE.COM

”[Picky eating] is a natural way for [children] to assert their growing independence.”

—JULIE REEDER, PHD, MPH, MS, CHES
and will end up being wasted.”

Lastly, Reeder says parental guilt must be considered by clinicians when offering counseling in order to find effective interventions.

“Many lower-income parents may be experiencing food insecurity currently themselves or grew up with uncertainties about an adequate supply of food. This may increase their feelings of anxiety or guilt related to their child’s unwillingness to eat a greater amount or variety of foods. Although concerns about food security and limited income to purchase foods that may be wasted are ones to keep in mind, they do not mean that feeding and picky eating concerns should not be raised with families in WIC,” Reeder says. “Rather, asking parents about their child’s most- and least-favorite ‘WIC foods’ opens a way to discuss eating concerns with foods that will be present in the household.”

How to help
Reeder suggests that pediatricians supplement efforts by WIC staff by having conversations with parents of picky eaters and may utilize programs such as WIC, asking parents open-ended questions to assess their child’s eating habits and any feelings of guilt the parent might be having.

“Simply asking ‘how does that make you feel’ when a mom shares that her 3-year-old wants to eat only chicken nuggets every day for a month can be a good way to start. Reassuring parents that almost all children go through periods when they can seem quite picky and that it is a natural way for them to assert their growing independence can go a long way toward lessening a parent’s guilt or anxiety,” Reeder suggests. “Rather than jumping to tricks or tips to try to push the child to eat more in quantity or variety, which often backfires, focus on bringing a more holistic notion of a nourishing mealtime to the conversation.”

Reeder says she hopes the editorial will help pediatricians, WIC staff, dietitians, and other clinicians better assess their approaches to discussing eating concerns with their patients and families. Work toward reducing pressure and guilt for the parent and child and offer support.

“Family mealtimes are about much more than just the ingestion of a certain quantity of calories and nutrients,” she says. “Asking the parent to name one thing the child eats now that they didn’t before, celebrating even the smallest of successes, and bringing joy back to mealtime will help eliminate pressure and guilt for both parent and child.”

WIC program needs to reach more low-income children
USDA calls for higher participation in WIC and SNAP nutrition programs.

RACHAEL ZIMLICH, RN, BSN

Early nutrition is critical to healthy development in infants and children, and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides much-needed support in this area to low-income families.

A recent study from the US Department of Agriculture (USDA) investigated utilization of the WIC program at early levels, and where improvements may be needed.1

Joanne F. Guthrie, MPH, lead author of the report and senior research nutritionist in the Food Assistance Research Branch of the Food Economics Division of the Economic Research Service at the USDA, says WIC offers a host of programs to parents and their young children to support a healthy diet.

“For infants, [WIC provides] nutritional support for breastfeeding mothers or iron-fortified formula. At age 6 months, infants also receive iron-rich infant cereals, and infant fruits and vegetables. Infants of breastfeeding mothers also receive infant meats, important iron sources,” Guthrie explains. “At ages 1 to 4 years, children receive a package of healthful foods and a cash value voucher that their parents can use to purchase fruits and vegetables for them. At all ages, WIC also provides nutrition education to parents. This combination of immediate food support and nutrition education is intended to provide immediate benefit and also improve eating habits long term,” she says.
Good news and not-so-good news
The study highlighted some benefits of the program as well as some ongoing concerns.

“Our findings indicate several ways that WIC is benefitting low-income infants and young children. Among infants, WIC participation is associated with older infants (6 to 12 months) being more likely to eat iron-rich infant cereals and vegetables (including baby food vegetables) than low-income non-WIC infants,” Guthrie says. “However, encouraging breastfeeding, especially its continuation through the first year of life, remains a concern.”

As children age, Guthrie says preschoolers using the WIC program are more likely to drink lowfat milk than other children, yet don’t eat enough servings of fruits and vegetables, despite being provided vouchers for them.

“Also, like other children not participating in WIC, as they got older more of them were consuming sweets and sweetened beverages,” Guthrie adds. “This indicates these are general problems for children’s nutrition, both for those on WIC and those not on WIC.”

Pediatricians can help address these issues outside the efforts of WIC staff by providing educational support and pointing parents to other community resources.

“If pediatricians see children who are low-income but not on WIC, they can refer them to the program,” Guthrie says.

Help find families who are eligible
The WIC program is available to households with total incomes at or below 185% of the US poverty income guidelines, which are updated annually, according to Guthrie. She says eligibility also may be established by participation in some other federal programs such as the Supplemental Nutrition Assistance Program (SNAP), formerly known as food stamps.

“Pediatricians who want to be able to refer patients they think may benefit from WIC may want to contact their state WIC agency to get specific information on how and where to apply in their state,” she suggests.

