PUZZLER  Bad to the bone: A case of altered mental status

Contemporary
PEDIATRICS®

Expert Clinical Advice for Today’s Pediatrician

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Mental Health
A pediatrician’s toolkit for psychosocial screenings

Pediatric Pharmacology
FDA approves new drug for plaque psoriasis

Respiratory Disorders
Doctors can help prevent teens turn into smokers

Nutrition
Have school lunches really become healthier?

INFECTIONOUS DISEASE

Skin Outbreaks
Another symptom of COVID-19

Contemporary Pediatrics.com
95% CURE RATE AGAINST PINWORM¹

- EMVERM contains mebendazole, the active ingredient that has been prescribed by physicians for more than 40 years.
- The AAP Red Book recommends mebendazole as one of the drugs of choice for pinworm infections.
- The CDC recommends treating the entire household where more than one member is infected or where repeated, symptomatic infections occur².
- Patients should be prescribed 2 tablets. EMVERM can often cure pinworm infection with a single tablet. However, a second tablet may be necessary after 3 weeks to prevent reinfection and to kill any worms that hatched after the first treatment.¹
  - One 100 mg tablet is the same dose for adults and children.
  - Chewable, kid-friendly tablet can also be swallowed whole or crushed and mixed with food.

ELIGIBLE PATIENTS MAY PAY AS LITTLE AS $5.¹
LEARN MORE AT EMVERMSAVINGS.COM/CP

¹Subject to eligibility. Individual out-of-pocket costs may vary. Not valid for patients covered under Medicare, Medicaid, or other federal or state program. Please see full terms, conditions, and eligibility criteria at EmvermSavings.com.
²AAP. American Academy of Pediatrics.

INDICATION
EMVERM is indicated for the treatment of patients two years of age and older with gastrointestinal infections caused by Ancylostoma duodenale (hookworm), Ascaris lumbricoides (roundworm), Enterobius vermicularis (pinworm), Necator americanus (hookworm), and Trichuris trichiura (whipworm).

IMPORTANT SAFETY INFORMATION
Contraindication: EMVERM is contraindicated in persons with a known hypersensitivity to the drug or its excipients (mebendazole, microcrystalline cellulose, crospovidone, croscarmellose sodium, anhydrous lactose, sodium starch glycolate, magnesium stearate, stearic acid, sodium lauryl sulfate, sodium saccharin, and FD&C Yellow #6). Warnings and Precautions:
- Risk of convulsions: Convulsions in infants below the age of 1 year have been reported.
- Hematologic effects: Neutropenia and agranulocytosis have been reported in patients receiving mebendazole at higher doses and for prolonged duration. Monitor blood counts in these patients.
- Metronidazole and serious skin reactions: Stevens-Johnson syndrome/toxic epidermal necrolysis (SJS/TEN) have been reported with the concomitant use of mebendazole and metronidazole.

Adverse Reactions from Clinical Trials:* Anorexia, abdominal pain, diarrhea, flatulence, nausea, vomiting, rash.

Adverse Reactions from Postmarketing Experience with Mebendazole:* Agranulocytosis, neutropenia, hypersensitivity including anaphylactic reactions, convulsions, dizziness, hepatitis, abnormal liver tests, glomerulonephritis, Stevens-Johnson syndrome/toxic epidermal necrolysis, exanthema, angioedema, urticaria, alopecia.

*Includes mebendazole formulations, dosages and treatment duration other than EMVERM 100 mg chewable tablet.

Drug Interactions: Concomitant use of EMVERM and metronidazole should be avoided.

Use in Specific Populations:
- Pregnancy: Mebendazole use in pregnant women has not reported a clear association between mebendazole and a potential risk of major birth defects or miscarriages. However, there are risks to the mother and fetus associated with untreated hemicinfection during pregnancy.
- Lactation: Limited data from case reports demonstrate a small amount of mebendazole is present in human milk following oral administration. There are no reports of effects on the breastfed infant.
- Pediatric Use: The safety and effectiveness of EMVERM 100 mg chewable tablet has not been established in pediatric patients less than two years of age.
- Geriatric Use: Clinical studies of mebendazole did not include sufficient numbers of subjects aged 65 and older to determine whether they respond differently from younger subjects.

Overdosage: In patients treated at dosages substantially higher than recommended or for prolonged periods of time, the following adverse reactions have been reported: alopecia, reversible transaminase elevations, hepatitis, agranulocytosis, neutropenia, and glomerulonephritis.
- Symptoms and signs of overdose: In the event of accidental overdose, gastrointestinal signs/symptoms may occur.
- Treatment of overdose: There is no specific antidote.

Patient Counseling: Healthcare professionals should advise the patient to read the FDA-approved patient labeling (Patient Information). Advise patients that:
- Taking EMVERM and metronidazole together may cause serious skin reactions and should be avoided.
- EMVERM can be taken with or without food.

To report SUSPECTED ADVERSE REACTIONS contact Amneal Specialty, a division of Amneal Pharmaceuticals LLC at 1-877-835-5472 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

Please see Full Prescribing Information at www.EMVERMHCP.com and Brief Summary on following pages.
EMVERM® (mebendazole) 100 mg Chewable Tablets

BRIEF SUMMARY: Complete information about EMVERM® can be found in the Full Prescribing Information.

INDICATIONS AND USAGE
EMVERM® is indicated for the treatment of patients two years of age and older with gastrointestinal infections caused by Ancylostoma duodenale (hookworm), Ascaris lumbricoides (roundworm), Enterobius vermicularis (pinworm), Necator americanus (hookworm), and Trichuris trichiura (whipworm).

DOSE AND ADMINISTRATION
The recommended dosage for EMVERM® is described in Table 1 below. The same dosage schedule applies to adults and pediatric patients two years of age and older. The tablet may be chewed, swallowed, or crushed and mixed with food.

Table 1: Dosage of EMVERM in Adult and Pediatric Patients (two years of age and older)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Dose</th>
<th>Pinworm (enterobiasis)</th>
<th>Whipworm (trichuriasis)</th>
<th>Roundworm (ascariasis)</th>
<th>Hookworm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 tablet, once</td>
<td>1 tablet morning and evening for 3 consecutive days</td>
<td>1 tablet morning and evening for 3 consecutive days</td>
<td>1 tablet morning and evening for 3 consecutive days</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If the patient is not cured three weeks after treatment, a second course of treatment is advised. No special procedures, such as fasting or purging, are required.

CONTRAINDICATIONS
EMVERM® is contraindicated in persons with a known hypersensitivity to the drug or its excipients (mebendazole, microcrystalline cellulose, corn starch, anhydrous lactose, sodium stearate, magnesium stearate, stearic acid, sodium lauryl sulfate, sodium saccharin, and FD&C Yellow #6).

WARNINGS AND PRECAUTIONS
Risk of Convulsions
Although EMVERM® is approved for use in children two years of age and older, convulsions have been reported in infants below the age of 1 year during post-marketing experience with mebendazole, including EMVERM®.

Hematologic Effects
Agranulocytosis and neutropenia have been reported with mebendazole use at higher doses and for more prolonged durations than is recommended for the treatment of soil-transmitted helminth infections. Monitor blood counts if EMVERM® is used at higher doses or for prolonged duration.

Mebendazole Drug Interaction and Serious Skin Reactions
Stevens-Johnson syndrome/toxic epidermal necrolysis (SJS/TEN) have been reported with the concomitant use of mebendazole and metronidazole. Avoid concomitant use of mebendazole, including EMVERM® and metronidazole.

ADVERSE REACTIONS
Clinical Studies
Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice.

The safety of mebendazole was evaluated in 6276 subjects who participated in 39 clinical trials for treatment of single or mixed parasitic infections of the gastrointestinal tract. In these trials, the formulations, dosages and duration of mebendazole treatment varied. Adverse reactions reported in mebendazole-treated subjects from the 39 clinical trials are shown in Table 2.

Table 2: Adverse Reactions Reported in Mebendazole-treated Subjects from 39 Clinical Trials*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Adverse Reaction(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood and Lymphatic System Disorders</td>
<td>Agranulocytosis, Neutropenia</td>
</tr>
<tr>
<td>Immune System Disorders</td>
<td>Hypersensitivity including anaphylactic reactions</td>
</tr>
<tr>
<td>Nervous System Disorders</td>
<td>Convulsions, Dizziness</td>
</tr>
<tr>
<td>Hepatobiliary Disorders</td>
<td>Hepatitis, Abnormal liver tests</td>
</tr>
<tr>
<td>Renal and Urinary Disorders</td>
<td>Glomerulonephritis</td>
</tr>
<tr>
<td>Skin and Subcutaneous Tissue Disorders</td>
<td>TEN, SJS, Exanthema, Angioedema, Urticaria, Alopecia</td>
</tr>
</tbody>
</table>

*Includes mebendazole formulations, dosages and treatment duration other than EMVERM® 100 mg tablet

POSTMARKETING EXPERIENCE
The following adverse reactions have been identified in adult and pediatric patients postmarketing with mebendazole formulations and dosages other than the EMVERM® 100 mg chewable tablet. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure.

Table 3: Adverse Reactions Identified During Postmarketing Experience with Mebendazole*

<table>
<thead>
<tr>
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<th>Adverse Reaction(s)</th>
</tr>
</thead>
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DRUG INTERACTIONS
Concomitant use of mebendazole, including EMVERM®, and metronidazole should be avoided.

USE IN SPECIFIC POPULATIONS
Pregnancy
Risk Summary
The available published literature on mebendazole use in pregnant women has not reported a clear association between mebendazole and a potential risk of major birth defects or miscarriages [see Data]. There are risks to the mother and fetus associated with untreated helminthic infection during pregnancy [see Clinical Considerations].

In animal reproduction studies, adverse developmental effects (i.e., skeletal malformations, soft tissue malformations, decreased pup weight, embryolethality) were observed when mebendazole was administered to pregnant rats during the period of organogenesis at single oral doses as low as 10 mg/kg (approximately 0.5-fold the total daily maximum recommended human dose [MRHD]). Maternal toxicity was present at the highest of these doses [see Data]. The estimated background risk of major birth defects and miscarriage for the indicated populations is unknown. All pregnancies have a background risk of birth defect, loss, or other adverse outcomes. In the U.S. general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2–4% and 15–20%, respectively.

Clinical Considerations
Disease-Associated Maternal and/or Embryo/Fetal Risks
Untreated soil transmitted helminth infections in pregnancy are associated with adverse outcomes including maternal iron deficiency anemia, low birth weight, neonatal and maternal death.

Data
Human Data
Several published studies, including prospective pregnancy registries, case-control, retrospective cohort, and randomized controlled studies, have reported no association between mebendazole use and a potential risk of major birth defects or miscarriage. Overall, these studies did not identify a specific
pattern or frequency of major birth defects with mebendazole use. However, these studies cannot definitely establish the absence of any mebendazole-associated risk because of methodological limitations, including recall bias, confounding factors and, in some cases, small sample size or exclusion of first trimester mebendazole exposures.

**Animal Data**

Embryo-fetal developmental toxicity studies in rats revealed no adverse effects on dams or their progeny at doses up to 2.5 mg/kg/day on gestation days 6–15 (the period of organogenesis). Dosing at ≥10 mg/kg/day resulted in a lowered body weight gain and a decreased pregnancy rate. Maternal toxicity, including body weight loss in one animal and maternal death in 11 of 20 animals, was seen at 40 mg/kg/day. At 10 mg/kg/day, increased embryo-fetal resorption (100% were resorbed at 40 mg/kg/day), decreased pup weight and increased incidence of malformations (primarily skeletal) were observed. Mebendazole was also embryotoxic and teratogenic in pregnant rats at single oral doses during organogenesis as low as 10 mg/kg (approximately 0.5-fold the total daily MRHD, based on mg/m²).

In embryo-fetal developmental toxicity studies in mice dosed on gestation days 6–15, doses of 10 mg/kg/day and higher resulted in decreased body weight gain at 10 and 40 mg/kg/day and a higher mortality rate at 40 mg/kg/day. At doses of 10 mg/kg/day (approximately 0.2-fold the total daily MRHD, based on mg/m²) and higher, embryo-fetal resorption increased (100% at 40 mg/kg) and fetal malformations, including skeletal, cranial, and soft tissue anomalies, were present. Dosing of hamsters and rabbits did not result in embryotoxicity or teratogenicity at doses up to 40 mg/kg/day (1.6 to 3.9-fold the total daily MRHD, based on mg/m²).

In a peri- and post-natal study in rats, mebendazole did not adversely affect dams or their progeny at 20 mg/kg/day. At 40 mg/kg (1.9-fold the total daily MRHD, based on mg/m²), a reduction of the number of live pups was observed and there was no survival at weaning. No abnormalities were found on gross and radiographic examination of pups at birth.

