



Receive summaries of articles in each month's issue of *Pediatrics* when you sign up at [www.pediatrics.org](http://www.pediatrics.org).

### Early Puberty, Negative Peer Influence, and Problem Behaviors in Adolescent Girls

Early timing of puberty and affiliation with deviant friends are associated with higher levels of delinquent and aggressive behavior. Early-maturing adolescents tend to affiliate with more-deviant peers and appear more susceptible to negative peer influences.

Young early-maturing girls do not yet associate with deviant friends but are more susceptible to negative peer influences. Early puberty effects are stable over time for delinquency but dissipate for aggression. Most of these relationships are invariant across race/ethnicity.

### Health Care Worker Exposures to Pertussis: Missed Opportunities for Prevention

The incidence of pertussis has significantly increased, and infection can result in severe disease among young children. This highly contagious disease may frequently be transmitted in pediatric health care settings, necessitating effective infection control practices to reduce exposure risk.

Despite institutional guidelines, pediatric health care workers (HCWs) are frequently exposed to pertussis because of delayed or incomplete adherence to infection control practices. Inconsistent reporting may also result in missed HCW exposures, increasing the risk of subsequent transmission to patients.

### Accuracy of Pulse Oximetry in Children

Saturations from pulse oximetry ( $SpO_2$ ) may overestimate arterial oxygen saturations measured by CO-oximetry ( $SaO_2$ ).

The overestimation can be affected by location of measurement, perfusion, and skin color. Previous studies are limited by small numbers of observations in a hypoxemic range.

This large sample of hypoxemic patients identified that  $SpO_2$  typically overestimates  $SaO_2$ . Bias and precision varied throughout the  $SpO_2$  range. The  $SpO_2$  range of 81% to 85% had the greatest bias: median  $SpO_2$  6% higher than  $SaO_2$  measured by CO-oximetry.

### Stratification of Risk of Early-Onset Sepsis in Newborns $\geq 34$ Weeks' Gestation

The management of term and near-term newborns suspected of early-onset sepsis, particularly when they are not clearly symptomatic, remains controversial. Methods for quantifying risk that combine maternal factors with a newborn's evolving clinical examination have been lacking.

This study provides a method for predicting risk of early-onset sepsis. It combines maternal risk factors with objective measures of a newborn's clinical examination and places newborns into 3 risk groups (treat empirically, observe and evaluate, and continued observation).

### Validation of the Modified Checklist for Autism in Toddlers, Revised With Follow-up (M-CHAT-R/F)

Screening for autism spectrum disorders (ASDs) using the Modified Checklist for Autism in Toddlers (M-CHAT) improves early detection and long-term prognosis of ASD. Reducing the false-positive rate may increase implementation of screening for ASDs.

The Modified Checklist for Autism in Toddlers, Revised with Follow-up (M-CHAT-R/F), simplifies wording of the original M-CHAT. The current validation study indicates that the M-CHAT-R/F improves the ability to detect autism spectrum disorders in toddlers screened during well-child care visits.

### **Screening for Behavioral Health Issues in Children Enrolled in Massachusetts Medicaid**

Use of behavioral health (BH) screens in pediatrics have increased identification of children with BH issues. Screening rates increased in Massachusetts after it was mandated, as did the volume of some mental health services.

This is the first study of children after Massachusetts mandated behavioral screening began. Almost 40% of children who screened positive were newly identified. Being male, having a BH history, and being in foster care predicted a positive screen.

### **Intraventricular Hemorrhage and Neurodevelopmental Outcomes in Extreme Preterm Infants**

Cranial ultrasound is routinely used in identifying cerebral abnormalities in premature infants. Grade III and IV intraventricular hemorrhages, cystic periventricular leukomalacia, and late ventriculomegaly are all known predictors of adverse neurodevelopmental sequelae in these infants.

We reviewed neurodevelopmental outcomes among 2414 extreme preterm infants. Infants with grades I and II intraventricular hemorrhage had increased rates of neurosensory impairment, developmental delay, cerebral palsy, and deafness at 2 to 3 years' corrected age.

### **Antenatal and Postnatal Growth and 5-Year Cognitive Outcome in Very Preterm Infants**

Better postnatal growth, especially head growth, associates with better cognitive development in preterm infants. Sub-optimal postnatal growth is more common in infants with poor antenatal growth than in infants with normal growth.

