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.
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The Editors are pleased to announce the availability of our new parent company’s continuing education activities. We’ve picked this one especially for our Contemporary Pediatrics’ readers. Go to: bit.ly/2vsN3
The bright future of pediatric care

The American Academy of Pediatrics 2019 National Conference and Exhibition in New Orleans this past October yielded a bounty of new and relevant information for today’s pediatricians. Contemporary Pediatrics was there, and in this issue we share the best of the Conference with our audience.

The highlight of the year in the world of pediatric healthcare is the annual American Academy of Pediatrics (AAP) National Conference and Exhibition, where pediatricians from across the United States and the globe assemble to share successes and address new challenges to the practice of healthcare for children.

Contemporary Pediatrics attended this Conference in New Orleans in October, and in this issue we present the highlights of new research that will aid pediatricians in practice today and going forward. Beginning on page 14, you’ll read about advances in detecting acute flaccid myelitis, treating autism in the medical home, managing uncontrolled asthma, and how global climate change is already affecting children’s health. There is clinical advice to deal with vaccine-hesitant parents and to care for families who have lost a child to sudden unexplained death. On the business side, there is practical advice offering strategies for insurance reimbursement. You’ll find even more articles from the AAP Conference on our website: ContemporaryPediatrics.com.

In addition to our special Conference highlights, this issue presents clinical findings that address infectious disease, pediatric pharmacology, dermatology, mental health, respiratory disorders, and metabolic disorders as part of our continuing coverage of these important therapeutic areas of Pediatrics, as well as popular features including the Puzzler and Dermcase that you look for each month.

This exceptional content addresses your need to keep up-to-date on the latest clinical developments in your field of practice. We research for you what is relevant, synthesize the information into a readable package, and present it to you in a way that fits into your busy schedule. That is the continuing mission of this publication.

Mike Hennessy, Sr.
Chairman and Founder,
MJH Life Sciences
AAP 2019
Covering the world of children’s health

INFECTIOUS DISEASES
Update on acute flaccid myelitis

Recent research advances are providing insight on infectious causative mechanisms for this recently described disease in children.

CHERYL GUTTMAN KRADER

Acute flaccid myelitis (AFM) is an uncommon but serious condition for which outbreaks have followed a biennial pattern since 2014. With the next surge of AFM cases predicted in 2020, it is important that pediatricians be familiar with its presenting features because early recognition has implications both for the prognosis of the affected child and for enabling research to understand AFM etiology, said Kevin Messacar, MD, at the American Academy of Pediatrics (AAP) 2019 National Conference and Exhibition, October 28, in New Orleans, Louisiana.

In his session titled “Acute flaccid myelitis,” Messacar presented information on AFM epidemiology, diagnosis, prognosis, and management. He also discussed some recent research advances that are providing insight on infectious causative mechanisms for this recently described disease.

Messacar is assistant professor of Pediatrics at the University of Colorado, Denver, a hospitalist, and infectious disease consultant at Children’s Hospital Colorado Anschutz Medical Campus, Aurora. He told attendees that the term AFM was coined in 2014 after groups of children presented with paralysis of the arms, legs, or muscles of the face and throat. In response to reports of these cases, the Centers for Disease Control and Prevention (CDC) established a case definition to both identify cases and quantify their number. According to the CDC, AFM is defined as acute onset of flaccid limb weakness and magnetic resonance imaging (MRI) involvement of predominantly the gray matter of the spinal cord without identified etiology in individuals aged younger than 21 years.

Messacar said that pediatricians should suspect AFM in any child presenting with weakness in the arms or legs, particularly during late summer or early fall, which have been the peak periods for AFM outbreaks. The his-
The most common virus associated with AFM cases that have occurred throughout the country since 2014 has been enterovirus D68 (EV-D68), but in 2018 in Colorado there was a cluster of cases associated with EV-A71. Most children who had an EV-D68 infection had respiratory symptoms, whereas the initial prodromal illness associated with EV-A71 involved hand, foot, and mouth lesions. In addition, whereas the majority of children with EV-D68-associated AFM have persistent weakness, complete recovery was more common with EV-A71-associated cases.

When AFM is suspected, pediatricians should report cases to their state health department and order an MRI of the brain and spinal cord to confirm the diagnosis. Importantly, they should procure samples as soon as possible from the respiratory tract, blood, stool, and spinal fluid and submit the specimens to the CDC.

“Children typically first experience muscle weakness about 5 to 7 days after the prodromal illness that is likely the inciting infection, and so by the time that AFM is suspected, the window of opportunity to identify a potential pathogen may have passed in some cases,” he said.

Early recognition is also the cornerstone for optimizing management of children with AFM, the mainstay of which is supportive care to maintain breathing, nutrition, and hydration.

“Progressive neurologic injury with AFM can occur quickly, sometimes within a matter of hours, with resulting paralysis of the muscles that support breathing and protect the airway,” Messacar pointed out. “Consequently, a significant proportion of children with AFM require intubation and ventilation. Early recognition of AFM is critical so that the necessary support is provided in a timely manner.”

Rehabilitation therapies, including physical therapy, occupational therapy, and speech therapy, should be initiated as soon as the patient is clinically stable and maintained as long as needed to assist children in regaining as much function as possible.

“The majority of children with AFM do not have complete recovery and are left with long-term if not permanent weakness or paralysis. Pediatricians have an important role as quarterback for coordinating ongoing rehabilitation and the complicated care of these children,” Messacar said.

**COMMENTARY**

Acute flaccid myelitis (AFM) has captured national headlines since outbreaks were recognized in the United States in 2014, 2016, and 2018. Similar to poliomyelitis, patients can experience acute onset of flaccid weakness in one or more limbs, and the condition is most common in children.

Whereas the syndrome of flaccid myelitis can be caused by a number of viruses or immune-mediated pathologies, the late-summer outbreaks occurring on alternating years since 2014 are most associated with a specific enterovirus. This has raised a number of scientific questions and public health concerns. With those issues in mind, and because of the current emphasis on early recognition, reporting, and treatment, it is critical for pediatricians to be aware of AFM.

In a session on this topic at the AAP’s 2019 National Conference and Exhibition, Dr. Kevin Messacar discussed a number of important issues. An update on the current epidemiology and clinical presentations of AFM may be particularly valuable for pediatricians considering that early on, the signs of illness may be missed. Reviewing the differential of acute flaccid weakness is critical for pediatricians as patients may rapidly decline neurologically and suffer respiratory difficulties.

Messacar reviewed the data relative to etiology studies, pointing out that the likely cause in the majority of patients is enterovirus D68, which usually causes a mild upper-respiratory syndrome. He noted the prevalence of a prodromal illness in the majority of patients, followed by rapid neurologic symptoms.
As Dr. Messacar pointed out, early reporting to public health officials and sampling of nasopharyngeal secretions, cerebrospinal fluid, and blood will be critical for CDC-led efforts to confirm the etiology of spinal cord damage. Pediatricians need to be aware of the public health needs and the individual patient needs. Messacar stressed the importance of supportive care, considerations for therapies to limit damage, and the need for early, albeit prolonged, rehabilitation services.

—Benjamin M. Greenberg, MD, MHS, is Distinguished Teaching Professor of Neurology and Pediatrics, University of Texas Southwestern, Dallas, Texas.

AUTISM SPECTRUM DISORDER

What pediatricians should know about diagnosing autism

The pediatric medical home is the perfect place for early diagnosis of children who may have autism spectrum disorder.

CHERYL GUTTMAN KRADER

With autism spectrum disorder (ASD) affecting 1.7% of 8-year-old children, all pediatricians are likely to have many children with ASD under their care.

Pediatricians play an important role in optimizing outcomes for children with ASD, from facilitating early diagnosis, helping families access evidence-based treatments, identifying and treating comorbid medical and behavioral conditions, and serving as a resource to families about the safety and evidence relating to complementary and alternative medical treatments, said Lisa H. Shulman, MD, at the American Academy of Pediatrics (AAP) 2019 National Conference and Exhibition in New Orleans, Louisiana, in October.

In seminar sessions held on Monday, October 28, and Tuesday October 29, Shulman provided an overview of “Autism spectrum disorder: What every pediatrician should know” in 2019.

“Signs of ASD are often apparent by age 18 months or even younger, and yet it remains the case today that the diagnosis is typically not made until after age 4 years. Because of the frequency with which children are seen by their pediatricians when they are very young, the medical home is the perfect place for identifying children who may have ASD,” said Shulman, professor of Pediatrics, Albert Einstein College of Medicine, and interim director of the Rose F. Kennedy Children’s Evaluation and Rehabilitation Center at Montefiore Medical Center, Bronx, New York. “Each encounter over time is an opportunity to not only evaluate developmental milestones but also social functioning.”

Shulman noted the need for following the AAP guidelines on screening for ASD at 18 and 24 months to help improve early identification, and also for pediatricians to not rely solely on completed checklists but to “look with their own eyes” for early signs that are predictive of autism when present at 12 months. These signs include reduced eye contact, failure to respond to name, not pointing to request, and not pointing to show. How easy is it to obtain the child’s attention? To achieve a shared smile in response to a song? How does the child let you know that he/she wants a colorful object out of reach?

A hearing test is essential in the medical workup for a child when ASD is suspected. After hearing is cleared and there is concern about ASD, simultaneous referrals should be made for a diagnostic evaluation and for early intervention to the school district. “The diagnostic evaluation for ASD can take some time. So, do not wait for it to be completed before making the referral to early intervention or the school district,” Shulman said.

She encouraged pediatricians who do not work in a setting with access to an existing ASD diagnostic center to “make a team” of professionals who have an interest and expertise in early ASD diagnosis. The team can be informal and might include a developmental pediatrician, neurologist, or psychiatrist and a psychologist, and/or speech and language pathologist.

Shulman reviewed the Diagnostic and Statistical
Manual of Mental Disorders (DSM-5) diagnostic criteria and discussed the importance of genetic testing, which over time has led to an increasing number of findings relating to the multiple etiologies of ASD. “There are likely epigenetic or environmental second hits that contribute to the development of ASD in children at biologic risk, and we cannot rule out the possibility that there are unknown risk factors leading to an increase in the incidence of ASD,” she said.

Shulman also covered the evaluation and management of medical and emotional/behavioral issues that are common in children with ASD. “As the primary care provider, pediatricians are ideally positioned to monitor for the various conditions that are often comorbid with ASD, including attention-deficit/hyperactivity disorder, anxiety, restrictive eating habits, and constipation, as well as to give anticipatory guidance regarding relevant safety issues such as elopement,” she said.

With an ever-widening set of complementary and alternative medicine (CAM) interventions being promoted for ASD, and confusion over what is experimental and what is evidence based, Shulman reminded pediatricians to ask families about all the treatments they are accessing for their children.

“If you don’t ask, you may not hear about the various treatments families are utilizing,” she said. “Whereas some CAM treatments are quite safe, others may pose risk such as hyperbaric oxygen, chelation, immunoglobulins, stem cell therapies, bleach therapy, and so on. Building on a trusted relationship, pediatricians can be a resource to families to help them sort out safe and effective choices.”

Noting ongoing public concern about vaccination and ASD, Shulman also reviewed the literature on this topic, including the most recent nationwide cohort study that included more than 657,000 children born in Denmark.

