OUTBREAKS, ALERTS & HOT TOPICS

OPT-OUT SCREENING AND HIV TESTING IN THE ADOLESCENT POPULATION

New recommendations from the AAP Committee on Pediatric AIDS (COPA) support risk-reduction counseling and routine HIV testing for teenagers. Specifically, they conclude that all teens by age 16-18 years should be offered HIV testing at least once if they live in communities where HIV seroprevalence is more than 0.1 percent and testing is encouraged for all teens who are sexually active or who have other risk factors. (Pediatrics November 2011).

Recently, Dr. Rich Charette called me to ask how this recommendation should be interpreted in our community, with specific question regarding our local seroprevalence.

The rationale for the recommendation is that testing leads to earlier detection of HIV infection, appropriate linkage to care, initiation of antiretrovirals and, consequently, better survival outcomes. Data from the CDC suggest that of the 1.2 million persons living with HIV in the United States, approximately 20 percent do not know their status, highlighting the importance of early detection. Even more compelling is data from the teen population where nearly 60 percent of people ages 13-24 are unaware of their status.

State regulations on the opt-out policy are available on the National HIV/AIDS Clinicians' Consultation Center (NCCC) website; both Kansas and Missouri are compatible with the AAP and CDC’s recommendation for opt-out HIV testing. Additionally, minors in both states can consent to be tested for STDs and parental disclosure of a positive HIV test is not required.

For specific state seroprevalence data, check out the website www.countyhealthrankings.org. For those of you who practice in Missouri or Kansas, the counties in which HIV seroprevalence is ≥0.1 percent include:

**Kansas (eight counties):** Ellsworth, Geary, Johnson, Leavenworth, Sedgwick, Seward, Shawnee and Wyandotte.

**Missouri (21 counties):** Audrain, Boone, Buchanan, Callaway, Clay, Cole, Cooper, DeKalb, Dunklin, Greene, Jackson, Jasper, Mississippi, Montgomery, Pemiscot, Platte, Randolph, St. Francois, St. Louis, St. Louis City and Washington.

Keep in mind these caveats: the data we share is from 2007, but is the most recent data that is published. Also there is no data for some counties; usually these are smaller counties with a population of <10,000 (65/105 counties in Kansas and 35/115 in Missouri have no data).

**Bottom line:** We strongly support risk assessment and testing of all adolescents with risk factors as outlined in this policy. Opt out testing allows you to let teens know that HIV testing will be performed unless they refuse.

Check out the entire article that concludes with 13 recommendations from Patricia Emmanuel and Jaime Martinez and the rest of the COPA and provides discussion of risk assessment and counseling, testing and implementation and outline the barriers to HIV screening in the teen population.

References:

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**VISUAL DIAGNOSIS**

**WHAT’S THE DIAGNOSIS?**

A 4-year-old female patient presents a month after a severe illness that required intravenous line (IV) placement for fluid resuscitation. During that hospitalization, leg swelling at the IV site is noted after a week and she receives vancomycin and meropenem for two weeks. She now has a two-day history of fever to 101 and antalgic gait; the right lower leg is erythematous, warm and edematous. A shiny nodule is noted at the previous IV portal of entry. Plain films reveal osteomyelitis and air pockets in the tibial soft tissues.

Which of the following is the most likely organism causing her infection?

- A. S. pyogenes
- B. S. aureus
- C. septicum
- D. C. botulinum
Levetiracetam (Keppra) is a newer broad spectrum antiepileptic drug whose use is rapidly increasing. It was approved by the FDA for use in adults in 1999, and, in 2005, it was approved to treat partial seizures in children 4 years and older. Recently the approval was broadened to include myoclonic seizures in children 12 years and older and primary generalized tonic-clonic seizures in children 6 years and older.