Good weight gain and head circumference growth until 2 years was associated with better 5-year cognitive outcome in non-small for gestational age infants. Good head circumference growth around term age benefits the cognitive outcome of small for gestational age infants.

### **Violent Film Characters' Portrayal of Alcohol, Sex, and Tobacco-Related Behaviors**

Youth are frequent consumers of movies that contain high levels of violence, and violent content in films, especially those rated PG-13, has been increasing over time.

Content analyses seldom examine how violence is portrayed with other health risk behaviors, such as smoking, drinking, and sex. This study presents an innovative way to characterize on-screen violent content and demonstrates the extent to which risk behaviors co-occur within films.

### **Association Between Pediatric Clinical Trials and Global Burden of Disease**

Fewer clinical trials are performed in children compared with other patient populations. It is unknown how well existing pediatric clinical trials are aligned with the needs of children, both in high-income countries and globally.

There is only moderate correlation between clinical trial activity and pediatric burden of disease, with certain conditions substantially underrepresented in the current research portfolio. Our findings provide a benchmark for prioritizing conditions for study, analyzing gaps, and identifying funding priorities.

### **Perceptions of 24/7 In-Hospital Intensivist Coverage on Pediatric Housestaff Education**

Increasing numbers of hospitals are instituting 24/7 in-hospital pediatric intensivist coverage. Data regarding patient outcomes are mixed and the impact on housestaff education remains unknown.

This study quantifies the perceived impact of in-hospital attending coverage on pediatric resident and critical care fellow education and also investigates the growing concern that increasing supervision may contribute to housestaff being less well prepared for independent clinical practice.

### **Two-Year Impact of the Alternative Quality Contract on Pediatric Health Care Quality and Spending**

Payment arrangements that blend global budgets with pay-for-performance are proliferating. However, little is known about how these contracts affect pediatric health care quality and spending for children with and without special health care needs receiving care from large provider organizations.

A prototypical global budget contract significantly improved preventive care quality measures tied to pay-for-performance, especially for children with special health care needs. It did not alter trends for spending or for quality measures that were not tied to pay-for-performance.

### **Bronchiolitis Management Before and After the AAP Guidelines**

Bronchiolitis is a leading cause of hospitalization for children, yet variability in its management persists. To promote evidence-

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based care, the American Academy of Pediatrics published practice guidelines in 2006 that advocate primarily supportive care for this self-limited disease.

Since publication of the guidelines in 2006, few studies have evaluated their impact on diagnostic testing and treatment. This study documents positive changes in resource use among hospitalized patients with bronchiolitis over an 8-year period.

#### **7% Hypertonic Saline in Acute Bronchiolitis: A Randomized Controlled Trial**

Hypertonic saline (3% and 5%), has been shown to improve clinical severity scores and reduce inpatient length of stay, and was associated with a trend toward lower admission rate in acute bronchiolitis.

We are not aware of any previous data using 7% hypertonic saline in bronchiolitis. Our results suggest that 7% saline does not lower clinical severity of illness, admission rate, or length of stay, when compared with normal saline.

#### **Environmental Risk Factors by Gender Associated With Attention-Deficit/Hyperactivity Disorder**

Attention-deficit/hyperactivity disorder (ADHD) is the most common mental health condition diagnosed in childhood, is highly heritable, and more common in boys. Although studies have identified perinatal risk factors, no one has investigated perinatal risk factors separately in boys and girls.

Contrary to other studies, low birth weight, postterm pregnancy, low Apgar scores, and fetal distress were not risk factors for ADHD irrespective of gender. Early term deliveries increased the risk of ADHD, and oxytocin augmentation in girls may be protective.

#### **Comparative Effectiveness of Empiric Antibiotics for Community-Acquired Pneumonia**

Broad-spectrum antibiotics are frequently used to empirically treat children hospitalized with community-acquired pneumonia despite recent national recommendations to use narrow-spectrum antibiotics.

Narrow-spectrum antibiotics are similar to broad-spectrum antibiotics for the treatment of children hospitalized with community-acquired pneumonia in terms of clinical outcomes and resource utilization. This study provides scientific evidence to support national consensus guidelines.

