



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

### Pre- and Postnatal Exposure to Parental Smoking and Allergic Disease Through Adolescence

Exposure to second-hand tobacco smoke during pregnancy and infancy has been linked to development of asthma, rhinitis, and eczema in young children. It is unclear whether these risks persist into adolescence.

Exposure to second-hand smoke in utero or during infancy influences the development of allergic disease up to adolescence. Excess risks for asthma and rhinitis were seen primarily in early childhood, whereas those for eczema occurred at later ages.

### Cerebral Oxygenation in Preterm Infants

Prone sleeping is a major risk factor for sudden infant death syndrome (SIDS). Cerebral oxygenation and blood pressure are reduced in the prone sleeping position in healthy term infants. Preterm infants are at significantly increased risk of SIDS.

Preterm infants display reduced cerebral oxygenation compared with term infants, most prominently at 2 to 3 months corrected age in the prone position when blood pressure is concurrently reduced. This may contribute to the increased risk for SIDS among infants born preterm.

### Health Care Provider Advice for Adolescent Tobacco Use: Results From the 2011 National Youth Tobacco Survey

Cigarette smoking during adolescence causes significant health problems. Health care providers play an important role

in promoting tobacco use abstinence among adolescents, but recent data on the prevalence of provider screening and advice to adolescents are lacking.

This study uses nationally representative surveillance data to provide current estimates of self-reported receipt of health professional screening and advice about tobacco use among US adolescents. Cessation behaviors and correlates of past-year quit attempts among smokers were also explored.

### Impact of a Pertussis Epidemic on Infant Vaccination in Washington State

It is thought that vaccination coverage increases during and immediately after an infectious disease epidemic; however, little evidence exists to support this phenomenon.

The 2011 to 2012 pertussis epidemic did not significantly change the proportion of infants in Washington State who were up to date for pertussis-containing vaccines. This finding may challenge conventional wisdom that vaccine acceptance uniformly increases when risk of disease is high.

### Hydroxyurea and Growth in Young Children With Sickle Cell Disease

Growth impairment in sickle disease has been a consistent finding in published reports. Hydroxyurea (HU) decreases vasoocclusive events and increases hemoglobin levels, which may improve growth. However, HU may adversely affect growth in young children by its effect on DNA synthesis.

Height, weight, and head circumference were normal in HU-treated children in the study as compared with the World Health

Organization standards. Height, weight, and BMI z scores were similar in placebo and treatment groups. There were no harmful effects of HU on growth.

### **Teacher and Peer Reports of Overweight and Bullying Among Young Primary School Children**

Overweight and peer victimization are common in childhood and negatively affect health and well-being. Overweight may predispose children to peer victimization, but whether adiposity also increases the risk of bullying perpetration is unclear.

A high BMI at school entry predicts bullying involvement, according to reports of teachers and children themselves. Although trends were visible across the whole BMI spectrum, particularly obese children were victimized and likely to be bully perpetrators.

### **Generational Shift in Parental Perceptions of Overweight Among School-Aged Children**

There is a generational shift in social norms related to body weight among adult population; little is known about the secular change of paternal perceptions of their child's weight.

A shift in body norms toward heavier weight statuses exists among parents of children, presenting a vast challenge to family-based childhood obesity prevention. Primary care providers can play a more active role in identifying the children with increased weight.

### **Impact Locations and Concussion Outcomes in High School Football Player-to-Player Collisions**

Recent concussion research has examined the role of impact location (ie, the area on the head to which impact occurred); however, no studies exist regarding impact location's association with concussion outcomes (eg, symptomatology, symptom resolution time, return to play).

This study is the first to examine the association of impact location and concussion outcomes in young athletes. Our findings suggest that impact location, as assessed by sideline observers/player report, is likely of little use in predicting clinical outcomes.

### **Neonatal Vitamin K Refusal and Nonimmunization**

Vitamin K prophylaxis at birth is an effective intervention for preventing vitamin K deficiency bleeding.

