**Intranasal Flu MISSED its target**

by Henry H. Bernstein, D.O., M.H.C.M., FAAP, and David W. Kimberlin, M.D., FAAP

The Academy supports the Centers for Disease Control and Prevention’s (CDC’s) interim recommendation that quadrivalent live attenuated influenza vaccine (LAIV4) not be used in any setting during the 2016–17 season.

Vaccination remains the best preventive measure against influenza, so everyone 6 months and older should receive an age-appropriate trivalent or quadrivalent (no preference) inactivated influenza vaccine (IIV) as soon as available.

**Why no intranasal LAIV4 this season?**

This approach was taken in light of new observational data from the U.S. Flu Vaccine Effectiveness Network that documented poor vaccine effectiveness (VE) of LAIV4 during each of the past three influenza seasons (see table on page 4), especially against 2009 influenza A (H1N1) and pandemic (H1N1pdm09) viruses. During the most recent season, LAIV4 had an overall adjusted VE of 3% against any influenza, while IIV had an adjusted VE of 63% in children 2 through 17 years of age.

In all pediatric age groups for all three seasons, LAIV did not have any statistically significant benefit in preventing influenza (all 95% CI cross zero), while IIV provided statistically significant protection, albeit to differing degrees by season. Children who received LAIV had more than 2.5 times higher odds of developing influenza due to any virus type compared with IIV vaccinated children. For H1N1pdm09 in

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**Female athlete triad: Early recognition, intervention important**

by Amanda K. Weiss Kelly, M.D., FAAP

The female athlete triad originally was considered an interrelationship of disordered eating, amenorrhea and osteoporosis. Our understanding has evolved to recognize that each of the components — now defined as energy availability (EA), menstrual function and bone health — exists on a spectrum from optimal health to disease. Athletes affected by the triad also may have risk factors for cardiovascular disease, and they may present with disease in one or any combination of the components.

Updated guidance on diagnosis and treatment of the triad conditions can be found in the newest AAP clinical report *The Female Athlete Triad*, available at [http://dx.doi.org/10.1542/peds.2016-0922](http://dx.doi.org/10.1542/peds.2016-0922). The report from the Council on Sports Medicine and Fitness is published in the August issue of *Pediatrics*.

**Components of the triad**

When exercise occurs without adequate compensation for exercise-related energy expenditure, adverse effects on reproductive, bone and cardiovascular health may occur.

EA is defined as daily dietary energy intake minus daily exercise energy expenditure corrected for fat-free mass (FFM). Optimal EA, where reproductive, bone and cardiovascular health are well-maintained, has been identified as 45 kilocalories per kilogram (kcal/kg) FFM per day in adults but may be higher in adolescents who are growing.

For many athletes affected by the triad, low EA is unintentional, and pathological eating behaviors are not present. An EA of less than 30 kcal/kg FFM per day has been associated with disruptions in menstrual function and bone mineralization.

The spectrum of menstrual disturbances related to the triad ranges from anovulation and luteal dysfunction to oligomenorrhea and amenorrhea (primary or secondary). As anovulation and luteal phase deficiency often are asymptomatic, they

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**AAP joins groups calling for drastic reduction in early childhood expulsions**

by Jessica Pupillo • Correspondent

High-quality preschool programs provide a foundation for a child’s academic, social and emotional success. Research also shows those who attend preschool are more likely to graduate from high school and less likely to be involved in the criminal justice system. Yet recent data show young children are being expelled from preschool at an alarming rate.

Data collected by Walter S. Gilliam, Ph.D., child psychologist at the Yale Child Study Center, found that 6.7 children per 1,000 enrolled in state-funded preschool programs faced expulsion compared to 2.1 in grades K-12. Surveys of non-state-funded child care centers have found even higher expulsion rates.

Of preschoolers receiving out-of-school suspensions, 78% are boys, according to the U.S. Department of Education’s Office of Civil Rights. There are racial disparities as well: Black children are 3.6 times more likely to receive one or more out-of-school suspensions as white preschool children.

Anecdotally, Dr. Gilliam has found children with aggressive behaviors who are bigger than their peers are more likely to be expelled. “Big, black and boy,” Dr. Gilliam said. “If you have one of those, you’re at risk for expulsion. If you have all three, you’re at the greatest risk of all.”