#### **Accuracy of Early DMSA Scan for VUR in Young Children With Febrile UTI**

The sensitivities of <sup>99m</sup>Tc-dimercaptosuccinic acid in predicting vesicoureteral reflux reported by different institutions were at

different levels for young children with acute febrile urinary tract infection.

An acute <sup>99m</sup>Tc-dimercaptosuccinic acid scan is of great value in predicting dilating vesicoureteral reflux in children  $\leq 2$  years of age with a febrile urinary tract infection.

#### **Use of White Blood Cell Count and Negative Appendectomy Rate**

Currently, the false-positive rate of appendicitis in children is  $\leq 5\%$ . Abdominal imaging and blood tests (particularly leukocytosis) help minimize the negative appendectomy rate, but appendicitis is not always associated with an elevated white blood cell count. Reducing the threshold of leukocytosis as a criterion for appendicitis to 8000 to 9000 white blood cells per  $\mu\text{L}$  improves specificity (negative appendectomy:  $<1\%$ ) while only marginally decreasing sensitivity.

#### **Accuracy of Brief Screening Tools for Identifying Postpartum Depression Among Adolescent Mothers**

Studies assessing the accuracy of brief screening tools for postpartum depression have been conducted among adult women; however, no similar validation studies have been conducted among adolescent mothers. Accurate and valid brief depression screening tools are needed for adolescent mothers. We found that the 10-item Edinburgh Postnatal Depression Scale (EPDS) and 2 subscales, the EPDS-7 and EPDS-2, are highly accurate at identifying postpartum depression among adolescent mothers. In pediatric settings with limited time and resources, these brief scales have potential to be used as effective depression screening tools.

#### **Comorbidity Clusters in Autism Spectrum Disorders: An Electronic Health Record Time-Series Analysis**

Individuals with autism spectrum disorders have a higher comorbidity burden than the general pediatric population, including higher rates of seizures, psychiatric illness, and gastrointestinal disorders.

Comorbidities do not occur evenly. Our clustering analysis reveals subgroups characterized by seizure, psychiatric disorders, and complex multisystem disorders including auditory and gastrointestinal disorders. Correlations between seizure, psychiatric disorders, and gastrointestinal disorders are validated on a sample from a second hospital.

#### **Acute and Chronic Effects of Sleep Duration on Blood Pressure**

Inconsistent results have been reported on the association between sleep duration and blood pressure (BP) in children,

likely as a result of inadequate adjustment for confounders and the use of different time frames in assessing sleep duration. Short sleep duration and poor sleep quality are associated with higher BP in normal-weight adolescents. One night of adequate sleep may partially ameliorate the risk of high BP but cannot completely reverse the effect of chronic sleep insufficiency.

### **Acute Lower Respiratory Infection Among Bacille Calmette-Guérin (BCG)–Vaccinated Children**

Bacille Calmette-Guérin (BCG) vaccination may provide benefits beyond protecting against pediatric tuberculosis. Evidence suggests links between cell-mediated immunity from tuberculosis and bacterial/viral-related pneumonia but the impact of BCG on acute lower respiratory infection is not fully known. BCG-vaccinated children had a lower risk of suspected acute lower respiratory infection. Protection was amplified when children were vaccinated against diphtheria-tetanus-pertussis (DTP). Number of DTP doses did not modify this effect, but order in which vaccines were received did.

### **Identifying Potential Kidney Donors Among Newborns Undergoing Circulatory Determination of Death**

The demand for donor kidneys for transplantation exceeds supply. En bloc kidney transplantation and donation after determination of circulatory death from pediatric donors increases the potential donor pool.

Newborn infants undergoing elective withdrawal of life support in the NICU are a previously unrecognized source of potential kidney donors.

### **Prospective Evaluation of a Clinical Pathway for Suspected Appendicitis**

Although appendicitis is the most common surgical cause of abdominal pain in pediatrics, its diagnosis remains elusive. When evaluated independently, clinical scoring systems and ultrasonography have been shown to have low to moderate sensitivity in the diagnosis of appendicitis.

