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The Link

News from Children's Mercy Hospitals and Clinics for our Pediatric Partners

OUTBREAKS, ALERTS & HOT TOPICS

UPDATE ON H1N1 INFLUENZA

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As of June 11, 2009, with reports of novel influenza A (H1N1) infection from over 70 countries and with ongoing community outbreaks in multiple parts of the world, the World Health Organization announced a pandemic influenza level 6 alert, signaling that a global pandemic was underway. As of June 19, 2009, all 50 U.S. states plus Puerto Rico, and the U.S. Virgin Islands had reported novel H1N1 infection and disease is ongoing around the world.

It is now considered "unstoppable" by the WHO. Having said that, it seems clear that the severity of the pandemic is considered to be moderate and what we are seeing is mainly uncomplicated, self-limited illness. Still, several groups of individuals who appear to be at higher risk of complications include pregnant women and those with chronic conditions including for instance morbid obesity. To date we have confirmed over 50 cases in children seen at Children's Mercy though this is likely just the tip of the iceberg.

The development and implementation of H1N1 vaccine appears to be essential to halting the pandemic and a candidate vaccine has been developed. The WHO has estimated that a maximum of 4.9 billion doses potentially could be produced in 12 months (though a realistic estimate would be 1 to 1.5 billion doses) and it is being suggested that prioritization of groups eligible for vaccine would be necessary.

For now, health care workers look to be in the first group to be immunized and recommendations have been formulated suggesting that the next groups that would follow would be pregnant women; then those aged above 6 months with chronic medical conditions; healthy young adults (15 to 49 years); healthy children; healthy adults (50 to 64 years); and healthy adults of 65 years and older. First doses of an H1N1 vaccine are expected and by September, national studies will be enrolling to confirm immunogenicity and safety and identify appropriate doses.

If you know of a healthy 6-month-old to 17-year-old and would like more information regarding the experimental vaccine and research study, please contact Christopher Harrison, MD, or Gina Calarco, BSN, RN, study coordinator at 816-983-6312. The Children's Mercy Infectious Diseases Section in collaboration with the Pediatric Care Clinic is conducting a research study for a two-dose novel H1N1 influenza vaccine to be given to healthy 6-month-old to 17-year-old children.

The study requires five clinic visits over the course of six weeks, with five follow-up phone calls throughout the study and for about five months after the last dose of study vaccine is given. Compensation will be provided. At the initial visit participants will be randomly assigned to one of two treatment groups and all treatment groups will receive a study vaccine.

Speaking of Respiratory Illnesses

When the adolescent/adult Tdap was approved in 2006, it appeared we might finally see a decrease in the number of pertussis cases in the U.S. Looking at data from our institution over the last 26 years, it appeared that this might be a reality. An average of 30 cases per year was noted annually 2004-2006 but in 2007 and 2008, fewer cases (10 and 19 cases respectively) were confirmed. In the first six months of 2009 however, 23 cases so far have been reported and we are not even into our typical peak season (summer through October). Identify adolescents in your practice who are candidates for vaccine and advocate for postpartum Tdap and vaccine for young parents (or any child caregivers). Be alert for the child coughing in paroxysms. PCR is available through Children's Mercy and institution of treatment for the index case plus household contacts is necessary. Remember this is a reportable disease.

New guidelines for rabies vaccine

You have probably read that as of July 10, 2009, provisional ACIP recommendations have been approved calling for four doses of rabies vaccine for a postexposure scenario, eliminating the need for the day 28 vaccine. The current approach would include RIG and rabies vaccine on day 0, then vaccine on days three, seven, and 14 (IM, deltoid for older children and anterolateral thigh for infants and young children). Key information should be collected before vaccine is recommended and, as always, you can contact the Infectious Diseases section for questions. If you want to access the Children's Mercy rabies vaccine form, go to: http://www.childrensmercy.org/rabiesexposure/

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ENTEROVIRUS INFECTIONS IN SUMMER AND FALL

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The genus Enterovirus (EV) belongs to the family Picornaviridae and comprises of more than 80 serotypes that are associated with human infections. Molecular sequence analysis of the VP1 capsid protein ("molecular serotyping") help to classify known enteroviruses and newly discovered enterovirus (<70 percent identity to any recognized serotype) into four human enterovirus groups A-D.