Levetiracetam is rapidly absorbed when taken orally and has a bioavailability of nearly 100 percent with plasma concentrations peaking an hour after ingestion. Levetiracetam exhibits linear kinetics and shows limited protein binding. The half-life of levetiracetam is 6-8 hours in adults, but the drug is cleared 30-40 percent quicker in children, resulting in half-life of six hours. Levetiracetam is not metabolized by the liver, and this makes significant drug–drug interactions rare. It is cleared by the kidneys with 66 percent of the dose in the form of the parent drug and the rest as a non-functional metabolite that has been enzymatically hydrolyzed. In patients with impaired renal function, the clearance is prolonged. It is not uncommon for children with epilepsy or epilepsy syndromes to be on multiple medications. Several studies have reported that levetiracetam does not have clinically significant interactions with other commonly prescribed antiepileptic drugs, but a more recent study indicates that the clearance of levetiracetam can be slowed by the cotreatment with drugs that are enzyme inducers.

Therapeutic drug monitoring of levetiracetam is most useful for determining patient compliance in taking their medication, adjusting the dose for patients with renal insufficiency or assessing potential toxicity. No correlation between dose and clinical response has been found at this time.

The laboratory at Children’s Mercy Hospitals and Clinics offers testing for levetiracetam on a 24/7 basis. Testing is performed in the laboratory at Children’s Mercy Hospital, but patients may have blood drawn at any Children’s Mercy facility. The test is performed on a serum sample (red top tube, no gel), and the reference range is 12.46 ug/mL. This value is a trough value, so the sample should be drawn prior to the patient’s next dose.

Without a doubt, each of our lives at a personal and professional level are impacted by the ill effects of firsthand and secondhand tobacco smoke. As a public health malady, we know that tobacco use is the leading preventable cause of death with more than 5 million deaths each year attributable to tobacco-related heart attack, stroke, cancer, lung disease and other diseases. Further, we know that more than 600,000 people (with more than a quarter of them children) will die from exposure to secondhand smoke. The global death toll from tobacco use could easily reach 8 million per year by 2030.

According to the 2009 American Academy of Pediatrics “Policy Statement – Tobacco Use: A Pediatric Disease,” three overarching principles can be identified: “(1) there is no safe way to use tobacco; (2) there is no safe level of duration of exposure to secondhand smoke (SHS); and (3) the financial and political power of individuals, organizations and government should be used to support tobacco control.” In that vein, in 2006 with grant funding from the Flight Attendants Medical Research Institute (FAMRI), the AAP established the Julius B. Richmond Center of Excellence dedicated to the elimination of children’s exposure to tobacco and secondhand smoke. The Richmond Center was established to help institutionalize pediatric tobacco control activities at the AAP. To date, the AAP Richmond Center has awarded 24 visiting lectureships in more than 14 states and two countries, serves as one of 10 national organizations providing technical assistance to communities funded by the Communities Putting Prevention to Work (CPPW) initiative, and has formally trained 179 clinicians to be effective tobacco control advocates, including 51 multidisciplinary clinicians. The AAP Richmond Center website has a wide range of resources to assist in helping your families with tobacco cessation and avoidance.

How can you help? The AAP policy recommends that pediatricians support clean-air and smoke-free environment ordinances and legislation in their community and state, particularly for environments in which children learn, live and play, such as schools, multi-unit housing, public parks, child care settings, public beaches, sidewalks, restaurants, and sporting arenas. These environments should be smoke-free even when children are not present.

Further, according to the policy statement, “Pediatricians and other clinicians who care for children are uniquely positioned to assist patients and families with tobacco-use prevention and treatment. Understanding the nature and extent of tobacco use and SHS exposure is an essential first step toward the goal of eliminating tobacco use and its consequences in the pediatric population.” Our advocacy and education efforts may well go a long way towards helping our families and patients breathe easier.
Failure to thrive (FTT) is a common pediatric problem with a vast differential diagnosis. Children with FTT are commonly identified as having weight less than the third percentile for their corrected gestational age; however no single definition exists in the literature.

Historically, FTT has been categorized as organic versus nonorganic etiology. Organic causes imply an underlying medical disease whereas nonorganic FTT is commonly attributed to psychosocial and environmental factors. This simple classification of organic versus nonorganic FTT will be used in this discussion, but it is important to note that these terms are outdated. Many experts now prefer to classify FTT into the following four categories: inadequate caloric intake, inadequate absorption and/or excess losses, increased caloric requirements, and defective utilization.

