Rapid Strep Tests Are Useful in Pediatric EDs

Impact of Rapid Streptococcal Test on Antibiotic Use in a Pediatric Emergency Department.
Ayanruoh S, Waseem M, et al:

Pediatr Emerg Care 2009; 25 (November): 748-750

Use of a rapid strep test significantly reduces the use of antibiotic prescriptions for pharyngitis in children visiting the emergency department.

Background: Acute pharyngitis is common in children, accounting for 6% of emergency department (ED) visits and >10 million diagnoses each year. Bacteria may cause almost one third of cases, although the prevalence of group A strep causing pharyngitis varies significantly. Because of this, empiric antibiotic use is likely not a good idea. In the last decade, rapid strep tests have become commonplace, along with increased sensitivity. How this has affected use of empiric antibiotic prescriptions is unknown.

Objective: To determine if use of rapid strep tests has affected the number of antibiotic prescriptions for children with pharyngitis in EDs.

Participants/Methods: This study took place in a pediatric ED between 2005 and 2007. All physicians were trained in the use of a rapid strep test kit. Patients aged 2 to 18 years who came to the ED complaining of pharyngitis were eligible. The control period was the 2 years before introduction of the rapid strep test. During the study period, patients were treated with antibiotics if the rapid strep test was positive; negative results were followed by a strep culture with a follow-up appointment in 2 days. Prescription rates were measured in both the control and study periods.

Results: Over the 2-year study period, 6557 children were enrolled in the study; in the control period, 1723 children were seen with a diagnosis of pharyngitis. Of children in the study period who had rapid strep tests, 23% had positive results and 77% had negative results. Antibiotic prescription rates for children with pharyngitis were significantly lower in the study period (22%) than in the control period (41%). In the control period, only 2 children (less than half of one tenth of a percent) had a negative rapid strep test and a positive culture for strep.

Conclusions: Use of a rapid strep test significantly reduced the use of antibiotic prescriptions for pharyngitis in children visiting the ED. Practical Review Points: (1) Use of rapid strep testing in the ED almost halved the use of antibiotics for pharyngitis. (2) Rapid strep tests resulted in almost no false negatives, which should bring in question even the necessity for confirmatory cultures in negative rapid strep tests. (3) It's nice to see evidence confirming the importance of doing rapid strep tests.

Reviewer's Comments: Although I don't believe many of us will be surprised that rapid strep tests are a good thing, it's still nice to see hard data to support them. They really do work well. (Reviewer-Aaron E. Carroll, MD, MS).

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Keywords: Rapid Streptococcal Test, Antibiotics, Emergency Department

Print Tag: Refer to original journal article
Children are at lower risk of developing herpes zoster if they have been vaccinated against varicella than if they had contracted the wild-type varicella infection.

**Background:** Herpes zoster (HZ) infections occur when latent varicella virus in a dorsal root ganglion reactivates. It has been hypothesized that the vaccine strain of varicella virus, like the wild-type, can cause HZ infections.

**Objective:** To assess the incidence of HZ infections among children vaccinated with 1 dose of varicella vaccine at age ≤12 years.

**Participants/Methods:** Cases were identified from a health maintenance organization in Southern California. The study included children with ≥1 day of membership in the plan who had received a single antigen varicella vaccine between January 1, 2002, and January 31, 2008. HZ cases were identified during this same period by finding inpatient, outpatient, or emergency department records that were coded with the ICD-9 code 053.xx (herpes zoster). Potential medical records of cases were then reviewed for accuracy of diagnosis and the existence of other comorbid chronic medical conditions. The authors calculated the incident rate by dividing the number of cases by the number of days from immunization to whichever of the following occurred first (for all children combined): HZ, disenrollment from the plan, second varicella vaccine, or December 31, 2008. The authors also assessed whether the rate differed according to age group (<12 months, 12 to 18 months, >18 months to 5 years, and >5 years) and whether there was a trend in the HZ rate 4 and 6 years after vaccination.

**Results:** 172,163 children were included in the analysis, 80% of whom were vaccinated at age 12 to 18 months. There were 122 likely cases of HZ identified, for a case rate of 27.4 per 100,000 person-years. Average time to onset of an HZ case was 2.1 years after vaccination (range, 2.0 weeks to 5.4 years). The incidence of HZ cases and time to HZ occurrence was not significantly different among the different age groups examined. However, among children vaccinated at age 12 to 18 months, there was a statistically significant increase in the incidence rate of HZ for 4 years following vaccination, with a peak rate of 43.17 cases per 100,000 person-years. Only 1 case in the study was associated with a comorbid condition that would compromise the immune system (leukemia).

**Conclusions:** The rate of HZ among children who received 1 dose of varicella vaccine is lower than that seen among children in the pre-varicella vaccine era (about 30 to 46 per 100,000 person-years).

**Reviewer's Comments:** Given the raging debate over vaccination and possible adverse effects, this large, prospective, and well-conducted study can at least provide parents with some comforting news. Pediatricians can assure parents that not only does varicella vaccination not increase a child’s risk for HZ, but that it actually decreases the child’s risk compared to those children who have actually had the varicella infection. (Reviewer-Beth A. Tarini, MD).

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Keywords: Varicella, Vaccination, Herpes Zoster Infections

Print Tag: Refer to original journal article
Labeling changes in the Pediatric Exclusivity Program resulted in significant findings and changes to drug labeling.

**Background:** Two landmark studies in the past showed that about 80% of drugs in the Physicians' Desk Reference lacked adequate information and labeling for use in children. This means that, when treating children, physicians often have to decide to use drugs known to work in adults off-label to achieve the same benefit in children. In 1997, a new law was passed that encouraged studies of drugs in children by promising an additional 6 months of marketing exclusivity in exchange for such research.

**Objective:** To determine how often new information arose from the Pediatric Exclusivity Program and how this affected pediatric drug labeling.

**Design/Methods:** This cohort study looked at drugs submitted to the FDA for pediatric exclusivity. Selective serotonin uptake inhibitors were excluded due to a black box warning because of an increased risk of suicide in children and adolescents. FDA reviews and labels for these drugs were closely examined. The medical literature was also searched to look for studies of these drugs in children that were published for public consumption. Analyses examined how well the information in peer-reviewed studies aligned with that in the FDA labels and drug reviews.

**Results:** In the first decade of the Pediatric Exclusivity Program, determinations were made on 153 products. Research for these determinations included almost 100,000 children in 365 trials. In all, these studies resulted in 137 label changes for use in children, 129 of which were included in this study. More than one fourth of product studies had safety information about their use in children added to their labeling. Of these additions, 12 products had findings in neuropsychiatric safety and 21 had findings in other areas. Fewer than half of these 33 trials were reported in the peer-reviewed literature. Of 16 trials that were reported in the medical literature, 7 focused on findings that were significantly different from those deemed important in the FDA reviews and label changes.

**Conclusions:** Labeling changes in the Pediatric Exclusivity Program resulted in significant findings and changes to drug labeling. **Practical Review Points:** (1) Further studies conducted in the Pediatric Exclusivity Program resulted in significant findings and changes to drug labels for children. (2) Too few of these studies appear in the peer-reviewed medical literature. (3) Even those studies that do appear there often do not focus on important safety data that necessitate changes to drug labels.

**Reviewer's Comments:** While we should be pleased that the Pediatric Exclusivity Program is leading to improved labeling, it's distressing how few of these studies are published, and then interpreted correctly. We need much better transparency when it comes to pediatric drug safety. (Reviewer-Aaron E. Carroll, MD, MS).

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Keywords: Pediatric Drug Trials, Safety

Print Tag: Refer to original journal article
There is a significant prevalence of sexually transmitted diseases in female adolescents. The need for better sexual education, human papillomavirus vaccination, and increased screening in sexually active females is necessary.