EV are associated with various clinical syndromes from mild non-specific febrile illness, common cold, conjunctivitis and rash to more severe and potentially fatal conditions such as acute flaccid paralysis, myocarditis, aseptic meningitis and neonatal enteroviral sepsis.

Individual serotypes exhibit variations in temporal patterns of circulation and associations with different clinical manifestations; for example echovirus 9 and 30 are commonly associated with aseptic meningitis, group B coxsackieviruses with myopericarditis, coxsackie A24 and entrovirus 70 with acute hemorrhagic conjunctivitis, enterovirus 71 with neurological manifestations, coxsackie A16 with hand, foot and mouth disease.

Enterovirus surveillance in United States during 1970 – 2005 indicate that

1. Infections were commonly caused by certain serotypes (echovirus 9, 11, 30, 6 and coxsackievirus B5 accounted for nearly 50 percent)
2. Children <1 were more commonly infected (44 percent)
3. Most of the EV infections occurred during summer-fall seasonality (78 percent)
4. Cerebrospinal fluid was the most common specimen type, followed by respiratory and fecal specimens (50 percent, 27 percent, and 14 percent respectively)

Laboratory detection of EV has evolved over time from viral isolation by tissue culture being replaced by pan-enterovirus PCR introduced in the mid 1990s. Majority of the reverse-transcriptase PCR (RT-PCR) involved amplification of the 5' nontranslated region (5'-NTR) that is conserved in all members of the genus.

More recently, rapid nucleic acid amplification techniques (NAAT) such as the realtime RT-PCR, nucleic acid sequence based amplification (NASBA), and fully automated systems capable of extraction, amplification and detection have replaced conventional RT-PCR methods. The main advantages of the rapid NAAT are the high sensitivity and rapid turn-around-time (TAT) to result when compared to culture.

Several studies have documented the benefit of rapid TAT in management of children with sepsis-like illness and aseptic meningitis. Early detection of enterovirus in these children reduces hospital stay, antibiotic usage and additional laboratory testing resulting in significant health care savings. CSF is the diagnostic specimen of choice for detection of EV in patients with aseptic meningitis. Blood specimens have shown to be useful for detection of EV in neonates with sepsis-like illness. The detection of EV in permissive sites such as respiratory tract and stool specimens may not always indicate disease process.

Children's Mercy offers enterovirus PCR testing seven days a week during the summer and fall months. CSF is the specimen of choice for PCR. Viral culture is available for detection of EV from other body sites such as respiratory and stool specimens. This year the season has started off relatively mild compared to the last two years (see table below).

2009 Data	# Positive	# Tested	% Positive
6/8 to 6/14	0	10	0.00
6/15 to 6/21	0	18	0.00
6/22 to 6/28	1	21	4.76
6/29 to 7/5	1	14	7.14
7/6 to 7/12	1	26	3.85
7/12 to 7/19	0	16	0.00
7/20 to 7/26	2	24	8.33

To view the most current lab report, please click here. For more information, please visit lab services or Pathology & Laboratory Medicine Newsletters.

WHAT IS NEW FROM THE AAP?

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No doubt, each of you has been interested and bombarded by the flurry of activity in Washington, DC, regarding President Obama's push for health care reform. Certainly, much of what is coming out of Washington these days has the typical sound of political rhetoric and posturing. However, as pediatricians, there should be a great amount of excitement and anticipation about the potential for achieving many of our long-range goals in improving health care access and equity for children.

For example, when President Obama recently addressed a small group of pediatricians, nurses and physician's assistants at Children's National Medical Center in Washington, DC, he raised several points which are of great importance to those of us who are child health advocates. For one, he remarked about the steady increase in the volume of visits to emergency departments and, specifically, the impact these increases have on pediatric emergency visits, shrinking access and under-insurance, and the added burden and expense that the unnecessary visits represent.

Further, President Obama emphasized that poor payment rates for pediatricians and primary care physicians is a significant contributor to barriers to accessing care in an appropriate setting. Additionally, the president was concerned about the strains our health care system places on parents with sick children. In fact, he mentioned that many families, even those with health insurance, can't afford routine visits for their children.

Historically, pediatricians and the American Academy of Pediatrics have lobbied and advocated for every child in America to have equal access to needed preventive and acute care in a medical home. Though the medical home concept is now being bandied about by other organizations, I believe if you search for the roots of the idea you would find it squarely among us.