**Lactation**

**Risk Summary**

Limited data from case reports demonstrate that a small amount of mebendazole is present in human milk following oral administration. There are no reports of effects on the breastfed infant, and the limited reports on the effects on milk production are inconsistent. The limited clinical data during lactation precludes a clear determination of the risk of EMVERM® to a breastfed infant; therefore, developmental and health benefits of breastfeeding should be considered along with the mother’s clinical need for EMVERM® and any potential adverse effects on the breastfied infant from EMVERM® or from the underlying maternal condition.

**Pediatric Use**

The safety and effectiveness of EMVERM® 100 mg chewable tablets has not been established in pediatric patients less than two years of age. Convulsions have been reported with mebendazole use in children less than one year of age.

**Geriatric Use**

Clinical studies of mebendazole did not include sufficient numbers of subjects aged 65 and older to determine whether they respond differently from younger subjects.

**OVERDOSAGE**

In patients treated at dosages substantially higher than recommended or for prolonged periods of time, the following adverse reactions have been reported: alopecia, reversible transaminase elevations, hepatitis, agranulocytosis, neutropenia, and glomerulonephritis.

**Symptoms and signs**

In the event of accidental overdose, gastrointestinal signs/symptoms may occur.

**Treatment**

There is no specific antidote.
CHAIRMAN’S LETTER

Falling into place

We had hoped that, with summer would come a marked decrease in the number of COVID-19 cases, and although, unfortunately, this has not been the case, children have remained a minority of those succumbing (as of early August, the Centers for Disease Control reported that 7.3% of all COVID-19 cases in the United States were children). Advances in vaccine trials foster hope that a viable vaccine will be available to the public in the not-too-distant future.

And so, fall begins. Schools and universities have chosen a number of ways to educate our children and young adults, with in-class, remote, and hybrid learning options. Contemporary Pediatrics recently ran a timely and successful webinar on just this topic with some of the biggest names in pediatrics and pharmacy, discussing safe back-to-school measures, the notion of state-mandated vaccines, and the efficacy of current CDC guidelines.

As children open up new notebooks and use freshly-sharpened pencils, many will be adding decorative masks and hand sanitizers to their backpacks. Research scientists and pediatricians continue to monitor the effects of COVID-19 and MIS-C on children (including this month’s cover story, “Dermatologic findings associated with MIS-C on children (including this month’s cover story, “Dermatologic findings associated with COVID-19 in pediatric patients”). It’s a new season and as always, we are here to provide the latest findings in all areas of pediatric medicine.

Mike Hennessy, Sr.
Chairman and Founder
MJH Life Sciences
in this issue

SEPTEMBER 2020

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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/2vrsVn3

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ADHD* IMPACTS MORE THAN ACADEMIC PERFORMANCE

A child’s ADHD can cause substantial stress among caregivers—including parents and siblings. As one of the most valued and trusted resources for families impacted by ADHD, you may be able to help diffuse some of the tension at home. You can reinforce that families are not alone in what they are experiencing. It is also helpful to share that while pharmacological treatment is often the primary focus of ADHD management, a multimodal treatment plan individualized to each child’s needs is recommended for patients with ADHD.*

Strategies included in the treatment plan may include:

- Parent behavior therapy
- Cognitive behavioral therapy (CBT)
- ADHD coaching
- School accommodations

While living with ADHD can be challenging, it’s also important to remind parents and caregivers that there are many positive aspects to ADHD. Children with ADHD can channel their symptoms into some remarkably positive traits, such as being:

- Extroverted/open to new experiences
- Energetic/fun seeking
- Free spirited/less conventional

You can help. Dive deeper into complex ADHD at www.TEAM-ADHD.com.

REFERENCES:

*Attention-deficit/hyperactivity disorder.
As the COVID-19 pandemic continues, we are learning more about the various ways that the infection can manifest and the significant mental health impact that it is having on the pediatric population. There are various dermatologic manifestations that are unique to COVID-19 that the practicing clinicians should be aware of. These manifestations are discussed in the cover story of this issue by Dr. Bellodi Schmidt and Ms. Vivien Chen. Other articles that are must-reads include:

- The respiratory section study on how primary care providers are the key to tobacco prevention in teenagers. This is extremely important, given the increasing number of teenagers that vape, especially during the pandemic.
- The nutrition section article that reports on the Healthy, Hunger-Free Kids Act of 2010 and whether or not it had an impact on improving school lunch programs.
- The mental/behavioral health section article in which Dr. Jellinek discusses a Pediatric Symptom Checklist for pediatric health care providers to know when a child needs formal mental health services. This is a very timely article given the significant mental health impact that COVID-19 has had on children, especially those with underlying mental health issues.

Another issue that has recently come up is the US Department of Health and Human Services announcement authorizing state-licensed pharmacists to order and administer all vaccines to children and adolescents aged 3-18 years. The American Academy of Pediatrics (AAP) came out with a statement that strongly opposes this policy change. I am in complete agreement with the AAP who stated that “this move is incredibly misguided” and that “the action supersedes state laws governing the scope of pharmacists’ ability to administer vaccines, using the COVID-19 pandemic as justification to make policy change that goes well beyond care related to COVID-19.” This policy should be a call to action for all of us that provide care to the pediatric population. Now more than ever, we need to communicate with our patients and their parents and emphasize the importance of the medical home. We need to stress that pediatric health care provider offices are open and are the best, safest, and optimal places for children to be vaccinated and for the provision of routine care, developmental and mental health screenings, anticipatory guidance and counseling about nutrition, injury prevention, and chronic disease management. This is the time for us to make a statement that we are the best providers of all things that pediatric medicine has to offer with vaccines making up a big portion of the care that we provide.

Please stay safe and well. I welcome your suggestions, comments, and questions.

With warmest regards,
Tina

Tina Q. Tan, MD, FAAP, FIDSA, FPIDS
Professor of Pediatrics and Director of International Patient Services at the Feinberg School of Medicine, Northwestern University; Pediatric Infectious Diseases attending at Ann and Robert H. Lurie Children’s Hospital of Chicago; Medical Director at IPS; and co-director of the Pediatric Travel Medicine Clinic.
No more hide and seek for GI bugs.

Improved pediatric results with infectious disease testing from the BioFire FilmArray Gastrointestinal (GI) Panel.

When diagnosing pediatric gastroenteritis it can feel like you’re playing a game of hide and seek—searching all around to find what GI bug could be infecting your patient. The BioFire GI Panel helps you find potential culprits by testing for 22 of the most common GI pathogens, all in about an hour. Leave the hide and seek for playtime with fast, accurate, and comprehensive testing from the BioFire GI Panel.

The BioFire FilmArray Gastrointestinal Panel

- Decreased turnaround time. 84% reduction in time-to-result compared to traditional testing methods.1
- Increased diagnostic yield. 25%-36% more potential pathogens detected compared to traditional testing methods.1, 4
- Improved treatment decisions. 41% increase in targeted, rather than empiric, therapy.2
- Reduced unneeded antibiotics. Patients were 11% less likely to be prescribed antibiotics.3
- Reduced unnecessary testing. Decreased downstream procedures, such as X-rays, ultrasounds, CT scans, and endoscopies.1, 3

biofiredx.com/filarraygi


Young children who wheeze from time to time (so-called early transient wheezers) are less likely to develop allergy in adolescence than their peers who never or only infrequently wheeze, according to a study conducted in Australia. Children with persistent wheeze, on the other hand, are at increased risk of having other allergic manifestations in later childhood and adolescence, researchers found.

The study was conducted in a longitudinal birth cohort of 620 children from families with a history of allergic disease, who were followed up to the age of 18 years. Researchers identified 5 wheeze patterns these children exhibited from the age of 4 weeks to 7 years: never/infrequent (47%), early transient (26%), early persistent (5%), intermediate onset (19%), and late onset (3%). Investigators collected data about participants' wheezing 18 times in the first 2 years of life. They also conducted skin prick testing for common allergens at ages 6, 12, and 24 months and 12 and 18 years, measured fractional exhaled nitric oxide (FENO), a determinant of eosinophilic airway inflammation, and collected information about the existence of eczema and hay fever.

Analysis of the collected data, which took into account potential confounders, including sociodemographic factors and parental smoking and asthma, showed that compared with never/infrequent wheezers, early transient wheezers had reduced risks of hay fever and eczema at age 18 years, along with lower FENO levels and lower risk of sensitization. In contrast, both intermediate onset and late onset wheezers were at increased risk of having hay fever at 12 and 18 years of age, compared with never/infrequent wheezers, with youngsters’ having the intermediate onset pattern also at increased risk of sensitization and higher FENO levels. Although early persistent and intermediate onset wheezers were at increased risk of eczema at 12 years, no wheeze pattern was associated with eczema at 18 years. Overall, intermediate onset wheezers represented the most atopic group (Dodge CJ, et al. Pediatr Allergy Immunol. 2020; Epub ahead of print).

This impressive, very long-term study provides some indirect evidence for the ‘hygiene hypothesis,’ that early exposure helps protect against allergies.

This impressive, very long-term study provides some indirect evidence for the ‘hygiene hypothesis,’ that early exposure (in this case, perhaps to respiratory viruses) helps protect against allergies. It would have been nice to see if early transient wheezers were less likely to have asthma when older.
Is botulinum toxin effective for treating children’s migraines?

“Perhaps” might be the best answer to this question, based on a review of the literature on use of botulinum toxin for treating pediatric chronic migraine. Seven studies with from 1 to 30 participants were included in the review: 2 retrospective analyses, 3 case series, a case report, and a single randomized controlled trial with 125 patients. The number of treatments ranged from 1 to 11, and dosing and injection protocols varied. Only the randomized controlled trial had fixed protocols; the other studies combined a fixed protocol with one that “followed the pain.” Dosages ranged from 100 to 215U, with treatment given about every 3 months.

The randomized controlled trial found no benefit to botulinum toxin compared with placebo. The other studies noted clinically significant benefits for headache frequency, migraine intensity, or migraine duration. Two studies found that headache frequency decreased 50% whereas others noted even greater decreases of 74% and 97%. Decrease in migraine intensity ranged from 25% to 100%. The one study that measured migraine duration showed a median decrease from 8 to 0.75 hours. Side effects were minimal in most studies, generally injection site pain and tenderness (Marcelo R, et al. J Child Neurol. 2020; Epub ahead of print).

We can add botulinum toxin to the long list of proposed treatments for pediatric migraine that possibly are worth trying but are not yet proven in large enough randomized, controlled trials. Others on this list include antiepileptics, tricyclics, SSRIs, beta-blockers, and antihistamine medications, as well as cognitive behavioral therapy.

Consider the foreskin for syndactyly repair

An account of 3 case studies illustrates how preputial skin may be an ideal graft for repairing syndactyly because the tissue is easily accessed and harvested and is hairless and free of subcutaneous fat; the procedure also is associated with low morbidity/mortality. Syndactyly release generally is performed with full thickness skin grafts from the groin region, which can result in growth of unwanted hair and subcutaneous fat.

The 3 patients, referred to urology at the request of the orthopedic surgeon, underwent circumcision at the time of syndactyly repair to provide preputial skin for graft coverage. The infants were 17-, 18- and 20-months-old, respectively, when they underwent the surgery. The skin grafts healed well in all 3 infants, and though the grafts were associated with some increased pigmentation, parents were satisfied with the outcomes. Given these results, the authors recommend “careful assessment for congenital anomalies that may require skin grafting, such as syndactyly, prior to ‘routine’ neonatal circumcision” (Romeus L, et al. J Pediatr Urol. 2020; Epub ahead of print).

This strikes me as a brilliant concept, another surgical reason, besides hypospadias, for sparing the foreskin. Please remember this, or inform your obstetrical colleagues, before doing a circumcision in a boy with syndactyly.

E-mail them to llevine@mjhiflsciences.com
Bad to the bone: A case of altered mental status

JILL L SORCHER, MS4; THUY L NGO, DO

A 5-year-old female with no significant past medical history presented to the emergency department (ED) in 2016 with altered mental status, decreased activity, fever, and decreased oral intake. Her mother reports that she was in her usual state of health until 1 week prior to presentation when she developed low grade fevers and abdominal pain with associated complaints of headaches, neck pain, and muscle aches. She was able to tolerate water but her overall oral intake was diminished with a marked decrease in urine output, worsening to once daily.