**Objective:** To evaluate rates of sexually transmitted diseases (STDs) in female adolescents aged 14 to 19 years.

**Methods:** This study was performed using data from the National Health and Nutrition Examination Survey conducted by the Centers for Disease Control and Prevention. This study used a random non-institutionalized population. Race was identified and participants were interviewed, had a physical exam, and had a biologic specimen taken. Females aged 14 to 19 years provided urine, blood, and a self-collected vaginal swab. Samples were tested for *Chlamydia*, gonorrhea by urine, herpes simplex 2 by blood, and trichomonas and human papillomavirus (HPV) with vaginal swab. The DNA polymerase chain reaction was used to determine high-risk strains of HPV. The authors determined the 23 high-risk HPVs as described in the article and HPV 6/11, which are low risk but account for 90% of genital warts.

**Results:** 820 females were examined, and 96% had at least 1 STD lab test and 70% had all screen tests performed. The prevalence of STDs was 24%. The most prevalent was the HPV 6/11 (18%), followed by *Chlamydia*. If the female was considered sexually experienced, the rate increased to 37% for HPV 6/11. *Chlamydia* increased to 7%. If a female had >1 STD, 79% had HPV 6/11 as one of the infections. In those aged 14 to 15 years, the prevalence of an STD was 14%, but the authors had concerns due to small sample size in this group. In 18- to 19-year-old group, the prevalence was 33%. Mexicans and non-Hispanic whites had the lowest incidence at 18% to 19%, but the highest was in non-Hispanic black females at 44%. In the group of non-Hispanic blacks, the rate was double for HPV 6/11 infections (33% vs 15%) than for Mexican and white females. For other STDs that were not HPV related, rates were also higher for non-Hispanic blacks at 21% compared to 5% to 6% in Mexican and white females. If a female had been sexually active for 1 year, the rate of STDs was 25%, and if it was >2 years, the rate jumped to 49%. If the adolescent claimed a single partner, the prevalence was 20%, and if they had ≥3 partners, the rate was 53%.

**Conclusions:** There is a significant prevalence of STDs in female adolescents. The need for better sexual education, HPV vaccination, and increased screening in sexually active females is necessary.

**Reviewer’s Comments:** It is clear by these data, that many parents would be shocked by these high levels of infections. Recommending HPV vaccination and a direct conversation about sexual education is key to help reduce morbidity of these diseases. The newer version HPV vaccine does not protect against 6/11 strains. These strains were the highest disease incidence screened in this study. (Reviewer-Charles I. Schwartz, MD).
Sepsis risk in late preterm infants varies, with risks of sepsis and death being greater for infants with late-onset sepsis compared to those with early onset sepsis.

**Background:** While late preterm infants (34 to 36 weeks’ gestation) are often considered similar to term infants in their physiology, the sepsis risk for late preterm infants has not been well described.

**Objective:** To characterize the risk of early and late-onset sepsis in late preterm infants.

**Design_Participants:** Prospective study of infants aged <121 days with an estimated gestational age (GA) of 34 to 36 weeks admitted to 248 U.S. neonatal ICUs (NICUs) from 1996 to 2007.

**Methods:** Cases of early onset sepsis (EOS) and late-onset sepsis (LOS) were defined by a positive culture in the first 3 days of life or between days 4 and 120, respectively. Infants were excluded if they died <24 hours after birth without a positive blood culture, did not have a discharge date, or had a blood culture positive for a contaminant. Researchers calculated cumulative incidences of EOS and LOS, and they assessed maternal and infant risk factors associated with each.

**Results:** Birthweight and GA were similar between EOS and LOS infants. For EOS infants, 531 of 82,263 blood cultures were positive (0.6%). Group B streptococcus, *Escherichia coli*, and *Staphylococcus aureus* accounted for most organisms. The risk of death was 1.3%, with infants infected with gram-negative organisms being more likely to die (odds ratio [OR], 4.39; 95% CI, 1.71 to 11.23). Risk factors for EOS included Hispanic ethnicity (OR, 1.24; 95% CI, 1.01 to 1.53), birthweight of 2500 to 3499 g (OR, 1.37; 95% CI, 1.01 to 1.87), and Cesarean delivery (OR, 1.04; 95% CI, 1.01 to 1.08). Maternal receipt of antibiotics decreased the risk of EOS (OR, 0.65; 95% CI, 0.53 to 0.80). For LOS infants, 803 of 6529 blood cultures were positive (10.2%). The risk of death was 7%. The most common organisms were coagulase-negative staphylococcus, *S aureus*, and *E coli*. The risk of LOS increased with lower maternal age (mothers aged 11 to 19 years compared to those aged 20 to 29 years; OR, 1.34; 95% CI, 1.06 to 1.69) and lower 5-minute Apgar scores (0 to 3: OR, 2.09; 95% CI, 1.15 to 2.19; and 4 to 6: OR, 1.59; 95% CI, 1.21 to 3.59).

**Conclusions:** The risk of sepsis in late preterm infants varies depending on timing after birth, with a greater risk of sepsis occurring for infants with prolonged stays in the NICU. In addition, responsible organisms and risk factors differ between preterm infants with EOS and LOS.

**Reviewer’s Comments:** This study highlights that features of sepsis in late preterm infants depend on whether the sepsis occurs soon after birth or later. Not surprisingly, late preterm infants with prolonged NICU stays are sicker and therefore more likely (1) to have sepsis and (2) to die from it. However, it is important to note that the risk of sepsis for any late preterm infant will be lower than that found in this study because cases here were drawn only from late preterm infants admitted to the NICU. (Reviewer-Beth A. Tarini, MD.)

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Keywords: Sepsis, Late Preterm Infants, Risk Factors, Death

Print Tag: Refer to original journal article
CMV More Common in Dried Blood Spots of Infants Who Fail Newborn Hearing Screens

Detection of Cytomegalovirus DNA in Dried Blood Spots of Minnesota Infants Who Do Not Pass Newborn Hearing Screening.


Use of dried blood spots to detect cytomegalovirus infection may become an adjunct to the evaluation of newborns with failed hearing screens.

**Background:** The most common congenital infection is cytomegalovirus (CMV). In large screening studies, CMV infection is detected in up to 2% of newborns. The majority of cases, 85% to 90%, are asymptomatic. However, one long-term sequela that can occur is sensorineural hearing loss, which is seen in 35% to 65% of those infants with symptoms at birth and in 7% to 15% of those who are asymptomatic. This hearing loss can be present in the newborn period or can develop on a delayed basis. In the United States, newborn hearing screening is now the standard of care. However, there are problems. Follow-up rates for those who fail screens are less than ideal. An abnormal screen also does not reveal the cause of hearing loss.

**Objective:** To compare the results of CMV testing on dried blood spots for newborns who did and did not pass hearing screens.

**Participants/Methods:** Between March and December 2006, 958 anonymous blood spots were obtained from newborns who had undergone newborn hearing screening by noninvasive methods. Half had passed and half had not passed the hearing screen. CMV DNA was detected from the blood spots by polymerase chain reaction (PCR) testing, and the results were compared with hearing test outcomes.

**Results:** Of 479 infants with bilateral failure on the newborn hearing screening, 13 (2.7%) had CMV DNA in the blood spot. For 479 controls who had passed the hearing screen, only 2 (0.4%) had CMV DNA.

**Conclusions:** Use of newborn blood spot screening by PCR testing may be a useful adjunct to newborn hearing screening, particularly in infants who fail the test, and it may enable a more rapid etiologic diagnosis for sensorineural hearing loss.