Evidence for when to obtain labs in FTT patients was analyzed in three studies, conducted in 1978, 1981 and 1982. Sills et al performed a retrospective review of 185 hospitalized FTT patients with FTT and found that 1.4 percent of labs provided positive diagnostic assistance. Overall, an average of 14 laboratory tests or studies was performed per patient, with a total of 2,607 tests. Only 10 (0.4 percent) of tests affected the patients’ diagnosis and that in combination with a thorough psychosocial assessment a more rational and cost effective evaluation could be determined; specifically using laboratory evaluation only for confirmation of a suspected diagnosis.

Finally, Berwick et al reviewed 122 infants and found that labs led to a diagnosis in 0.8 percent of cases and concluded that labs are unlikely to uncover an organic diagnosis that is unexplained by the history and physical exam.2 On average approximately 40 laboratory tests and radiologic studies were performed per patient with only 0.8 percent of all tests affecting the patients’ diagnosis and 3.6 percent contributing to their management. This study does note that laboratory and radiological evaluations of the GI tract were more frequently helpful than other types of studies, but that an indication to obtain these exams was apparent in the history and physical exam.

Homer et al evaluated 82 hospitalized FTT patients and found that the history and physical exam was the most sensitive indicator for organic disease with the usefulness of labs primarily for confirmation of suspected diagnosis.3 Interestingly, Homer found that almost half of patients with organic causes for failure to thrive also had psychiatric difficulties contributing to their growth failure. He also showed that the history, including family history and physical examination identified more than 80 percent of patients with organic disease and that in combination with a thorough psychosocial assessment a more rational and cost effective evaluation could be determined; specifically using laboratory evaluation only for confirmation of a suspected diagnosis.

These studies conclude that generalized laboratory or radiographic examinations on all patients are not indicated. If the history and physical does not suggest an organic etiology, extensive laboratory and radiographic testing will be low yield. There is not further or more current literature refuting the information in these studies. We would strongly recommend, based on this moderate quality evidence, that providers should obtain labs on a patient with FTT only when supported by the history and/or physical exam. A final note: it is important to point out that testing may be useful to determine the effects of FTT and malnutrition. For example, prealbumin level, alkaline phosphatase, vitamin D and bone age can be affected by chronic malnutrition and may be helpful in the treatment of failure to thrive.1

References:

PEDIATRIC BIOETHICS

Pediatric Transplantation and Neurodevelopmental Disabilities

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A controversy at the Children’s Hospital of Philadelphia (CHOP) reveals a lot about the ways that the world of pediatric transplantation has changed. The controversy began when the mother of a child with Wolf-Hirschhorn syndrome wrote on a blog about her interactions with the renal transplant team at CHOP.

According to the mother’s blog, the doctor told her that her daughter, and who needs a kidney transplant, is not eligible for a transplant because of her cognitive impairments. The doctor reportedly said something about her quality of life.1

The story was posted on Jan. 12, 2012, and went viral. I saw it the next day when it was posted to an international bioethics group on Facebook. By Jan. 14, I was getting calls from reporters and, by Jan. 16, a petition drive on Facebook had collected 16,000 signatures protesting the purported transplant denial. Many parents of children with disabilities posted comments on CHOP’s Facebook page and on the blog.

The postings give a window into a world that was once completely hidden from view: the world of parents who struggle to raise children with complex chronic conditions. It is a world of quiet heroism, smoldering resentments and enormous challenges, and there is a lot of solidarity among these parents.

CHOP responded to the allegations and to the conversation on its Facebook page. Because of HIPAA, however, there is no direct comment on any of the facts of the case. Instead, they posted a statement that said, in part, “The Children’s Hospital of Philadelphia does not disqualify potential transplant candidates on the basis of intellectual abilities. We have transplanted many children with a wide range of disabilities, including physical and intellectual disabilities. We at CHOP are deeply committed to providing the best possible medical care to all children, including those with any form of disability.”2

At least three things are going on here. First, transplants for children have gotten much better over the past 20 years. This controversy would not have arisen in 1990 because transplants would have been seen as innovative, extraordinary or exotic. Today, they have become routine.

Second, most medical treatment is more widely available for children with disabilities today than it was 20-30 years ago. Then, children with disabilities were frequently denied heart surgery, surgery for congenital anomalies and organ transplants. That is much less likely today.

Third, social networking allows news stories spread faster. Such stories can generate firestorms of criticism in the blogosphere, even if the facts about a particular case are not known.