Refusal of vitamin K is not common, but those who refuse are more likely to have a birth attended by a midwife, and deliver at home or in a birth center. They are also less likely to immunize their child.

### **Incidence, Etiology, and Outcomes of Hazardous Hyperbilirubinemia in Newborns**

Total serum bilirubin levels  $\geq 30$  mg/dL have been labeled as "hazardous." Levels this high are rare, occurring in 3 to 10 per 100 000 births. Few studies have examined etiologies and long-term outcomes in these infants.

Glucose-6-phosphate dehydrogenase (G6PD) deficiency is a major identifiable cause, but is under-assessed. Chronic, bilirubin-induced neurotoxicity is rare and only occurred in the setting of additional risk factors (prematurity, G6PD deficiency, sepsis) and at levels far above recommended exchange transfusion thresholds.

### **Extreme Neonatal Hyperbilirubinemia and a Specific Genotype: A Population-Based Case-Control Study**

For newborn infants, extreme hyperbilirubinemia ( $\geq 24.5$  mg/dL) is associated with risk for severe bilirubin encephalopathy. The causal factor of extreme hyperbilirubinemia is often not established. The genotype of Gilbert syndrome, the UGT1A1\*28 allele, is considered a potential risk factor.

The UGT1A1\*28 allele was not associated with risk for developing extreme hyperbilirubinemia.

### **Defining and Determining Medical Necessity in Medicaid Managed Care**

Clinical decisions must be medically necessary to be approved by insurers. There is a federally mandated medical necessity standard for children in Medicaid, but not in private plans. American Academy of Pediatrics policy calls on pediatricians to help define pediatric medical necessity.

This study reviewed pediatric medical necessity definitions in Medicaid state statutes, regulations, and provider manuals. The federal standard was not replicated on all levels, and provider manuals were least likely to have it. Pediatricians should engage in defining pediatric standards.

### **Automated Urinalysis and Urine Dipstick in the Emergency Evaluation of Young Febrile Children**

Urinary tract infection is the most common serious bacterial illness among febrile infants and young children. Automated urine cytometry may supplant traditional urinalysis, but diagnostic performance at unique pediatric cutpoints has not been described for this labor-saving technique.

We describe new, clinically useful cutpoints for automated leukocyte and bacterial counts. The sensitivity and specificity of bacterial counts  $\geq 250$  cells/ $\mu$ L exceed those of other

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methods. However, point-of-care dipstick tests for leukocyte esterase or nitrite have acceptable performance.

#### **Changing Trends of Childhood Disability, 2001–2011**

The prevalence of disability in childhood has been on the rise for the past several decades. Children living in poverty are more likely to have chronic health conditions and experience disabilities.

The percentage of children with disabilities rose 16% between 2001 and 2011. Economically disadvantaged children had the highest rates of disability, but economically advantaged children experienced greater increases in disability. Disability due to neurodevelopmental or mental health conditions rose substantially.

#### **Variation in Emergency Department Admission Rates in US Children's Hospitals**

There is substantial variation in the medical care provided to pediatric patients across diverse clinical settings. This variation raises concerns about whether every patient is receiving optimal care and whether more standardized approaches around clinical decisions are needed.

We observed wide variation in admission rates for common pediatric conditions across US children's hospitals. Our findings highlight the need for greater focus on the standardization of decisions regarding hospitalization of patients presenting to the emergency department.

#### **Hospitalizations for Severe Lower Respiratory Tract Infections**

Lower respiratory tract infections (LRTIs), including pneumonia, are in the top 10 causes of death among children in the United States. In high-income countries, 3% to 14% of LRTI hospitalizations have been reported to require admission to an ICU.

During 2007–2011, approximately 31 289 hospitalizations for severe LRTI occurred in children each year in the United States. Children <1 year of age had the highest rates of severe LRTI and accounted for 30% of severe LRTI hospitalizations.