**Reviewer's Comments:** Detecting presence of a CMV infection in a newborn who has failed a hearing screen could have very significant management implications if a well-accepted therapy were available. However, use of antiviral therapy currently is not recommended in these newborns. Although some studies have shown benefit for use of the antiviral ganciclovir for newborns with symptomatic CMV infection involving the central nervous system, to date, studies have not documented therapeutic benefit for use of ganciclovir for those with isolated hearing loss alone. About 50% of newborns with sensorineural hearing loss due to CMV will have continued deterioration of that loss over time. Unfortunately, use of antivirals has not been shown to retard that progression. The authors express the hope that greater use of PCR testing for CMV in children with hearing loss might spur greater development for a role for antiviral therapy. At the very least, detection of a CMV infection would facilitate appropriate neurodevelopmental screening and follow-up because of the possibility of progression. (Reviewer-Mark F. Ditmar, MD).

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Keywords: Cytomegalovirus, Dried Blood Spots, Newborn Hearing Screening

Print Tag: Refer to original journal article
Implementation of a clinical practice guideline does not improve the appropriateness of ceftriaxone use for refractory acute otitis media.

**Background:** Ceftriaxone is recommended as a second-line agent to be used to treat acute otitis media (AOM) in children who have failed treatment with first-line drugs. Unfortunately, ceftriaxone has a broad spectrum of activity, meaning that it can lead to significant bacterial resistance if overused. To try to make sure this does not occur, some have instituted clinical practice guidelines to manage its use.

**Objective:** To examine how a clinical practice guideline for application of ceftriaxone for refractory AOM affects how it is used.

**Methods:** This was a before-after study in a tertiary pediatric care center in Canada. A multidisciplinary team created a clinical practice guideline on appropriate use of ceftriaxone for AOM. Refractory AOM was defined as a persistence of symptoms after 2 to 3 days of therapy or a relapse within 1 month in a case fully treated with antibiotics. All charts of patients from age 3 months to 5 years treated for refractory AOM were examined. Data were gathered for 18 months before and after the clinical practice guideline was implemented. Treatment with ceftriaxone was considered adequate if at least 3 daily doses were given at 40 to 60 mg/kg. The primary outcome of interest was the appropriateness of use of ceftriaxone.

**Results:** Over the course of the study, 127 patients were eligible; 60 were in the pre-clinical practice guideline group and 67 in the post group. Average age of patients referred for ceftriaxone treatment was 17 months in the pre group and 20 months in the post group. Indications for use of ceftriaxone in the time before the clinical practice guideline were adequate only 17% of the time. Unfortunately, use of ceftriaxone was appropriate only 22% of the time after the clinical practice guideline was implemented. The difference was not statistically significant.

**Conclusions:** Implementation of a clinical practice guideline did not improve the appropriateness of ceftriaxone use for refractory AOM. **Practical Review Points:** (1) Ceftriaxone was used appropriately for refractory AOM only 17% of the time before a clinical practice guideline was implemented. (2) The clinical practice guideline did not significantly improve its appropriate use, which was 22% after implementation. (3) Ceftriaxone is rarely used appropriately, and other means than guidelines are needed to correct this.

**Reviewer’s Comments:** Ceftriaxone is not being used appropriately for refractory AOM. Clinical practice guidelines do not appear to affect that at all. We need to come up with better solutions and fast. (Reviewer-Aaron E. Carroll, MD, MS).

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Keywords: Ceftriaxone, Otitis Media, Clinical Practice Guidelines

Print Tag: Refer to original journal article
Consider screening for attention deficit hyperactivity disorder (ADHD) in children presenting with self-inserted foreign bodies in the ear or nose due to a higher likelihood of ADHD, especially if the patient is aged >5 years.

**Background:** It is known that children diagnosed with attention deficit hyperactivity disorder (ADHD) have an increased incidence of injuries when compared to controls. This covers a wide range of injury types and mechanisms, including broken bones, dental and head injuries, poisoning, and self-inflicted injuries.

**Objective:** To assess the prevalence of ADHD in children seen for self-insertion of foreign bodies.

**Participants/Methods:** The study setting was the ear, nose, and throat department of a tertiary children's hospital in Sri Lanka. All children who were referred over a period of 3 months in 2006 with a diagnosis of self-inserted foreign bodies in the nose or ears were included in the study. Two rating scales were used to establish diagnosis of ADHD: the Conners Parent Rating Scale and the Strengths and Difficulties Questionnaire (SDQ). In Sri Lanka, a known prevalence of about 5% for ADHD was known from previous studies. The main objective of this study was to compare the known ADHD prevalence rate to that of those patients with self-inserted foreign bodies.

**Results:** 34 children were seen with self-inserted foreign bodies during the study period. Ages ranged from 3.0 to 10.0 years, with a mean age of 4.8 years. About two thirds were aged 3 to 4 years, and one third were aged 5 to 10 years. Three fourths of patients had nasal foreign bodies, and one fourth had objects in the external auditory canal. Types of objects included a wide spectrum of pieces of toys, pebbles, plant seeds, beads, paper, and chalk. Of patients, 20% had a past history of foreign body insertion. None had been diagnosed previously with ADHD. The results of rating scales found that 14% with a history of self-inserted foreign bodies met criteria for ADHD. This was about 3 times higher than the known prevalence rate.

**Conclusions:** Clinicians should be aware of a possible association between self-insertion of foreign bodies and ADHD. Children identified with such problems need an assessment for possible ADHD, especially in those aged >5 years.

**Reviewer’s Comments:** Although two thirds of children in the study were age <5 years, when the diagnosis of ADHD can be more problematic, the authors note that in 3- to 4-year-olds, scales were positive in only 6%, but in those aged >5 years, abnormal scales were found in 20%. If you see a patient with a history of inserting things into his/her nose or ears, delve a bit deeper, including use of your preferred screening tool, in the search for possible ADHD. If you look for ADHD in these patients, there is a higher likelihood that you may find it. (Reviewer-Mark F. Ditmar, MD).

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**Keywords:** Attention Deficit Hyperactivity Disorder, Foreign Body Insertions

**Print Tag:** Refer to original journal article
Refer refractive epileptic patients for surgical resection evaluation as it can result in cessation of seizures and an improved quality of life.

**Background:** Up to 30% of epilepsy cases are refractive to medical intervention. Surgical resections have been shown to be more efficacious than a 2- or 3-drug regimen in reducing the seizure burden in these patients. However, physicians remain reluctant to refer these patients for surgical evaluation.

**Objective:** To describe the outcome after surgery for refractory epilepsy with a focus on selection criteria for surgery and quality of life after surgery.

**Design:** Consecutive, retrospective chart review.

**Participants:** 83 participants with intractable epilepsy, defined as epilepsy despite the use of 2 anti-epileptic medications.

**Methods:** Participants were categorized and analyzed by type of resection (hemispherectomy, non-temporal focal resection, temporal resection, or corpus callosotomy) and by pathology (cortical dysplasia, mesial temporal sclerosis, encephalomalacia, tumor, vascular disease, or other). Additionally, all participants had follow-up for 1.5 years and were then categorized by their new seizure burden (none, ≤3 per year, improved but >3 per year, or no improvement). Finally, all participants completed the Quality of Life (QOL) Childhood Epilepsy assessment after surgery, and the results were analyzed by seizure burden.

**Results:** Overall, 70% of participants were seizure free after surgery regardless of surgical resection classification. Those who had a temporal resection had the highest seizure-free rate (84%), followed by hemispherectomy (76%). Those who had a corpus callosotomy had the lowest seizure-free rate (50%). By pathology, those with a "lesion" such as cortical dysplasia were less likely to be seizure free than "non-lesion" participants. QOL scores were higher in postoperative children with no further seizures than in those who experienced seizures postoperatively. Specifically, those with no further seizures were more physically and socially active, had improved general health and QOL, and were less depressed. However, such results were not seen in adolescent participants.

**Conclusions:** Hemispherectomies and temporal resections greatly improved seizure frequency, especially in children without a lesion causing their epilepsy. QOL was better in postoperative children who had no further seizures. However, this finding was not observed in adolescents.