History and exam
The patient’s mother took her to a local hospital 4 days prior to her ED presentation with complaints of fever (maximum temperature 104°F), headache, and neck pain. She was discharged home when her influenza, streptococcal throat swab, chest x-ray, and urinalysis were all unremarkable. In the days following, she became increasingly too weak to get out of bed, was intermittently confused, refused to answer questions, and was more lethargic. The night before her ED presentation, her mother was extremely concerned when the patient could not remember her name or her parents’ names. Parents denied any rashes, vomiting, or diarrhea.

The patient had no previous hospitalizations and was otherwise a healthy child. Her family history was reviewed and was non-contributory. She attended school and lived with her parents, aunt, and grandmother. The patient does not have any siblings. There were no reported sick contacts, allergies, recent travel, or new exposures. The patient’s immunizations were up to date.

On presentation to the ED, her vital signs were as follows: temperature 99.5°F; heart rate 135 beats/min; respiratory rate 24 breaths/min; blood pressure 71/52 mm Hg; oxygen saturation was 99% on room air; weight was 20.4 kg. On physical examination, she was awake, ill-appearing, but not toxic. She was not answering questions but would respond “ow” and “nothing is helping” to painful stimuli. Physical exam was otherwise significant for a normocephalic and atraumatic head, sunken eyes, and dry mucosal membranes. She was tachycardic with 2+ distal pulses bilaterally and a brisk capillary refill. Neurologically, she was altered and had positive Brudzinski and Kernig signs. Her Glasgow Coma Scale (GCS) was 13 (eyes 4, verbal 4, and motor 5).

Laboratory testing
Preliminary laboratory data in the ED revealed leukocytosis with a...
Pass the test this respiratory season.

Rapid respiratory results in any setting.

During respiratory season, flu is not the only (or even the most prevalent) threat, and when patients present with similar respiratory symptoms catching the culprit can seem like a tough test to pass. The CLIA-waived BioFire® FilmArray® Respiratory EZ (RP EZ) Panel uses a syndromic approach—simultaneously testing for 11 viral and 3 bacterial respiratory pathogens in about one hour. Comprehensive in-clinic respiratory results from BioFire can help you identify the culprit faster, so you can provide the right treatment sooner and get kids back to class fast.

- **Improve Workflow**
  - The BioFire RP EZ Panel has been shown to significantly reduce appointment duration.¹

- **Improve Treatment Decisions**
  - The BioFire RP EZ Panel has been shown to increase the occurrence of appropriate treatment.¹

- **Provide Accurate Results**
  - Many rapid influenza diagnostic tests sacrifice accuracy for speed, with pooled sensitivity of only 66%.² The BioFire RP EZ Panel improves sensitivity and accuracy, providing a higher standard of care.

biofiredx.com

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white blood cell count of 17,830/mm³, with 86% neutrophils, 6% lymphocytes and 6% monocytes. Her hemoglobin was low at 11.6 g/dL and she was thrombocytopenic with a platelet count of 22,000/mm³. A comprehensive metabolic panel revealed the following data: sodium 123 meq/L, potassium 5.0 meq/L, chloride 80 meq/L, carbon dioxide 13 meq/L, BUN 105 mg/dL, creatinine 2.5 mg/dL, glucose 105 mg/dL, calcium 8.2 mg/dL, total protein was 5.7 g/dL, and albumin were 2.8 g/dL. Her anion gap was elevated at 30 meq/L. All other metabolic panel results were unremarkable. Her C-reactive protein (CRP) was elevated at 20.8 mg/dL (normal range <0.5 mg/dL). Her lactic acid levels, PT and INR, and PTT were unremarkable. Due to her altered mental status, a computed tomography (CT) scan of her head was obtained and did not reveal any acute abnormalities.

**Differential diagnosis**

The most common cause of altered mental status in children is infection¹ which is consistent with this patient’s presentation of altered mental status, a computed tomography (CT) scan of her head was obtained and did not reveal any acute abnormalities.

The night before her ED presentation, her mother was extremely concerned when the patient could not remember her name. (Table 1). The clinical presentation of occult ingestion varies depending on the ingested substance and occult infection. The source and etiology of infection are important factors in the development of SAE. The greatest risk of SAE is associated with biliary tract or intestinal infections followed by pulmonary infections. The most commonly implicated organisms are *Staphylococcus Aureus*, *Enterococcus faecium*, *Acinetobacter spp*, *Pseudomonas aeruginosa*, and *Stenotrophomonas maltophilia*. More severe brain dysfunction and higher mortality rates were observed in patients with SAE infected with multiple bacteria or *Candida albicans*⁴.⁶ Although not as well studied in children, SAE in adults presents with nonfocal neurologic manifestations and can present as a depressed state.⁷

Another potential cause of altered mental status could be toxic exposure. Exploratory ingestions are common in children aged younger than 6 years. (Table 1). The clinical presentation of occult ingestion varies depending on the ingested substance and occult

### TABLE 1

**DIFFERENTIAL DIAGNOSIS OF ALTERED MENTAL STATUS**

<table>
<thead>
<tr>
<th>Infectious Causes</th>
<th>Noninfectious Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meningitis</td>
<td>Toxic Exposure</td>
</tr>
<tr>
<td>Encephalitis</td>
<td></td>
</tr>
<tr>
<td>Myocarditis</td>
<td>Metabolic Disorders</td>
</tr>
<tr>
<td>Endocarditis</td>
<td>DKA</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>Lactic Acidosis</td>
</tr>
<tr>
<td>Osteomyelitis</td>
<td>Methanol, Ethylene Glycol, Salicylate</td>
</tr>
<tr>
<td>Sepsis Associated Encephalitis</td>
<td></td>
</tr>
</tbody>
</table>

² The source and etiology of infection are important factors in the development of SAE.⁴ The greatest risk of SAE is associated with biliary tract or intestinal infections followed by pulmonary infections. The most commonly implicated organisms are *Staphylococcus Aureus*, *Enterococcus faecium*, *Acinetobacter spp*, *Pseudomonas aeruginosa*, and *Stenotrophomonas maltophilia*. More severe brain dysfunction and higher mortality rates were observed in patients with SAE infected with multiple bacteria or *Candida albicans*.⁴⁶ Although not as well studied in children, SAE in adults presents with nonfocal neurologic manifestations and can present as a depressed state.⁷

Another potential cause of altered mental status could be toxic exposure. Exploratory ingestions are common in children aged younger than 6 years. (Table 1).⁴ The clinical presentation of occult ingestion varies depending on the ingested substance and occult ingestion.

³ The source and etiology of infection are important factors in the development of SAE.⁴ The greatest risk of SAE is associated with biliary tract or intestinal infections followed by pulmonary infections. The most commonly implicated organisms are *Staphylococcus Aureus*, *Enterococcus faecium*, *Acinetobacter spp*, *Pseudomonas aeruginosa*, and *Stenotrophomonas maltophilia*.
toxic exposure should be considered in the differential diagnosis of a child who presents with acute onset multisystem dysfunction, unexplained metabolic acidosis, and altered mental status. However, the likelihood of a toxic ingestion underlying this patient’s presentation was low as the patient was not in the “at risk” age group of incidental ingestions (aged 1 to 4 years old), lacked a history of previous ingestions, and did not have exposure to commonly ingested agents such as cleaning products, analgesics, cough medications, topical agents, or pesticides. Additionally, the timeline of the onset of her presentation was inconsistent with an acute toxic ingestion.

The patient’s basic metabolic panel was indicative of an anion gap metabolic acidosis and thus, metabolic disorders should be considered as a cause of her altered mental status (Table 1). Diabetic ketoacidosis could have been underlying her anion gap metabolic acidosis, but was less likely in the absence of polyuria, polydipsia, hyperglycemia, and a negative past medical history. Lactic acidosis in the setting of hypoperfusion due to sepsis could be considered, but her lactate levels were only mildly elevated suggesting that lactic acidosis was unlikely the underlying cause of her altered mental status. Other causes of anion gap metabolic acidosis include ingestion of toxic materials such as methanol, ethylene glycol, and salicylate poisoning. Her lack of exposure to these substances and more insidious onset of illness were inconsistent with toxic ingestion. Her presenting hypotension and elevated creatinine suggest that the most likely etiology of her anion gap metabolic acidosis was acute kidney injury (AKI) precipitated by severe dehydration. This may have contributed to her altered mental status, but would not account for the patient’s initial fever and lethargy that were more consistent with an infectious etiology.

**Discussion**

The patient’s hypotension, tachycardia, and leukocytosis raised concern for sepsis. The incidence of sepsis, characterized by immune dysregulation, has been steadily increasing in children since the mid-1990s with an estimated global incidence of pediatric and neonatal sepsis of 25.2 million in 2017. Sepsis accounts for 4.4% of admissions to children’s hospitals with approximately 75,000 children hospitalized for severe sepsis each year. Definitions of sepsis and organ dysfunction developed by the International Consensus Conference on Pediatric Sepsis help physicians identify sepsis, determine its severity, and monitor progression of a child’s illness. The consensus criteria also divide sepsis into categories based on the severity of presentation: severe inflammatory response (SIRS), severe sepsis, and...
IMPORTANT SAFETY INFORMATION

WARNING: ABUSE AND DEPENDENCE
• CNS stimulants (amphetamines and methylphenidate-containing products), including Vyvanse, have a high potential for abuse and dependence. Assess the risk of abuse prior to prescribing and monitor for signs of abuse and dependence while on therapy.

• Contraindications
  • Known hypersensitivity to amphetamines or other ingredients of Vyvanse. Anaphylactic reactions, Stevens-Johnson Syndrome, angioedema, and urticaria have occurred.
  • Use with monoamine oxidase inhibitors (MAOIs) or within 14 days of stopping MAOIs (including MAOIs such as linezolid or intravenous methylene blue), because of an increased risk of hypertensive crisis.

• Warnings and Precautions
  • Prior to and during treatment assess for the presence of cardiac disease. Avoid use in patients with known structural cardiac abnormalities, cardiomyopathy, serious heart arrhythmia, coronary artery disease, and other serious heart problems. Sudden death, stroke and myocardial infarction have been reported in adults with CNS stimulants at recommended doses, as well as sudden death in children and adolescents with structural cardiac abnormalities and other serious heart problems while taking CNS stimulants at recommended doses. Further evaluate patients who develop exertional chest pain, unexplained syncope, or arrhythmias while taking Vyvanse.
  • CNS stimulants cause increases in blood pressure (mean increase about 2-4 mm Hg) and heart rate (mean increase about 3-6 bpm). Monitor all patients for tachycardia and hypertension.
  • Exacerbation of Pre-existing Psychosis: May exacerbate symptoms of behavior disturbance and thought disorder in patients with a pre-existing psychotic disorder. Induction of a Manic Episode in Patients with Bipolar Disorder: May induce a mixed/manic episode in patients with bipolar disorder. Prior to initiating treatment, screen for risk factors for developing a manic episode (e.g., comorbid or history of depressive symptoms, or a family history of suicide, bipolar disorder, and depression). New Psychotic or Manic Symptoms: At recommended doses, may cause psychotic or manic symptoms (e.g., hallucinations, delusional thinking, or mania) in patients with no prior history of psychotic illness or mania. Discontinue if symptoms occur.

INDICATION AND LIMITATION OF USE
Vyvanse is indicated for the treatment of Attention-Deficit/Hyperactivity Disorder (ADHD) in patients ages 6 and above. Vyvanse is not indicated or recommended for weight loss. Use of other sympathomimetic drugs for weight loss has been associated with serious cardiovascular adverse events. The safety and effectiveness of Vyvanse for the treatment of obesity have not been established.

VYVANSE IS PROVEN TO HELP TREAT PEDIATRIC PATIENTS (AGES 6-17) WITH ADHD

For appropriate patients with ADHD
Start with Vyvanse

See more at VyvansePro.com/pediatric

Hypothetical patient portrayal. Individual results may vary.
In a clinical study of children aged 6-12 years with ADHD, Vyvanse (lisdexamfetamine dimesylate) demonstrated a significant reduction in ADHD-RS-IV* total score1-3.

**Primary Endpoint:** Change from baseline to endpoint in ADHD-RS-IV total score\(^1,2\)

Vyvanse provided a 56% average reduction in ADHD-RS-IV total score (from 43.9 to 19.5) for all doses combined vs a 14% average reduction for placebo (from 42.4 to 36.6); \(P<.0001\) for Vyvanse versus placebo.\(^1,3\)

**Study Design**
Randomized, double-blind, parallel-group, placebo-controlled, 4-week study with forced-dose escalation to assess the efficacy and safety of Vyvanse 30, 50, and 70 mg/day compared with placebo in 290 children aged 6-12 years with ADHD (as defined by DSM-IV-TR\(^2\)).

\(^*\)ADHD-RS-IV=Attention-Deficit/Hyperactivity Disorder Rating Scale, Version IV, a validated investigator-rated measure that consists of 18 items designed to reflect symptomatology of ADHD based on DSM-IV-TR\(^2\) criteria.