Whereas all WIC programs provide only foods that meet USDA nutritional standards, lists of particular foods vary by state, and pediatricians may want to get access to these lists to better tailor their education and guidance to their particular patient populations, Guthrie adds.

In terms of challenges with breastfeeding, although the USDA supports breastfeeding as a priority, WIC also supports mothers in other ways, such as lactation counseling, access to breast pumps, and educational materials.

Still, researchers found room for improvement here. The study found that WIC infants were less likely to breastfeed than infants in higher income, non-WIC households—with 45% of infants in WIC households being breastfed compared with 74% of infants in higher income households.

Guthrie says she hopes the new report will help provide clinicians with information to guide their interactions with parents of young infants and children and allow them to provide better nutritional support and education, particularly when it comes to the availability of nutrition resources such as WIC.

REFERENCE
A study conducted in Australia found that the answer to this question is a resounding “no.” A comparison of behavioral outcomes in 124 children who had colic that had resolved by age 6 months (colic group) and 503 infants without problem crying at 1, 4, and 6 months (no colic group) found that the colic group did not manifest any adverse effects related to behavior, regulatory abilities, temperament, or family functioning when they were aged 2 to 3 years.

Investigators based their findings largely on results of behavioral questionnaires completed by participants’ caregivers, including several validated measures of child behavior, family functioning, and maternal mental health. Even after adjusting for socioeconomic variables, investigators found no significant differences between the colic and no-colic groups in internalizing or externalizing behavior problems or parental perception of crying, feeding, sleeping, or family functioning. Nonetheless, a far larger proportion of parents of children in the colic group than in the no-colic group rated their children as having a “difficult” or “very difficult” temperament, although this difference became statistically insignificant after adjusting for confounders (Bell G, et al. J Pediatr. 2018;201:154-159).

**THOUGHTS FROM DR. BURKE**

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been successful in improving pulmonary function and other clinical outcomes for some patients. Interestingly, pharmacologic therapy for CF that potentiates CFTR function also has been shown to reduce aquagenic wrinkling.

Given the high prevalence of AWP in patients with CF and its association with gene mutation carriers, AWP should prompt preliminary workup for CF.

Whereas AWP is most prominently described in association with CF, there have been reports of AWP in healthy individuals as well as in patients with marasmus and atopic dermatitis. Certain drugs (eg, selective cyclooxygenase-2 (COX-2) inhibitors, nonsteroidal anti-inflammatory drugs (NSAIDs), angiotensin-converting enzyme (ACE) inhibitors, and angiotensin II receptor blockers (ARBs) also may be associated with cases of aquagenic wrinkling by causing dysregulation of aquaporins and abnormal water transport across cell membranes in the skin.

Differential diagnosis

Hyperhidrosis is a condition of unknown etiology characterized by excessive sweating that is generally localized to local body region (ie, palms). It can affect patients of any age but is most commonly seen in adolescents and young adults. Although palmar hyperhidrosis has been associated with the development of AWP, the former is a distinct disorder with much higher prevalence and is not known to have association with CF.

Hereditary papulotranslucent acrokeratoderma (HPA) is a congenital disorder characterized by yellow-white papules and plaques at the borders of the palms and soles. However, normal eccrine glands are seen on biopsy. In contrast, skin changes in AWP occur transiently in response to water exposure and involve dilated eccrine glands on histology.

Treatment and management

Aquagenic wrinkling of the palms itself is benign and can be prevented by water avoidance. Severe cases can be treated with a topical antiperspirant (eg, aluminum chloride).

In this patient, AWP was an isolated finding without accompanying symptoms or family history suggestive of CF. However, reports have shown that AWP can be the first presenting sign of CF carrier status in otherwise healthy individuals, or of nonclassical CF that involves fewer organ systems and that is often diagnosed later in life. Given this finding, the patient was referred for sweat chloride testing.

Patient outcome

With the patient’s sweat chloride level of 26 mmol/L (reference range: 0-29), she was categorized as “cystic fibrosis unlikely.” Although there have been cases of CF patients and carriers with normal sweat chloride tests, a previous study did not recommend genetic testing for patients with isolated aquagenic wrinkling without symptoms related to, or family history of, CF. This was consistent with recommendations from the pediatric Pulmonary Service.

Conclusions

Given the high prevalence of AWP in patients with CF and its association with gene mutation carriers, AWP should prompt preliminary workup for CF.

A careful history should be elicited for family history of CF and associated symptoms (eg, chronic fatigue, diabetes mellitus, nutritional deficiencies, recurrent pancreatitis, diarrhea, acholic stools, bowel obstructions, nasal polyps, chronic sinusitis, chronic coughing, wheezing). Digital clubbing on exam may also suggest pulmonary disease.

The index of suspicion based on history and exam may then guide management toward the sweat chloride test or more definitive genetic testing.