**Reviewer's Comments:** This article hopefully gives pediatricians the much-needed courage and confidence to refer intractable seizure patients for surgical evaluation. The improved QOL and the decrease in seizure burden are inspiring! The lack of improvement in adolescents may cause hesitation, but this may reflect a flaw in the study. The authors acknowledge that most survey respondents had no further seizures, so there may not have been enough participants with seizures for a true comparison. Alternatively, multiple years of having seizures may have a lasting impact on a person's QOL that cannot be ameliorated by the cessation of epilepsy. This risk should inspire pediatricians to refer even earlier. (Reviewer-Lisa Humphrey, MD).

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Keywords: Epilepsy, Neurosurgery, Quality of Life

Print Tag: Refer to original journal article
Parents are more likely to place their infants on their back if they receive a positive recommendation about supine sleep position from their physician.

Between 1993 and 2000, the percentage of infants placed supine (on their backs) increased, and the percentage of infants placed prone (on their stomachs) decreased. African Americans had higher prone sleeping rates than other racial/ethnic groups. Since 2001, there have been no changes in sleep position practices; 58% of African Americans and 75% of other racial/ethnic groups place their infants supine, and 20% of African Americans and 10% of other groups place their babies prone. In recent years, the use of supine positioning may be decreasing instead of increasing. If parents are concerned about the possibility of the infant choking, they are 5 times less likely to place their infants supine; parents who are concerned that the infant is not comfortable or sleeps less well are 4 times less likely. Finally, only one third of mothers received advice from their physician to place their infants supine. In the most recent time period (2003 to 2007), whether a parent used the supine sleep position could be explained almost entirely by 3 factors: concern about infant comfort, concern about choking, and physician advice about supine sleeping. If a parent receives positive advice about placing the infant supine, there is a 2.6 times higher likelihood that the infant will be placed in the supine position. However, if the parent hears negative advice about the supine position, the infant is 30% less likely to be placed in the supine position than if the parent received no advice.

Conclusions: The rate of prone sleeping may be increasing. Parents who do not place their infant supine are concerned about infant choking and comfort. Reviewer's Comments: It is important that we continue to talk about sleep position to parents and to be proactive in addressing potential concerns about choking, aspiration, and infant comfort. (Reviewer-Rachel Moon, MD).

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Keywords: SIDS, Sleep Position, Trends

Print Tag: Refer to original journal article
Don’t Overlook Urolithiasis in Children With Recurrent Abdominal Pain

**Recurrence Abdominal Pain in Childhood Urolithiasis.**
Polito C, La Manna A, et al:

Pediatrics 2009; 124 (December): e1088-e1094

Children with recurrent abdominal pain and a family history of urolithiasis should be evaluated for the presence of calculi even if there are no urinary signs or symptoms and, in younger patients, if the pain is diffuse.

**Background**: Acute and/or recurrent abdominal pain, hematuria, and dysuria are common presentations of urolithiasis. However, recurrent abdominal pain (RAP) is also associated with other conditions including many functional disorders.

**Objective**: To determine the clinical features and manifestations of pain attacks in children with RAP and urolithiasis.

**Design**: Case-control and prospective observational study.

**Participants**: 100 white subjects aged 3 to 18 years with RAP and urolithiasis were followed up in a pediatric urology/nephrology office; 270 control subjects aged 3.0 to 18.5 years with respiratory infections were evaluated to determine rates of appendectomy expected in the general population.

**Methods**: Subjects in the urolithiasis and RAP group were identified from a longitudinal study of 188 subjects with urolithiasis. Subjects were excluded if they had other forms of pain and significant medical conditions. RAP was defined as 3 episodes of diffuse or localized abdominal pain over a period of 3 months. Children and parents were asked about the location and frequency of pain attacks. Urine collections were obtained to look for urinary solute excretion abnormalities.

**Results**: Mean age of study patients was 9.8 years. Mean duration of RAP before the first visit was 12.5 months, and mean duration of pain attacks was 127 minutes. A family (first or second degree) history of urolithiasis was seen in 88 patients. A negative ultrasound for calculi was noted in 37 subjects, 21 of whom (57%) had no history of hematuria or dysuria. The rate of appendectomy was 16% versus 1.5% in the control group \((P < 0.0001)\). A majority of patients had hematuria or dysuria 3 days to 18 months after the procedure. Patients aged <8 years were more likely to have central/diffuse pain (69%) than those aged >8 years, who were more likely to have lateral/flank pain. The frequency of attacks was 4 to 9 times lower than that reported in historical controls of patients with RAP. There was no history of gross hematuria or dysuria in 53 patients. There were 41 patients with no hematuria or dysuria at the first visit. Central/diffuse pain without gross hematuria or dysuria was reported in 34% of patients aged <8 years. In many cases, evaluation for urolithiasis in the face of negative studies was prompted due to a positive family history.

**Conclusions**: Urolithiasis should be considered even when hematuria or dysuria and flank pain are absent, especially in younger children with infrequent pain attacks and a positive family history.

**Reviewer’s Comments**: This paper reminds us that the clinical presentation of urolithiasis is inconsistent and that clinicians need to look for more than the classic symptoms of hematuria and flank pain. If a young child has infrequent episodes of RAP and a positive family history, consider urolithiasis. (Reviewer-Seth L. Schulman, MD).

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Keywords: Urolithiasis, Abdominal Pain

Print Tag: Refer to original journal article
In patients treated as outpatients for mild to moderate asthma exacerbations, those with montelukast therapy alone had significantly more treatment failures compared to those who received ongoing oral steroids.

**Background:** When children have acute exacerbations of asthma, most cases are of mild to moderate severity and do not require hospitalization. Generally, oral corticosteroids are used for 5 to 7 days as a mainstay of therapy. However, there is a significant use of alternate anti-inflammatory corticosteroid therapies, particularly montelukast.

**Objective:** To compare the efficacy of oral steroids with montelukast for outpatient post-stabilization therapy for asthma attacks.

**Participants/Methods:** Eligible for inclusion were patients in the emergency department (ED) who were at least 2 years of age (up to age 17 years) and who had mild to moderate exacerbation as demonstrated by the Pediatric Respiratory Assessment Measure asthma scoring system. Patients were treated for acute symptoms and, if discharge was planned, randomized to receive either 1 mg/kg prednisone or prednisolone (depending on the ability to tolerate tablets) or montelukast (dosage depending on age) daily for 5 days. They were advised to continue albuterol by a metered dose inhaler (MDI)/spacer as needed every 4 hours for 5 days and, on day 7, to begin fluticasone (100 μg twice daily) via MDI for 4 weeks. Follow-up with the primary care physician within 48 hours after discharge from the ED was advised. The primary outcome measured was a treatment failure between discharge from the ED and day 8. Treatment failure was defined as an asthma-related unscheduled visit, hospitalization, or treatment with corticosteroids outside the protocol. Nurses phoned the families daily to identify unscheduled return for care, other therapies needed outside the protocol, and any persistent symptoms. Home visits were made on day 2 and day 8 to assess respiratory status and to confirm the primary outcome.

**Results:** 130 patients were included in the study. Mean age was between 5 and 6 years. Treatment failure occurred in approximately 8% of the prednisolone group (5 of 63) but in 22% in the montelukast group (15 of 67). Sixty percent of the montelukast group who failed needed steroid therapy. Treatment with montelukast compared to prednisolone was significantly more likely to fail in patients aged ≤3 years.

**Conclusions:** Use of montelukast as an alternative to corticosteroids after ED stabilization in mild to moderate acute asthma is not adequate. These patients should receive oral steroids after discharge.