Certainly, at this point, no one knows what shape the final touches of health care reform will take. However, for each of us, their should be an air of excited anticipation as many of the ideals and ideas for which we have been advocating may at last have a chance to come to fruition. At the very least, they will be on the forefront of the news and public awareness.

Rest assured, the American Academy of Pediatrics is monitoring the process closely and providing expert opinion and advocacy at each opportunity. Our Washington, DC, lobbying office is sending out updates two to three times per week. Your Missouri AAP Chapter Legislative Committee and Executive Committee are now meeting weekly to discuss changes as they occur and their potential impact on children in the state of Missouri.

I am sure my Kansas AAP colleagues are doing the same. If you are interested in receiving frequent updates directly from the AAP, I would encourage you to become a key contact of the AAP. If you want more information, log on to the AAP members only channel and follow the link to the Federal Advocacy page. If you have any questions, please contact me at twtryon@aap.net.

EVIDENCE-BASED RECOMMENDATIONS FOR EVALUATION, TREATMENT AND FOLLOW-UP OF OTITIS MEDIA WITH EFFUSION

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What are the evidence-based recommendations regarding the management of otitis media with effusion?

Otitis media with effusion (OME), defined as the presence of fluid in the middle ear without signs or symptoms of acute ear infection, results either as a consequence to an episode of AOM or spontaneously from poor functioning of the eustachian tube. The presence of OME is of clinical concern because it decreases the mobility of the tympanic membrane causing hearing impairment. Hearing impairment can lead to delayed language development and subsequently place a child at a psychosocial and educational disadvantage.

In 2004 a multidisciplinary group including the AAP and AAFP published a practice guideline regarding the management of OME.

Diagnosis

1. Diagnosis is fundamental to proper management and pneumatic otoscopy is the most accurate and cost-effective tool.
2. OME must be differentiated from AOM. Unlike OME, AOM is characterized by acute signs and symptoms and evidence of middle ear inflammation.
3. Other conditions which put a child at higher risk for OME and/or its associated outcomes of hearing impairment or language delay should be elicited. Examples include Down syndrome, visual impairment, craniofacial anomalies, and autistic-spectrum disorders.

Management

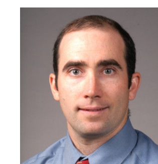
1. The foundation of management is close follow-up and monitoring.
2. It is recommended that observation without medications (antibiotics, antihistamines, decongestants, steroids, etc.) be the first line management option for at least three-months for the child with OME who does not have risk factors.
3. Children with persistent OME who are not at risk should be reexamined at three- to six-month intervals until the effusion is no longer present, significant hearing loss is identified, or structural abnormalities are suspected.
4. Hearing testing is recommended when OME persists for three-months or longer or if language delay, learning problems, or hearing loss is suspected.
5. The child with OME who is at risk for developmental difficulties should be more aggressively managed. Early referral is recommended.

Referral

1. It is recommended that an otherwise well child with OME of at least three months duration be referred for possible PE tube insertion only if the child has: Moderate hearing loss (> 40 dB), anatomic changes secondary to OME (e.g. ossicular erosion), complications from chronic OME (e.g. disturbance in balance)
1. After three months, in an otherwise healthy child with normal hearing/mild hearing loss (26 to 39 dB), continue observation (every three months) for an additional three to nine months. Evidence suggests no difference in developmental or language outcomes with early versus late referral.
2. For the high risk child, it is recommended that ENT referral be made for persistent OME regardless of hearing status. There is no evidence, however, that PE tubes are beneficial in the asymptomatic patient.
3. The referring physician should document the following prior to ENT referral: duration and laterality, prior hearing tests or tympanometry, suspected language delays, presence of high-risk conditions, AOM history

References:
AAP: Otitis media with effusion. Pediatrics, 113 (5): 1412-29, 2004.
Paradise et al. Tympanostomy Tubes and Developmental Outcomes at 9 to 11 years of age. NEJM. 2007; 356 (3): 248-61.

AXILLARY LYMPHADENOPATHY IN A PRESCHOOLER



Jason Newland, MD
Director of ASP, Director, Antibiotic Stewardship Program, Assistant Professor of Pediatrics, UMKC School of Medicine

This 12-month-old male presents to your clinic in June with fever, a post-auricular lymph node, and the ulcerative lesion pictured above. Parents report that they had been camping a week prior. Which of the following pathogens is responsible for this infection?