Our study evaluated the accuracy of a clinical practice guideline combining the Samuel's pediatric appendicitis score and selective ultrasonography as the primary imaging modality for children with suspected appendicitis. Our clinical pathway demonstrated high sensitivity and specificity.

### **Characteristics of Youth Seeking Emergency Care for Assault Injuries**

The emergency department (ED) is a critical contact location for youth violence interventions. Information on the characteristics of youth, motivations for fights leading to the injury, as

well as previous health service utilization of assault-injured youth seeking care is lacking.

Assault-injured youth are characterized in a systematic sample demonstrating frequent ED use and the need to address substance use and lethal means of force in interventions; context and motivations for the fight are novel and will inform intervention efforts.

### **Outcomes in Hospitalized Pediatric Patients With Systemic Lupus Erythematosus**

Systematic health disparities in adults with systemic lupus erythematosus are well documented and are likely driven by biologic as well as modifiable factors. Sociodemographic factors and health care delivery characteristics have been associated with poor outcomes.

In hospitalized children with systemic lupus erythematosus, race and ethnicity were associated with increased risk for ICU admissions, end-stage renal disease, and death. Identification of sociodemographic factors associated with outcomes is important to address the needs of these vulnerable patients.

### **Adiposity Rebound and the Development of Metabolic Syndrome**

Early adiposity rebound is associated with future obesity and an increased risk of development of type 2 diabetes and coronary heart disease in adult life.

This study shows that early adiposity rebound is associated with future obesity and metabolic consequences of higher triglycerides, atherogenic index, apolipoprotein B, and blood pressure and lower high-density lipoprotein cholesterol at 12 years of age.

### **Postnatal Head Growth in Preterm Infants: A Randomized Controlled Parenteral Nutrition Study**

Preterm infants dependent on parenteral nutrition are vulnerable to deficits in early postnatal nutritional intake. This coincides with a period of suboptimal head growth. Observational studies indicate that poor nutritional intake is associated with suboptimal head growth and neurodevelopmental outcome.

This study provides randomized controlled trial evidence that head growth failure in the first 4 weeks of life can be ameliorated with early nutritional intervention. Early macronutrient intake can be enhanced by optimizing a standardized, concentrated neonatal parenteral nutrition regimen.

### **School Violence, Mental Health, and Educational Performance in Uganda**

Violence from school staff toward children is anecdotally widespread, but there are few empirical data on prevalence and health consequences, especially in low-income settings.

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Despite a ban on corporal punishment, just over 52% of children in Luwero District experienced physical violence from school staff members in the previous week. This was associated with poor mental health in boys and girls and poor educational performance in girls.

#### **Postural Orthostatic Tachycardia Syndrome (POTS) and Vitamin B<sub>12</sub> Deficiency in Adolescents**

Studies have shown dysfunction in the baroreflex mechanism and the autonomic nervous system, particularly in the sympathetic nervous system, in the pathophysiology of chronic fatigue syndrome, postural orthostatic tachycardia syndrome, and syncope. Vitamin B<sub>12</sub> deficiency is associated with postural orthostatic tachycardia syndrome in adolescence.

#### **Vitamin D During Pregnancy and Infancy and Infant Serum 25-Hydroxyvitamin D Concentration**

A serum 25-hydroxyvitamin D (25(OH)D) concentration of 20 ng/mL meets the requirements of at least 97.5% of the population older than 1 year. A recommended dietary intake to achieve this

serum 25(OH)D concentration has not been established during infancy.

Daily maternal (during pregnancy) and then infant vitamin supplementation with 1000/400 IU or 2000/800 IU increases the proportion of infants with 25(OH)D  $\geq$ 20 ng/mL during infancy with the higher dose sustaining this increase for longer.

#### **Pneumococcal Antibody Levels in Children With PID Receiving Immunoglobulin**

Although immunoglobulin replacement is recognized as effective in children with primary immunodeficiency, pneumococcal infection may occur. There is no available prospective clinical study evaluating levels of protective serospecific antibodies in patients and products.

Protective (0.2  $\mu$ g/mL) antibody levels for the most frequent pneumococcal serotypes were measured in children treated for primary immunodeficiencies. A linear relationship was demonstrated between peak and trough levels of serospecific antipneumococcal antibodies in patients and infused immunoglobulins.

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