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**Voters’ Guide**

Get to know the AAP candidates running for district office vacancies and hear the president-elect candidates’ thoughts on the evolving medical home. AAP voting runs from Oct. 21 to Nov. 21. Pages 25-29

**Effects of parental substance use**

An updated clinical report distills information on how to guide parents whose substance use affects their children. Page 42
Study explores chickenpox trends using Google search data


Using Google search data, researchers were able to predict chickenpox outbreaks and show vaccines are effective in preventing them. This method of using online data, known as digital epidemiology, can provide information about disease trends even if they are not reported to national health officials.

The team in this study sought to look at the reliability of this approach as well as patterns in chickenpox outbreaks around the world. They used Google Trends to analyze searches for chickenpox from 36 countries on five continents over 11 years and noted seasonal patterns. Spikes in searches tended to come in the spring consistent with previous studies on chickenpox outbreaks.

Researchers compared search trends to clinical data from five countries. In Mexico, Thailand and Estonia where vaccination is not required, searches were significantly correlated with reported cases of the disease. In the U.S. and Australia where vaccination is required, the links were weaker.

“The findings … indicate that immunization programs diminish seasonal information-seeking behavior and likely represent decreased seasonality of outbreaks,” the authors wrote.

This also could be seen in Germany where seasonality of searches dropped after the country began requiring vaccination in 2004. It plunged even more after 2009 when the country required a booster dose.

Researchers also created eight models to forecast the timing and size of outbreaks and found those incorporating Google Trends fared better than those that did not.

“Thus, digital epidemiology is an easily accessible tool that can be used to complement traditional disease surveillance, and may be the only readily available data source for studying seasonal transmission of nonnotifiable diseases in certain instances,” according to the study.

Doctors, parents need better communication on asthma medications


Parents often don’t know what type of asthma medication their child was prescribed and how often to use it, researchers found.

The cross-sectional study included 740 pairs of providers and parents of children ages 4–11 years. Each of the children had a diagnosis of asthma and were prescribed at least one controller medication. Children with severe asthma or other health issues were excluded.

Results showed 72% of parents knew what type of controller medication their child was prescribed, and 49% knew both the type and how often to administer it.

Among children prescribed inhaled corticosteroids, there was a mismatch in the understanding of the dose in 27% of prescriptions for daily, year-round use; 54% of prescriptions for daily use when asthma is active; and 66% of prescriptions for relief only, according to the study.

Parents who were Latino or who did not feel the medicine was working were more likely to report a different medication than the provider reported. A mismatch between parents and provider reports also was more likely when the parent did not feel the child needed the dose prescribed.

Researchers suggested providers talk with parents about the importance of the medicine and whether they think it is working to identify families who are not using the proper dose.

Improving provider-patient communication during medical visits could help with caregiver-reported medicine adherence,” they said.

Transgender youths may struggle to find gender-affirming care


Transgender youths report multiple barriers to receiving gender-affirming health care, according to a new study.

Delaying such care comes with a price as it is connected to increased risk of psychiatric issues like anxiety and depression, which already are higher in transgender youths than in their peers.

The Academy and other health organizations recommend supporting transgender youths and providing referrals for transitions.

Researchers set out to see if these youths were able to find gender-affirming care. They used surveys, interviews and focus groups to garner input from 15 youths ages 14–22 and 50 caregivers of transgender youths. They found six common barriers:

• limited number of providers trained in supporting transgender youths who were accessible in terms of insurance coverage and distance;
• lack of office protocols or awareness of professional guidelines;
• providers who did not use the patient’s chosen name or pronoun;
• lack of coordination between providers;
• trouble accessing pubertal blockers and cross-sex hormones due to age, parental approval or lack of provider training; and
• insurance exclusions.

The team suggested remedies for each barrier, including training providers and staff, developing office protocols, opening multidisciplinary gender clinics and providing cross-sex hormones at an age that allows adolescents to develop at the same time as their peers.

“Our data suggest that the implementation of clear, comprehensive, evidence-based best practices and policies that take into account patient age, pubertal stage, desired future treatments, and comorbid conditions and address barriers to gender-affirming care are likely to improve mental and physical health outcomes for transgender youth,” authors wrote.
Despite partisan roadblocks, pediatricians resolve to protect children from gun violence

For two decades, the Academy has been advocating for policies that protect children, families and communities from gun violence. After the 2012 massacre at Sandy Hook Elementary School in Newtown, Conn., which left 20 first-graders dead, pediatricians renewed their call for progress and urged lawmakers to work across the aisle to move forward on meaningful gun reform.

Four years later, that message was reiterated after 49 people lost their lives in the deadliest mass shooting in our nation’s history after a shooter opened fire at a gay nightclub in Orlando, Fla.