**Reviewer’s Comments:** The authors pull no punches on this one. In a significant asthma exacerbation, ongoing oral steroids are indicated. Anti-leukotriene agents, such as montelukast, are not a good outpatient alternative. Montelukast has many theoretic benefits—synergism with beta-agonists and reduction of airway edema. However, in this study, the use of montelukast instead of oral steroids was associated with a much higher failure rate in children with mild to moderate exacerbations of asthma. Improving chronic control in children with recurrent episodes is important. However, control the acute episode first. Don't spare the oral steroids. (Reviewer-Mark F. Ditmar, MD).

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Keywords: Asthma, Montelukast, Oral Steroids

Print Tag: Refer to original journal article
Lipid screening can be simplified into 2 tests, and fasting is not necessary.

**Objective:** To produce, via meta-analysis, reliable estimates of the associations of major lipids and apolipoproteins with coronary heart disease and ischemic stroke.

**Methods:** The authors analyzed 68 studies that met the following criteria for analysis: prospective, population-based, recorded cause-specific mortality, involved >1 year of follow-up, involved adults without any known history of coronary heart disease (CHD) at the initial examination, included conventional risk factors (such as smoking, gender, diabetes, and body mass index [BMI]), and had complete information at baseline on total cholesterol, HDL-cholesterol, and triglyceride levels. The primary outcome was CHD (first-ever myocardial infarction or fatal CHD). Hazard ratios were adjusted progressively for age, sex, blood pressure, smoking status, diabetes, BMI, and lipid measures.

**Results:** Of 302,430 participants included in these 68 studies, the mean age at entry was 59 years, and 43% were women. The median time to first-time CHD event was 6.1 years. Triglyceride, HDL-cholesterol, and non–HDL-cholesterol levels were correlated with one another. The hazard ratio for triglycerides was 0.99 (CI, 0.94 to 1.05) once adjusted for non-lipid risk factors and HDL and non–HDL-cholesterol levels. For HDL-cholesterol, the similarly adjusted hazard ratio was 0.78 (CI, 0.74 to 0.82). For non–HDL-cholesterol, this ratio was 1.50 (CI, 1.39 to 1.61). Regarding fasting status, the hazard ratios for HDL-cholesterol were 0.79 in those who fasted versus 0.75 in those who did not. Furthermore, the hazard ratios for non–HDL-cholesterol were 1.41 in those who fasted versus 1.72 in those who did not.

**Conclusions:** From their analysis, the authors conclude that lipid screening of adults who have never previously had a CHD event can be simplified to measurement of HDL-cholesterol and non–HDL cholesterol (calculated by subtracting the HDL from the total cholesterol level). They also conclude that fasting is not necessary. In addition, since HDL-cholesterol and non–HDL-cholesterol were independently associated with CHD outcomes, the authors suggest therapy directed at improving not only non–HDL-cholesterol levels (like statins do) but also improving HDL-cholesterol levels (like niacin does).

**Reviewer’s Comments:** While this study examined the adult population using adult data, it is intriguing to think that fasting is unnecessary. This would eliminate a seemingly minor but significant obstacle to lipid screening in primary care. Instead of relying on the family to return for blood work after fasting, the blood work could be done during the actual primary care visit. It may also be slightly more cost-effective to screen for only HDL and total cholesterol levels are obtained. The key point to decide is if this study’s findings extrapolate to pediatric lipid screening. Considering, however, that pediatric lipid screening was originally extrapolated from adult outcomes, it seems like a rational leap of faith to incorporate these findings into pediatric practice. (Reviewer-Daniel Coghlin, MD).

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Keywords: Lipid Screening, Cardiovascular Disease, Meta-Analysis

Print Tag: Refer to original journal article
Due to the lack of evidence-based care guidelines for HSP, there is significant variability in diagnostic evaluation and treatment approaches across U.S. pediatric centers.

**Background:** Henoch Schönlein purpura (HSP) is the most common pediatric vasculitis. It requires hospitalization in up to 40% of cases for complications such as glomerulonephritis, hypertension, severe pain, gastrointestinal bleeding, and arthritis. There are no established clinical practice guidelines for the management of the HSP.

**Objective:** To assess the variation in practice patterns for evaluation and treatment of HSP in children's hospitals across the United States.

**Design:** Retrospective cohort study.

**Methods:** The Pediatric Health Information System, a comprehensive administrative database of inpatient information from children's hospitals throughout the United States, was used to identify patients. Subjects had to be <18 years of age with a discharge ICD-9 code for HSP between January 1, 2000, and December 31, 2007. Medication exposure at any time during the hospitalization (including the use of corticosteroids, opioids, non-steroidal anti-inflammatory drugs [NSAIDs], and antihypertensive medications) was determined by pharmacy billing data. Radiologic imaging, endoscopy, laboratory tests, and renal or skin biopsies were identified in a similar fashion. Patient demographic characteristics and hospitalization severity scores were used to assess differences in patient case-mix across the 36 participating hospitals.

**Results:** During the 8-year study period, there were 2407 admissions for HSP (83% for initial episodes and 17% for readmission). The age range was 2 to 17 years, with a median of 6 years. Corticosteroids (the most frequent therapy offered) were administered in 56% of initial hospitalizations, opioids in 36%, and NSAIDs in 35%. There was substantial variation in use across hospitals for these medications. Corticosteroids were used in 31% to 73% of cases, opioids in 2% to 60%, and NSAIDs in 17% to 59%. These variations subsisted even after adjustment for patient and hospital level factors such as severity score, annual volume of HSP cases, and on-site presence of subspecialists. Significant variation among hospitals was also found for imaging, endoscopy, CBC, blood chemistries, urinalysis, and renal biopsy. Only the use of antihypertensives and skin biopsy was more consistent.

**Conclusions:** There is significant variability in diagnostic evaluation and treatment procedures for HSP across tertiary care/academic children's hospitals in the United States.

**Reviewer's Comments:** Because formal management recommendations do not exist for HSP, there seems to be a veritable "free-for-all" with regard to diagnostic studies and medication use. The management variability demonstrated in this study raises questions about whether clinical outcomes are similarly disparate. The authors call for a "national quality improvement effort" that would include elucidating the impact of corticosteroids, NSAIDs, and pain control and presumably lead to the development of standardized care guidelines. (Reviewer-Alyssa Siegel, MD).

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Keywords: Henoch Schönlein Purpura, Health Care Disparities, Clinical Management Guidelines

Print Tag: Refer to original journal article
Certain conditions that, in many cases, are exclusively managed by specialists (such as attention deficit disorder, allergic rhinitis, and acne) could be managed in primary care settings.

**Background:** As the number of children with chronic conditions increases, the need for pediatric specialist care would be expected to increase as well. However, little is known about the content of specialized care in the community where most pediatric care is concentrated.

**Objective:** (1) To describe the type and content of pediatric subspecialist care in the community, with emphasis on preventive and routine follow-up care; and (2) to determine how care is shared with primary care physicians.

**Design:** Survey.

**Participants:** Randomly selected non-federally funded, office-based physicians describing 1 week of visits made between 2002 and 2006.

**Methods:** Specialist physicians were divided into medical subspecialists, surgical subspecialists, and psychiatrists. Visits were classified as follows: whether the patient was new or known; if the diagnosis was new or known; and if the visit was primary care, referred specialty care, or non-referred specialty care. Physicians reported if they were sharing care with the primary care physician and if a reappointment had been recommended. Analyses were performed to determine the types of visits by subspecialists.