“Consistent with previous research, the authors of the Danish study determined that their findings support the conclusion that the measles/mumps/rubella vaccine does not increase the risk for autism or trigger it in susceptible children,” she said.

COMMENTARY

Autism spectrum disorder (ASD) is relevant to every pediatrician given that it affects roughly 2% of children in the United States and has a significant impact on the lives of children and families. Most children are diagnosed after the age of 4, years after evidence-based ASD-specific therapy could have begun.

Pediatricians play a vital role in early identification of children with ASD and with ongoing care throughout childhood and adolescence. It is therefore important that every pediatrician have a sound working knowledge of this condition in order to facilitate early identification, maximize functional outcomes, and support children with ASD and their families.

In a session at the AAP 2019 National Conference and Exhibition, Dr. Lisa Shulman, a developmental pediatrician at Albert Einstein College of Medicine and current member of the AAP Autism Subcommittee, reviewed “What every pediatrician should know” about ASD. She emphasized developmental surveillance, a process in which pediatricians look for early signs of ASD during health supervision visits. Orienting to name and joint attention were identified as social skill milestones that are critical in identifying toddlers at risk for ASD. Screening all children for ASD at the 18- and 24-month visits, as recommended by the AAP, was also reviewed as a way to augment developmental surveillance in order to facilitate early identification.

Once a child is identified as at risk, Shulman provided important recommendations for the pediatrician regarding referrals for a comprehensive “team-based” ASD evaluation, along with simultaneous referrals to an early intervention program or to a special education program to get appropriate interventions started. She also reviewed aspects of the medical workup for children with ASD, including genetic testing.

Once the diagnosis is made, Shulman provided important information about identification and management of common co-occurring conditions, addressing questions about integrative, complementary, and alternative medications, and ways to inform parents about the lack of association between vaccines and ASD.

—Paul S. Carbone, MD, is professor of Pediatrics, University of Utah, Salt Lake City, Utah, and chairperson of the AAP Council on Children with Disabilities Autism Subcommittee.
Environmental Health
Climate change has adverse effects on children’s health

Children are more physiologically and developmentally vulnerable to health problems created by climate change.

Cheryl Guttmann Krader

The climate crisis is affecting everyone, but no group has more at stake than children. That was the key message of Debra Hendrickson, MD, at the recent American Academy of Pediatrics (AAP) 2019 National Conference and Exhibition in New Orleans, Louisiana. Her talk, “A burning house: Children’s health in the warming world,” addressed conference attendees during the plenary session on Monday, October 28.

Hendrickson told the audience that she was inspired to write a book on the need for action after seeing how climate change was affecting her patients in Reno, Nevada, which in 2016 was named the fastest-warming city in the United States. From infants suffering from wildfire smoke to teenagers anxious about their future in a warming world, children are increasingly feeling the impacts of our changing climate, she said.

Hendrickson urged doctors to better recognize how certain illnesses—such as asthma, allergies, heat illnesses, and infectious diseases carried by ticks and mosquitoes—are being amplified by rising temperatures, more frequent wildfires, hurricanes, flooding, and other climate changes.

“Although the health consequences of climate change are being seen in our patients,” she said, “clinicians may not notice because, much like natural disasters themselves, these diagnoses have always been around but they’re occurring now with greater frequency or severity.”

As part of her talk, Hendrickson told the stories of several children affected by wildfires, hurricanes, or heat waves, and then used their cases to explain why children are more physiologically and developmentally vulnerable to the health problems created by climate change. She emphasized the importance of such storytelling in motivating parents and policymakers to act, arguing that the climate crisis is not just a global crisis, it’s also “a very personal crisis, multiplied many times.”

Hendrickson noted that, ironically, pediatricians today have extraordinary new medications and technology to keep their patients healthy, while at the same time children are facing an existential crisis. “Climate change is threatening everything we work to accomplish for our patients because it is altering the fabric of life itself,” she said.

Far from being a pessimist, Hendrickson emphasized the great potential for pediatricians, as trusted sources of information, to help promote solutions and lead the way, both in their practices and their daily lives. She noted that there are relatively easy steps that each person can take to reduce their own carbon emissions and build a broader movement toward sustainable energy.

For example, most utility companies now offer a “green energy” option that allows customers to choose all-renewable electricity with just a few clicks on their website. Wider adoption of electric cars, which can plug into these all-green homes, and reducing meat and dairy content in our diets would also help, Hendrickson said.

Finally, noting that children are rising up in protest around the world, demanding that governments and corporations act on this issue while there is still time, she called on pediatricians to stand with them.

“We care for the generation that will be most affected by this crisis,” Hendrickson said. “We have a moral obligation to fight for our patients.”

Commentary
Pediatricians are increasingly facing a new issue in child health—climate change. More extreme heat is increasing the risk of heat illness and making it more hazardous for children to play outdoors. Increasing wildfires and rising pollen counts are challenging our ability to protect children’s respiratory health. Warming winters, earlier springs, and higher water temperatures are causing shifts in patterns of some climate-sensitive infectious diseases.

Whereas all people are affected by changing climate conditions, children are among the most vulnerable. It is estimated that children aged younger than 5 years bear greater
than 80% of the global burden of disease caused by climate change. In recognition of this unique vulnerability, the American Academy of Pediatrics (AAP) was the first major medical society to publish a policy statement on this topic in 2007. The AAP Council on Environmental Health published an updated policy statement and technical report in 2015. These reports identify climate change as one of the greatest threats facing children in the United States and across the world.

Although most pediatricians are seeing affected children today, recognizing the signal of climate change in a busy pediatrician's office remains challenging. That is because changing patterns in temperature, rainfall, and extreme weather generally amplify and shift conditions pediatricians have always seen, rather than create novel conditions. Noticing changes in seasonal timing, frequency, or severity of common conditions can be a challenge.

In her plenary session at the AAP’s 2019 National Conference, Dr. Debra Hendrickson helped pediatricians to make the connections between changes in the climate and changes in the health of their patients. Through the stories of children affected by extreme heat, weather disasters, and wildfires, she portrayed how changes in climate are affecting the lives of real children in diverse ways across the United States. Many pediatricians are witnessing similar stories but have not yet linked them to environmental change.

Climate change is not only an immediate health threat but is an unprecedented risk to children's future. As such, it is a moral challenge for all who care for children.

The past year has brought this into focus as children across the world have engaged in school strikes to highlight the urgent need for climate solutions to protect their future. In the United States, children are suing the federal government for its inaction on climate change and the resulting deprivation of their fundamental rights in the case of Juliana v. United States. The AAP signed an amicus brief in support of the children in this case.

Advocacy has been a top priority of the AAP since its inception. The voice of pediatricians has been instrumental in protecting children from a wide range of threats to their health and safety over the century. Dr. Hendrickson discusses the role of pediatricians in speaking out in support of climate solutions. From small changes in our personal lives and practice management, to advocacy in our communities, states, and our nation's capital, pediatricians can protect every child by working to ensure a safe and healthy planet for their future.

—Samantha Ahdoot, MD, FAAP, is a pediatrician in Alexandria, Virginia, and assistant professor of Pediatrics at Virginia Commonwealth University School of Medicine, Inova

AAP 2019

PRACTICE MANAGEMENT

Fight for insurance reimbursement rightfully earned

Understanding which insurance payment denials are valid and which are inappropriate is the first step to practices successfully getting paid for services rendered.

MARY BETH NIERENGARTEN, MA

Pediatricians deserve to be paid appropriately for the services they deliver to patients. The process of documenting what care was delivered, using appropriate International Classification of Diseases (ICD) and Current Procedural Terminology (CPT) codes to submit for billing, adding appropriate modifiers, and successfully transmitting this information through claims processing systems is ripe for problems that can lead to denials. Sometimes denials that are considered “improper” by practices are actually valid denials because the practice made an error or omission in the original claim submission. Other times the claim is inappropriately denied, and practices should be paid for the care delivered.

Understanding which insurance payment denials are valid and which are inappropriate is the first step to successfully getting paid for services rendered. When an inappropriate payment denial is identified, practices need to set up a plan to fight back to ensure compensation for money rightfully earned. This does not require all members of a practice team to be subject matter experts in this area, but a practice should have the collective knowledge to understand and advocate for the financial success of the practice.

In a session delivered on Saturday, October 26, at the
American Academy of Pediatrics (AAP) 2019 National Conference and Exhibition in New Orleans, Louisiana, titled “David and Goliath: How to fight improperly denied insurance claims,” Suzanne Berman, MD, chair of the AAP Section on Administration and Practice Management, and Susan Kressly, MD, chair of the AAP Payer Advocacy Advisory Committee (PAAC), reviewed the billing concepts that all pediatric offices should be familiar with but often aren’t. These include an understanding of ICD specificity and mutually exclusive diagnoses, Medically Unlikely Edit (MUE) and Maximum Frequency per Day (MFD), as well as submission for Multiple Units. The presenters outlined the specific data elements that can often cause a claim to fail and may not even be visible to the pediatrician.

The presenters walked the audience through specific issues important for a practice’s revenue cycle—timely filing, knowing what claims are in which buckets, reviewing denials, submitting corrected claims, the appeals process, and triaging work.

Lastly, the presenters offered a step-by-step approach on how to take on “Goliath” and fight the payer for monies rightfully earned:

- **STEP 1**: Understand the various reasons payers deny claims and what the electronic reason codes defined by the American National Standards Institute (ANSI) mean.
- **STEP 2**: Contact the payer and ask why the claim was denied when the practice believes all the information was appropriately provided in the claim.
- **STEP 3**: Appeal the payer decision.
- **STEP 4**: Effectively advocate with the appropriate information to the appropriate body.

Kressly and Berman emphasized the need to understand the rules governed by the state insurance commissioner as well as state and federal Medicaid agencies to ensure that if an appeal is made it goes to the relevant authority for consideration. The presenters also discussed where pediatricians can go for assistance in both resources and leverage to address payment issues. For AAP members, some of the underutilized member benefits include:

- The AAP coding hotline and various coding resources are available on the AAP website.
- The AAP PAAC creates resources for pediatricians to help them receive appropriate payment from both private payers and Medicaid.
- State chapter Pediatric Councils often have relationships with regional payers and can assist pediatric practices having difficulties getting paid.

“Pediatricians all deserve adequate payment for the services they deliver to the patients of their community,” said Kressly. “Understanding the rules, how to advocate for your practice, and where to look for resources and partners in this work ensures that we have the resources to provide high-quality care to the families of our communities.”

**COMMENTARY**

Understanding the processes that underpin billing and collections is an essential element to running a professional practice of any size. Large healthcare organizations typically have comparatively large staffs to effectively manage the “revenue cycle,” which suggests just how important this element of practice management is to the functioning of the clinical. Smaller practices have an equal need to manage billing and collections but don’t typically have the resources to have an equally large staff focused just on this element of practice management.

Drs. Suzanne Berman and Susan Kressly offer a solution in their presentation “David and Goliath: How to fight improperly denied insurance claims”—namely, stay focused on a disciplined approach to the revenue cycle and make full use of the resources offered by organizations such as the AAP to keep up with changes in processes, learn tips for being efficient and effective, and to assist in prioritizing one’s time and effort.