#### **Establishing Benchmarks for the Hospitalized Care of Children With Asthma, Bronchiolitis, and Pneumonia**

With the publication of evidence-based guidelines for asthma, bronchiolitis, and pneumonia, numerous efforts have been made to standardize and improve the quality of care. However, despite these guidelines, variation in care exists.

This study establishes clinically achievable benchmarks of care for asthma, bronchiolitis, and pneumonia. Using a published method for achievable benchmarks of care, we calculated average utilization among the high-performers, which can serve as achievable goals for local quality improvement.

#### **Small Geographic Area Variations in Prescription Drug Use**

Prescribing patterns in the US pediatric population are changing but not uniformly. A detailed examination of prescription variation is needed to better understand pharmacotherapy of children and to inform future exploration of the causes and consequences of diverse practices.

We examine pediatric pharmacotherapy and quantify payer type differences and small geographic area variation. Substantial payer-type differences and regional variations were found, likely reflecting local practice cultures. Variation was greatest for medications used in situations of diagnostic and therapeutic uncertainty.

#### **Neuroinvasive Arboviral Disease in the United States: 2003 to 2012**

Arthropod-borne viruses are important causes of neurologic infections among children in the United States. The epidemiology of these diseases is complex and relates to multiple factors, including vector biology, animal reservoirs, weather, and human behavior.

National surveillance data from 2003 to 2012 will improve understanding of the geographic, temporal, and clinical trends in pediatric neuroinvasive arboviral disease, and will inform decision-making for clinicians, public health authorities, and the general public.

#### **Herpes PCR Testing and Empiric Acyclovir Use Beyond the Neonatal Period**

Herpes encephalitis outside the neonatal period is typically severe and recognizable to clinicians. Excessive testing for herpes encephalitis is associated with increased medical costs and hospital length of stay, and risks patient harm.

Herpes testing and empirical acyclovir treatment in older and less unwell patients has been increasing in US pediatric hospitals over the past decade, which may reflect a more fundamental problem in current approaches to clinical decision-making.

### **Long-Term Study of a Quadrivalent Human Papillomavirus Vaccine**

The short-term immunogenicity and safety of a HPV4 vaccine have been previously evaluated in preadolescents and adolescents. To date, no long-term studies of the safety, effectiveness, and immunogenicity of the HPV4 vaccine have been reported in this age group.

The HPV4 vaccine administered to adolescents demonstrated durability in clinically effective protection and sustained antibody titers over 8 years. These data, along with extensive postapproval safety surveillance data, should help reinforce national recommendations for HPV vaccination of preadolescents and adolescents.

### **Missed Opportunities for HPV Vaccination in Adolescent Girls: A Qualitative Study**

Rates of human papillomavirus (HPV) vaccination lag behind other adolescent vaccines. Research indicates that provider recommendation is the key to improving HPV vaccination rates and that most adolescents who are unvaccinated received other vaccines, indicating missed opportunities for HPV vaccination.

This study explores in-depth the content of provider–patient conversations that either create or prevent opportunities for HPV vaccination. Effective and ineffective conversations are presented with the goal of providing practical tools to improve communication regarding HPV vaccines.

### **Vaccine Message Framing and Parents' Intent to Immunize Their Infants for MMR**

Messages emphasizing societal benefits of vaccines have been linked to increased vaccination intentions in adults. It is unclear if this pattern holds for parents deciding whether to vaccinate their children.

Findings suggest that health care providers should emphasize the direct benefits of MMR vaccination to the child. Mentioning societal benefits seems to neither add value to, nor interfere with, information highlighting benefits directly to the child.

### **Severe Complications in Influenza-like Illnesses**

Severe complications, such as respiratory failure, have been described in influenza infection. Clinicians are commonly faced with influenza-like illnesses (ILI), which is the initial nonspecific presentation of many respiratory viruses; the risk of severe complications from ILI are unknown.

Severe complications occurred in children initially presenting with ILI, irrespective of the virus identified. Risk factors for

severe complications did not differ by demographics or respiratory virus, although children with high-risk conditions are at greater risk of severe complications.