“We grieve for the victims, we stand in solidarity with members of the LGBT (lesbian, gay, bisexual, transgender) community who far too often are targets of violence and discrimination, but we also recognize that these actions alone are not enough,” said AAP President Benard P. Dreyer, M.D., FAAP, in a press release. “We must take this opportunity, as our country reels from the deadliest mass shooting in its history, to push for common-sense gun safety policies that will make our children and our country safer.”

Congress reacts, AAP pushes for change

With only a few weeks left on the legislative calendar before adjournment for recess, the work in Congress came to a near halt as the issue of gun control was re-inserted into the conversation.

In the U.S. Senate, more than 35 senators filibustered an appropriations bill for nearly 15 hours to bring four gun violence-related amendments to the floor for a vote. The Academy supported two of the amendments, including one from Sen. Dianne Feinstein (D-Calif.) that would make it more difficult for individuals being monitored for terrorism activity to purchase firearms and one from Sen. Chris Murphy (D-Conn.) that would expand requirements for background checks on all gun purchases.

In the few days between when the amendments were announced and then voted on, the Academy mobilized its full membership to urge their senators to support the proposals from Sens. Feinstein and Murphy. The Academy also coordinated a letter with nearly 60 other medical and public health groups in support of the Murphy and Feinstein amendments.

Unfortunately, the Senate failed to pass either of the amendments.

“We have lost far too many young lives to gun violence,” Dr. Dreyer said moments after the vote. “Today, the Senate missed a critical opportunity to lay a foundation for strong federal policies to keep children safe, but pediatricians will not give up our fight against this preventable public health crisis.”

Later that week, Democrats in the U.S. House of Representatives staged a sit-in on the chamber floor, demanding a vote on gun violence prevention before the impending Fourth of July hiatus, but House Republicans adjourned for recess before any such votes could take place.

Following the failed votes earlier in the week, the Senate also considered a bipartisan compromise to make it more difficult for those with terrorism-related air-travel restrictions to purchase firearms. Similarly, it did not advance beyond a procedural vote.

At press time, the House was considering a vote on legislation also intended to prohibit an individual from purchasing a gun if the government could prove within 72 hours that it had probable cause that the purchaser was a known or suspected terrorist. However, gun violence prevention groups oppose this legislation, saying it sets the bar too high to ban a gun purchase.

Pediatricians remain undeterred

The inability of federal leaders to work together to address gun violence has not dampened pediatricians’ resolve to advocate for overdue reform.

Looking ahead to the new administration, gun violence prevention will be a top federal advocacy priority for the Academy and an issue that will be put forth for discussion between the presidential candidates. The Academy has outlined the following priorities for the federal government, which will continue to serve as a blueprint for advocacy efforts:

- **Stronger gun laws**: Enactment of common-sense firearm legislation, including stronger background checks, banning assault weapons, addressing firearm trafficking and encouraging safe firearm storage.

- **Violence prevention programs**: Support for programs addressing the needs of at-risk children and children exposed to violence, including those at the Centers for Disease Control and Prevention (CDC) and the Department of Justice.

- **Research**: Funding for gun violence prevention research and public health surveillance, including $10 million to support research at the CDC and expanding the National Violent Death Reporting System to all 50 states.

- **Physician counseling**: Protecting the crucial role of physicians in providing anticipatory guidance to patients about firearm safety.

- **Mental health access**: Ensuring children and their families have access to appropriate mental health services, particularly to address the effects of exposure to violence.

“Pediatricians urge our elected leaders — along with those running for office this year — to prevent gun violence by supporting meaningful and comprehensive public policies that keep children safe,” AAP CEO/Executive Director Karen Remley, M.D., M.B.A., M.P.H., FAAP, said in a press release. “We will continue speaking up for the victims of gun violence and their families, for the children we care for, and for our community, until we see real progress.”

Pediatricians raise awareness on social media

(Top): The theme of this year’s National Gun Violence Awareness Day was “Wear Orange,” a reference to the orange that hunters wear to protect themselves and others. The Academy used orange lights to illuminate its headquarters in Elk Grove Village, Ill.

(Bottom): Asking Saves Kids (ASK) Day encourages parents to ask if there are guns in the homes where their children play. Marshal D. Raulerson, M.D., FAAP, shared a personal story about the importance of asking.
particular, LAIV4 had an adjusted vaccine effectiveness of -21% (95% CI, -108% to 30%) compared with IIV of 65% (95% CI, 49% to 76%). The adjusted odds ratio was 3.67, indicating that children who received LAIV4 were almost four times more likely to get influenza than those who received IIV.