A. Bartonella henselae (Cat Scratch disease)
B. Staphylococcus aureus
C. Francisella tularensis (Tularemia)
D. Streptococcus pyogenes
E. Sporothrix schenckii (Sporotrichosis)

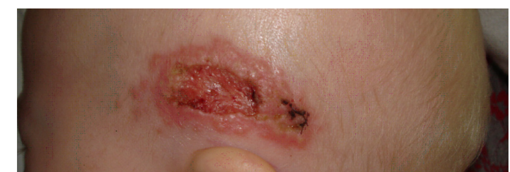
The causative bacterial pathogen of this clinical scenario is Francisella tularensis. Tularemia can present with oculoglandular (Parinaud's syndrome), ulceroglandular, glandular, intestinal, or pneumonic disease. Forty percent of all tularemia cases reported to the CDC occur in Arkansas, Oklahoma, and Missouri.[1] A recent study from the CDC of Missouri cases in 2000 to 2007 showed children and adults typically present with ulceroglandular disease. Children though were twice as likely to have glandular disease and adults were 10 times more likely to have pneumonic tularemia.[1]

Data from Children's Mercy identified 45 cases of tularemia from 1990 to 2008.[2] Tick borne transmission was most common (74 percent) and ulceroglandular disease was the most common presentation (60 percent). Glandular disease occurred in one-third of the cases, typically in those less than 2 years of age who often had no reported exposure to ticks.

It is important to keep tularemia in your differential of lymphadenitis; each patient had on average three doctors' visits and three courses of antibiotics before serology or culture revealed the diagnosis. While serology is the preferred diagnostic test, if tularemia is suspected and a culture of an ulcer or lymph node is obtained, the laboratory must be informed so they can take proper precautions to prevent transmission of this bacteria to laboratory personnel.

Cat scratch disease and common infections like S aureus and GAS do not cause large ulcerated lesions. Sporotrichosis can present with a chronic ulcer but is not typically noted on the scalp.

1. Pratt D, Fick F, Bos J, et al. Tularemia–Missouri, 2000-2007. MMWR 2009; 58:744-48.
2. Peterson SC, Newland JG, Jackson MA, Herigon J. Epidemiologic and Clinical Characteristics of Tularemia in Children. Pediatric Academic Societies' Annual Meeting, Baltimore, MD May 2-5, 2009



Various federal and state laws now mandate the establishment of community-based, coordinated, multidisciplinary, family-centered programs that are accessible to children and families. The medical home, in close collaboration with the family and the early intervention team, play a critical role.

The purpose of our first academic partnership with Shao Jiang, MD, Associate Professor of Pediatrics and Surgery, UMKC School of Medicine, is to collaborate with pediatric health care professionals in assuming a proactive role in assessing the need for intervention services in infants with positional plagiocephaly. Since the initiation of the AAP "Back to Sleep" campaign, a significant reduction in sudden infant death syndrome has followed the recommendation for supine sleeping for infants. Along with this, practitioners have noted an increase in clinical deformational plagiocephaly in infants who sleep on their back.

In most cases, examination for and counseling regarding deformational plagiocephaly in the newborn period is performed by the pediatrician at health supervision visits during infancy, and monitoring for improvement or progression follows. The study will assess agreement between the medical home and the surgeon on examination findings and treatment recommendations in such cases and also include a survey for parents regarding satisfaction with care.

For the September Poll: Would your practice participate in assuming a proactive role in assessing the need for intervention services in infants with positional plagiocephaly? Go to http://www.childrensmercy.org/QualityFocusPoll to submit your answer.

AUGUST POLL

Last month, we asked "What percentage of your asthma patients has Asthma Action Plans?" and are pleased to provide the following responses:

Practice #1:	75
Practice #2:	99
Practice #3:	55
Practice #4:	75
Total:	Out of four practices, the average number of patients with Asthma Action Plans is 76 percent

Many thanks to all that took the time to answer the survey and we encourage you to respond to the August Poll. We recommend that one physician in each practice respond for the practice, so we can provide a balanced perspective of the information collected.