### **Automated Conversation System Before Pediatric Primary Care Visits: A Randomized Trial**

A substantial gap exists between what is recommended for effective primary care of children and what takes place. Patient-centered health information technologies have been used to gather information and counsel parents, however, have not been integrated directly with electronic health records nor been speech-based to improve decision-making at the point-of-care.

This study shows that a ubiquitous technology, the telephone, can be successfully used to automatically assess and counsel parents before pediatric primary care visits as well as inform their primary care clinicians in a way that is feasible and effective for multiple important issues.

### **Telephone Peer Counseling of Breastfeeding Among WIC Participants: A Randomized Controlled Trial**

In-person peer counseling to pregnant and new mothers has been shown to improve breastfeeding modestly in three US RCTs. But this level of support for WIC is unlikely to be scaled up nationally in the current fiscal environment.

We randomly assigned WIC clients to a telephone peer counseling program relative to standard WIC support for breastfeeding. Nonexclusive breastfeeding among Spanish-speakers increased at 1, 3, and 6 months, but the program had much less of an effect on English-speaking clients.

### **Changes Over Time in Sex Assignment for Disorders of Sex Development**

XY disorders of sex development have a diverse etiology and often present with atypical genitalia in the newborn period. Sex assignment in those cases in whom this is marked genital ambiguity is a rare, challenging situation that requires multidisciplinary input.

An international registry has shown temporal changes over the last 3 decades in the practice of sex assignment with a greater proportion of severely affected infants being raised as boys, raising the need for long-term monitoring of these children.

### **Electronic Gaming and Psychosocial Adjustment**

Concerns as well as hopes regarding electronic games have led researchers to study the influence of games on children, yet studies to date have largely examined potential positive and negative effects in isolation and using samples of convenience.

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Results from this nationally representative study of children 10 to 15 years indicated low levels of regular daily play related to better psychosocial adjustment, compared with no play, whereas the opposite was true for those engaging in high daily play.

#### Smart-Phone Obesity Prevention Trial for Adolescent Boys in Low-Income Communities: The ATLAS RCT

Adolescent males from low-income communities are a group at increased risk of obesity and related health concerns. Obesity prevention interventions targeting adolescents have so far had mixed success. Targeted interventions, tailored for specific groups, may be more appealing and efficacious.

A multicomponent school-based intervention using smartphone technology can improve muscular fitness, movement skills, and key weight-related behaviors among low-income adolescent boys.

#### Adoption of Cardiovascular Risk Reduction Guidelines: A Cluster-Randomized Trial

Cardiovascular risk begins in childhood. New clinical guidelines established a care strategy for lowering risks. Incorporation of guidelines into routine practice lags due to barriers related to knowledge and attitudes about guidelines, as well as behaviors of practitioners, patients, and clinical systems.

This study demonstrated that a multifaceted approach including tools, education, and support for changes in practice systems can accelerate the adoption of guidelines during routine pediatric well-child visits, compared with dissemination of the guidelines alone.

#### High-dose Vitamin A With Vaccination After 6 Months of Age: A Randomized Trial

The World Health Organization recommends using vaccination contacts to deliver high-dose vitamin A supplementation (VAS) to children aged 6 to 59 months. The effect of this policy on overall child mortality has not been assessed.

In this first randomized controlled trial of VAS at routine vaccination contacts after 6 months, VAS had no overall effect on mortality but was associated with reduced mortality in girls and increased mortality in boys.

#### Cognitive Delay and Behavior Problems Prior to School Age

Children with cognitive delay have been shown to have more behavior problems than typically developing children; however, few studies have investigated this relationship over time or among very young children.

Our findings provide some of the first national, prospective evidence that having a cognitive delay may place children at risk for developing and maintaining behavior problems before school age. Early identification and intervention may improve outcomes for these children.

#### Restrictive Eating Disorders Among Adolescent Inpatients

Recent case reports have described acute life-threatening complications in adolescents who present to health services having lost large amounts of weight but who are not underweight. Little is known about the frequency of life-threatening complications in these adolescents.