This all leads to a world of far more equality, far more transparency and far more scrutiny of doctors and hospitals.

So, is it all good? Not necessarily. We seldom get the whole story in cases like this, drawing conclusions based upon partial versions of the facts. We may never know what conversations really took place.

And, surprisingly, many programs still consider neurodevelopmental disabilities when evaluating potential transplant candidates.

In 2008, Richards and colleagues at Stanford published a national survey of transplant programs. They found that, among programs doing pediatric solid organ transplants, “39 percent of programs stated that they ‘rarely’ or ‘never’ consider neurodevelopmental delays (NDD) in their decisions, whereas 43 percent of programs ‘always’ or ‘usually’ do. Sixty-two percent of programs report that informal processes guide their use of NDD, and no programs describe their process as ‘formal, explicit, and uniform.’”3

It is time for transplant programs to be more transparent in the criteria that they use to approve or disqualify patients and more accountable for the ethical assumptions built into their evaluation process.

References:
A 4-year-old female patient presents a month after a severe illness that required intraosseous (IO) placement for fluid resuscitation. During that hospitalization, leg swelling at the IO site is noted after a week and she receives vancomycin and meropenem for two weeks. She now has a two-day history of fever to 101 and antalgic gait; the right lower leg is erythematous, warm and edematous. A shiny nodule is noted at the previous IO portal of entry. Plain films reveal osteomyelitis and air pockets in the tibial soft tissues.

Which of the following is the most likely organism causing her infection?

A. S. pyogenes
B. S. aureus
C. C. septicum
D. C. botulinum

Answer: C. - C. septicum

While intraosseous infusions are considered safe and effective in the pediatric population, occasional complications have been reported, most commonly infiltration, which is estimated to occur in 12 percent of patients. Other complications that have been noted include compartment syndrome, air embolism, fat embolism, growth plate injuries and fractures. Osteomyelitis has only rarely been reported. Rossetti el al reviewed more than 4,000 cases where IO access was utilized and identified 27 (0.63 percent) cases of osteomyelitis.

In terms of pathogen, while both S. pyogenes and S. aureus are well known causes of soft tissue and bone infections, neither are the most likely cause of infection in the setting of finding gas in the tissues on radiologic evaluation. This finding is concerning for a gas producing organism, such as Clostridium spp. Of the two options listed above, C. septicum is the most likely pathogen. C. septicum is known to cause infection in the setting of traumatic injury, pregnancy, bowel disease and immune compromise (commonly neutrophil dysfunction or malignancy in the pediatric patient) and has been associated with sepsis, myonecrosis, aortitis, spontaneous peritonitis and osteomyelitis. The mortality rate of this infection is high, even in the setting of appropriate surgical and medical management. Penicillin is the mainstay of antibiotic treatment once the pathogen has been confirmed, although initial empiric therapy should include an agent with coverage against S. pyogenes and S. aureus including MRSA.

C. botulinum causes botulism, which can occur in the setting of ingestion of preformed toxin formed under anaerobic conditions that permit germination, multiplication, and toxin production. Botulism occurs in three situations: food-borne, wound and an infantile form. C. botulinum infection is characterized by an acute afebrile descending flaccid paralysis in the foodborne and wound forms, and with constipation, poor feeding and weak cry in the infant form.

References:
An interesting question has been bouncing around Kansas City. What happened to influenza this year?

Of course it’s a big gamble to predict seasonal influenza. The one thing we can be sure about is that influenza is highly unpredictable as to seasonal onset, severity and duration. Having said that, as of the fourth week of January, influenza season has been extraordinarily late. So, why talk about it in the vaccine segment of *The Link?* Well, it just may be that vaccines are playing a part.

But, first, let’s look at another potential factor: winter has been mild. It has recently become clear that influenza is more likely to cause infection if the ambient temperature is colder and drier. The virus is better able to attach to the mucosa; and more microscopic breaks in the mucosal barrier mean fewer virus particles can produce symptomatic infection. In this scenario, prior immunity from natural infection or vaccine may be less effective, so a higher anti-influenza antibody titer may be needed for successful defense against symptomatic influenza.