The bottom-line message is that pediatric professionals practicing in all sizes of healthcare organizations can effectively manage their practice’s revenue cycle if they prioritize their efforts and make full use of the shared learnings and resources made available from their colleagues and professional organizations. Even though the payers are a much bigger Goliath than us, we have the benefit of shared experience and a desire to share best practices. This collectively gives us enormous strength to step up to this important task! Go David!

—Angelo P. Giardino, MD, PHD, MPH, is Wilma T. Gibson Presidential Professor, chair, Department of Pediatrics, University of Utah School of Medicine, and chief medical officer, Intermountain Primary Children’s Hospital, Salt Lake City, Utah.
FLARES AREN’T GOING TO PREVENT THEMSELVES

DAILY USE OF ECZEMA RELIEF BODY CREAM REDUCES THE INCIDENCE OF FLARE AND INCREASES THE TIME-TO-FLARE RECURRENCE

44% reduction in risk of flare in pediatric subjects

4 out of 5 children remained flare-free for six months

Steroid-free | Fragrance-free

Beiersdorf

What’s recommended for the 2019 flu shot

The American Academy of Pediatrics has released its recommendations for the upcoming flu season, with this year’s recommendation once again including the live, intranasal vaccine.

RACHAEL ZIMLICH, RN, BSN

The American Academy of Pediatrics (AAP) published its recommendations in Pediatrics,¹ and matched the recommendations issued this year by the Centers for Disease Control and Prevention’s (CDC) Advisory Committee on Immunization Practices (ACIP).²

Flor M. Munoz, MD, MSC, associate professor of Pediatrics and Molecular Virology and Microbiology at Baylor College of Medicine, and medical director for the transplant infectious diseases program at Texas Children’s Hospital in Houston, helped draft the new recommendations and says this is the first year since the live vaccine was reinstated that the AAP and the CDC’s recommendations match. Last year, the CDC offered the live, intranasal version of the influenza vaccine as an option for children, but the AAP held back its recommendation in favor of a longer surveillance period.

“The difference this year is that the AAP and the CDC’s recommendations match, meaning that they both agree that either the injectable or intranasal influenza vaccine can be used,” Munoz says. “There is not a strong argument to recommend one over the other.”

The ACIP made a preferential recommendation for the intranasal vaccine, FluMist, in 2014 for children aged 2 to 8 years because it appeared to offer better protection. The recommendation was reversed in 2015 over concerns about the vaccine’s efficacy against the 2009 H1N1 strain of influenza. The ACIP reinstated its recommendation for FluMist in 2018, after the vaccine manufacturer was able to demonstrate improved efficacy. The AAP, however, withheld its recommendation in favor of reinstating FluMist, noting that it would prefer to observe the new formulation’s efficacy for a longer period of time before making a decision.

Munoz says the AAP’s decision to recommend FluMist is the result of better data showing similar efficacy results between the intranasal and injectable influenza flu vaccines. She notes that protection against H3N2 wasn’t great in either formulation of the vaccine, but both were effective against H1N1.

“This year we do anticipate the majority of the vaccines used will be injectables,” Munoz says, adding that children aged younger than 2 years cannot receive the live, intranasal vaccine.

Munoz also notes that all pediatric influenza vaccines recommended this year are quadrivalent. This has been an ongoing transition from trivalent formulations, she says. As far as which strains the vaccine will cover, this year’s composition of the flu vaccines has been updated to include the influenza A (H1N1) pdm09 and A (H3N2) components. Coverage for B strains is unchanged from previous seasons, according to the AAP.

“This year we do anticipate the majority of the vaccines used will be injectables.”

—FLOR M. MUNOZ, MD, MSC

According to ACIP, the 2019-2020 quadrivalent flu vaccine will include protection against the A/Brisbane/02/2018 (H1N1) pdm09-like virus; an A/Kansas/14/2017 (H3N2)-like virus; a B/Colorado/06/2017-like virus (Victoria lineage); and a B/Phuket/3073/2013-like virus (Yamagata lineage). Additionally, the US Food and Drug Administration (FDA) expanded the age indication for the Afluria Quadrivalent vaccine this year. The vaccine, previously approved for use in children aged 5 years and older, now can be used in children aged 2-4 years.
Impact of the varicella vaccine

The varicella vaccine may have reduced the incidence of herpes zoster. A recent study confirms what others had previously reported.

MIRANDA HESTER, EDITOR

According to the study published in Pediatrics,1 researchers used children aged 0 to 17 years from 2003 to 2014. They identified cases of herpes zoster using electronic medical records and looking for International Classification of Diseases, Ninth Revision diagnosis code 053. Researchers calculated the incidence rate of herpes zoster per 100,000 person years of health plan membership for all children and also among children who had been vaccinated versus those who had not been. Among children who had been vaccinated, they compared herpes zoster rates by month and year of age at vaccination. The study included 6,372,067 children with 1 month or more of health plan membership. Over the 12-year period, the herpes zoster incidence rate for all children was 74 per 100,000 person years. The rate among children who had been vaccinated for varicella was 38 per 100,000 person years, which was 78% lower than among children who were not vaccinated (170 per 100,00 person years). The incidence of herpes zoster declined by 72% during the study period and the annual rates were consistently lower in children who had been vaccinated than in children who had not been vaccinated.

The researchers say their study confirms the significant decline in herpes zoster incidence among children vaccinated for varicella and highlights the importance of routine varicella vaccination.  

For reference, go to ContemporaryPediatrics.com/varicella-vaccine

aged 6 to 35 months. Children aged 6 to 25 months should receive the 0.25-mL dose, and children aged older than 36 months should receive the 0.5-mL dose, according to the ACIP. Pediatricians must watch which vaccine they are using, Munoz notes. “Make sure to look at the vaccine brand and formulation,” she advises. “There are different options for babies aged 6 to 35 months.”

There are now 4 egg-based quadrivalent flu vaccines licensed for children aged 6 months and older; 1 inactivated cell-based quadrivalent vaccine for children aged 4 years and older; and 1 quadrivalent live attenuated vaccine for children aged 2 years and older. New formulas of vaccines with a volume of 0.5 mL have been approved for children aged 6 to 36 months depending on the vaccine formula used. Children aged 36 months and older should receive the 0.5-mL dose, according to the recommendations. The ACIP recommends that a 0.25-mL dose is indicated for Afluria Quadrivalent; 0.5-mL doses are indicated for Flurix and FluLaval quadrivalents; and either a 0.25-mL or 0.5-mL dose can be used of Fluzone Quadrivalent. The dose for intranasal FluMist is 0.2 mL, or 0.1 mL in each nostril.

Which vaccine is chosen may also depend on supplies, with some manufacturers anticipating shipping delays due to the timing of the World Health Organization’s decision on which flu strains to include in this year’s vaccine. As for timing, the AAP recommends that children aged 6 months to 8 years who are receiving the flu vaccine for the first time, or who received only 1 dose prior to July 2019, be vaccinated with 2 doses of the vaccine as soon as possible. Children needing only 1 dose should also be vaccinated now, the AAP states.

There is also a new antiviral treatment available to pediatric patients, according to the AAP. Baloxavir marboxil was licensed in 2018 for early treatment of influenza in patients aged older than 12 years who have been sick for less than 2 days. The new medication requires only a single dose, notes the AAP, adding that clinical trials of the drug are still ongoing in hospitalized patients. The AAP recommends that any children hospitalized with suspected or confirmed influenza be treated with some form of antiviral medication approved for their age group, regardless of the duration of symptoms.  

For references, go to ContemporaryPediatrics.com/2019-2020-influenza

According to the study published in Pediatrics,1 researchers used children aged 0 to 17 years from 2003 to 2014. They identified cases of herpes zoster using electronic medical records and looking for International Classification of Diseases, Ninth Revision diagnosis code 053. Researchers calculated the incidence rate of herpes zoster per 100,000 person years of health plan membership for all children and also among children who had been vaccinated versus those who had not been. Among children who had been vaccinated, they compared herpes zoster rates by month and year of age at vaccination. The study included 6,372,067 children with 1 month or more of health plan membership. Over the 12-year period, the herpes zoster incidence rate for all children was 74 per 100,000 person years. The rate among children who had been vaccinated for varicella was 38 per 100,000 person years, which was 78% lower than among children who were not vaccinated (170 per 100,00 person years). The incidence of herpes zoster declined by 72% during the study period and the annual rates were consistently lower in children who had been vaccinated than in children who had not been vaccinated.

The researchers say their study confirms the significant decline in herpes zoster incidence among children vaccinated for varicella and highlights the importance of routine varicella vaccination.  

For reference, go to ContemporaryPediatrics.com/varicella-vaccine
Selective serotonin reuptake inhibitors (SSRIs) are a first-line pharmacologic intervention for major depressive and anxiety disorders, but also are indicated for obsessive-compulsive disorder (OCD), premenstrual dysphoric disorder, and bulimia nervosa, among other psychiatric conditions. Due to their relatively low adverse-effect profile—with the exception of a very low rate of self-injurious thoughts and behaviors—and the high prevalence of anxiety and depressive disorders in youth, a significant proportion of SSRIs are prescribed by pediatricians.

The mechanism of action of SSRIs consists of inhibiting the function of the transmembrane presynaptic serotonin transporter (SERT), which in turn increases the availability of serotonin to a myriad of postsynaptic serotonin receptors. Depending on the SSRI, the norepinephrine transporter (NET) and dopamine transporter (DAT) are also weakly inhibited. The ensuing serotonergic transmission cascade is still only poorly understood. In particular, neuroplasticity effects may be key in the therapeutic action of SSRIs.

Pharmacogenomic data available to guide use of SSRIs is cataloged by the Clinical Pharmacogenomics Implementation Consortium (CPIC), with a guideline published in 2015 for CYP2D6 and CYP2C19 polymorphisms. Pharmacogenomic data can theoretically be used to personalize biologic information to guide clinicians in choosing among SSRIs to optimize response and decrease adverse effects. However, the data available is only emergent, and should be considered cautiously in its interpretation. In particular, the US Food and Drug Administration (FDA) has not approved pharmacogenomic tests for use in differentiating psychotropic drug choices.

Notwithstanding, CPIC data focuses on polymorphisms in the cytochrome P450 system, which metabolize SSRIs. These polymorphic alleles have been cataloged and may guide treatment, specifically in identifying patients who are refractory to SSRIs or have excessive adverse effects. This article reviews the 2015 CPIC guidelines for 2 CYP450 enzymes, CYP2D6 and CYP2C19, with the addition of recent data available since 2015.

Of note, the 2015 CPIC guidelines caution using the information provided wholesale to children as most studies have only been performed in adults, with the caveat that cytochrome P450 system activity is generally fully mature by early childhood.

The CYP2D6 gene is highly polymorphic, with over 100 known allele variants and subvariants, which are not straightforward to
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completed a 6-week open-label escitalopram trial, using the Aberrant Behavior Checklist-Community Version (ABC-CV) score as an endpoint. There was no difference in outcomes for the different CYP450 genotype groups. However, UM participants showed a slower rate of change in dose over time.