**Results:** Of >925 million visits, 20.2% were to specialists. Approximately 25% of physicians, primarily psychiatrists, saw patients at least 6 times in the last 12 months. The most frequent type of visit was routine or preventive to known patients, accounting for 41.3% of all visits, with the majority of these patients being seen by medical subspecialists and psychiatrists. These types of visits represented >50% of visits by 3 specialties: psychiatry (25%), allergy and immunology (17.8%), and dermatology (11.7%). New problems were more commonly seen by surgical subspecialists. Seven diagnostic groups represented more than half of routine and preventive care visits, including attention deficit disorder, allergic rhinitis, and sebaceous gland disorders among the top 3 groups. Referred visits were highest for surgical subspecialists (39.9%) compared to medical subspecialists (31.6%) and psychiatrists (23.0%). Referred patients were more likely to be younger, visits were likely to be longer, and insurance was more likely to be private. Subspecialists reported sharing care in only 23.5% of visits, and reappointments were scheduled approximately 75% of the time.

**Conclusions:** A large proportion of non-referred routine and preventive care is provided by subspecialists for common problems to patients known by the specialist. If the care were provided by primary care practitioners, there would be less demand for specialists and potentially better coordination of care.

**Reviewer’s Comments:** It is impossible to determine if the need for subspecialty care for these common problems stems from a preference of the primary care practitioner, parent/patient, or subspecialist. Although on the surface it would seem advantageous for attention deficit disorder, allergies, and acne to be managed in a primary care setting, I suspect there would be opposition to such a change by all 3 parties. (Reviewer-Seth L. Schulman, MD).

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Keywords: Specialists, Ambulatory Care

Print Tag: Refer to original journal article
In this sample of urban adolescent females, 75% had their first sexual experience before the age of 16 years, and 25% had their first STI within 1 year of their first sexual experience.

**Background:** It is recommended that adolescent females be screened routinely for sexually transmitted infections (STIs). It is unclear when STIs first occur after sexual initiation screening.

**Objective:** To determine (1) the typical interval between a female’s sexual initiation and first STI, and (2) the typical intervals between first and subsequent STIs.

**Design:** Observational cohort study.

**Methods:** Female subjects 14 to 17 years of age were recruited from urban adolescent medicine clinics. At enrollment and every 3 months subsequently, participants completed surveys and interviews on the following: recent sexual behavior, including lifetime and past 3 months’ experience with vaginal, oral, and anal sex; number of partners; intercourse frequency; and condom use. Specimens were collected for STI testing at each visit. Participants completed daily behavior diaries and submitted weekly self-administered vaginal swabs for STI testing. In addition, medical records were reviewed for STI testing. Participants with laboratory evidence of STI were appropriately treated.

**Results:** 386 females participated in the study; 89.1% were African American. The mean age at enrollment was 15.3 years. The mean age at reported first sexual intercourse was 14.2 years. Participants reported an average of 3 sexual partners in their lifetime; 51.6% had at least 1 STI before study enrollment. The median interval between first sexual intercourse and first STI was 3 years for *Chlamydia trachomatis*, 5 years for *Neisseria gonorrhoeae*, and 6 years for *Trichomonas vaginalis*. The median age at first STI was 17 years for *C. trachomatis* and 19 years for *N. gonorrhoeae* and *T. vaginalis*. The median age for a first STI of any type was 16 years, and the median interval between first sexual intercourse and first STI was 2 years; 25% of subjects had their first STI within 1 year of sexual initiation. The median interval between first and second STI was 1.2 years; 75% of participants had a second STI within 2 years, and 92% had a second STI within 4 years.

**Conclusions:** In this sample of urban adolescent females, 75% had their first sexual experience before the age of 16 years, and 25% had their first STI within 1 year of their first sexual experience. Early STI screening is important in urban adolescent females to prevent sequelae from STIs.

**Reviewer’s Comments:** The study population was comprised of adolescent, predominantly black women from an urban population, so the results may not be generalizable. Nonetheless, we must be aware of the potential for STI in sexually active adolescents. (Reviewer-Rachel Moon, MD).

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Keywords: Sexually Transmitted Infections, Adolescent

Print Tag: Refer to original journal article
Human Metapneumovirus May Have Associated CNS Disease

Human Metapneumovirus Associated With Central Nervous System Infection in Children.
Arnold JC, Singh KK, et al:

Human metapneumovirus may cause seizures and encephalitis in actively infected children.

**Background:** Human metapneumovirus (hMPV) was discovered in 2001 and is related to measles, mumps, and parainfluenza. It has been theorized that, like these diseases, hMPV may cause central nervous system (CNS)-related infections.

**Objective:** To describe patients with lab-proven hMPV and their spectrum of abnormal CNS manifestations.

**Design:** Retrospective case control study of 2 populations.

**Participants:** Group 1 consisted of 1500 patients aged ≤18 years who presented at an emergency department (ED) and had a nasal swab for direct fluorescent antigen testing performed due to concern for upper respiratory infection (URI). Group 2 was 200 patients aged ≤18 years with suspected encephalitis.

**Methods:** Group 1 had polymerase chain reaction (PCR) testing for hMPV performed on all available nasal swabs. Those positive for hMPV were then statistically compared against those positive for respiratory syncytial virus (RSV) for the presence of neurological abnormalities. Group 2 had hMPV PCR testing performed both on nasal and cerebrospinal fluid (CSF) samples. Additionally, all CSF samples underwent indirect fluorescent antibody testing for IgM production against hMPV. Prevalence of hMPV detected in the CSF was then determined.

**Results:** In Group 1, hMPV was detected in 5% and of those, 6% had seizures compared to <1% of those with RSV. Of note, only 1 patient with hMPV was febrile at the time of the seizure. In Group 2, 5 patients had hMPV detected in their nasal sample, but none had hMPV detected in their CSF by either PCR or indirect fluorescent antibody testing. In those with positive nasal swabs, upper respiratory infection (URI) symptoms were present. Three patients had seizures and 1 presented with ataxia. Additionally, CSF pleocytosis was only noted in 2 of the 5; however, in the 3 patients who had an MRI performed, 2 were abnormal. In those 2, 1 had cerebral edema while the other had findings consistent with acute disseminated encephalomyelitis (ADEM).

**Conclusions:** Participants from Group 1 (the ED group with URI symptoms) who had hMPV detected by nasal swab were 5 times more likely than those with RSV to have a seizure. Five participants from Group 2 (the encephalitic group) had a positive nasal swab for hMPV, but none had positive CSF findings.

**Reviewer's Comments:** The authors found it puzzling that no CSF sample was positive for hMPV. However, it is hard to draw conclusions when there were only 5 participants with both a positive nasal swab for hMPV and a sample of CSF available for analysis. Perhaps there is a relationship or perhaps there is not. Or, as the researchers pointed out, perhaps it is a postinfectious process similar to *Campylobacter* and its posited role in Guillain-Barré syndrome. Hopefully, larger prospective studies are in the works. (Reviewer-Lisa Humphrey, MD).

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Keywords: Human Metapneumovirus, Encephalitis

Print Tag: Refer to original journal article
Human Milk Is Safely Refrigerated for 96 Hours

Refrigerator Storage of Expressed Human Milk in the Neonatal Intensive Care Unit.

Slutzah M, Codipilly CN, et al:

J Pediatr 2010; 156 (January): 26-28

Ninety-six hours of human milk refrigeration does not substantially affect its nutritional composition nor compromise its immunologic benefits.

**Background:** Refrigerator storage of human milk may be a necessary step toward providing this optimal nutritional source to preterm infants in the NICU. But reports on the effects of refrigerator storage on the immunologic and nutritional components of human milk have conflicted, yielding variable recommendations.

**Objective:** To assess the integrity of human breast milk with regard to bacterial growth, white blood cell (WBC) counts, and concentrations of immune factors and macronutrients under refrigerator storage conditions.

**Methods:** 80 mL of pumped breast milk were collected from mothers of term and preterm infants. Samples were divided into 5 containers to be studied immediately (at time point 0) or after storage in the refrigerator at 4°C degrees for 24, 48, 72, and 96 hours. Milk was analyzed for pH, osmolality, white cell count, bacterial colony counts, lactoferrin, secretory IgA, protein concentration, lipid, and fatty acid concentration.