Over 6 years, we found more than a fivefold increase in the incidence of hospitalized adolescents who, apart from not being underweight, have diagnostic features of anorexia nervosa. This group experienced a similar profile of acute complications of anorexia nervosa.

#### Characteristics of a Pediatric Hospice Palliative Care Program Over 15 Years

Palliative care is an increasingly important element of pediatric care for children with noncurable, terminal conditions. Free-standing hospices represent one model of care provision; however, little research on this approach has been conducted.

This report documents the experience of North America's first freestanding hospice over 15 years to better understand the characteristics of children and families enrolled and to establish baseline information for future studies and program planning.

#### Subdural Hemorrhage and Hypoxia in Infants With Congenital Heart Disease

Asymptomatic neonatal subdural hemorrhage (SDH) is common, resolves within 4 weeks, and is typically infratentorial or posterior when supratentorial. Subdural hemorrhages may occur after cardiac surgery in infancy. Some hypothesize a causal relationship between hypoxia and SDH in infancy.

Asymptomatic neonatal SDH is often supratentorial and over the convexities. Small infratentorial SDHs may persist for  $\leq 90$  days. In young infants with congenital heart disease, an association between hypoxia and SDH could not be demonstrated.

#### Strength and Body Weight in US Children and Adolescents

Among US youth 6 to 15 years of age there are differences in strength by gender and age. Little is known about differences in strength by weight status in the US pediatric population.

This study provides current US nationally representative reference values for 4 measures of strength in youth 6 to 15 years old. Body weight was associated with strength, but the association varied depending upon the measure.

### **In Situ Simulation Training for Neonatal Resuscitation: An RCT**

High-fidelity simulation improves individual skills in neonatal resuscitation. Usually, training is performed in a simulation center. Little is known about the impact of in situ training on overall team performance.

In situ high-fidelity simulation training of 80% of a maternity's staff significantly improved overall team performance in neonatal resuscitation (technical skills and teamwork). Fewer hazardous events occurred, and delay in improving the heart rate was shorter.

### **An Innovative Nonanimal Simulation Trainer for Chest Tube Insertion in Neonates**

Practitioners caring for critically ill infants need to acquire competence in insertion of chest tubes for pneumothorax. Ethical and logistic concerns inhibit the use of animals, and there are no realistic simulation models available for neonatal chest tube insertion training.

An inexpensive, nonanimal chest tube insertion model can be easily constructed and used effectively to train interns and residents to improve their knowledge, clinical skills, and comfort levels to perform the chest tube insertion procedure in infants.

### **Mode of Obstetrical Delivery and Type 1 Diabetes: A Sibling Design Study**

Several studies have revealed an association between cesarean section (CS) and childhood type 1 diabetes. Most of these

studies lacked important information on indication for CS and induction of labor. It is unknown whether the reported associations are causal.

Using a cohort of 2.6 million children we found an association between elective CS and type 1 diabetes. The sibling analysis suggested the association is not causal. The findings are crucial evidence to advise women on mode of delivery choice.

### **Mild Prematurity, Proximal Social Processes, and Development**

Previous studies examining developmental outcomes associated with late preterm and early term birth have shown mixed results. Many of these studies did not fully take into account the role of the social environment in child development.

Social factors, not late preterm or early term birth, were the strongest predictors of poor developmental outcomes at 2 to 3 and 4 to 5 years. The influence of mild prematurity may lose strength beyond the neonatal period.

### **Identifying Very Preterm Children at Educational Risk Using a School Readiness Framework**

Children born very preterm (VPT) are at high risk of educational delay. School readiness has been identified as a potentially useful clinical framework for early detection of those at greatest risk. However, evidence to support its predictive validity is limited.

VPT preschoolers are at risk of impairment across the 5 American Academy of Pediatrics school readiness domains. The number of domains affected predicted likelihood of later learning problems, supporting the utility of schoolreadiness frameworks for identifying children needing surveillance and/or support.

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