In another study, Strawn and colleagues used pharmacokinetic (PK) parameters to model the dosing for escitalopram in different CYP450 genotypic groups. Based on PK modeling, poor metabolizers require a 10 mg/day dose and ultrarapid metabolizers require 30 mg/day to reach the equivalent 20 mg daily dose of normal metabolizers for similar drug exposure among the groups.

Finally, Aldrich and colleagues reported on a retrospective study of electronic medical record data from 263 youth aged younger than 19 years with anxiety and/or depressive disorders who were prescribed citalopram or escitalopram. As expected, patients with CYP2C19 PM genotypes had more adverse effects than CYP2C19 UM patients (P=0.015), including activation symptoms (P=0.029) and more rapid weight gain (P=0.018). In contrast, CYP2C19 PM patients discontinued treatment more frequently than CYP2C19 NM patients (P=0.007). Finally, faster metabolizers paradoxically responded more quickly (P=0.005) and trended toward less time spent in subsequent hospitalizations (P=0.06).

Databases for clinicians

The CPIC formed in 2009 as a joint collaboration between the Pharmacogenomics Research Network (PGRN) and the Pharmacogenomics Knowledgebase (PharmGKB). The PharmGKB, a National Institutes of Health-funded online knowledgebase, has been operating since 2000 to promote researchers’ understanding of the field of pharmacogenetics by serving as a database for storing peer-reviewed, freely accessible, genotype-based drug-dosing guidelines for clinicians.

Another multidisciplinary group is the Dutch Pharmacogenetics Working Group (DPWG), which has developed pharmacogenetics-based therapeutic recommendations starting in 2005. Distinct gene-drug associations for well-known SSRIs have been catalogued by the DPWG (www.knmp.nl/downloads/pharmacogenetic-recommendations-august-2019.pdf). Although both CPIC and DPWG guidelines show a high level of concordance, differences exist, possibly due to different initial selection of the relevant gene-drug pairs or dissimilar allele classification with subsequent conflicting genotype to phenotype conversions.

Conclusion

In summary, given that anxiety and depressive disorders in children are etiologically complex conditions, a full assessment and consideration for psychosocial treatments is a key first step in management. If medication management is indicated, the use of CYP450 has promise for real world use in pediatric patients with need for SSRI treatment. The current practice of starting at lower doses and increasing gradually is supported as a reasonable approach to the large majority of patients. In those patients with early toxic effects at lower dosing or lack of response with higher dosing, CYP450 genotyping may provide additional guidance.

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For references, go to ContemporaryPediatrics.com/SSRI-for-children
PUZZLER

Boy’s chronic lesions change with the seasons

DAVID W BRODELL, MD; GLYNIS SCOTT, MD; MARIA CORDISCO, MD

A healthy 10-year-old male presents for evaluation with a 3-year history of an asymptomatic and progressive, mildly pruritic rash over his head and trunk. The first lesion appeared on his back 3 years ago, and numerous other lesions developed insidiously afterward. The patient’s father states that the lesions fade during the winter and become more prominent during the summer. Failed treatment included hydrocortisone.

Physical exam revealed well-circumscribed, annular, erythematous plaques with adherent scale and atrophy on the patient’s right forehead, cheeks, bilateral medial canthi, bilateral conchal bowls, and back (Figures 1 and 2). The rest of the physical exam was unremarkable. There was no recent travel, and the patient did not take any medications. There was no evidence of uveitis or arthritis.

Differential diagnosis

The initial differential diagnosis was broad given the nonspecific clinical presentation without significant symptoms (Table). Whereas granulomatous diseases such as granuloma annulare or sarcoidosis can present as infiltrated annular plaques, they generally lack the scale that is associated with disseminated cutaneous discoid lupus erythematosus (DLE). Lichen planus often has a shiny, violaceous hue, and hydroa vacciniforme often presents as small vesicles that heal with scarred, crust-ed erosions. Fungal acid-fast bacilli (AFB) and bacterial cultures help to eliminate any infectious etiologies. Biopsy helped to rule in or exclude possible neoplastic processes including cutaneous B-cell lymphoma.

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dermatology (CBCL) or lymphomatoid papulosis (LYP). Such neoplasms require clinic-pathologic confirmation.

Evaluation and testing
Punch biopsy from the patient’s back revealed prominent vacuolar change at the dermal-epidermal junction with hydropic degeneration of basal keratinocytes and numerous melanophages within the papillary dermis (Figures 3 and 4). Alcian blue staining revealed increased dermal mucin.

Blood work was unrevealing: C-reactive protein (CRP), 0.3; erythrocyte sedimentation rate (ESR), 11; complete blood count (CBC), normal; comprehensive metabolic panel (CMP), normal; antinuclear antibodies (ANA), negative; anti-double stranded DNA (anti-dsDNA), <1; anti-Ro/La, 0.2/<0.2; serum C3, 131; serum C4, 23; urinaryysis, within normal limits (WNL).

Diagnosis
Given the clinical and histologic findings, this patient was diagnosed with DLE as more than one body segment was involved. Shortly after the labs returned, the patient’s mother revealed that she was recently diagnosed with lupus erythematosus (LE). This patient did not fulfill the American College of Rheumatology criteria for systemic lupus erythematosus (SLE) given the absence of laboratory abnormalities and systemic symptoms.

Discussion
The exact cause of DLE in this patient, as in most DLE patients, is unclear. There is a family history of LE, and pediatric DLE is more commonly associated with a genetic predisposition than in adult DLE. Sampaio and colleagues found that 11.8% of pediatric DLE patients had a family history of LE compared with 1% to 4.4% of adults. Several triggers can unmask native LE such as ultraviolet radiation exposure and tumor

**TABLE DIFFERENTIAL DIAGNOSIS**

<table>
<thead>
<tr>
<th>Category</th>
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<tr>
<td>Inflammatory</td>
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<td>Sarcoidosis</td>
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<td>Lichen planus, hypertrophic</td>
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<td>Hydroa vacciniforme</td>
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<td>Discoid lupus erythematosus</td>
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<td>Infectious</td>
<td>Tinea corporis</td>
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<td></td>
<td>Leishmaniasis</td>
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<td></td>
<td>Histoplasmosis</td>
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<td></td>
<td>Blastomycosis</td>
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<tr>
<td>Neoplastic</td>
<td>Cutaneous B-cell lymphoma</td>
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<td></td>
<td>Lymphomatoid papulosis</td>
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CONTEMPORARY PEDIATRICS

**VIDEO EXCLUSIVE**

For Contemporary Pediatrics, Dr. Bobby Lazzara reviews the findings of a study that evaluated a possible association between hyperthyroidism and mental health conditions (MHCs) in pediatric patients. Using the Military Health System Data Repository, researchers compared specific MHCs in military beneficiaries aged between 10 and 18 years who were diagnosed with hyperthyroidism versus incidence of the same MHCs in children without hyperthyroidism. For results and the lesson for pediatricians, go to: ContemporaryPediatrics.com/thyroid-and-mental-health-video

**FIGURE 2** Patient’s rash shows well-circumscribed, annular, erythematous plaques with adherent scale and central atrophy.
necrosis factor (TNF)-alpha antagonists. Although this patient has not used any medications, he is an active young boy who spends a great deal of time in the sun and is clearly photosensitive per his father.

Pediatric DLE is a rare condition predominantly affecting females. The clinical morphology and distribution are very similar to “classic” patterns seen in adults. The face and scalp are very common locations; scaling, hypertrophy, and follicular plugging with atrophy are frequent.2 Less than 3% of patients develop DLE before age 10 years.1,3 The risk of progression to SLE over time frame is approximately 25%.4,5 In one study, the risk to progression was greatest within the first year following a diagnosis of DLE.5

There is general consensus between North American Dermatology and Rheumatology clinics that initial screening labs after diagnosis of DLE should include: CBCs with differential, urinalysis, complement levels, ESR, ANA, hepatic function tests, renal function/electrolytes, anti-dsDNA antibodies, as well as anti-Ro/SSA, anti-La/SSB, anti-Sm, and anti-RNP.4 Compared with adults, pediatric DLE more commonly precedes SLE. Additionally, pediatric SLE is associated with a higher proportion of end-organ damage and is more frequently life threatening compared with the adult counterpart.5 All patients should be screened regularly through their entire lifetime given concern for progression to SLE.

Patient outcome
Sunscreen as photoprotection and topical corticosteroids were prescribed for this patient. Treatment with hydroxychloroquine is planned as the first-line systemic therapy. This medication would be cardioprotective, treat the cutaneous disease, reduce the likelihood of flares, and decrease autoantibody creation.7 Screening for hydroxychloroquine retinopathy should be done at baseline and then annually after 5 years of use in the majority of pediatric patients.7

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For references, go to ContemporaryPediatrics.com/puzzler-1119
BERNARD A COHEN, MD
SECTION EDITOR

Pernio, or chilblains, is a chronic condition classically presenting as red-to-purple, edematous lesions of variable sizes on acral skin, typically fingers and toes. Lesions are commonly painful and pruritic, and they may progress to blisters and ulcers predisposing to infection. Symptoms result from abnormal vasoconstriction in response to physiologic stress, such as cold temperatures and hypoxemia.

The course may be acute, initiating as quickly as 24 hours following insult and improving within 3 weeks, or chronic, persisting or recurring over weeks to months despite lack of repeated insults. One-third of patients show at least 1 laboratory abnormality that may raise concern for underlying hematologic or rheumatologic disease. Patients with secondary perniosis due to such conditions are more likely to present with chronic symptoms.

Differential diagnosis and workup
The differential diagnosis for pernio includes leukocytoclastic vasculitis, Henoch-Schonlein Purpura, and hand-foot-mouth disease. Chilblains lupus erythematosus is an uncommon disorder that presents with both the characteristic discoid papules of cutaneous lupus erythematosus as well as the lesions of pernio. A complete history that includes recent illnesses, medications, triggers, and other involved organs is vital to the diagnosis of pernio.

A healthy 15-year-old girl presents for evaluation of itchy, painful bumps on her toes that developed 3 weeks earlier. The bumps become more numerous and bothersome when she is outdoors sledding and skiing.

FIGURE 1 Erythematos-to-violaceous, indurated papules and small plaques on the dorsal toes were tender to palpation.
Though not required, skin biopsy may be utilized when the diagnosis is unclear. Supporting histopathology shows papillary dermal edema with lymphocytic infiltrate surrounding blood vessels and adnexal structures.\(^7\) Laboratory workup includes a complete blood count (CBC) and antinuclear antibody (ANA) titers to rule out underlying hematologic or rheumatologic abnormalities.\(^3\)

**Management**
First-line management for pernio involves keeping extremities warm and dry. Medium-to-high potency topical corticosteroids are thought to be beneficial in clinical practice, however, no large, randomized trials have investigated their effectiveness. The vasodilatory calcium channel blocker nifedipine used for 6 weeks may alleviate symptoms, although evidence for its efficacy is conflicting.\(^6,\)\(^10\)

**Review and examination**
Review of systems for this patient included frequent discoloration and loss of sensation in the hands and feet during winter months. She denied foot trauma, lesions elsewhere on her body, recent infection, new medications, abdominal pain, chills, and joint pains.