\(^1\)Last post-randomization treatment week for which a valid ADHD-RS-IV total score was obtained.

\(^2\)DSM-IV-TR\(^2\)=Diagnostic and Statistical Manual of Mental Disorders, 4\(^{th}\) ed., text revision.

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**Warnings and Precautions (continued)**

- CNS stimulants have been associated with weight loss and slowing of growth rate in pediatric patients (monitor weight and height). Treatment may need to be interrupted in children not growing or gaining weight as expected.
- CNS stimulants, including Vyvanse, are associated with peripheral vasculopathy, including Raynaud’s phenomenon. Signs and symptoms are usually intermittent and mild; very rare sequelae include digital ulceration and/or soft-tissue breakdown. Observe patients during treatment for new numbness, pain, skin color change, or sensitivity to temperature in fingers and toes. Further evaluation may be required, including referral.
- Increased risk of serotonin syndrome when co-administered with serotonergic agents (e.g., SSRIs, SNRIs, triptans) and CYP2D6 inhibitors, but also during overdosage situations. Discontinue Vyvanse if it occurs and initiate supportive treatment.
- **Adverse Reactions**
The most common adverse reactions (≥5% and at least twice the rate of placebo) reported in clinical trials were:
- **Children aged 6 to 12:** decreased appetite, insomnia, upper abdominal pain, irritability, vomiting, decreased weight, nausea, dry mouth, and dizziness;
- **Adolescents aged 13 to 17:** decreased appetite, insomnia, and decreased weight;
- **Adults:** decreased appetite, insomnia, dry mouth, diarrhea, nausea, anxiety, and anorexia.
- **Pregnancy and Lactation**
  Vyvanse may cause fetal harm. Breastfeeding is not recommended during Vyvanse treatment.

**Please see Brief Summary of Full Prescribing Information, including Boxed WARNING regarding Potential for Abuse and Dependence, on following pages.**

CONTRAINDICATIONS
VYVANSE is contraindicated in patients with:
- Known hypersensitivity to amphetamine products or other ingredients of VYVANSE.
- Anaphylactic reactions, Stevens-Johnson Syndrome, angiodema, and urticaria have been observed in postmarketing reports.
- Patients taking monoamine oxidase inhibitors (MAOIs), or within 14 days of stopping MAOIs (including MAOIs such as linezolid or intravenous methylene blue), because of an increased risk of hypertensive crisis.

WARNING: ABUSE AND DEPENDENCE
CNS stimulants (amphetamine and methylphenidate-containing products), including VYVANSE, have a high potential for abuse and dependence.
Assess the risk of abuse prior to prescribing and monitor for signs of abuse and dependence while on therapy.

WARRIORS AND PRECAUTIONS
Potential for Abuse and Dependence (See Above)
Serious Cardiovascular Reactions
Sudden death, stroke, and myocardial infarction have been reported in adults with CNS stimulant treatment at recommended doses. Sudden death has been reported in children and adolescents with structural cardiac abnormalities and other serious heart problems taking CNS stimulants at recommended doses for ADHD. Avoid use in patients with known structural cardiac abnormalities, cardiomyopathy, serious heart arrhythmia, coronary artery disease, and other serious heart problems. Further evaluate patients who develop exertional chest pain, unexplained syncope, or arrhythmias during VYVANSE treatment.

Blood Pressure and Heart Rate Increases
CNS stimulants cause an increase in blood pressure (mean increase about 2-4 mm Hg) and heart rate (mean increase about 3-6 bpm). Monitor all patients for potential tachycardia and hypertension.

Psychiatric Adverse Reactions
Elevation of Pre-existing Psychosis
CNS stimulants may exacerbate symptoms of behavior disturbance and thought disorder in patients with a pre-existing psychotic disorder.

Induction of a Manic Episode in Patients with Bipolar Disorder
CNS stimulants may induce a mixed/manic episode in patients with bipolar disorder. Prior to initiating treatment, screen patients for risk factors for developing a manic episode (e.g., comorbid or history of depressive symptoms or a family history of suicide, bipolar disorder, and depression).

New Psychotic or Manic Symptoms
CNS stimulants, at recommended doses, may cause psychotic or manic symptoms, e.g., hallucinations, delusional thinking, or mania in children and adolescents without a prior history of psychotic illness or mania. If such symptoms occur, consider discontinuing VYVANSE. In a pooled analysis of multiple short-term, placebo-controlled studies of CNS stimulants, psychotic or manic symptoms, occurred in 0.1% of CNS stimulant-treated patients compared to 0% in placebo-treated patients.

Suppression of Growth
CNS stimulants have been associated with weight loss and slowing of growth rate in pediatric patients. Closely monitor growth (weight and height) in pediatric patients treated with CNS stimulants, including VYVANSE. In a 4-week, placebo-controlled trial of VYVANSE in patients ages 6 to 12 years old with ADHD, there was a dose-related decrease in weight in the VYVANSE group compared to weight gain in the placebo group. Additionally, in studies of another stimulant, there was slowing of the increase in height.

Peripheral Vasculopathy, including Raynaud’s Phenomenon
Stimulants, including VYVANSE, used to treat ADHD are associated with peripheral vasculopathy, including Raynaud’s phenomenon. Signs and symptoms are usually intermitent and mild; however, very rare sequelae include digital ulceration and/or soft tissue breakdown. Effects of peripheral vasculopathy, including Raynaud’s phenomenon, were observed in postmarketing reports at different times and at therapeutic doses in all age groups throughout the course of treatment. Signs and symptoms generally improve after reduction in dose or discontinuation of drug. Careful observation for digital changes is necessary during treatment with CNS stimulants. Further clinical evaluation (e.g., rheumatology referral) may be appropriate for certain patients.

SeroLoin Syndrome
SeroLoin syndrome, a potentially life-threatening reaction, may occur when amphetamines are used in combination with other drugs that affect the serotonergic neurotransmitter systems such as monoamine oxidase inhibitors (MAOIs), selective serotonin reuptake inhibitors (SSRIs), serotonin norepinephrine reuptake inhibitors (SNRIs), tricyclic antidepressants, fentanyl, lithium, tramadol, tryptophan, buspirone, and St. John’s Wort. Amphetamines and amphetamine derivatives are known to be metabolized, to some degree, by cytochrome P450 2D6 (CYP2D6) and display minor inhibition of CYP2D6 metabolism. The potential for a pharmacokinetic interaction exists with the co-administration of CYP2D6 inhibitors which may increase the risk with increased exposure to the active metabolite of VYVANSE (dextroamphetamine) in these situations, consider an alternative non-serotonergic drug or an alternative drug that does not inhibit CYP2D6. SeroLoin syndrome symptoms may include mental status changes (e.g., agitation, hallucinations, delirium, and coma), autonomic instability (e.g., tachycardia, labile blood pressure, dizziness, diaphoresis, flushing, hyperthermia), neuromuscular symptoms (e.g., tremor, rigidity, myoclonus, hyperreflexia, incoordination), seizures, and/or gastrointestinal symptoms (e.g., nausea, vomiting, diarrhea). Discontinue treatment with VYVANSE and any concommitant serotonergic agents immediately if symptoms of serotonin syndrome occur, and initiate supportive symptomatic treatment. Concomitant use of VYVANSE with other serotonergic drugs or CYP2D6 inhibitors should only be used if the potential benefit justifies the potential risk. If clinically warranted, consider initiating VYVANSE with lower doses, monitoring patients for the emergence of serotonin syndrome during drug initiation or titration, and informing patients of the increased risk for serotonin syndrome.

ADVERSE REACTIONS
Clinical Trial Experience
Based on data from 4-week parallel-group controlled clinical studies of VYVANSE in pediatric and adult patients with ADHD.

Adverse Reactions Associated with Discontinuation of Treatment
In the controlled trial in patients ages 6 to 12 years, 8% (18/218) of VYVANSE-treated patients discontinued due to adverse reactions compared to 1% (1/77) of placebo-treated patients. The most frequently reported adverse reactions leading to discontinuation (1% or more and twice rate of placebo) were ECG voltage criteria for ventricular hypertrophy, tic, vomiting, psychomotor hyperactivity, insomnia, decreased appetite and rash [2 instances for each adverse reaction, i.e., 2/218 (1%)].

In the controlled trial in patients ages 13 to 17 years, 3% (7/233) of VYVANSE-treated patients discontinued due to adverse reactions compared to 1% (1/77) of placebo-treated patients. Most frequent adverse reactions leading to discontinuation were irritability (3/233; 1%), decreased appetite (2/233; 1%), and insomnia (2/233; 1%).

In the controlled adult trial, 6% (21/358) of VYVANSE-treated patients discontinued due to adverse reactions compared to 2% (1/82) of placebo-treated patients. The most frequently reported adverse reactions leading to discontinuation (1% or more and twice rate of placebo) were insomnia (9/358; 2%), tachycardia (3/358; 1%), irritability (2/358; 1%), hypertension (4/358; 1%), headache (2/358; 1%), anxiety (2/358; 1%), and dyspnea (3/358; 1%).

Adverse Reactions Occurring at an Incidence of ≥5% or More Among VYVANSE Treated Patients with ADHD in Clinical Trials
Most common adverse reactions (incidence ≥5% and at a rate at least twice placebo) reported in children, adolescents, and/or adults were anorexia, anxiety, decreased appetite, decreased weight, diarrhea, dizziness, dry mouth, irritability, insomnia, nausea, upper abdominal pain, and vomiting.

Adverse Reactions Occurring at an Incidence of 2% or More
Adverse reactions reported in the controlled trials in pediatric patients ages 6 to 12 years, adolescent patients ages 13 to 17 years, and adult patients treated with VYVANSE or placebo:

Adverse Reactions Reported by >2% of Children (Ages 6 to 12 Years) with ADHD Taking VYVANSE and at least Twice the Incidence in Patients Taking Placebo - VYVANSE (n=218), Placebo (n=72):
Decreased Appetite (39%, 4%), Insomnia (22%, 3%), Abdominal Pain Upper (1%, 0%), Vomiting (1%, 0%), Irritability (10%, 0%), Headache (1%, 0%), Weight Decreased (9%, 1%), Nausea (6%, 3%), Dry Mouth (5%, 0%), Dizziness (5%, 0%), Affect lability (3%, 0%), Rash (3%, 0%), Pyrexia (2%, 1%), Somnolence (2%, 1%), Tic (2%, 0%), Anorexia (2%, 0%).

Adverse Reactions Reported by ≥2% of Adolescent (Ages 13 to 17 Years) with ADHD Taking VYVANSE and at least Twice the Incidence in Patients Taking Placebo - VYVANSE (n=233), Placebo (n=77):
Decreased Appetite (34%, 5%), Insomnia (13%, 4%), Headache (13%, 4%), Weight Decreased (9%, 0%), Dry Mouth (4%, 1%), Palpitations (2%, 1%), Anorexia (2%, 0%), Tremor (2%, 0%).

Adverse Reactions Reported by >2% of Adult Patients with ADHD Taking VYVANSE and at least Twice the Incidence in Patients Taking Placebo - VYVANSE (n=358), Placebo (n=62):
Decreased Appetite (27%, 2%), Insomnia (27%, 8%), Dry Mouth (26%, 3%), Diarrhea (7%, 0%), Nausea (7%, 0%), Anxiety (6%, 0%), Anorexia (5%, 0%).
Feeling Jittery (4%, 0%), Agitation (3%, 0%), Increased Blood Pressure (3%, 0%), Hyperhidrosis (3%, 0%), Restlessness (3%, 0%), Decreased Weight (3%, 0%), Dysgeusia (2%, 0%), Increased Heart Rate (2%, 0%), Tremor (2%, 0%), Palpitations (2%, 0%).

In addition, in the adult population erectile dysfunction was observed in 2.6% of males on VYVANSE and 0% on placebo; decreased libido was observed in 1.4% of subjects on VYVANSE and 0% on placebo.

Postmarketing Experience
The following adverse reactions have been identified during post approval use of VYVANSE. Because these reactions are reported voluntarily from a population of uncertain size, it is not possible to reliably estimate their frequency or establish a causal relationship to drug exposure. These events are as follows: cardiomyopathy, mydriasis, diplopia, difficulties with visual accommodation, blurred vision, eosinophilic hepatitis, anaphylactic reaction, hypersensitivity, dyskinesia, dysgeusia, tics, bruxism, depression, dermatillomania, alopecia, aggression, Stevens-Johnson Syndrome, chest pain, angioedema, urticaria, cardiac arrhythmias, cardiomyopathy, mydriasis, diplopia, difficulties with visual accommodation, blurred vision, eosinophilic hepatitis, anaphylactic reaction, hypersensitivity, dyskinesia, dysgeusia, tics, bruxism, depression, dermatillomania, alopecia, aggression, Stevens-Johnson Syndrome, chest pain, angioedema, urticaria, seizures, libido changes, frequent or prolonged erections, constipation, and rhabdomyolysis.