**Results:** Over the 96-hour storage period, there were significant declines in the pH of the milk (from 7.21 to 6.88), WBC count (by 16%), total protein concentration (by 5%), and gram-positive colony counts. There was a 3-fold increase in concentration of free fatty acid, with an inverse relationship between pH and free fatty acid concentration. There were no significant changes in milk osmolality, concentrations of secretory IgA, lactoferrin, total fat, and Gram-negative colony counts. There were no significant relationships between gestational age (which ranged from 25 to 41 weeks) or postpartum age (range, 7 to 150 days) and milk components, either at baseline or after storage.

**Conclusions:** The immunologic integrity of fresh human milk is not affected by 5 days of refrigerator storage and nutritional composition changes are minimal.

**Reviewer's Comments:** While this study identified statistically significant changes in milk composition, the ultimate conclusion was that these changes were inconsequential. It is worth detailing the rationale. The decline in pH was not expected to affect the activity of milk enzymes. The rise in free fatty acid concentration (an indication of active lipolysis) was still deemed compatible for feeding and may actually provide beneficial antimicrobial activity. The decrease in Gram-positive bacteria presumably reflects active host defenses in milk. Because more WBCs remained in the refrigerated milk than are usually seen following frozen or pasteurized methods, it is doubtful that the decline would be detrimental. While this study may be helpful to rationalize NICU storage guidelines where refrigerator opening times and temperatures can be strictly monitored, it may not translate to home storage conditions. Of note, the American Academy of Pediatrics Committee on Nutrition presently recommends maximum refrigerator storage of human milk for 48 to 72 hours. (Reviewer-Alyssa Siegel, MD).

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Keywords: Human Milk, Infant Feeding

Print Tag: Refer to original journal article
IVs in Newborns Last Just As Long With Or Without Joint Immobilization

Limb Splinting for Intravenous Cannulae in Neonates: A Randomised Controlled Trial.
Dalal SS, Chawla D, et al:
Arch Dis Child Fetal Neonatal Ed 2009; 94 (November): F394-F396

In a study of neonates receiving IV infusions, there was no difference in duration of the IV whether the joint at the IV site was or was not immobilized with a splint.

Objective: To determine whether immobilizing the limb at the cannulation site would prolong the functional duration of peripheral IV cannulae as compared to no immobilization.

Participants/Methods: The study was conducted at the NICU in a tertiary care hospital in New Delhi. All preterm and term infants were eligible if they had a cannula inserted over the wrist, elbow, knee, or ankle. Patients were randomized into "splint" and "no-splint" groups. The splint was cotton and gauze rolled over hard cardboard after fixing the cannula to prevent movement at the underlying joint. The cannula was monitored for removal every 2 hours. Removal occurred if there was extravasation (characterized by swelling and edema at the cannula site), blockage (indicated by high occlusion on the infusion pump), or inflammation (redness or tenderness over the cannula site). The functional duration of the cannula was measured in hours from the time of insertion to the time of removal.

Results: 54 patients were enrolled in the study. Some had multiple IVs. Groups were comparable in birth weight, gestational age, and site of cannulation. There was no significant difference in functional duration between the 2 groups (23.5 hours for the immobilized group vs 26.9 hours for the non-immobilized; P =0.38). The most common reason for removal in both groups was extravasation.

Conclusions: Joint immobilization with a splint at an IV cannula site does not affect the functional duration of a peripheral IV in an NICU setting.

Reviewer's Comments: Another common practice doesn't pass muster when put to the test. Joint immobilization has always been felt to be a positive: limiting motion, in theory, should lessen the chance of an IV dislodging. In this study, it made no difference. Although it was not significantly different, joint immobilization even had a slightly shorter functional duration compared to no immobilization. The authors postulate that the pressure of the extra taping may promote extravasation. If this study is replicated, it does not bode well for the neonatal arm board industry. (Reviewer-Mark F. Ditmar, MD).

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Keywords: Intravenous Cannulae, Immobilization

Print Tag: Refer to original journal article
Background: Head Start is a federally funded early childhood education program for families from a lower socioeconomic class to provide aid in cognitive development, physical fitness, nutrition, and motor skills. This means that it may be a good way to target childhood obesity, as somewhere between 15% and 25% of the population that Head Start serves is overweight or obese. Because of the vagueness in federal guidelines, Head Start programs are actually quite different from each other.

Objective: To examine the practices of Head Start programs with respect to obesity prevention.

Design/Methods: This was a cross-sectional survey administered to all Head Start Programs as part of the Study of Healthy Activities and Eating Practices and Environments in Head Start (SHAPES). The survey was adapted from previously developed instruments and policies for nutrition and physical activity in childcare and early childhood educational settings. The final survey had 90 items and took under a half hour to complete. Responses were de-identified and individual survey responses were not provided to federal agencies.

Results: Of the 1810 eligible programs, surveys were completed by 1583 for a response rate of 87%. The median number of students in each program was 314, and each Head Start program had a median of 6 centers. These programs served >828,000 enrollees in over 13,600 centers. Nonfat or 1% milk only was served at 70% of programs. Healthy foods were also prevalent: 94% served fruit (other than juice) each day, 97% served vegetables every day, and 91% served both. About two thirds of programs served healthy foods or used non-food treats for special events, and more than half had no vending machines even for staff. Almost 9 out of 10 programs had an outdoor play area for children, and almost three quarters of programs had structured physical activity every day. Almost the same number reported unstructured play for at least half an hour a day, and more than half had both unstructured and structured physical activities.

Conclusions: Most Head Start programs engage in healthy nutrition and physical activity far above the bare minimum required by law. More than 90% of Head Start programs offer nutritional and healthy food choices. About three quarters offer structured or unstructured physical activity each day and more than half offer both. The long-term effects of these programs needs to be studied to see if they affect obesity rates later in life.

Reviewer's Comments: I was actually surprised by the quality of the nutritional offerings at Head Start and their commitment to physical activity. I wish all public schools (and private for that matter) had the same level of commitment. (Reviewer-Aaron E. Carroll, MD, MS).

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Keywords: Obesity Prevention, Head Start Programs

Print Tag: Refer to original journal article
This study found that children had no cross-reactive antibody response of 2009 H1N1 after immunizing with seasonal influenza vaccine.

**Objective:** To determine antibody responses to 2009 H1N1 influenza virus after vaccination from routine seasonal influenza vaccination in all age groups.

**Methods:** Serum samples were examined from vaccine trials conducted in 1976 and between 2005 and 2009. There were no volunteers for this study. Using microneutralization assays on serum samples, examiners looked at antibodies to 2009 H1N1 and influenza A (California 2009) and seasonal H1N1 and influenza A (New Jersey 1976).

**Results:** Based on age groups, there was little to no preexisting cross-reactive antibody to 2009 H1N1 in 124 samples examined in the 6-month-old to 9-year-old age group. A subgroup of children aged 5 to 9 years who had exposure to seasonal H1N1 (not the 2009 version) had no increase in antibody titers after immunization to seasonal vaccine. There was also no difference if live attenuated vaccination was used as well. In adults, there was some boosting of H1N1 seasonal (from the 1969 version of influenza vaccine) and 2009 H1N1 titers for those adults who were older and may have had exposure to a previous H1N1 strain when they were younger.

**Conclusions:** There was little to no cross-reactive antibody response to H1N1 in children.

**Reviewer’s Comments:** This study illustrates that there is no protection from administering the current seasonal or previous seasonal influenza vaccines for the 2009 H1N1 influenza strain. Informing parents who might be wavering on getting this newer vaccine may help them understand the need for this vaccine. Recommending both the H1N1 and seasonal influenza vaccines is key to protecting children during this influenza season. (Reviewer-Charles I. Schwartz, MD).