Ms Huang is a fourth-year medical student at the Johns Hopkins University School of Medicine, Baltimore, Maryland. Dr Cohen, section editor for Dermcase, is professor of Pediatrics and of Dermatology, Johns Hopkins University School of Medicine, Baltimore. The author and section editor have nothing to disclose in regard to affiliations with or financial interests in any organizations that may have an interest in any part of this article. Vignettes are based on real cases that have been modified to allow the author and editor to focus on key teaching points. Images also may be edited or substituted for teaching purposes.

For references, go to ContemporaryPediatrics.com/dermcase-1218

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A 16-year-old girl presents to the clinic for acne follow-up and mentions that her palms wrinkle significantly after only a few minutes of immersion in water. She is otherwise well and has no significant past medical history.

Patient reports exaggerated wrinkling of the palms with edematous white papules after minutes of exposure to water.

Clinical findings
After brief (minutes of) exposure to water, the patient experiences exaggerated wrinkling of the palms along with white, edematous papules that may coalesce into plaques. Upon removal from water, her skin changes typically resolve in less than 1 hour with drying of the skin. Although the diagnosis is made clinically, histology of the skin reveals dilated eccrine ducts.

Etiology/Epidemiology
Aquagenic wrinkling of the palms (AWP) has a strong association with cystic fibrosis (CF), affecting up to 84% of patients with CF and up to 25% of carriers. In patients with CF, aquagenic wrinkling typically develops faster (within 2 to 3 minutes of immersion in water) than in carriers (5 to 7 minutes).

The mechanism responsible for this phenomenon is not fully understood. However, it is thought that the increased tonicity of sweat in patients with CF induces an osmotic shift of water across the epidermis. Because mutations in the gene encoding the CF transmembrane conductance regulator (CFTR gene) protein are responsible for the pathologic dysregulation of epithelial fluid transport in CF, CFTR-directed therapies have...
Debunking “fringe” therapies

Complementary and alternative medicine (CAM) to me implies mostly unproven therapies with at least some partial evidence in support. By contrast, “fringe therapies”1 are more bizarre, with only anecdotal evidence. Popular for conditions for which there are no good cures, fringe therapies are easy to find online, and parents may bring them up. Here are some outlandish ones I have found.

1 America loves nutritional therapy, and not only for weight loss. You can go casein-free or gluten-free, or find diets based on blood type, for example. Celebrities weigh in: Actress Alicia Silverstone prechewed her baby’s food before giving it to her. Suzanne Somers advocates a natural approach to health and takes over 60 supplements a day. You can’t get more natural than that!

2 One dietary approach is enzyme therapy (digestive enzymes, not enzyme replacement). I first learned about this in an otherwise respectable magazine for parents. The article concluded unashamedly by telling parents that they should try it because it couldn’t hurt. The same issue had the first and only time I had seen a full-page advertisement for buying enzymes. When I wrote to the editor, I was told the 2 were unrelated.

3 I have no problem with chiropractic manipulation for back pain in adolescents. Some chiropractors manipulate infant spines. They have learned from lectures and sometimes mannequins, but when they get their license they have essentially no hands-on experience with live infants. There have been several case reports of serious injury from these manual therapies.2

4 Chelation therapy for developmental disorders, done with actual high-powered medicine, has been advocated. There have been several deaths associated with this practice. The Pfeiffer Treatment Center, Warrenville, Illinois, specialized in chelation. The original center has since closed, to be replaced by the Pfeiffer Medical Center, which did not reply when I asked if they still practice chelation.

5 Genova Diagnostics, Asheville, North Carolina, will be happy to analyze lab specimens (blood, urine, and stool) to determine nutritional imbalances, yeast infections causing systemic problems, and more. The company can then use the results to suggest supplements that one can purchase to cure himself/herself. My most recent patient to use the lab is on 24 pills a day as supplements.

6 Dr. Joseph Mercola, a wealthy alternative medicine practitioner, has a website, www.mercola.org, talking about advocacy, charitable donations, and also the scourge of profit-driven health industries. The main link on the above website is to www.mercola.com, where one can purchase his supplements, cat litter, even light bulbs. He no longer sells tanning beds as wellness tools, having settled his lawsuit with the Federal Trade Commission by agreeing to pay them several million dollars.

7 Some providers use the WaveFront 2000 (now WaveFront 3000). With this electronic device, which is small enough to hold in your hand, you put someone’s saliva into the input well, and the machine will “analyze the electromagnetic energy” and use that to create an anti-allergy product. The machine is best known through the case of pediatrician Ming Te Lin, MD, in Chicago in 2016, who used it to make alternative vaccines for children, incorporating vodka and cat saliva in the process of making his own modified vaccines.

REFERENCES
FLARES AREN’T GOING TO PREVENT THEMSELVES

BABY ECZEMA RELIEF BODY CREME helps prevent the incidence of flare over time with daily use¹

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