Examination revealed erythematous-to-violaceous, edematous papules and small plaques on the dorsal feet with greatest density on the toes (Figure 1). Laboratory studies revealed positive ANA (1:320) with speckled pattern and normal CBC, erythrocyte sedimentation rate, C-reactive protein, C3, C4, anti-Smith, anti-double-stranded DNA, anti-Ro, and anti-La antibodies. Biopsy showed mild subepidermal edema with brisk perivascular and periadnexal lymphocytic infiltrate (Figure 2).

**Patient outcome**
The patient was diagnosed with pernio based on clinical history and biopsy results. Despite her ANA results, she did not meet criteria for any form of lupus erythematosus. She was counseled on keeping her hands and feet dry and wearing insulated gloves and footwear.

Two months later, her symptoms improved with onset of warmer weather. Two years later, despite continued conservative management, her symptoms recurred. Clobetasol ointment twice daily for no more than 2 consecutive weeks was prescribed. The lesions cleared within 6 months.

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**FIGURE 2** Punch biopsy of a discrete papule revealed mild subepidermal edema and a prominent perivascular and periadnexial lymphocytic infiltrate.

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**Read More**
- Erythematous plaque on an infant’s cheek: ContemporaryPediatrics.com/dermcase-1019
- Segmental hemangioma on a newborn’s face: ContemporaryPediatrics.com/dermcase-0919
- Emergent itchy rash in a 5-year-old boy: ContemporaryPediatrics.com/dermcase-0819

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Dr Stilphen is a first-year Pediatrics resident, Nationwide Children’s Hospital, Columbus, Ohio.

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Dr. Cohen, section editor for Dermcase, is professor of Pediatrics and of Dermatology, Johns Hopkins University School of Medicine, Baltimore, Maryland. The authors 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 authors 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-1119
DISPATCHES

How to strengthen PCPs’ mental health training

A new nationwide program helps primary care providers (PCPs) with mental health training to better address routine psychosocial issues in children and their families.

MOLLKA SAJADY, DO, MPH; EMILY BORMAN-SHOAP, MD; KATHERINE E MURRAY, MD, MPH; JONATHAN HOMANS, MD; ANDREW BARNES, MD, MPH

The prevalence of mental health concerns in children has increased steadily over the last 30 years to approximately 1 in 5 children in the United States.1 Primary care providers (PCPs) often report time constraints to address mental health concerns and long waiting periods for mental health referrals as common barriers to identification and treatment of psychosocial concerns in children.2 Over half of general pediatricians who are recent graduates of pediatric residency programs indicated that they needed additional training in mental health.3

To address this growing concern, the US Department of Health and Human Services’ Health Resources and Services Administration (HRSA), Maternal and Child Health Bureau (MCHB) Division of Maternal and Child Health, provides funding for 10 programs nationwide to address the mental health-training gap and support the professional development of PCPs, known as collaborative office rounds (COR).4

Program highlights
All COR programs are structured as regularly scheduled discussion groups, co-led by developmental-behavioral pediatricians and child and adolescent psychiatrists, with the aim of increasing the comfort level and ability of PCPs to address routine psychosocial issues of children, adolescents, and their families.4 Participants include interdisciplinary community practitioners and trainees in fields such as medicine, psychology, dentistry, and social work. Most COR programs provide continuing education credits to participants.

MAIN GOALS
There are 5 primary goals of the University of Minnesota COR program, as follows:5

GOAL 1: Enhance PCP understanding of psychosocial aspects of child development, disorders, and disability.

GOAL 2: Increase provider availability to help children and families address these issues.

GOAL 3: Expand the provider’s ability to distinguish between transient disturbances and more serious psychiatric disorders that may require referral.

MOLLIKA SAJADY, DO, MPH; EMILY BORMAN-SHOAP, MD; KATHERINE E MURRAY, MD, MPH; JONATHAN HOMANS, MD; ANDREW BARNES, MD, MPH

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GOAL 3: Expand the provider’s ability to distinguish between transient disturbances and more serious psychiatric disorders that may require referral.
GOAL 4: Promote collaboration among PCPs with developmental-behavioral pediatricians and child and adolescent psychiatrists.

GOAL 5: Facilitate a comprehensive approach to health supervision, such as outlined in Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents.6

PROGRAM DESIGN
The University of Minnesota COR program was first established in 1996 and is designed as a biweekly-to-monthly case-based discussion addressing a real-word clinical dilemma selected by a community professional. A PCP chooses a challenging case to highlight from his/her practice, filling out a brief standardized online form that includes questions that the provider wants the group to address/assist with; age and presenting problems; developmental, academic, and past medical, social, and family histories; cultural and linguistic considerations; current services and interventions; initial diagnostic formulation and assessment; and relevant follow-up visit information (Table 1). The resulting de-identified case summary is sent electronically to participants 3 days prior to the meeting.

At the beginning of the one-hour session, COR participants (usually 10 to 20 persons) offer brief introductions of themselves to better understand the various health professions represented. Additional virtual options to participate via phone or video call are offered as well. The presenter then verbally summarizes the case over approximately 15 minutes. After the case is presented, participants ask clarifying questions before dividing into facilitated small groups of 4 to 6 persons for discussion of the case and to address the questions brought forth by the presenter. After 15 to 20 minutes of small group discussion, the entire group reconvenes for a larger discussion of the case for the remainder of the time. At least one representative from each small group summarizes the points discussed and offers any recommendations or resources for the presenter to consider for ongoing care of the patient.

Examples of COR discussions that have been presented at the University of Minnesota are provided in Table 2.

The COR program at the University of Minnesota was recently highlighted in the media by Minnesota Public Radio, as mental health training is becoming

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>COR CASE INFORMATION FORM</th>
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<tbody>
<tr>
<td><strong>PREFACE QUESTIONS</strong></td>
<td><strong>CASE TITLE</strong></td>
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<tr>
<td>1</td>
<td>Patient’s age and presenting problems (please do not use real names or include identifying information). Example: “J. is a 10-year-old boy with historical diagnosis of ADHD and dyslexia who became severely irritable on 10 mg of daily methylphenidate 2 months prior to my first visit with him and it was discontinued. His parents wanted to reconsider medication options.”</td>
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<td>Developmental history (including summary of results of developmental, behavioral, mental health screening or psychological testing, if done).</td>
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<td>3</td>
<td>Academic history (including academic accommodations and modifications, school-based services/therapies, and whether a 504 or IEP is in place).</td>
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<td>Current services and therapies (outside school).</td>
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<td>Current medications (including doses, if known).</td>
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<td>Past medical history (including birth history, if known).</td>
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<td>Family history.</td>
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<td>9</td>
<td>Vital signs (including height, weight, body mass index percentile estimates, if known).</td>
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<td>10</td>
<td>Behavioral observations (including caregiver-child interactions).</td>
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<td>11</td>
<td>Relevant exam findings.</td>
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<td>12</td>
<td>Initial diagnostic formulation/assessment.</td>
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<td>13</td>
<td>Initial clinical decision-making/management plan.</td>
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<td>14</td>
<td>Relevant subsequent clinical course.</td>
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Abbreviations: ADHD, attention-deficit/hyperactivity disorder; COR, collaborative office rounds; IEP, individualized education program.

Author created.
an increasingly important public health concern. A unique aspect of the University of Minnesota COR program is our emphasis on hosting a conference that is geared toward providers in practices in conjunction with residents in training. In this way, primary care preceptors are encouraged to participate with their continuity clinic trainees by selecting a comanaged case for presentation. Discussing cases with providers with a range of experience levels provides rich opportunities for shared learning.

**GUIDING PRINCIPLES**
During each COR session there are 4 guiding principles that are followed:

1. Focus upon practitioners’ presentation of common clinical dilemmas.
2. Create a common language and supportive environment.
3. Enhance understanding of psychosocial aspects of child development, emotional and behavioral disorders, and disabilities, and the ability of providers to help families cope.
4. Increase the providers’ ability and comfort to differentiate transient from more severe disorders. Both prospective and retrospective analytical approaches are utilized to promote understanding of the case and plan for optimum care moving forward.

**PROGRAM EVALUATION**
The COR program at the University of Minnesota also collects quantitative and qualitative feedback for continuous quality improvement. Over 90% of participants reported that COR meetings met the program objectives well and most participants stated that they would continue to attend COR in the future (64.7% of respondents).

Some examples of general opportunity to engage with peers; “interactive and designed to address meaningful clinical problems”; and “convenient and free.” Suggestions for improvement include: “cases with effects of technology on children with autism”; and “ethics cases and challenges with medication management.”

**Lessons learned**
Challenges faced by our COR program include recruiting community providers outside the university to attend the sessions and lower participation numbers for monthly morning community sessions compared with monthly residency training-based lunch sessions. To increase participation, we have combined the community and residency training sessions into one monthly lunch session (with food provided), while offering virtual participation options. We encourage community clinics to block an hour of time for their clinicians to participate in COR monthly. Finally, we are exploring ways to help physicians to gain Maintenance of Certification (MOC) credit for COR participation.

**Key takeaways**
The COR program at the University of Minnesota is a case-based continuing-education initiative funded by the MCHB to address mental health training gaps for PCPs. Other programs could use the COR model to provide ongoing education and encourage collaboration among PCPs, primary care trainees, and mental health professionals.

**TABLE 2**

<table>
<thead>
<tr>
<th><strong>COR CASE TITLE EXAMPLES</strong></th>
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<tr>
<td><strong>CASE TITLE</strong></td>
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<tr>
<td>“Culturally Bound Barriers in Mental Health Care: A Somali Case Presentation”</td>
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<tr>
<td>“ADHD Evaluation in a Homeschooled Fifth Grader”</td>
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<tr>
<td>“Severe Aggression and Impulsive Behavioral Concerns in a 2-Year-Old: Do Medications Play a Role in the Treatment Plan?”</td>
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<td>“Kicked Out of Daycare: What to do Now?”</td>
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<td>“Behavioral Struggles in a 9-Year-Old with an All-Star Team”</td>
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<td>“6-Year-Old with Concerns About Violent Behavior at School”</td>
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<td>“Adolescent Paraphilia in the Internet Age”</td>
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<td>“Groundhog Day with School-Triggered Anxiety”</td>
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<td>“13-Year-Old Girl Presenting with Headache”</td>
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<tr>
<td>“Medication Adherence in an Adolescent Patient with High-Functioning Autism: How to Communicate?”</td>
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<tr>
<td>“Would This Have Happened to My Son? The Admission Course of a 6-Year-Old with Auditory Hallucinations Due to Psychostimulant Medication”</td>
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<tr>
<td>“4-Year-Old Girl with Anxiety at a Well-Child Check”</td>
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<tr>
<td>“Life After a Second Suicide Attempt”</td>
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<tr>
<td>“6-Year-Old Boy with ADHD and Aggressive Behaviors at School”</td>
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</tbody>
</table>

Abbreviations: ADHD, attention-deficit/hyperactivity disorder; COR, collaborative office rounds. Author created.

comments about the University of Minnesota COR program from attendees include: “a great

For references, go to ContemporaryPediatrics.com/mental-health-training
Novel study connects family stress to asthma exacerbation

The connection between mind and body are well known, but a study is now tying family stress to chronic illness—specifically asthma.