DRUG INTERACTIONS

Clinically Important Interactions with Amphetamines

MAO Inhibitors (MAOI)

Clinical Impact: MAOI antidepressants slow amphetamine metabolism, increasing amphetamines effect on the release of norepinephrine and other monoamines from adrenergic nerve endings causing headaches and other signs of hypertensive crisis. Toxic neurological effects and malignant hypertension can occur, sometimes with fatal results.

Intervention: Do not administer VYVANSE during or within 14 days following the administration of MAOI [see Contraindications]

Examples: selegiline, isocarbazid, phenelzine, tranylcypromine

Serotonergic Drugs

Clinical Impact: The concomitant use of VYVANSE and serotonergic drugs increases the risk of serotonin syndrome.

Intervention: Initiate with lower doses and monitor patients for signs and symptoms of serotonin syndrome, particularly during VYVANSE initiation or dosage increase. If serotonin syndrome occurs, discontinue VYVANSE and the concomitant serotonergic drug(s) [see Warnings and Precautions]

Examples: selective serotonin reuptake inhibitors (SSRI), serotonin norepinephrine reuptake inhibitors (SNRI), tricyclic antidepressants, fentanyl, lithium, tramadol, tryptophan, buspirona, St. John’s Wort

CYP2D6 Inhibitors

Clinical Impact: The concomitant use of VYVANSE and CYP2D6 inhibitors may increase the exposure of dextroamphetamine, the active metabolite of VYVANSE compared to the use of the drug alone and increase the risk of serotonin syndrome.

Intervention: Initiate with lower doses and monitor patients for signs and symptoms of serotonin syndrome particularly during VYVANSE initiation and after a dosage increase. If serotonin syndrome occurs, discontinue VYVANSE and the CYP2D6 inhibitor [see Warnings and Precautions and Overdosage]

Examples: paroxetine and fluoxetine (also serotonergic drugs), quinidine, ritonavir.

Alkalizing Agents

Clinical Impact: Urinary alkalizing agents can increase blood levels and potentiate the action of amphetamine.

Intervention: Co-administration of VYVANSE and urinary alkalizing agents should be avoided.

Examples: Urinary alkalizing agents (e.g. acetazolamide, some thiazides).

Acidifying Agents

Clinical Impact: Urinary acidifying agents can lower blood levels and efficacy of amphetamines.

Intervention: Increase dose based on clinical response.

Examples: Urinary acidifying agents (e.g., ammonium chloride, sodium acid phosphate, methemamine salts).

Tricyclic Antidepressants

Clinical Impact: May enhance the activity of tricyclic or sympathomimetic agents causing striking and sustained increases in the concentration of d-amphetamine in the brain; cardiovascular effects can be potentiated.

Intervention: Monitor frequently and adjust or use alternative therapy based on clinical response.

Examples: desipramine, protriptyline

Drugs Having No Clinically Important Interactions with VYVANSE

From a pharmacokinetic perspective, no dose adjustment of VYVANSE is necessary when VYVANSE is co-administered with guanfacine, venlafaxine, or omeprazole. In addition, no dose adjustment of guanfacine or venlafaxine is needed when VYVANSE is co-administered.

From a pharmacokinetic perspective, no dose adjustment for drugs that are substrates of CYP1A2 (e.g. theophylline, duloxetine, melatonin), CYP2D6 (e.g. atomoxetine, desipramine, venlafaxine), CYP2C19 (e.g. omeprazole, lansoprazole, clopabrom, and CYP2A4 (e.g. midazolam, pimozide, simvastatin) is necessary when VYVANSE is co-administered.

USE IN SPECIFIC POPULATIONS

Pregnancy

The limited available data from published literature and postmarketing reports on use of VYVANSE in pregnant women are not sufficient to inform a drug-associated risk for major birth defects and miscarriage. Adverse pregnancy outcomes, including premature delivery and low birth weight, have been seen in infants born to mothers dependent on amphetamines. Monitor infants born to mothers taking amphetamines for symptoms of withdrawal such as feeding difficulties, irritability, agitation, and excessive drowsiness.

Lactation

Lisdexamfetamine is a pro-drug of dextroamphetamine. Based on limited case reports in published literature, amphetamine (d-or l, l) is present in human milk, at relative infant doses of 2% to 13.8% of the maternal weight-adjusted dosage and a milk/plasma ratio ranging between 1.9 and 7.5. There are no reports of adverse effects on the breastfed infant. Long-term neurodevelopmental effects on infants from amphetamine exposure are unknown. It is possible that large dosages of dextroamphetamine might interfere with milk production, especially in women whose lactation is not well established. Because of the potential for serious adverse reactions in nursing infants, including serious cardiovascular reactions, blood pressure and heart rate increase, suppression of growth, and peripheral vasculopathy, advise patients that breastfeeding is not recommended during treatment with VYVANSE.

Pediatric Use

Safety and efficacy in pediatric patients below the age of 6 years have not been established.

Geriatric Use

Clinical studies of VYVANSE did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects.

Renal Impairment

Due to reduced clearance in patients with severe renal impairment (GFR 15 to <30 mL/min/1.73 m2), the maximum dose should not exceed 50 mg/day. The maximum recommended dose in ESRD (GFR < 15 mL/min/1.73 m2) patients is 30 mg/day.

Lisdexamfetamine and d-amphetamine are not dialyzable.

Gender

No dosage adjustment of VYVANSE is necessary on the basis of gender.

DRUG ABUSE AND DEPENDENCE

VYVANSE contains lisdexamfetamine, a prodrug of amphetamine, a Schedule II controlled substance.

OVERDOSE

Consult with a Certified Poison Control Center (1-800-222-1222) for up-to-date guidance and advice for treatment of overdose. Individual patient response to amphetamines varies widely. Toxic symptoms may occur idiosyncratically at low doses.

Manifestations of amphetamine overdose include restlessness, tremor, hyperreflexia, rapid respiration, confusion, assaultiveness, hallucinations, panic states, hyperventilation, and rhabdomyolysis. Serotonin syndrome has been reported with amphetamine use, including VYVANSE. Fatigue and depression usually follow the central nervous system stimulation. Other reactions include arrhythmias, hypertension or hypotension, circulatory collapse, nausea, vomiting, diarrhea, and abdominal cramps. Fatal poisoning is usually preceded by convulsions and coma.

Lisdexamfetamine and d-amphetamine are not dialyzable.

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septic shock, and multiple organ failure.\textsuperscript{13} The definition and clinical markers of sepsis differs in children compared to adults. In adults, elevated lactate is an important marker of sepsis and reduction of lactate levels is associated with improved adult survival.\textsuperscript{15} However, little evidence supports the use of lactate as a marker of clinical significance in children.\textsuperscript{15} Other inflammatory biomarkers, such as c-reactive protein (CRP) and procalcitonin may be useful in identifying infection, especially in patients with no apparent infection source\textsuperscript{16} or with neutropenia.\textsuperscript{17} C-reactive protein is also useful as a guide for de-escalation of antibiotics in patients without an identifiable source of infection.\textsuperscript{18} There has been some literature supporting the use of molecular methods to distinguish between bacterial and viral infections, including polymerase chain reaction (PCR) and detection of bacteria 16S (RNA) genes. Some evidence suggests that these methods have the potential to differentiate bacterial from viral infection in children with high accuracy,\textsuperscript{19} which has potential benefits regarding antibiotic stewardship.

Early identification of sepsis is important to ensure timely administration of broad-spectrum antibiotics and identification of an infection source to enable more targeted treatment. Although mortality in children due to severe sepsis is less than 10%,\textsuperscript{10,13,20} morbidity is significant in pediatric patients with septic shock further emphasizing the importance of early identification and treatment of sepsis to prevent adverse outcomes. Because children can compensate for circulatory dysfunction, hypotension is a late finding and this can make early identification of sepsis difficult.\textsuperscript{21} Non-bacterial infections may cause a systemic inflammatory response that mimics sepsis, which should be taken into account when

\textbf{FIGURE 2} a Brain MRI from hospital day 3 with small focus of restricted diffusion in the white matter of the posterior left frontal lobe consistent with early subacute infarct. 

\textbf{b,c} Brain MRI/MRA from hospital day 8 significant for extensive skull base osteomyelitis and (see d) 

\textbf{d} Occlusion of flow in the left carotid artery and limited flow in the right carotid artery with primary circulation through the posterior vessels.
FLARES AREN’T GOING TO PREVENT THEMSELVES

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considering a clinical picture of sepsis. Epstein-Barr Virus-associated hemophagocytic syndrome (HPS) can present with signs of severe sepsis.\textsuperscript{22} Hemophagocytic syndrome is a condition in which T-cells, natural killer cells, and macrophages are abnormally activated causing hypercytokinemia leading to cell death and eventually multiorgan failure.\textsuperscript{22-24} Epstein-Barr Virus is the most common infectious cause of HPS.\textsuperscript{22,24,25} Hemophagocytic syndrome should be considered in the differential in patients presenting with prolonged fever, pancytopenia, and a sepsis-like picture that is unresponsive to antibiotics.\textsuperscript{22}

**Patient course and management**

In the ED, the patient was given intravenous (IV) ceftriaxone after blood cultures were drawn due to the high concern for meningitis and IV ketorolac for pain prior to the return of her laboratory results. The patient was not a candidate for LP given her thrombocytopenia. Vancomycin was held when her laboratory results revealed an AKI. She remained hypotensive after 3 normal saline boluses and was started on dopamine at 10 mcg/kg/min, titrated down to 5 mcg/kg/min for normotension. She was admitted to the pediatric intensive care unit for further management of her hypotension, which was thought to be due to septic shock and subsequently intubated due to concern for respiratory failure likely due to aggressive fluid resuscitation and infection (Figures 1a,b,c). Ceftriaxone was continued; vancomycin was started; and steroids were held given low likelihood of *Streptococcus pneumoniae* as the patient was up to date on her vaccinations. She was also started on acyclovir given concern for viral meningitis. An echocardiogram ruled out myocarditis and endocarditis as an infectious source. Her AKI was thought to be caused by volume depletion secondary to decreased fluid intake prior to admission in the ED. Her renal function and hyponatremia noted on her initial labs resolved quickly with fluid resuscitation and without further renal sequelae.

Given her altered mental status, a brain magnetic resonance imaging (MRI/MRA) was ordered and significant for a tiny focus of restricted diffusion in the white matter of the posterior left frontal lobe consistent with early subacute infarct (Figure 2a). On hospital day 5, she was extubated and found to have right-sided motor deficits. Repeat imaging revealed extensive skull base and cervical osteomyelitis and arteritis with complete occlusion of flow in the left carotid artery and limited flow in the right carotid artery with primary circulation through the posterior vessels (Figure 2b,c,d). The MRI also showed an extensive left side frontal lobe infarct (Figure 2b,c). The CT angiogram of her head and neck confirmed occlusion of the left internal carotid artery and marked narrowing of the right internal carotid artery. The CT was also significant for opacification of the sphenoid sinus and left mastoid air cells thought to be consistent with an infectious process. The following day, she had sphenoid abscess drainage via functional endoscopic sinus surgery and tympanostomy tubes placed by otolaryngology due to the extensive middle ear effusion noted on CT. She was treated with vancomycin, ceftriaxone, and clindamycin for 5 days, at which time the clindamycin was discontinued. Aerobic culture of sinuses was positive for coagulase positive *Staphylococcus* and anaerobic culture of sinuses was negative for growth. Cultures including blood cultures drawn in the ED and bacterial and viral CSF cultures were negative. The final diagnosis was skull base and cervical osteomyelitis caused by coagulase positive *Staphylococcus*. Origin of her osteomyelitis remained unclear.

She was hospitalized for 6 weeks. Prior to discharge, she regained speech function; hemiparesis improved; renal function normal. She was treated with Lovenox for her infarcts. One month after discharge, she had no neurological deficits and returned to school. She has been seen in the ED for minor infections and injuries and is doing well without any sequelae from hospitalization.

**Another potential cause of altered mental status could be toxic exposure.**

**COMMENTS?** E-mail them to llevine@mhlfsciences.com

For references, go to ContemporaryPediatrics.com/puzzler-0920

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Ms Sorcher is an MS4 at Johns Hopkins University School of Medicine, Baltimore, Maryland.