Also remember that the circulating A strains are the same as last year. So, fewer among the overall populace are as susceptible because they have some antibody to the dominant circulating strains because of exposure/infection to these strains last year.

This year’s seasonal vaccine contains the same A strains as last year. If approximately 50-70 percent of those immunized last year got some protection and then get boosted this year, one could expect higher levels of protective antibody. Likewise those with “natural immunity” from last year’s infections with the same strains will also boost if immunized this year. This means as many as half of the population may have relatively high vaccine-induced protection.

We have been trying to immunize all children greater than 6 months of age. This is important because young children excrete more influenza virus for longer than teens and adults. Thus, children are efficient vectors for ongoing spread of influenza. If we reduce the number of efficient vectors by immunizing children against influenza, this increases our chances of approximating herd immunity.

Children and the elderly achieve only approximately 60 percent protection from trivalent inactivated vaccine (TIV). But children receiving live attenuated influenza vaccine (LAIV) develop 10-15 percent better protection and the elderly have long term memory for the H1N1pnd 2009 strain likely based on vaccine or disease from a similar strain decades ago. This means even more chance than ever before for achieving immunity in 90 percent of the population needed for herd immunity.

An entire mild season this year is evidence that repeated annual influenza vaccine in a sizable proportion of our population could make influenza season milder in many years. But, before we get carried away, it may be that this is simply a late season as in 1998, when influenza B hit in February. So, how do we combat that? There are two A strains each year in seasonal vaccines but only one B strain. Given that there are two antigenically distinct B virus families, some experts suggest a quadrivalent vaccine with one B strain from family. Such vaccines are under study and could lessen B vaccine mismatches. Stay tuned.
LAB UPDATES FROM THE CHILDREN’S MERCY MICROBIOLOGY LABORATORY
Providers are invited to access the following website to see weekly updates regarding the pathogens being seen in the Children’s Mercy Microbiology Laboratory: www.childrensmercy.org/labupdates.

2012 EDUCATIONAL CONFERENCES SPONSORED BY CHILDREN’S MERCY HOSPITALS AND CLINICS
Following are some upcoming educational conferences hosted by Children’s Mercy Hospitals and Clinics. For a complete list of conferences and events, visit www.childrensmercy.org/professionaleducation.

Saturday, Feb. 25, 2012
“Teen Aches and Pains: A Practical Office-Based Approach”
Auditorium in Children’s Mercy Hospital

March 28-30, 2012
Pediatric Pharmacogenomics and Personalized Medicine Conference
Auditorium in Children’s Mercy Hospital

Friday, March 30, 2012
Tools to Succeed in a Sea of Health Care Changes
Westin Crown Center Hotel, Kansas City, Mo.

Saturday, May 5, 2012
7th Annual Springfield Pediatric Specialty Care Update
University Plaza Hotel, Springfield, Mo.

CLINIC PATIENT ACTIVITY INFO FAXED EVERY WEDNESDAY
For providers who have had a patient with specialty clinic activity at Children’s Mercy, a new report will be faxed to that provider’s office every Wednesday morning. The report will be broken down by physician and will share the following information: patient name, DOB, referral status, activity date, scheduled location (clinic), appointment date and appointment type. Providers are encouraged to share this information with staff who request clinic appointments, so they know when an appointment has been scheduled. For questions about this report or if you are not receiving this report, please contact Physician Services at (816) 234-1642.

GRAND ROUNDS ONLINE
Health care professionals can now register to view Children’s Mercy’s Grand Rounds Online and those that wish to earn Continuing Medical Educational credit can do so by completing a short pre/post test and evaluation. Access Grand Rounds Online by visiting: www.childrensmercy.org/grandrounds/.

REFERRING PATIENTS TO THE EMERGENCY DEPARTMENT AT CHILDREN’S MERCY
When referring patients to the Emergency Department at both Children’s Mercy Hospital and Children’s Mercy South, providers are encouraged to call ahead of the patient’s arrival and provide basic details about the patient’s condition. Following this process can help expedite the patient’s visit as well as help them understand what may or may not occur during their visit. To reach the Emergency Department location, call 1-800-GOMERCY

NEWS BRIEFS

CONTACT INFORMATION
The Link is produced monthly by Community Relations with editorial guidance from the Associate Chair, Community and Regional Physician Collaborations.

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