RACHAEL ZIMLICH, RN, BSN

In a new study published in *Pediatrics*, principal Investigator Molly Martin, MD, MAPP, associate professor of Pediatrics in the University of Illinois at Chicago (UIC) College of Medicine and fellow of the Institute for Health Research and Policy, and her team reveal that family chaos corresponded to worse asthma control, even when accounting for parent and child depression.

Much research has shown a link between psychosocial issues and child asthma control, says Sally Weinstein, PHD, associate director of the University of Illinois Center on Depression and Resilience, associate professor of Clinical Psychology at the UIC College of Medicine, and lead author of the report, but these links are not well understood.

“We do not have great answers to the questions of ‘why’ and ‘how’ this relationship exists,” Weinstein says. “Our aim was to address some of these gaps in the literature and our understanding of the health disparities that exist in pediatric asthma, particularly in low-income minority populations, by examining family chaos as a potential pathway that could explain the link between parent/child mental health and child asthma control.”

The study shows that there are many factors to asthma manifestation and control, she adds.

“Parent, child, and family factors all play a role in the etiology and maintenance of child asthma control,” says Weinstein. “Above and beyond the effects of parent and child depression, family chaos emerged as a robust influence on child asthma outcomes in an urban, high-risk population.”

The study is the first to suggest that family chaos is indeed a powerful mechanism linking parent depression and worse child asthma control in a high-risk urban population,” Weinstein adds.

“Because it’s a first-of-its-kind study, this study offers a fresh perspective of exploring the psychosocial risk factors of asthma and opens up the opportunity to equip front line providers such as pediatricians, community health workers, and parents and caregivers with guidance and a resource to develop and advance a collaborative system of care for asthma management,” she says.

Still, Weinstein says knowing the problem is the first step in finding a solution.

“Our findings offer a much-needed resource to more effectively control pediatric asthma in high-risk populations—integrating behavioral interventions that can improve family chaos through developing family routines, structure, and organization, particularly around asthma management,” Weinstein says.

Asthma is a difficult condition to control, and this research could point the way to more effective treatment methods, she adds. Weinstein says whereas the findings of the study are novel, they were not all that surprising.

“Despite all our advances in treatment, child asthma prevalence and morbidity remain high. What was most compelling about this study was that focusing on the family can be key to improving child asthma,” Weinstein says. “As a child psychologist, I suppose that I’m not surprised that family functioning plays such a
respiratory

key role in child asthma outcomes, yet this is the first study to document this relationship."

Weinsein says the study highlights the importance of caring for the whole child as well as their families. "Our research underscores the importance of looking beyond symptoms in children with uncontrolled asthma to address the health and well-being of the child, caregiver, and the family," she says. "Our findings suggest that assessing and addressing child and parent depression is critical for improving child asthma outcomes in high-risk populations. Additionally, offering education and support on family structure, organizations, and routines in the household around asthma management may be particularly important tools for the healthcare provider."

Pediatricians are a vital frontline provider for children and their caregivers, Weinsein adds, and should include parents in some way in their routine assessments. "Including brief, low-burden assessments of parental well-being in routine child visits, followed by providing mental health resources and referrals to parents identified as higher risk, can offer an important gateway for parents to access their own mental healthcare," Weinsein says. "Having a list of local resources for mental health treatment, with a few guidance points on what to ask for and what information may be needed to schedule an appointment, available for parents may help break down barriers associated with accessing mental health resources."

Although this study focused only on pediatric asthma, Weinsein couldn’t say whether family chaos contributes to other chronic conditions in the pediatric population. "Family routines and structure are important for child and family well-being, and that relationship becomes even more important when the family is confronted with the challenges involved in managing a chronic health condition," Weinsein explains. "Our findings point to the importance of future research exploring the role of family chaos in other pediatric chronic conditions that require daily management."

Are sleep studies helpful for treating sleep apnea?

MIRANDA HESTER, EDITOR

Polysomnography has long been considered key to diagnosing obstructive sleep apnea (OSA) in children, but a new study in Pediatrics questions how helpful the technique is for determining whether a child will benefit from an adenotonsillectomy.

Researchers obtained cognitive, behavioral, quality-of-life, health, and polysomnographic outcomes at baseline and at 7 months from the Childhood Adenotonsillectomy Trial, a randomized trial that compared the outcomes of watchful waiting and early adenotonsillectomy in children who have OSA. The study included 398 children aged 5 to 9 years. At follow-up, 244 children (61%) saw resolution of OSA. A polysomnographic resolution of OSA accounted for small but significant proportions of changes in disease-specific quality of life (proportion mediated, 0.11 [95% confidence interval (CI), 0.04 to 0.20; P=.004]) and symptoms (proportion mediated, 0.13 [95% CI, 0.07 to 0.21; P<.001]). A change in polysomnographic severity also showed a similar mediation in disease-specific quality-of-life outcomes (proportion mediated, 0.20 [95% CI, 0.10 to 0.31]; P=.004). However, in the other 16 outcomes, there was no significant mediation effect identified. Adenotonsillectomy was found to return a normal polysomnography in 79% of children versus 46% who underwent watchful waiting. Obstructive sleep apnea resolved in roughly 50% of the children who underwent watchful waiting.

The researchers concluded that most of the treatment-related changes in the outcomes of OSA in school-aged children were not causally attributable to polysomnographic resolution or changes in its severity. They said the results illustrate the limited use of polysomnographic thresholds for managing childhood OSA.

For reference, go to ContemporaryPediatrics.com/
family-stress-and-asthma

For reference, go to
ContemporaryPediatrics.com/
polysomnography-for-OSA
Pediatric hypertension criteria should reflect overweight and obesity

A European study reveals that obesity criteria used by the American Academy of Pediatrics to diagnose pediatric hypertension helps identify more children at risk of cardiovascular disease.

RACHAEL ZIMLICH, RN, BSN

Criteria to classify children and young adults as hypertensive should be changed to reflect the status of overweight and obese children with high blood pressure who don’t meet current guidelines, according to a recent report.

The recommendation was made in a study published in the European Journal of Preventive Cardiology, and suggests that the European Society of Hypertension (ESH) criteria—last updated in 2016—must be updated again to address the increased cardiovascular risk faced by overweight and obese teenagers currently considered nonhypertensive under current ESH guidelines.1

The study evaluated children and teenagers aged 6 to 16 years who were overweight or obese and classified as nonhypertensive under current ESH guidance. Researchers applied both ESH criteria from 2016 and American Academy of Pediatrics (AAP) guidelines from 2017 to these children and teenagers, considering additional cardiovascular and health information. When AAP criteria were applied to the study group, 11% were classified as hypertensive. These participants tended to be older with lower high-density lipoprotein levels, higher body mass index, and other risk factors when compared with those participants who were classified as nonhypertensive under both current ESH and AAP criteria.

Additionally, researchers note that children and adolescents who fell into the hypertensive group when AAP criteria were applied—but continued to be nonhypertensive under ESH criteria—had greater insulin resistance, high total cholesterol to HDL-C ratios, and higher rates of left ventricular hypertrophy.

The researchers suggest that by adapting ESH criteria to better match current AAP criteria, more high-risk children and teenagers could benefit from early identification of hypertension and better avoidance of the progression of cardiovascular damage.

**Hypertension and cardiovascular risk**

Giuliana Valerio, MD, PhD, associate professor of pediatrics at the Parthenope University of Naples, Italy, and one of the study authors, says that the lower blood pressure threshold to classify children and teenagers as hypertensive in the AAP guidelines helped to classify more children and adolescents with high risk factors.

“As a result of the lowered blood pressure cutoffs, the 2017 AAP criteria allowed us to identify more obese children and teenagers with insulin resistance and atherogenic dyslipidemia who would have been missed using the ESH criteria,” she says. “In addition, children and adolescents reclassified as hypertensive by the 2017 AAP criteria, but normotensive by the old criteria, also have higher odds of left ventricular hypertrophy than individuals classified as nonhypertensive by both criteria.”

The plan now is to request ESH to officially update its criteria, noting that having 2 different sets of criteria for hypertension in children is both “confusing and detrimental.” The ability to identify these children and adolescents early and accurately is essential, she adds.

“The association between obesity, abnormal cardiometabolic risk factors, hypertension, and left ventricular hypertrophy represents a threatening cluster in children and adolescents and should not be overlooked because appropriate management can decrease cardiovascular risk,” Valerio says.

Ms Zimlich is a freelance writer in Cleveland, Ohio. She has 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.

**For reference, go to**

ContemporaryPediatrics.com/hypertension-and-obesity
More, younger children receive dialysis for acute kidney injuries

Hemodialysis use in children hospitalized with acute kidney injuries (AKIs) has increased over the last 2 decades, but it is not necessarily improving the outlook for these patients.

RACHAEL ZIMLICH, RN, BSN

Researchers in Canada published a report in the Clinical Journal of the American Society of Nephrology revealing that although the use of hemodialysis to treat patients hospitalized with acute injury has increased, so has the risk for short-term mortality.1

The research team studied 30-day mortality in more than 1300 children hospitalized AKI who received their first dialysis treatment. Data was collected on children aged 29 days to 18 years between 1996 and 2015 in the province of Ontario. The total incidence of children receiving dialysis for AKI was 0.58 per 1000 person years in 1996, but that number rose to 0.65 per 1000 person years by 2015. Over the same period, 30-day mortality rates rose in the cohort, according to the report, jumping from 14% in 1996 to 25% in 2009. Since 2009, however, 30-day mortality has sustained at 20. During the same period, use of peritoneal dialysis in this population has decreased, and the median age at which dialysis initiated dropped from age 13 years in 1996 to age 3 years from 2010 to 2015.

Rahul Chanchlani, MD, MSC, FASN, assistant professor of pediatric nephrology and associate faculty in the department of health research methods, evidence and impact at McMaster Children’s Hospital and McMaster University in Hamilton, Ontario, Canada, led the study and says pediatricians need to take note of the increasing incidence of severe acute injury requiring dialysis in children. “These high-risk patients need close follow-up, and not just during the hospital stay, but also after discharge, as they are at a higher risk of death,” Chanchlani says.

Pediatricians can help by working to reduce AKIs and the need for dialysis, he adds, offering some advice. “The important ones are avoiding nephrotoxic medications such as nonsteroidal anti-inflammatory drugs and antibiotics, if possible; counseling children and their parents about benefits of adequate hydration and frequent voiding; keeping a close eye on children at high risk of AKI during hospital stay such as preterm babies or those admitted to the intensive care unit; and those with sepsis, shock, cardiac issues, malignancy, or some renal and urological abnormalities,” Chanchlani says. “Any rise in creatinine during the hospital stay should be taken seriously.”

He offered some analysis on the decline of peritoneal dialysis and the reasons behind the increase in hemodialysis as treatment modalities for AKI. “In our study, there was initially an increase in the 30-day mortality from 14% to 25% until 2009 followed by a decline to around 20% in the more recent years despite an increasing burden of comorbid conditions such as cardiac surgery and mechanical ventilation,” Chanchlani says. “This may be due to various reasons including significant advancement in clinical care of the underlying conditions, better availability of intensive care units, and earlier initiation of dialysis.”