The authors have nothing to disclose.
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The COVID-19 pandemic has created numerous challenges for physician practices, among them severe losses to patient volume and revenue. MJH Life Sciences™ the parent company of Medical Economics®, recently conducted a survey of our physician audience to learn about these financial challenges. We present the data below.

BY THE MEDICAL ECONOMICS® STAFF

How has the COVID-19 pandemic affected your current staffing plan?

<table>
<thead>
<tr>
<th>STAFF TYPE</th>
<th>No change</th>
<th>Furloughed/temporary leave</th>
<th>Permanent staff reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYSICIANS</td>
<td>23%</td>
<td>37%</td>
<td>10%</td>
</tr>
<tr>
<td>NON-PHYSICIAN CLINICAL STAFF</td>
<td>60%</td>
<td>23%</td>
<td>9%</td>
</tr>
<tr>
<td>NON-CLINICAL SUPPORT STAFF</td>
<td>48%</td>
<td>34%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Do you expect your headcount to change once your locality reopens?

- 37% We’ll return to same levels of staff members
- 34% We won’t return to the same headcount
- 23% We haven’t decreased staff and don’t expect to
- 6% Other

Who took the survey?

PRACTICE TYPE
- Private/independent: 53%
- Hospital/health system: 22%
- Group practice: 16%
- HMO-based practice: 1%
- Other: 7%

SPECIALTY
- Pediatrics: 22%
- Primary care: 19%
- Dermatology: 5%
- OB/GYN: 11%
- Psychiatry: 14%
- Neurology: 2%
- Ophthalmology: 7%
- Oncology: 2%
- Rheumatology: 1%
- Urology: 2%
- Other: 15%

About the survey

This data was collected between May 29 and June 3, 2020, via pop-up alerts on MJH Life Sciences™ websites from more than 1,500 health care providers. To view the entire survey, visit bit.ly/34grc6s.
With kids home and parents looking for things to do that include “social distancing,” more families will take to the outdoors. The only thing, ticks don’t play by the same rules, so Lyme disease could end up on the rise. When patients aren’t feeling well, anxiety levels could be especially high – and now more than ever they’ll ask to be tested. Sofia 2 Lyme FIA uses a finger-stick whole blood sample to provide accurate, objective and automated results in as few as 3 minutes, getting practitioner and anxious patient on a path to treatment much sooner.

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Dermatologic findings associated with COVID-19 in pediatric patients

As the COVID-19 pandemic continues on its lethal path, dermatologists are discovering new cutaneous manifestations that may help identify whether or not a child has been exposed to the virus.

FERNANDA BELLODI SCHMIDT, MD; VIVIEN CHEN, MS3

Disease caused by severe acute respiratory syndrome coronavirus 2 virus (SARS-CoV-2), otherwise known as COVID-19, has rapidly emerged as an international public health emergency with over 12 million cases, 650,000 deaths,1 and varying states of lockdown among countries worldwide since the virus first appeared in December 2019. The novel coronavirus classically presents in symptomatic patients with signs of upper or lower respiratory tract infection (URI, LRI), varying in degree of severity and multi-organ involvement.2

Recent literature has reported a variety of dermatologic manifestations among children and adults associated with COVID-19 infection. In general, children with the virus reportedly have milder clinical manifestations and lower incidence of critical cases compared to adults.3,4 Cutaneous manifestations seen in children may often differ from those seen in infected adults. Findings most commonly seen in children include chilblains-like lesions (or “COVID toes”) and viral exanthem variations (erythema multiforme-like, papulovesicular eruption, varicella-like eruption among others), as well as prominent mucocutaneous involvement in the more severe Kawasaki-like disease (KD) and Multisystem Inflammatory Syndrome in Children (MIS-C). In this review, we aim to highlight the various pediatric cutaneous findings associated with COVID-19 thus far, in context of infection timeline and utility of recognizing these manifestations to alert suspicion of SARS-CoV-2 infection.

One of the dermatological findings to first gain traction among COVID-19-related manifestations is chilblains-like lesions, or “COVID toes.”
Vascular-related manifestations: the debate over COVID toes

One of the dermatological findings to first gain traction among COVID-19-related manifestations is chilblains-like lesions, or commonly referred to as “COVID toes” or pseudo-chilblains. Chilblains, also known as perniosis, is a localized vasculopathy that involves vasoconstriction of small arterioles and venules triggered by cold, most commonly affecting those with chronic exposure to low temperatures, damp exposure, or poor peripheral circulation, in children, young women, and elderly patients. Lesions present as single or multifocal erythematous, purplish edematous papules, nodules, macules, or less commonly bullae, that may be pruritic, tender, or accompanied by a paresthesia, often on the extremities such as the fingers, toes (Figure 1), and less commonly on nose and ears. Treatment for primary chilblains includes preventative care (warm clothing, gloves, and socks), oral nifedipine and topical corticosteroids, and lesions usually resolve within 2 weeks but may recur seasonally. The past months have seen an increase in outpatient cases of chilblains-like lesions in some areas around the world, mostly among pediatric patients and young adults.

Variable COVID-19 testing results among reported patients has sparked debate on whether pseudo-chilblains are truly a sign of COVID-19 or rather secondary to quarantine-related lifestyle changes. Cordoro and colleagues reported clustered cases of pseudo-chilblains appearing within 1 week among 2 groups of siblings aged 12 to 17 years old, in Northern California, in the context of either mild viral URI symptoms (subjective fever, rhinorrhea) or contact with symptomatic persons 1-2 weeks before rash onset. However, SARS-CoV-2 polymerase chain reaction (PCR) and immunoglobulins (IgG, IgM, IgA) antibodies were negative for all patients. Similarly, a combined study of prospective testing in Eastern Spain and retrospective literature review of acral cases in both adults and children found only 13 out of 88 (14.8%) tested cases were positive for COVID-19. The PCR/serology testing of 38 children (median age 13.5 years) with new onset pseudo-chilblains at a tertiary care hospital in Italy found all patients negative for RT-PCR and IgM, IgG, IgA antibodies. A potential confounding variable is lifestyle...
infectious disease

changes from staying indoors during a lockdown state, implemented by many countries in response to the COVID-19 pandemic. An in-depth study by Neri and colleagues\(^8\) of 8 adolescents with chilblains-like lesions revealed that they had increased risk factors for primary chilblains: body mass index (BMI) <50th percentile, increased cold exposure with barefoot or thin socks contacting with cold floors, and prolonged postural habits impeding robust peripheral circulation.

Quarantine-related habits may contribute to the rise in primary chilblains cases, but the association with COVID-19 cannot be entirely ruled out by the absence of positive PCR or serology. Initial viral testing is biased towards patients with URI symptoms, the timing of retrospective testing is variable, and much is still unknown about COVID-19 antibodies—including the percentage of who acquires these antibodies and the duration of positive serology.\(^9,10\)

Reports of pseudo-chilblains associated with COVID-19 have presented consistent histological findings of superficial, deep, and perivascular lymphocytic infiltrate regardless of positive or negative COVID-19 testing in the patient.\(^6,11,12\) suggesting an inflammatory-based etiology that differs from the post-infectious perniosis histology commonly involving cold agglutinins and cryoglobulins.\(^13\) Interestingly, even in some pediatric cases with negative SARS-CoV-2 PCR, biopsies still demonstrated SARS-CoV-2 positive immunohistochemistry in endothelial cells.\(^13,14\) The positive immunohistochemistry was confirmed on electron microscopy with coronavirus particles present in endothelial cell cytoplasm,\(^13\) suggesting that the virus may still play a role in inducing lymphocytic vasculitis in pseudo-chilblains, despite negative PCR or serum serology.

Erythema multiforme-like lesions also presented in a case series of adolescents (aged 11 to 17 years), in conjunction with pseudo-chilblains and possible COVID-19 relation.\(^14\) Erythema multiforme (EM) is a hypersensitivity syndrome with distinct mucocutaneous manifestations in the setting of infection. It is characterized by acute onset of target lesions (sharply demarcated round plaques with 3 zones: outermost erythematous ring, middle pale zone, central dusking with possible blistering or crusting), that affects mostly the extremities and are most commonly triggered among children and young adults by viral infections, namely herpes simplex virus (HSV) and by *Mycoplasma pneumoniae*.\(^15\)

In a case study, Torrelo and colleagues\(^14\) identified 4 out of 22 pediatric patients with pseudo-chilblains (18%) also presenting with concomitant erythema multiforme located on the extremities (hands, feet, knees, elbows). Similar to other pseudo-chilblains patients, despite negative COVID-19 testing, skin biopsy demonstrated immunohistochemistry for SARS-CoV-2 spike protein in endothelial cells. Most notably, histopathology also did not demonstrate the typical features of EM including necrotic keratinocytes and spongiosis, but rather features consistent with chilblains, with superficial, deep, and perivascular lymphocytic infiltrations.

The authors have proposed that vascular damage clinically manifesting as pseudo-chilblains may represent a late antigen-antibody reaction at a time when viral load is already low. This theory is supported by the relatively late onset of lesions and
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significant number of negative nasopharyngeal PCRs. In addition, these patients also seem to have an overall milder disease presentation.16,17 Whether caused by quarantine-related lifestyle changes or COVID-19 viral-induced vasculitis, there is still more to be studied. As many patients with chilblain-like lesions present asymptomatically or within a few weeks of mild URI symptoms, it is important to consider and screen for both classic risk factors present amongst quarantine living, and for potential SARS-CoV-2 infection in the context of the continued pandemic.

In most cases reported, the pseudo-chilblains lesions were minimally symptomatic, did not require treatment, and resolved within a few days without sequelae. The Pediatric Dermatology Research Alliance COVID-19 Response Task Force (PDCRTF) has developed an open registry for cases to study and better understand this phenomenon.18 Other vascular related skin manifestations such as livedo-recticularis and purpuric or petechial eruptions have been reported in adults and were felt to be a thrombotic phenomenon related to viral infection, but a literature search has not revealed such cases among children up to date of this publication except for one case of petechiae presenting in relation to other morbilliform and annular lesions discussed later.19

Nonspecific viral exanthems
A series of cases highlight a varicella-like exanthem associated with COVID-19 among adult patients, particularly in Italy, who developed a monomorphic papulovesicular rash of the trunk that progressed to crusting over a few days with histology consistent with viral infection.20 Among children, Genovese and colleagues21 detailed a similar varicella-like papulovesicular exanthem, distributed symmetrically along the bilateral trunk. The rash erupted in the patient aged 8 years, 3 days after the start of a cough, and self-resolved after 7 days. The patient and his asymptomatic family members all tested positive for SARS-CoV-2, the latter of whom developed URI symptoms shortly after.

Aside from the more widespread truncal papulovesicular lesions, there are also reports of more localized eruptions. Klimach et al19 described a COVID-19 positive case of a boy aged 13 years, in the United Kingdom with an erythematous papular eruption involving the axillae and feet, as well as erythematous macules with associated petechiae and annular lesions on the distal lower extremities. The skin findings developed either before or within 24 hours of onset of mild flu-like symptoms (fever, myalgia, and headache), and resolved within 2 weeks.

Of note, an early pruritic morbilliform eruption, with onset concomitant with other COVID-19 symptoms and lasting 3-10 days has been described in adults infected with SARS-CoV-2.22 In children, morbilliform eruptions have been most commonly described in the context of MIS-C, as discussed below. Although urticarial eruptions have been described in adults, to our knowledge at time of this publication, no isolated cases have been reported in children in relation to COVID-19.

Similar to the presentation of pediatric patients with chilblains-like lesions, these viral exanthems seem to affect children who are generally asymptomatic or with mild preceding URI symptoms. Notably, the onset of these generalized cutaneous findings tends to be earlier than onset of vascular-related findings, presenting within a few days of any other viral symptoms.23

Multisystem Inflammatory Syndrome in Children (MIS-C) and KD-like
Viral infections among children are generally self-limiting, but in rare cases can trigger multisystem inflammation and severe sequelae. SARS-CoV-2 seems to be no exception, and although current literature demonstrates the majority of infections among children to be asymptomatic or mild-moderate cases, there are temporal relationships to KD-like presentations to COVID-19, including in Italy where one hospital saw a 30-fold increase in the rate of KD-like presentation during the COVID-19 pandemic.24 As of May 15, 2020, the World Health Organization detailed preliminary diagnostic criteria for what they termed “Multisystem Inflammatory Syndrome in Children,” involving fever ≥3 days in patients ≥9yo and <19yo, evidence of COVID-19 or likely contact with COVID-19 patients, and a set of clinical
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and laboratory features of hyperinflammation, including an exanthem or enanthem.\textsuperscript{25}

Notably, reports of MIS-C and KD-like have demonstrated large prevalence of mucocutaneous involvement in these patients, with some presenting as one of the primary or most prominent initial symptoms of the disease course. Patients can present with bilateral non-purulent conjunctival injection and oropharyngeal changes including diffuse hyperemia, strawberry tongue, and lip fissures. Cutaneous presentations can also involve hand-foot erythema and edema progressing later to desquamation, and diffuse exanthema with reports of various potential morphologies including either morbiliform, urticarial, EM-like, scarlatiniform, or pustular lesions (Figure 2).