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Keywords: Influenza A, 2009 H1N1 Vaccine, Seasonal, Antibody Response

Print Tag: Refer to original journal article
The T-cell receptor excision testing assay is an effective way to determine T-cell lymphopenia in state newborn screening.

**Objective:** To determine if a newborn blood screening test can determine if T-cell lymphopenia is present.

**Methods:** In Wisconsin over a year period the state newborn screen lab added a test called the T-cell receptor excision (TREC) by real-time quantitative PCR. These tests show markers for T-cell that can help quantify the number of t-cells in a newborn’s blood. Patients with test results meeting criteria for lymphopenia had follow-up blood tests to determine if true T-cell lymphopenia, such as DiGeorge syndrome, existed.

**Results:** There were 71,000 infants screened; 90% were term infants. There was repeat testing from inconclusive results in some infants at 0.17%. Premature infants were found by this and previous studies to have false positive tests. Of 96 preterm infants, 72 had normal results and 22 died. One infant had an abnormal TREC and 1 had DiGeorge syndrome. Of infants with abnormal (not inconclusive) TREC testing, there were 23 premature and 12 full-term infants. In the premature group, 15 infants were normal, 5 died, and 3 were abnormal. In the full-term group, 4 infants were normal, 1 died unrelated to immunodeficiency, and 6 were abnormal (1 parent refused retesting). Of 71,000 children screened, only 11 with 2 abnormal TREC assays were detected. Three of these children had normal flow cytometry and 8 had abnormal cytometry. Two had DiGeorge, 3 had extravasation of T-cells outside the vascular space, and 3 had idiopathic lymphopenia.

**Conclusions:** The TREC testing assay was an effective way to determine T-cell lymphopenia in state newborn screening.

**Reviewer’s Comments:** The main reason to determine if a child has T-cell lymphopenia in the newborn period is that, in certain conditions, hematopoietic transplantation is more successful in the first 3 months of life than as an older infant or child. Also certain attenuated vaccines when given to an infant with T-cell lymphopenia can cause severe adverse infections. The authors do not discuss the economic cost versus benefits of statewide screening tests. Each state must determine if adding this test can have a positive benefit for early detection for the individual and a cost savings for the health care system. (Reviewer-Charles I. Schwartz, MD).

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Keywords: Newborn State Screen, T-Cell Lymphopenia

Print Tag: Refer to original journal article
Exposure to childcare during toddlerhood reduces a child's risk of persistent or late-onset asthma independent of the number of respiratory infections or family history.

**Background:** Exposure to childcare during early childhood may protect against persistent wheezing later in life. The effect of the timing of childcare exposure on later wheezing risk is unknown.

**Objective:** To examine whether exposure to childcare during or after infancy is associated with increased risk of persistent late-onset (age >3 years) asthma.

**Participants/Methods:** Children from the Study of Early Child Care and Youth Development were followed from birth (1991) through age 15 years. Diagnosis of asthma was obtained from parental report at ages 36 months, 54 months, and 6, 8, 10, and 15 years. A child was considered to have asthma if parents answered "yes" at ≥2 time points or at 15 years. Childcare data were obtained at ages 6, 15, 24, and 36 months and were classified as center care, home-based, parent care, or a mixture. The number of other children in the setting was recorded. Various family history, medical history, and socioeconomic covariates were collected. Researchers used logistic regression to model the relationship between timing of childcare exposure, number of children in childcare, and likelihood of persistent or late-onset asthma, adjusting for significant covariates.

**Results:** 939 children were studied, 3% of whom had persistent or late-onset asthma and 16% of whom developed asthma by age 15 years. Before age 15 months, 8% of children had center childcare, which increased to 21% between 16 and 36 months. Meanwhile, 20% were cared for by parents and 49% of childcare experiences could not be classified. In the multivariate model, maternal history of asthma (OR, 2.88; 95% CI, 1.66, 5.00) and eczema by 36 months (OR, 3.09; 95% CI, 1.94, 4.91) were associated with increased risk of persistent or late-onset asthma, while maternal age (OR, 0.94; 95% CI, 0.90, 0.99) and respiratory infections at 16 to 36 months (OR, 1.24; 95% CI, 1.08, 1.44) were associated with a decreased risk. Interestingly, the number of children in the childcare setting during toddler age (16 to 36 months) independently decreased the odds of persistent or late-onset asthma in a quadratic manner with a threshold effect occurring in around 9 children.

**Conclusions:** Exposure to other children as a toddler may offer a protective effect against persistent or late-onset asthma, independent of family history, comorbid conditions (eg, eczema), and early respiratory infections.

**Reviewer's Comments:** This study may prompt some parents to seek out daycare to decrease their child's risk of asthma. When these parents come to the practicing pediatrician complaining about the number of respiratory infections their child contracts in daycare, the pediatrician would be wise to present them with the findings of this study, while also explaining that other factors such as family history and a history of eczema also influence a child's risk for persistent or late-onset asthma. (Reviewer-Beth A. Tarini, MD).

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**Keywords:** Asthma, Childcare Exposure, Risk Factors

**Print Tag:** Refer to original journal article
Detection of certain levels of urinary proteins may predict obstructive sleep apnea in prepubertal children.

Background: Obstructive sleep apnea (OSA) is a common condition that is difficult to distinguish from normal snoring based only on history and physical exam. Its diagnosis requires an expensive, inconvenient, and sometimes unavailable sleep study. An accurate, noninvasive urine screen for OSA could make it easier and potentially cheaper to diagnose OSA.

Objective: To examine whether certain urinary protein markers are associated with obstructive sleep apnea in prepubertal children.

Methods: Children who were referred for a sleep study to evaluate habitual snoring in Louisville, Kentucky were recruited to participate in this case-controlled study. Control subjects who were in their usual state of good health and did not snore were invited from the community. Children with genetic or systemic disorders, neuromuscular diseases, renal diseases, or any acute infectious process were excluded. All subjects underwent overnight polysomnography to rule in or out obstructive sleep apnea. A first urine void was collected on the day after the sleep study. The urine was then analyzed via 2-dimensional differential in-gel protein electrophoresis (2D-DIGE) followed by mass spectrometry. ELISA or immunoblotting were performed as confirmatory tests. Receiver-operating characteristic (ROC) plots were analyzed for individual and combinations of urine proteins and their association with obstructive sleep apnea.

Results: Morning urine proteins from 60 children with obstructive sleep apnea, 30 children with primary snoring, and 30 control subjects were analyzed. The age range was between 2 and 9 years. Four proteins: uromodulin, urocortin-3, orosomucoid-1, and kallikrein had the most favorable ROC plots, and the analysis of combinations of these 4 proteins was even better. For a test requiring levels of 2 of these 4 proteins to exceed the cut-offs, the sensitivity for OSA was 100.0%, and the specificity was 96.5%. For a test requiring levels of 3 of these 4 proteins to exceed the cut-offs, the sensitivity for OSA was 95%, and the specificity was 100%.

Conclusions: Urine protein testing for combinations of 4 proteins holds promise for noninvasively detecting obstructive sleep apnea in prepubertal children. The authors caution, however, that the findings from this case-controlled study require validation from larger, prospective studies.

Reviewer’s Comments: It would be great to distinguish prepubertal children with OSA from those with normal snoring without first referring them for a sleep study. Depending on the accuracy and cost of the potential urine test, it could improve access to care for OSA while also saving time and money (a rare combination these days). For those whose urine test suggested OSA, one might proceed with specialty referral, but for those whose test was normal, watchful waiting could more confidently be recommended. Clearly, however, this study is preliminary and has only potential clinical application at this point. (Reviewer-Daniel Coghlin, MD).

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Keywords: Urinary Protein Levels, Obstructive Sleep Apnea

Print Tag: Refer to original journal article