Chanchlani says he was surprised at the rising risk of severe AKI in children over the last 2 decades, as well as the dramatic reduction in the use of peritoneal dialysis for AKI compared with dialysis or continuous renal replacement therapy (CRRT).

“The reasons for the relative decline in peritoneal are significant advances in extracorporeal therapy technology tailored to the pediatric population. This includes the availability of smaller dialyzers permitting the use of smaller extracorporeal volumes, which has made the delivery of hemodialysis and CRRT feasible and safe even in extremely-low-birthweight babies,” he says. “With the introduction of newer machines for CRRT, it is expected that CRRT utilization will continue to grow.”

Chanchlani says he hopes the study will increase awareness among pediatricians and stress the need for additional follow-up with high-risk patients.
CHILD DEATH
Caring for parents after the sudden death of a child

Pediatricians can use the growing body of knowledge from biomedical and grief research as the basis for improving their care of bereaved parents in crisis.

CHERYL GUTTMAN KRADER

Sudden unexplained death in infants and children is responsible for more deaths than pediatric cancer or heart disease and is the leading cause of postneonatal mortality in most advanced economies throughout the world. There are important questions about increased risks in other children in the family, while bereaved parents often experience severe and prolonged grief that may influence their parenting.

At the American Academy of Pediatrics (AAP) 2019 National Conference and Exhibition in New Orleans, Louisiana, in October, Richard Goldstein, MD, explained the complex needs of families whose children died from sudden infant death syndrome (SIDS) or sudden unexplained death in childhood (SUDC) and discussed the growing body of knowledge from biomedical and grief research as a basis for helping pediatricians provide improved care.

His session titled “Supporting families after the sudden unexpected death of a child” took place on Monday, October 28.

“Pediatricians are very attuned to the importance of giving sleep recommendations for preventing SIDS and are aware of the possible child abuse implications surrounding cases of sudden unexplained death. However, our field has not done as good a job educating clinicians about how to interact with and help families who are in crisis after experiencing the unimaginable,” said Goldstein, program director, Robert’s Program on Sudden Unexpected Death in Pediatrics, and assistant professor of Pediatrics, Harvard Medical School, Boston, Massachusetts.

“These are our patients and their families. Sometimes they die following all our advice and, even when they don’t, many of us can feel unprepared about what to say or do,” said Goldstein. “Our educations typically leave us uninformed about strides made by research in this area. It is important that clinicians be prepared to understand and address the concerns of these families beyond just talking about risk factors in the sleep environment.”

Parents almost universally want to know why it happened, how their seemingly healthy child might have died this way, and what it means for their other children. Goldstein heads a program that investigates the possibility of undiagnosed diseases and vulnerabilities in cases of unexplained deaths. He shared research that provides some answers.

Brainstem vulnerability is a driving factor in many cases of SIDS, preventing infants from responding to what is otherwise a modest threat in their sleep environment and leading to a failure to autoresuscitate and arouse. “We have found reduced serotonin in the brainstems of SIDS infants and shown in animal models that this deficiency causes autoresuscitation failure,” said Goldstein.

His group’s SUDC research has found changes in the hippocampus that are otherwise considered hallmarks of
epilepsy. Related to this discovery, they have discovered a gene present in some SIDS cases linked to Dravet syndrome, a severe epilepsy syndrome.

“Whereas this research is significant and may provide direction for the future, to be a good pediatrician for these families requires an understanding of the psychological crisis they are going through,” said Goldstein, who also discussed his grief research that shows extremely high levels of grief-related symptoms that impede a mother’s function.

“We found that while approximately 10% of older adults experience pathologic grief 1 year after losing their life partner, 60% of mothers who lost a child to SIDS are suffering pathologic grief 1 year later, a burden that continues at high rates for years,” Goldstein points out.

His research has also found ways to identify mothers at higher risk.

Goldstein’s main message was to emphasize the need to remain a family’s pediatrician at an extremely difficult time. He provided practical help for how to reach out to families, help them pursue explanations, and provide needed support.

COMMENTARY
The death of a child is an unnatural event, defying life’s natural order. When the death is sudden and unexpected, there can be added trauma for parents, siblings, and extended family members as the entire family dynamic has changed.

At the AAP 2019 National Conference and Exhibition, Richard Goldstein, MD, addressed this important topic in a session titled “Supporting families after the sudden unexpected death of a child.” As Dr. Goldstein highlights, the pediatrician has a unique role to play in meeting the complex medical and psychosocial needs of the family. However, our training has not adequately prepared us for how to support families after these deaths.

When a child dies suddenly and unexpectedly, the family is faced with a multitude of professionals and agencies, including first responders, law enforcement, emergency department providers, child protective services, and medical examiners. The pediatrician can act as a liaison between these professionals and the family. In providing support for families, it is important for pediatricians to recognize that grief is not linear and that the families’ needs may change over time.

When the child is aged older than 1 year, there is the added challenge that there is limited awareness of the category of death of sudden unexplained death in childhood (SUDC), which is the sudden and unexpected death of a child aged between 1 and 18 years that remains unexplained after a thorough investigation including autopsy. It affects approximately 400 children annually and is the fifth-leading category of death in children aged 1 to 4 years. However, most of the research in sudden death in Pediatrics has focused on infant deaths. As a result of this lack of awareness, pediatricians may be unaware of how to connect families with important resources such as the SUDC Foundation (sudc.org).

In recognition of the need for more consistent investigations and the need for guidance for medical professionals handling these deaths, the SUDC Foundation provided a scientific grant for a collaboration between the AAP and the National Association of Medical Examiners to form consensus guidelines for sudden deaths in Pediatrics titled “Unexplained pediatric deaths: Investigation, certification, and family needs.” These guidelines, which will be published in January 2020 and available online (sudpeds.com), represent an important step in improving care to families affected by sudden pediatric deaths.

The consensus guidelines and Dr. Goldstein’s session are significant steps to addressing the gap in our education around supporting families after pediatric deaths and encouraging pediatricians to remember that their role as the child’s pediatrician should not end with the child’s death.

— Erin Bowen, MD, is a pediatrician in practice in Ansonia, Connecticut. She is a member of the American Academy of Pediatrics (AAP) and a member of the AAP Section on Child Death Review and Prevention. She is also a member of the Sudden Unexplained Death in Childhood (SUDC) Foundation Board of Directors, working on the foundation’s Medical Education Initiatives, with a goal of increasing medical education of SUDC to professionals at the forefront of care for affected families.
ALLERGY AND IMMUNOLOGY

How to manage uncontrolled asthma and its causes

Pediatricians need to implement the strategies of assessing, adjusting, and reviewing symptoms and risks of severe asthma to confirm the diagnosis and implement appropriate interventions.

MARY BETH NIERENGARTEN, MA

In the United States, 8.4% of children have asthma. Among this cohort, 5% have asthma that is classified as severe and poorly controlled despite adherence to standard treatments. However, a much larger proportion of children with asthma report frequent symptoms that are difficult to control. The highest rates of uncontrolled asthma occur in black children (63%), young children aged 0 to 4 years (59%), and girls (53%). A number of factors can affect asthma control in these children and make it difficult to control.

To help pediatricians and front-line healthcare providers recognize and diagnose difficult-to-control asthma in children, Susan S. Laubach, MD, FAAP, associate clinical professor of Pediatrics, University of California San Diego, and director, Allergy Clinic, Rady Children’s Hospital, San Diego, California, provided an overview of factors that make asthma difficult to control and key questions that should be asked to identify these factors to make the diagnosis during a session at the American Academy of Pediatrics (AAP) 2019 National Conference and Exhibition in New Orleans, Louisiana, titled “Breathe easy: Diagnosis and management of difficult-to-control asthma” on Sunday, October 27, 2019.

These key questions include: 1) Is this really asthma?; 2) Are the treatments working?; 3) Are there unrecognized triggers?; and 4) Are there comorbidities? For each question, Laubach used a case study to illustrate how clinicians should approach a child with difficult-to-control asthma to ensure optimal management.

Laubach discussed a personalized asthma management approach taken from the 2019 Global Strategy for Asthma Management and Prevention (GINA) Report that is based on a strategy of assessing, adjusting, and reviewing symptoms and risks of severe asthma to confirm the diagnosis and implement interventions. As the first step, assessing requires confirming a diagnosis if necessary; identifying symptom control and modifiable risk factors as well as comorbidities; inhaler technique and adherence; and understanding patient goals. Adjusting includes treatment of modifiable risk factors and comorbidities; managing with nonpharmaceutical strategies; educating the patients; and use of asthma medications. Reviewing focuses on reviewing the response to treatments including symptoms, exacerbations, adverse effects, lung function, and patient satisfaction.

In addition to a review of the recommended step-up treatments used to control asthma symptoms, Laubach listed other factors that contribute to making asthma difficult to control. Many of these factors, she emphasized, are modifiable. She urged clinicians to consider “other diagnoses in the differential diagnosis of a child who coughs and wheezes; adhering to the treatment guidelines to make sure the correct medications and doses are being used for a child’s level of severity; checking inhaler technique; addressing parental concerns about adverse effects of medications; assessing for environmental triggers (such as allergies, tobacco, smoke exposure, and pollution); comorbidities (such as obesity, reflux, and sinus disease); and age-specific concerns (especially in adolescence).”

Laubach ended her talk with a brief description of new biologic therapies available for older children and adults.

Overall, Laubach emphasized the need for pediatricians to look for factors underlying difficult-to-control asthma and getting help as needed. “When asthma is difficult to control, consider the underlying factors and consider consulting allergy or pulmonary specialists,” she said.

COMMENTARY

Asthma remains the cause of substantial morbidity and even mortality in children and young adults. Discerning the relative...
degree of disease severity can be challenging. Although severe, difficult-to-control asthma is distributed asymmetrically across sex (female predominance), socioeconomic strata (uninsured), and race (black children), and children are afflicted irrespective of geography, wealth, or race.

On Sunday, October 27, 2019, Susan S. Laubach MD, associate clinical professor, University of California San Diego, and director, Allergy Clinic, Rady Children’s Hospital, San Diego, California, provided an overview of factors that make asthma difficult to control during a session titled “Breathe easy: Diagnosis and management of difficult-to-control asthma.”

Several aspects of the presentation and difficult-to-control asthma merit comment. First, difficult-to-control asthma may derive from a cause that is addressable. Undertaking a careful history that includes environmental exposures (pollutants, volatile chemicals, dust mites), living situation (smokers, pets, heat source), as well as allergic and family history can inform both diagnosis and treatment. Prolonged exposure to an inflammatory stimulus can lead to chronic inflammation and poorly controlled asthma.

Second, clinicians managing children with difficult-to-control asthma should ensure both compliance and the diagnosis. From a compliance perspective, patients may be in possession of the correct medication, but they are delivering it incorrectly. Review of delivery techniques and capacity for the patient and family to comply with the medications as prescribed is essential. Moreover, considering the difficult-to-control asthma patient from a comprehensive perspective is important as highly labile asthma may result from a cause such as aspiration, allergy, or reflux.