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THE WIDE WORLD OF VACCINES

THE NEW STUFF ABOUT ROTAVIRUS (RV) VACCINE SCHEDULES

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Infectious Diseases
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Director, Infectious Diseases Research Laboratory

The new American Academy of Pediatrics 2009 Redbook lists seven combination vaccines (see Table below). Combination vaccines have become an important part of pediatric practice, particularly with the 2008 FDA approval of the Sanofi-Pasteur five-component DTaP-IPV/Hib vaccine and Glaxo SmithKline's (GSK) DTaP-IPV vaccine. More are in development, including six-component vaccines for routine infant immunization. Fewer injections to deliver the requisite infant and toddler vaccines can reduce pain and improve vaccine adherence. But use of these combinations can require some adjustments.

The Five Vaccine Combinations

The 2008 DTaP-IPV/Hib (Pentacel®) vaccine is available in addition to the previously 2002 released DTaP-IPV-HepB (PediaRix®) vaccine. Three doses of DTaP-IPV-HepB at 2, 4 and 6 months of age result in an extra (fourth) dose of HepB for those who have received the recommended birth dose of HepB.

Studies have shown no added risk to this fourth dose and good immunogenicity. This vaccine can be given through the "kindergarten" preschool booster, i.e. through 6 years of age. In contrast, the newer DTaP-IPV/Hib is limited to administration from 6 weeks through 4 years of age. It has provided a welcome source of Hib vaccine for many children during the recent Hib shortage that now has been resolved.

The New Four Vaccine Combination

The 2008 approved four-component DTaP-IPV (KinRix®) is approved only at 4 years through 6 years of age as a pre-school booster, which could be used after either above combination was the primary series.

MMR + Varicella versus MMRV

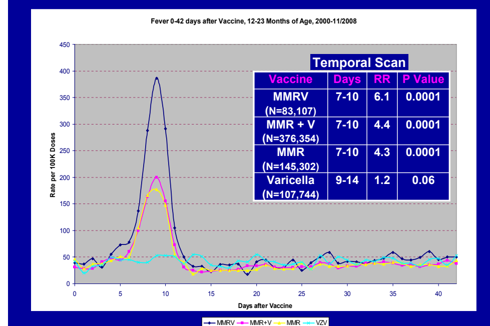
While MMR is not on the list, it is obviously a combination vaccine. The AAP and ACIP had recommended a preference for measles, mumps, rubella, and varicella vaccines to be given together as a single MMRV injection previously. However, they recently reverted to "no preference" between a single MMRV injection versus a MMR in one and varicella in another injection (MMR+V). The change to "no preference" occurred after the 2009 Redbook was finalized, so MMR was not on the list.

The change in "preference" recommendation was due to a slightly increased risk for benign febrile seizures associated with MMRV above that previously described for MMR + V. Northern California Kaiser Permanente and the Vaccine Safety Datalink (VSD) compared data over 0 to 42 days post-MMRV in 12 to 23 month olds through 2007 with available historical data over 0 to 30 days post MMR.

Febrile seizures were increased seven to ten days after vaccination for both MMRV (N=45/43,353) and MMR + V (N=132/314,599) (Odds Ratio 2.3, 95 percent CI 1.6-3.2). There was one more febrile seizure for every 1,923 MMRV doses versus MMR + V. See Figure below). There were no sequelae noted to any of these benign febrile seizures. So, adding MMR back to the list, there are actually eight-combination vaccines.

We should expect more combinations as the number of diseases against which we can protect children continues to evolve. Like the parents of our children, we will need to adjust our thinking (as well as our practices) to their release.

Outpatient Fever Visits Among 12-23 Month Olds after First Dose of Vaccine: 2000-2008



Vaccine	Tracle Name (Year Licensed)	Age Group	Recommendations
Hib-HepB	Comvax (1995)	6 Wk through 71 mo	Three-dose schedule given at 2,4,and 12 through 15 mo of age.
DTaP/Hib	TriHIBit (1996)	Fourth dose of Hib and DTaP scrica	15 through 18 mo of age.
Hep A-HepB	Twinrix(2001)	≥18 y	Three closes on a 0-, 1-, and 6-mo schedule
DTaP-HepB-IPV	Pediarix (2002)	6 wk through 6 y	Three-close series at 2, 4, and 6 mo of age.
MMRV	ProQuad (2005)	12 mo through 12 y	Two doses 28 days apart on or after first birthday.
DTaP-IPV	Kinrix (2008)	4 through 6 y	Booster for fifth close of DTaP and fourth dose of IPV.
DTaP-IPV/Hib	Pentacel (2008)	6 wk through 4 y	Four-close series at 2, 4, 6, and 15 through 18 mo of age.

CONTACT INFORMATION

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