Although reported point estimates of vaccine effectiveness differed in two other U.S. studies of LAIV4 (one by the U.S. Department of Defense and the other by the manufacturer of LAIV4), all studies found that IIV always outperformed LAIV4. In contrast, LAIV4 was reported to be effective in a small number of international studies performed in countries that do not have a universal influenza immunization program like the U.S. Children in these countries are more likely to be vaccine naïve, perhaps resulting in a stronger immune response to LAIV.

How did we get to this new recommendation?
LAIV was introduced in its trivalent form (LAIV3) in the 2003-’04 season. An international, randomized study with over 8,000 children documented significantly better efficacy for LAIV3 compared with IIV (Belshe RB, et al. N Engl J Med. 2007;356:685-696).

However, the same results have not been observed for LAIV4, which was introduced in the 2013-’14 season. At this point, there is no clear explanation. Hypotheses include problems with the H1N1pdm09 strain in LAIV4, interference when the fourth strain was added to LAIV3 beginning in 2013, or the larger proportion of children who have been vaccinated in their past, which may blunt the immune response generated by a live attenuated vaccine that requires replication intranasally.

Following is a summary of problems experienced during the last three influenza seasons:
- During the 2013-’14 season, the U.S. Flu Vaccine Effectiveness Network observed that LAIV4 performance was inferior to that of IIV against more than 90% of circulating strains in that H1N1pdm09-dominant season. It was suggested that this performance was particularly inferior in children 2 through 8 years of age. Although the addition of the fourth strain may have caused some interference, the manufacturer also suggested that the H1N1 strain used in its intranasal quadrivalent vaccine may have been unstable upon exposure to heat. In response, a different H1N1 strain was incorporated, although not in time for the 2014-’15 season.
- For the 2014-’15 season, the CDC made a preferential recommendation for using LAIV4 in healthy children ages 2 through 8, after a thorough GRADE (Grading of Recommendations, Assessment, Development and Evaluations) analysis of pre-licensure data. The Academy did not make a preferential recommendation. As the anticipated predominant strain for the 2014-’15 season was influenza A (H3N2) virus, LAIV4 was expected to provide better protection than IIV since the Belshe study had reported superior efficacy for LAIV3 compared with IIV against both well-matched and mismatched influenza A (H3N2) viruses. However, vaccine effectiveness for both IIV and LAIV4 was reduced for all ages during the 2014-’15 season due to antigenic drift, highlighting that LAIV4 did not result in the same robust protection against mismatched influenza A (H3N2) viruses as LAIV3 had years back. The CDC rescinded its preference for LAIV as the 2014-’15 data became available.
- For the 2015-’16 season, despite a change in influenza A (H1N1) within the intranasal vaccine, recent evidence has shown that LAIV4 continues to perform poorly against H1N1pdm09 compared with IIV. Although LAIV4 vaccine effectiveness against influenza A (H3N2) could not be evaluated, this uncertainty is outweighed by strong evidence indicating poor effectiveness against influenza A (H1N1) and inconsistent effectiveness against influenza B when compared with IIV in the U.S. It is important to keep in mind that influenza A (H1N1) is one of the circulating strains during every influenza season, even when it is not the predominant strain.

FDA approves drug to treat active Crohn’s disease in pediatric patients

from the Food and Drug Administration Office of Pediatric Therapeutics, Division of Pediatric and Maternal Health, and Division of Gastroenterology and Inborn Errors Products

The Food and Drug Administration has approved Entocort EC (budesonide) to treat Crohn’s disease (CD) in pediatric patients, making it the first drug approved for use in children with active disease.

Entocort EC (budesonide) was approved on April 29 for the treatment of mild to moderate active CD involving the ileum and/or the ascending colon in pediatric patients 8 years of age and older who weigh more than 25 kilograms.

Use of Entocort EC capsules in this age group is supported by evidence from adequate and well-controlled studies in adults, with additional data from two clinical studies in 149 pediatric patients treated up to eight weeks and one pharmacokinetic study in eight pediatric patients.

The safety and effectiveness of Entocort EC have not been established in pediatric patients younger than 8 years of age or for the maintenance of clinical remission of mild to moderate CD. An open-label study to evaluate the safety and tolerability of Entocort EC as maintenance treatment in pediatric patients ages 5-17 years did not establish the safety and efficacy of maintenance of clinical remission. Pediatric patients with CD have a 17% higher mean systemic exposure and cortisol suppression than adults with CD. Systemic corticosteroids, including Entocort EC, may cause a reduction of growth velocity in pediatric patients.