The significance of the difficult-to-control asthma patient is amplified further by the changes unfolding in our environment. With global warming and increasing levels of particulate matter in the air, especially in developing countries and inner cities, there is reason to believe that the prevalence of difficult-to-control asthma will be increasing. Further, the advent of increasingly specific therapeutic tools, more precise and more personal, will allow for the delivery of more bespoke care than ever before. Thus, being able to achieve a highly defined, “thin” phenotype will enable clinicians to mitigate the clinical harm associated with difficult-to-control asthma by providing therapies that address the underlying cause.

—David N. Cornfield, MD, is the Anne T. and Robert M. Bass Professor in Pulmonary Medicine, and director, Center for Excellence in Pulmonary Biology, Department of Pediatrics and (by courtesy) Surgery, Stanford University School of Medicine, Stanford, California.

### INFECTIOUS DISEASE

#### What’s new in the vaccine wars

To address the different fears motivating vaccine-hesitant parents versus antivaccine parents, one must understand the historical resistance to vaccination.

MARY BETH NIERENGARTEN, MA

Resistance to vaccines is not new. Starting with the first vaccine developed in the late 1700s/early 1800s for smallpox through current times, people have resisted vaccines.

“What we are looking at today is not new,” said Paul A. Offit, MD, director of the Vaccine Education Center and attending physician in the Division of Infectious Diseases at Children’s Hospital of Philadelphia, Pennsylvania. “It is historic, but the good news is that I think there is a path forward.”

The path forward he suggests lies in understanding the historical resistance to vaccines and the reasons behind the resistance. Calling this a “war on vaccines,” Offit described a number of issues related to the fight around vaccines such as the whooping cough vaccine and measles/mumps/rubella vaccine. These issues inform what is going on today, he said.

Offit spoke during a session at the American Academy of Pediatrics (AAP) 2019 National Conference and Exhibition in New Orleans, Louisiana, on Sunday, October 27, titled “Communicating the science of vaccines to parents, the public, and the media.” The bulk of his talk centered on the current resistance to vaccines. He underscored 2 groups of people who primarily make up the resistance: vaccine-hesitant parents and antivaccine parents or conspiracy theorists.

Underlying the resistance in both groups, he said, is fear. “People are compelled by fear more than reason,”
he emphasized. “I don’t think people fear the diseases anymore and so they fear other things, such as misconceptions about vaccines.”

As an example, Offit pointed to the lack of resistance to the polio vaccine despite the real tragedy that occurred in 1955: Using a bad batch of the vaccine, 120,000 children inadvertently were inoculated with a live polio virus that caused short-lived polio in 40,000 children, permanent paralysis in 164, and death in 10. “When you fear the disease more than the vaccine, you are willing to accept the safety issues,” Offit said.

Fear of vaccine-preventable diseases no longer motivates people. “People don’t fear diseases such as flu and human papillomavirus (HPV), but they are wrong not to fear them,” he said, pointing out that the flu has killed more people than all other vaccine-preventable diseases combined.

The fear motivating the 2 groups of people he sees as the main resisters to current vaccines he suggests is different. For the first group, the vaccine-hesitant parents, he emphasized their true hesitancy about the vaccines because they are not as compelled and fearful of the diseases themselves. Social media plays a role in spreading bad information that is quick and easy to access.

Underlying the fear of the antivaccine group, Offit said, is conspiratorial thinking. “They believe there is a conspiracy to hide the truth and that the pharmaceutical industry is behind the conspiracy.”

Although he said that there is little one can do to convince the antivaccine people of the value of vaccines, Offit underscored the need for compassionate and compelling education of the vaccine-hesitant group. “I think information is of value to people who are receptive to information,” he said.

**COMMENTARY**

Even though resistance to vaccines has been present since the first vaccine was developed in the late 1700s, over the last decade the antivaccine movement has grown exponentially. The proponents have become well organized, very vocal, and brash. They have flooded all forms of media, especially social media and the Internet, with their messages of misinformation about vaccines, distrust, conspiracy theory beliefs, and “fear,” much of which has a major negative impact on many parents seeking information on vaccinating their infants and children.

Additionally, the antivaccine group is incredibly well funded allowing them to continue to engage in their fight. This has all led to a growing number of significant outbreaks of vaccine-preventable diseases.

Dr. Paul Offit’s session “Communicating the science of vaccines to parents, the public, and the media” at the AAP 2019 National Conference provided a very insightful and comprehensive look into the current underlying reasons that drive the antivaccine movement, with “fear” rising to the top as being the most compelling factor leading to vaccine rejection.

Dr. Offit emphasized that people who are antivaccine or vaccine hesitant are compelled by different types of “fear” and that reasoning and logic play a little role in the decision to vaccinate. He pointed out that there is not much that can be done to convince true antivaccine people about the value of vaccines. However, he strongly stressed the need for practitioners to be understanding and provide guidance and education to the vaccine-hesitant group, who, in the vast majority of cases, are receptive to information and ultimately understand the value that vaccines provide.

The runaway train of the antivaccine movement has continued to rapidly gain momentum and we as a society are in grave danger of derailing much of the progress that has been made in the control of vaccine-preventable diseases. We as pediatric healthcare providers need to remain staunch advocates for the value and importance of vaccines. By providing understanding, information, and education, we can slow this movement and provide important protection to our patients.

—Tina Q. Tan, MD, is professor of Pediatrics, Feinberg School of Medicine, Northwestern University, Chicago, Illinois, and Infectious Diseases attending, Ann and Robert H. Lurie Children’s Hospital of Chicago, Chicago, Illinois.

Ms Nierengarten, a medical writer in Minneapolis, Minnesota, has more than 25 years of medical writing experience, authoring articles for a number of online and print publications. She has 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.

Ms Krader has 35 years’ experience as a medical writer. She has worked as both a hospital pharmacist and a clinical researcher/writer for the pharmaceutical industry and is presently a freelance writer in Deerfield, Illinois. She has 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.
Recognize & Refer

Retinoblastoma
CONTINUED FROM PAGE 53

in both eyes. If a parent comes in with photographs where one eye is white and one eye is red, and it’s in more than one photograph, it’s something to be aware of. Because people take so many photographs these days using their cell phones, we can therefore know that we need to pay attention to that a little bit more than we used to when we were looking back at old photographs.

Another sign is redness of the eye itself or glaucoma, changes in vision, lazy eye, which is an indication of a change in vision, and then just leukocoria on exam or the physician seeing the lack of the red reflex. Those are all signs that pediatricians should be looking for.

Q. What are the best treatment options for retinoblastoma in children?
A. Children diagnosed with retinoblastoma with very small tumors often can be treated with what we call local therapies, mostly commonly cryotherapy or laser therapy, without needing a removal of the eye, also known as enucleation, or needing chemotherapy or radiation therapy. That’s one of the reasons we are very vigilant about doing exams on children who have a family history, for example, before they develop clinical signs of the disease, to pick up tiny little bits of retinoblastoma early to save them from those therapies.

The other treatments that are increasingly being used are chemotherapy delivered directly to the eye through the ophthalmic artery and then chemotherapy is directed, is infused, directly to the retina. This allows us to avoid systemic chemotherapy, can be preserving of vision, can help us avoid removal of the eye, and avoids needing to use external beam radiation therapy.

Another therapy used when external beam radiation therapy is necessary is proton beam radiation, which is increasingly available and used in retinoblastoma patients because it can limit the dose in these very young children, limit the spread of the dosing of radiation outside of the eye. It really can target where the tumor is and avoid dosing areas such as the bones around the eye, because when we do that in very young children, the dose, to the bones around the eye or the soft tissues around the eye, is known to be associated with the development many years later of tumors of that area because of the tumorigenic effect of the radiation. So, if we can limit where we deliver radiation, we can hopefully reduce the risk that those secondary tumors will develop.

Q. Most importantly, at what point should a community pediatrician refer a patient to a specialist?
A. Any child who has a family history suspicious for retinoblastoma—that would be an unknown history of visual losses in multiple family members, a parent who has a glass eye, a parent who says there was something wrong with his/her eye as a baby but didn’t know what it was—those children all should be referred just based on the family history, and that should be done very early in infancy. Pediatricians are very good at looking for red reflex and, obviously, if they see an abnormality on physical exam, that should be referred. If a parent comes in with photographs that are of concern, I think that’s a reason to refer to a specialist as well, and that specialist would be a pediatric ophthalmologist. It’s not necessary to go directly to a pediatric oncologist at that point. I think the diagnosis is mostly made by observation by a pediatric ophthalmologist who has expertise in this field.

Q. Dr. Diller, is there anything else that you would like to add as a final thought for our community of pediatricians?
A. The other thing to remember is that increasingly genetic counselors who have expertise in cancer predisposition syndrome are able to take a family history and assess whether or not a child should be genetically tested for a risk of retinoblastoma. That is something that a pediatrician might consider if there’s a family history that is somehow concerning, and that might be the first level of referral before a pediatric ophthalmologist in certain situations.

Dr. Diller has nothing to disclose.

Dr. Johanek
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Focus on retinoblastoma

This month’s spotlight is Pediatric Oncology as Contemporary Pediatrics sits down exclusively with pediatric oncologist Lisa Diller, MD, vice chair, Clinical Affairs, and medical director, Clinical Cancer and Blood Disorders Service Line, Dana-Farber Cancer Institute, Boston, Massachusetts, to discuss the one key condition for which she believes community pediatricians should be especially aware—retinoblastoma.

ERIN JOHANEK, PHARMD

Q. Dr. Diller, can you tell us why you think that retinoblastoma is something of particular concern for pediatricians?

A. Retinoblastoma is important for pediatricians because early detection can make a huge difference in terms of the outcome for the child. Knowing who might be at risk for retinoblastoma or what signs and symptoms are important to pick up for retinoblastoma is very important because the pediatrician is usually the first person to see the patient who might have retinoblastoma.

Q. What are the underlying reasons for maybe the increased severity of retinoblastoma in children?

A. It’s not really increased severity that I’m thinking about. I’m thinking about the possibility of picking up a retinoblastoma early that makes a huge difference. So, the severity of retinoblastoma in terms of the aggressiveness of the treatment is often related to delays in diagnosis, and if we can find retinoblastomas early and get the children into treatment, we can often avoid therapies that can have long-term effects for the rest of a child’s life, such as radiation therapy or losing an eye. That’s what I think it’s important for pediatricians to know.

Q. What advice can you offer as far as those diagnostic clues that the pediatrician should be on the lookout for to properly identify retinoblastoma?

A. First of all, retinoblastoma can run in families, so it’s very important to have a good family history. Often adult parents who had retinoblastoma may not be aware of the word retinoblastoma because they were treated at a very young age. They may have had an eye removed as a young child for reasons that they don’t know. They’ve had a glass eye their whole lives or a false eye their whole lives and they may not know this. So, unless the pediatrician is aware of the parent’s history he or she might be missing a clue. I had a recent patient, for example, whose mother lost an eye as a baby, was never told why, and then her child was diagnosed with retinoblastoma but she was completely unaware of the relationship between her likely retinoblastoma and what happened to her child.

Another sign or symptom that a pediatrician should be aware of—and that we’re seeing at increased frequency because people take so many photographs—is the lack of red reflex that you normally see in a photograph. In a photograph, when you shine a light, use the flash, you often see the reflection of the retina...
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