A large retrospective study conducted by Feldstein and colleagues\textsuperscript{26} of MIS-C cases in the United States found that not only did the majority of patients present with KD-like features (90% prolonged fever for ≥4 days), but also the most common KD-like features outside of fever were “rash” (n=110, 59%) and bilateral conjunctival injection (n=103, 55%). There are also examples of cases where cutaneous manifestations were at the forefront of the clinical picture. Jones et al\textsuperscript{27} describe a case of a 6-month-old girl with KD-like (4/5 criteria) and positive SARS-CoV-2 RT-PCR who presented initially with fever and erythematous “blotchy rash” (day 2 of fever) that progressed to a diffusely distributed blanching, polymorphous, maculopapular rash by day 5. The rest of the clinical course and presentation for the patient was mild, with no notable respiratory symptoms throughout hospitalization. Another case of KD-like in the setting of COVID-19-like pneumonia presented first with prolonged fever and cutaneous manifestations with generalized exanthema, subsequent desquamation, and mucous membrane involvement with cheilitis and stomatitis.\textsuperscript{28}

Among patients with recorded COVID-19 symptoms before MIS-C onset, the median time interval measured in one study was 25 days.\textsuperscript{26} Additionally, the emergence of reported MIS-C cases during the descent of the COVID-19 epidemic in those locations suggests MIS-C has a delayed onset after SARS-CoV-2 infection.\textsuperscript{26} Concerning the association between COVID-19 and MIS-C or KD-like presentation, it is important to consider the temporal relationship of generalized exanthems appearing as one of the most common, or even first clinical manifestations of these multi-system inflammatory responses.

Conclusion

A variety of dermatologic findings have been reported thus far amongst pediatric patients in relation to COVID-19, best categorized into chilblains-like lesions, viral exanthem variations (morbiliform, varicella-like), and mucocutaneous involvement as part of KD-like and MIS-C. Pseudo-chilblains and varicella-like eruptions tend to present in asymptomatic or mildly symptomatic patients within 1-2 weeks of respiratory symptoms or contact with infected persons and self-resolve, with some reports of histological evidence of inflammatory infiltration and SARS-CoV-2 positive immunohistochemistry in patients regardless of PCR or serological testing. On the other hand, KD-like and MIS-C patients tend to present later in the course of COVID-19 infection, with predominant mucocutaneous involvement (generalized exanthem, cheilitis) that can even be the early feature on initial presentation. The temporal and causal relationships between COVID-19 and each of these cutaneous manifestations are still unclear due to variable viral testing and follow-up, and more in-depth studies are needed to understand the correlation.

Diagnosing of these cutaneous findings can be challenging as they are nonspecific and can also be seen in the context of other viral or bacterial infections, drug reactions, or have idiopathic etiology. Therefore, when evaluating patients with such cutaneous findings, COVID-19 should be suspected but it is important to still consider and rule alternative causes.\textsuperscript{29} Nevertheless, the notable increase of certain cutaneous manifestations among children in the context of the COVID-19 pandemic seems more than a mere coincidence, and greater awareness of their association with COVID-19 infection will be an important asset to pediatric and dermatologic practice.

In Italy, one hospital saw a 30-fold increase in the rate of KD-like presentation.

In Italy, one hospital saw a 30-fold increase in the rate of KD-like presentation.
Did the Healthy, Hunger-Free Kids Act of 2010 Improve School Nutrition?

The Healthy, Hunger-Free Kids Act of 2010 was supposed to improve the quality of the school lunch. An investigation may finally be able to prove an answer.

MIRANDA HESTER, EDITOR

Much ink has been spilled over former First Lady Michelle Obama’s project the Healthy, Hunger-Free Kids Act of 2010, and many have wondered whether the act prompted an improvement in the dietary quality of lunch served to children who participated in the National School Lunch Program. An investigation in JAMA may be able to provide an answer.1

Investigators created a serial cross-sectional study design that used data from the National Health and Nutrition Examination Survey from 2007-2008, 2009-2010, 2013-2014, and 2015-2016. A total of 6389 were included in the study of which 56% were middle-high-income students; 12% were low-middle-income students; and 32% were low-income students. The investigators concluded that Healthy, Hunger-Free Kids Act of 2010 was linked to improved dietary quality for children who were part of National School Lunch Program.

Unfortunately, the act has been watered down, now allowing less whole grains, more flavored milk, and sodium. ■

COMMENTS? E-mail them to llevine@mjlifesciences.com

To read the entire article on this study and see reference, go to bit.ly/3hej7F0.
Primary care providers key to tobacco prevention in teens

A recent report emphasizes the work of primary care physicians and pediatricians in preventing tobacco use in teens, noting that prevention is the best tool to combat smoking initiation.

RACHAEL ZIMLICH, RN, BSN

Primary care doctors and pediatricians are the front line when it comes to the fight against tobacco use. Frequent interactions throughout childhood make these providers the ideal resource for education and counseling on tobacco avoidance, according to an updated recommendation from the US Preventive Services Task Force (USPSTF).

The USPSTF outlined its updated recommendations in a series of reports published last April in JAMA. These reports include an updated recommendation statement, an evidence report, and an editorial on the recommendations.1–3

The evidence report, penned by Shelley Selph, MD, MPH, of the Oregon Health and Science University’s Pacific Northwest Evidence-based Practice Center in Portland examined 24 randomized clinical trials with more than 44,000 participants. In 13 of the trials, an 18% drop in the risk of smoking initiation was attributed to clinician behavioral interventions. On the other hand, the study found no significant change in smoking cessation efforts after behavioral interventions and no improvement after pharmacologic interventions using nicotine replacement or bupropion.

The task force confirmed earlier recommendations that primary care physicians and pediatricians should focus on behavioral interventions as a prevention tool to keep children and teenagers from using tobacco in the first place rather than trying to get them to stop.

Tobacco is the top cause of preventable death in the United States. About 480,000 deaths each year are attributed to tobacco use among adults, according to the evidence report. In children and adolescents, an estimated 1600 adolescents aged 12 to 17 smoke their first cigarette each day, and 5.6 million teenagers will eventually die from an illness related to smoking. Increasingly, tobacco use in teenagers is moving from conventional cigarettes to electronic cigarettes (e-cigarettes).

“Pediatricians cannot ignore the use or potential use of any tobacco product in their patients, due to the risk of significant harms associated with such use,” says Selph.

The evidence report was used to update the task force’s recommendation, which was last reviewed in 2013. Changes to the task force’s recommendations include the addition of e-cigarettes to the tobacco products addressed in the recommendation. The USPSTF noted that there isn’t enough evidence to make a clear recommendation on tobacco cessation methods in children and adolescents. More research is needed to identify the best methods to help children and teens stop using tobacco products.

COMMENTS? E-mail them to llevine@mjhlifesciences.com

Ms Zimlich, a freelance writer in Cleveland, Ohio, writes regularly for Contemporary Pediatrics.

For references, go to bit.ly/3I0DRKY
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A good approach to knowing when a child needs referral for mental health evaluation.

MICHAEL JELLINEK, MD

When I started my pediatric residency, I knew my long-term career goal was to be a child and adolescent psychiatrist. I very much appreciated that the pediatric residency built my core identity as a physician, capable of caring medically for children whether in an intensive care unit or in primary care. However, my natural bent was to always include the psychosocial aspects of care and to ask more psychologically oriented questions after the necessary medical information was gathered, for example, when admitting a child to the hospital. When I went to my primary care clinic, I, of course, completed all the usual screening and vital sign measures. Height, weight, urine screening for infection and diabetes, as well as traditional vital signs were done at every visit. In infants and toddlers, developmental issues such as sitting, walking, first words, and toilet training were well noted. However, through working in both an academic and community clinic settings, I was increasingly convinced that there were psychosocial concerns unaddressed and not recognized by any available screening approach.

Most supervising attendings would ask 1 or 2 questions about school or friendships that had a ‘hit or miss’ quality. The director of the clinic was wonderfully intuitive and almost magically sensed which children needed a mini-psychiatric review. However, at the time, there was no training requirement in behavioral pediatrics and even the rotations now instituted could not train someone to select children in a primary care setting without some screening mechanism. Overall, the recognition of emotional problems in pediatrics was highly variable, and the research conducted in the late 1970s indicated that the identification of emotional problems in pediatric primary care was well below expectations set by epidemiological studies. I wondered if there could be a short, valid screening questionnaire that could fit into the flow of a busy clinic and identify children in need of further pediatric evaluation and potential mental health referral.

I knew the time pressure and workflow in primary care practice. Any screening process, like a urine dipstick or blood pressure, had to be brief, take no more than 3 or 4 minutes to administer and score, and not clog up the waiting room that had been built to accommodate the typical flow of patients. The screen had to be understandable and readily accepted by parents and teenagers and, if possible, one form had to be applicable to a broad age range. The front desk had enough paper to deal with (electronic records were still 30 years in the future) that there could not be different screening forms by age, gender, or other demographic factors. Using the metaphor of a urine dipstick, the screening had to be simple with one form on one shelf. Given the economics of practice, the screen had to be free to administer and score and potentially be reimbursable like other routine procedures.

If the operational requirements could be met, there were 3 major conceptual questions in considering psychosocial screening:

1. What issues or problems should a set of screening questions identify?
2. Who should answer the questions—parents or teenagers (or even younger children)?
3. What would be the clinical approach for a primary care pediatrician if a screen came back as “positive”?

If the operational requirements could be met, there were 3 major conceptual questions in considering psychosocial screening:

1. What issues or problems should a set of screening questions identify?
   As a psychiatrist, I was trained to look for sets of symptoms that met criteria for a disorder—a system better suited to adults than to children, given the complexities of development and family considerations. Pediatricians were not familiar with lists of symptoms, with a certain number of symptoms needed for a diagnosis, independent of family or development history, and with a diagnostic result of more than one mental health diagnosis. A child diagnosed with major depression from the psychiatric perspective could be 11 or 16 years of age, could have a strong family history of depression suggesting a largely biological etiolo-
mental health

gy, or could be trying to cope with divorcing parents, bullying at school, an alcoholic, abusive father, or a family’s food insecurity. Many pediatricians had no experience with this psychiatric diagnostic approach, were uncomfortable with one or more diagnoses not grounded in an etiology, and/or found it of limited use in communicating with parents or colleagues.

Rather than lists of symptoms, pediatricians start by asking how old is the child and how are they functioning with friends, school, activities, in family life? What is the status of the child’s mood and self-esteem? Given the strong reluctance to use the psychiatric symptom-based approach, to be broadly accepted, psychosocial screening in primary care would have to be based on understandable questions regarding daily functioning. A child’s daily functioning is an expression of their strengths and stressors. A child’s functioning is the common pathway for the influences of genetics, their psychological development, social determinants of health, coping abilities, and resilience. In the context of the epidemiology of childhood psychosocial issues, a screen will find 10%-15% of all 4-16-year-old children “positive,” meaning the pediatricians should include assessing the child further as part of the pediatric visit.

The questionnaire items reflect difficulties in psychosocial functioning with the goal of coming to a score that reflects risk versus non-risk. The first version of the screening tool had 35 questions for parents to rate their child’s problems as occurring “never,” “sometimes,” and “often.” Naming the screening questionnaire, “The Pediatric Symptom Checklist” (PSC) emphasized that a child’s psychosocial functioning was a core and routine part of pediatric healthcare. The PSC was freely available with no charge for the tool, its use, or scoring. More than a decade after initial validation, some colleagues found that groups of questions on the PSC clustered together and could reliably identify risk in three different domains: externalizing, internalizing, and attention problems in a shorter 17-item format of the PSC.2,3

Who should answer the questions?

Generally, a parent or legal guardian brings the child for the pediatric visit and is typically the person in the best position to assess the child’s functioning. The questionnaire reflects a parents’ perceptions and when considering the psychosocial functioning of a child, a parent is more like the umpire in a baseball game. A ball thrown by the pitcher is defined as a ball or strike by the umpire, and once defined, enters history as what the umpire indi-
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cated. Is a child more often alone, having fun, or not listening to rules? There are no objective counts, only a parents’ sense of the situation and that is why “often” scores are so relevant. The major area where parents’ perception is limited is with teenagers, when their thoughts are often private, and a related depressive mood may be hidden. A youth-completed version of the PSC has been developed and other instruments specific to adolescent depression such as the patient health questionnaire (PHQ-9) are also available.

3 What is the clinical path of a primary care pediatrician if a screen is “positive”? The goals for the clinician are to assess if the screen is a true positive (similarly to other positive screens, eg, repeating a higher than expected blood pressure), and, if deemed valid, assessing the level of severity and next steps. Questions answered “often” are a good starting point for the pediatrician to solicit the parent’s understanding, and to explore the impact of the behaviors on the child’s and family’s functioning. The next step is to have the pediatrician ask questions about other areas of functioning (school, friends, activities, family, and mood). Depending on these answers, it may be relevant to ask about family violence, any mental health treatment, family history of emotional disorders, and safety concerns (access to guns or dangerous adult medications). Usually, in about 15 minutes, pediatricians get a sense of whether this is a true positive, the general nature of the issue and the severity of impairment or suffering. Next steps might be to offer counseling, schedule a follow-up (“watchful waiting”), or refer to a mental health consultation. Repeat PSCs can be given at the appropriate interval to monitor watchful waiting or get some feedback on the course of treatment post referral. The PSC more than doubled both the recognition and referral rate for psychosocial dysfunction (See Figure 1).

Since its initial creation, over 35 years of research on the PSC in more than 200 studies has shown its validity and reliability in a wide range of settings, demonstrated that it is understood and well-accepted by parents and clinicians, is sensitive to the impact of social determinants of health and poverty on mental health, can be shortened from a 35- to a 17-item version, can be used in both a parent- and younger-reported format, and that regular use of the PSC is associated with an increase in mental health treatment.

The PSC is also used in specialty pediatric and mental health clinics, schools, Head Start, state agencies, and online. Many questions, however, still remain unanswered: Which children benefit the most from early recognition (those with the highest scores or those with lower levels of risk)? Can the PSC be used to track progress in treatment or highlight the need for more intensive treatment? What is the natural history of an individual’s scores over a decade or more of childhood and adolescence, how should outcomes in functioning be measured, and can the PSC be used more effectively to identify impending adolescent risk taking and suicidal behavior? The PSC is now widely used and is a major bridge between pediatric and mental health care. However, with the burden of mental health problems rising, especially during and post COVID, the bridge should be busier, better resourced, and refined by future research.

Usually, in about 15 minutes, pediatricians get a sense of the nature of the issue and the severity of suffering.

In Massachusetts, the PSC was one of a handful of recommended screening questionnaires mandated by a Federal Court as part of a remedy to broaden mental health services for children with Medicaid. The PSC has been endorsed by the Massachusetts and California Medicaid programs, the American Academy of Pediatrics, and the National Quality Forum, both for overall screening and for screening adolescents for depression using its internalizing scale. The PSC is now included in many if not most US electronic medical record systems (EMR) including two of the most widely used (EPIC and Centricity).

Studies of the PSC in an EMR indicate that 70%-90% of children in large systems can be screened routinely, that pediatricians document their discussion of PSC scores in medical records, generally selecting the higher scoring children for mental health referral. The screen is now a routine feature of the visit and increases referrals for mental health services.

Many questions, however, still remain unanswered: Which children benefit the most from early recognition (those with the highest scores or those with lower levels of risk)? Can the PSC be used to track progress in treatment or highlight the need for more intensive treatment? What is the natural history of an individual’s scores over a decade or more of childhood and adolescence, how should outcomes in functioning be measured, and can the PSC be used more effectively to identify impending adolescent risk taking and suicidal behavior? The PSC is now widely used and is a major bridge between pediatric and mental health care. However, with the burden of mental health problems rising, especially during and post COVID, the bridge should be busier, better resourced, and refined by future research.

COMMENTS? E-mail them to Levine@mjhllifesciences.com

For references, go to ContemporaryPediatrics.com/pediatric-symptom-checklist

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I would like to acknowledge my partner of 35 years, Michael Murphy EdD, whose contributions have been essential.
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Telemedicine (TM) video visits were off to a slow start in most offices and clinics in 2020. Then along came the COVID-19 pandemic and TM care took off. To prevent the spread of the virus, primary care providers (PCP) transitioned from in-person visits to providing as much definitive care as possible by video visits. Being able to bill at in-person rates was an added motivator. The PCPs quickly adapted, overcoming concerns about learning video visit technology. Reports that a significant percentage of contagious patients with the virus were asymptomatic increased their interest. Families who were afraid of catching COVID-19 in a medical setting welcomed a video visit option. Convenience was an added incentive. This report reviews how to optimize teamwork between telephone triage nurses and PCPs who provide video visits.

Repurpose telephone triage protocols to support telemedicine visits

Nurse triage continues to be a vital part of how we manage our patient populations. Nurses can use the triage questions and care advice as written but modify the dispositions to include a TM option. Most of the dispositions simply need to be changed by adding “or schedule a video visit” to the existing “in person visit” wording (Table 1).

There are two main exceptions:

1. Triage questions that fall under the 911 or Go to emergency department (ED) Now dispositions. These indicators recognize serious conditions where delay in diagnosis and treatment could lead to adverse outcomes.

2. Patients who are nurse-triaged to the Home Care dispositions. They usually don’t need PCP involvement.

Use nurse triage to front-end PCP telemedicine visits

Office triage nurses can continue to independently manage most calls about well children (such as eating, sleep, behavior, vaccines, and new baby questions). During office hours, these may account for 30% of pediatric calls.

For calls about sick children, each practice will need to decide if nurses continue to triage all of them or just some of them. If the practice wants nurses to triage all sick child calls, up to 50% will be triaged to the Home Care disposition (mildly ill and don’t need to be seen). Nurses then refer the patients who need to be seen to the PCP for an in-person or video visit.

Some practices prefer to let the parent decide. After knowing the reason for the call, the front desk staff can ask: “Do you want an appointment with the doctor, or do you want to talk with our advice nurse?” If they want to be seen, schedule an in-person appointment. If a parent prefers a video visit, it can only be scheduled after a triage nurse or PCP confirms the main symptom is appropriate for TM. For TM visits, the timeframe should be similar to the protocol-recommended timeframe for office visits or sooner if TM is readily available. Many PCPs still prefer in-person visits over video visits, because they can provide definitive care more quickly in the office.

Help triage nurses select patients for a TM visit

Many will validly argue that TM can’t manage all patients who are triaged as needing to be seen. Some offices found a solution. It’s called a “split visit.” A TM visit is attempted on almost all patients who would be triaged to an office visit. Most of the time, it is successful without a complete physical exam or any lab tests. When not, the patient is sent to the office soon after the call. The office visit can then be a brief encounter, such as to perform a rapid strep test or an ear exam, sometimes in the office parking lot. If 2 visits are required, reassure payors, only 1 fee should be generated.
For offices who want the nurse to more carefully select candidates for TM visits, here are some guidelines. If we tried to establish inclusion criteria, it would be difficult to reach a consensus. Establishing exclusion criteria for TM visits has greater consensus and leads to a far shorter list.

Some offices where a physician and nurse have worked as a team for many years may not need such a list. Nurse judgment from working closely with a PCP might allow the triage nurse to select appropriate patients for TM visits. When in doubt, office nurses can ask for guidance. However, for triage nurses in many office practices, an exclusion list of patients not appropriate for a TM visit is helpful. See our suggested list as a place to start and modify to meet your needs.

**Telemedicine exclusion list for office triage nurses**

The Telemedicine Exclusion List in Table 2 is a work in progress. It will need to be customized by most primary care practices. Some software platforms with protocols in electronic format support customizing specific triage questions that are not appropriate for TM. Nurse awareness of PCP preferences also play a role in deciding who is appropriate to refer for TM. In our experience, most suspected COVID-19 calls and symptoms are being managed by TM visits.

Another decision is where to start. Table 3 lists the nurse triage protocols most amenable to TM care. They are protocol symptoms with high call volumes. They also have a high likelihood that a video visit can provide diagnosis and treatment.

**Join the new normal**

Telemedicine video visits are part of the new normal. Most PCPs have learned how to provide them. Families appreciate their convenience and safety from COVID-19 contact. And they want the service provided by their PCP, not an unknown provider. In addition, the PCP can seamlessly convert a video visit into an office visit when needed. During office hours, office triage nurses can schedule TM visits in real-time. On weekends and holidays, call center nurses can schedule patients triaged to the video visit within 24 hours disposition with on-call PCPs who are willing to provide this service during the day. These are the patients who otherwise might need referral.

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**TABLE 1**

**OFFICE HOURS CALLS** New dispositions that include a video visit option

The following dispositions with Video Visit added can replace the existing Office Hours dispositions within Pediatric Telephone Protocols: Office Version (American Academy of Pediatrics published book) or the expanded number of office hours protocols in software. The 17th edition of the book (scheduled for 2021) will probably use these new dispositions. As mentioned in the text, see the Exclusion List for exceptions.

- Call EMS 911 Now – no change
- Go to ED Now – no change
- Go to ED/UCC (or to Office with PCP Approval) Now – no change
- Go to Office or Video Visit Now
- Call Transferred to PCP or Video Visit Now
- Callback or Video Visit by PCP within 1 Hour
- See in Office or Video Visit Today
- See in Office or Video Visit Today or Tomorrow
- Callback or Video Visit by PCP Today
- See in Office or Video Visit Within 3 Days
- See in Office or Video Visit Within 2 Weeks
- Home Care - no change

**TABLE 2**

**TELEMEDICINE EXCLUSION LIST FOR OFFICE TRIAGE NURSES**

Emergent Dispositions (911 or Go to ED Now) need to be excluded from video visits. See Table 1.

- **Specific protocols** may be excluded. Examples: fever in first 90 days, confusion, poisoning, child abuse.
- **Physical finding** not visible by video visit required for diagnosis. Examples: severe ear pain that needs an eardrum exam; mouth lesions that are difficult to visualize; vision loss that needs a retinal exam.
- **Genital image** required for diagnosis. Reason: sensitive image to transmit.
- **Lab test** required for diagnosis. Example: suspected urinary tract infection (UTI) that needs a urinalysis and urine culture (exception: bubble bath urethritis); suspected strep pharyngitis that requires a rapid strep test; chronic symptoms that require any lab work.
- **Imaging** required for diagnosis. Example: injured lower limb and child can’t bear weight.
- **Procedure** required for treatment. Example: gaping wound that needs suturing or an animal bite wound that needs vigorous irrigation.

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FDA expands approval of STELARA to treat pediatric plaque psoriasis

The US Food and Drug Administration (FDA) has approved STELARA for treating plaque psoriasis.

MIRANDA HESTER, EDITOR

The US Food and Drug Administration expanded the indication for STELARA (ustekinumab) to treat moderate-to-severe plaque psoriasis in children aged 6 to 11 years. The drug targets interleukin (IL)-12 and IL-23, key to moderating the overactive inflammatory response. The drug is given as an injection under the skin 4 times a year, following 2 starter doses.

The approval of the drug was based on the results from the CADMUS Junior study, which was an open-label, single-arm, multicenter phase 3 clinical trial. The study included 44 children who had moderate-to-severe plaque psoriasis and 77% of them had clear or almost clear skin at week 12, after receiving 2 doses. The study results showed that 84% achieved a Psoriasis Area and Severity Index (PASI) 75 response and 64% achieved a PASI 90 response.

Overall, the safety in the pediatric population was similar to the safety results seen in the adult population. Common adverse events include nasal congestion, sore throat, itching, tiredness, and headache. One potentially mitigating factor in the study was that the participants were aware that they were receiving ustekinumab.

COMMENTS? E-mail them to llevine@mjlifesciences.com

For references, go to ContemporaryPediatrics.com/FDA-approval-for-Stelara

TABLE 3

RECOMMENDED NURSE PROTOCOLS FOR VIDEO VISITS

- Dermatology protocols: Rashes, skin lesions, bites, and stings are where most PCPs start (includes 30 topics in the American Association of Pediatrics (AAP) book). Request caller send an image in advance.
- Allergy protocols: Allergic rhinitis and conjunctivitis are easy to manage.
- Cough and cold protocols: A virtual visit can rule out signs of respiratory distress. Once that is done, most coughs and colds can be managed successfully, including sinus symptoms.
- Diarrhea and vomiting protocols: A virtual visit can rule out signs of dehydration, such as a prolonged capillary refill. Prescriptions for ondansetron have reduced the need for intravenous rehydration.
- Follow-up visit protocols: Examples are follow-up calls for patients with bronchiolitis or taking antibiotics for an infection.

Skin at an ED or urgent care center (UCC) over the weekend. In summary, what we have learned from managing calls about suspected COVID-19 infections is that there is no “going back”.

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