Formal Swimming Lessons Reduce Drowning Risk in Young Children

Association Between Swimming Lessons and Drowning in Childhood: A Case-Control Study.

Brenner RA, Taneja GS, et al:
Arch Pediatr Adolesc Med; 163 (March): 203-210

Although the association was not strong in this study, there was a large reduction in the risk of drowning in children aged 1 to 4 years who had participated in formal swimming lessons.

**Background:** From 2000 through 2005, approximately 6900 children <20 years of age died from non-boat-related drowning; in those <5 years of age, the rate was 2.68 per 100,000 person-years. Although the use of pool fencing can be effective in preventing drowning, little is known about the effectiveness of other prevention strategies. While the American Academy of Pediatrics recommends formal swimming lessons for those 5 years of age, no recommendation exists for children aged <5 years.

**Objective:** To determine if swimming lessons are associated with a lower risk of drowning in children 1 to 19 years of age.

**Design:** Case-control study.

**Methods:** Cases were drowning deaths identified through the medical examiner or coroner offices between 2003 and 2005. Cases came from Maryland, North Carolina, Florida, California, Texas, and New York. Controls were matched for age, sex, and county of residence; for children 1 to 4 years of age, controls were also matched for the presence of a swimming pool at home. Two controls were chosen for every case with complete information. Interviews were conducted with all case and control families to determine exposure to water, swimming ability, swimming lessons, development and temperament, risk taking, medical conditions, and child and household descriptive data.

**Results:** Interviews took place for 88 case families and 213 control families. In children <5 years of age, 3% of cases had participated in formal swimming lessons compared to 26% of controls (OR, 0.12). In children aged 5 to 19 years, 27% had taken swimming lessons versus 53% of controls, although the difference was not statistically significant. Once analyses were controlled for covariates, however, none of the associations were statistically significant.

**Conclusions:** Although the association was not strong, there was a large reduction in the risk of drowning in children aged 1 to 4 years who had participated in formal swimming lessons. In unadjusted analyses, children aged 1 to 4 years who had participated in formal swimming lessons were significantly less likely to die by drowning. This association was not significant in children aged 5 to 19 years. None of the associations were statistically significant once adjusted for confounding variables.

**Reviewer's Comments:** Until now, some have argued that there was no evidence that swimming lessons were beneficial, and some believed they could be harmful. With this study, there are now suggestions that both those assertions are wrong. In this study, the small numbers of study subjects limited the importance of the results. Certainly, there is no shortage of children and swimming pools, so a larger study is needed.

**Additional Keywords:** Swimming Lessons

**print tag:** () Refer to original journal article.
TBI Associated With Epilepsy as Long as 10 Years Later

Long-Term Risk of Epilepsy After Traumatic Brain Injury in Children and Young Adults: A Population-Based Cohort Study.

Christensen J, Pedersen MG, et al:
*Lancet*; 373 (March 28): 1105-1110

The risk of epilepsy is increased >10 years after an episode of traumatic brain injury.

**Background:** There is an association between epilepsy and traumatic brain injury (TBI). In some cases, increased risk has been seen based on MRI or CT findings or in those >65 years of age. Few studies have included children and young adults. Studies evaluating the efficacy of prophylaxis post-injury have not been positive, although understanding prognostic factors associated with post-traumatic epilepsy could assist in developing new strategies or treatments.

**Objective:** To determine the risk of epilepsy in a large cohort of children and young adults after TBI.

**Design:** Retrospective, population-based cohort study.

**Participants:** Of >1.6 million Danes born between 1977 and 2002, >78,000 had TBI, >17,000 had epilepsy, and 1017 had trauma prior to epilepsy.

**Methods:** Data were obtained from the Danish Civil Registration System. ICD codes were used to identify patients with epilepsy, as well as those with concussion (mild brain injury), severe brain injury, or skull fracture. Time-dependent variables considered included age at time of injury, duration of hospitalization for first episode of traumatic injury, time since first episode of injury, and family history of epilepsy.

**Results:** Relative to individuals with no history of injury, the relative risk of epilepsy was 2.22 for mild brain injury, 7.40 for severe brain injury, and 2.17 for skull fracture. The risk of epilepsy after mild or severe brain injury was highest right after the episode but remained elevated for >10 years compared to those with no history (*P* < 0.0001 each). In general, the risk of epilepsy increased as the age at which trauma occurred increased and was highest in those aged >15 years. Greater risk was seen in patients with a long duration of hospital stay after severe brain injury (*P* < 0.0001) and skull fracture (*P* = 0.02). The adjusted relative risk of epilepsy after mild brain and severe brain injury in patients with a positive family history of epilepsy was 5.75 and 10.09. Women with mild brain injury also had an increased risk of epilepsy (2.49) compared to men (2.01).

**Conclusions:** There is an increased risk of epilepsy after TBI that lasts >10 years even if the injury is mild.

**Reviewer's Comments:** Several limitations exist in studies of this nature, including the absence of clinical data, missing cases, emigration, and incorrect categorization of the degree of trauma. The authors performed a subanalysis excluding seizures within 6 weeks after trauma in an attempt to exclude seizures as the cause of trauma and found similar results. Nevertheless, it is concerning that an increased risk can last so long after a concussion. Perhaps strategies reducing the risk can be applied during that interval.

**Additional Keywords:** Post-Traumatic Epilepsy

**print tag:** (*) Refer to original journal article.
Multiple ED Visits for Injuries Increase Chance of Substantiated Child Maltreatment

Association of Injury Visits in Children and Child Maltreatment Reports.
Spivey MI, Schnitzer PG, et al:
J Emerg Med; 36 (February): 207-214

Children aged <5 years who have 2 ED visits in 1 year for injury-related problems are more likely to be reported for child maltreatment and to have that report substantiated by an investigation.

Objective: To determine if there is an association between the frequency of emergency department (ED) visits for injury-related problems and child maltreatment reports to child protective agencies.

Design/Methods: Data were obtained from the Missouri Department of Health and Senior Services, which collects ICD-9 codes for all pediatric injury-related visits to the 143 non-federal hospitals in Missouri and from the Missouri Child Protective Services reports of child abuse and neglect. The Missouri Child Protective Services' data included the conclusion of the case as probable cause or unsubstantiated. These 2 databases were linked for the year 2000 to identify patients aged <5 years who were found in both databases. Children with ICD-9 codes for sexual abuse were excluded, as were children with the same injury code within 1 week.

Results: >383,000 visits to EDs occurred in Missouri in 2000 for children aged <5 years. Of these, 16% (16,500) included at least one injury code. After exclusions, slightly more than 50,000 children with approximately 56,000 injury visits were included for study. The most common injuries were falls, followed by being struck by or against something. The third most common injuries involved natural and environmental causes (usually insect or animal bites). How likely was a child to be reported to child protective services after 2 ED visits for injury? If the child had 2 visits, the relative risk (RR) increased to 1.9 (95% CI, 1.8 to 2.0). For 4 visits, it increased to 3.8 (95% CI, 3.0 to 4.7). Of reports that were subsequently substantiated, the RR increased from 2.5 (95% CI, 2.1 to 2.9) for 2 visits to 4.7 (95% CI, 2.4 to 9.2) for 4 injury-related ED visits.

Conclusions: Children aged <5 years who had 2 ED visits in 1 year for injury-related problems were more likely to be reported for child maltreatment and to have that report substantiated for maltreatment by an investigation.

Reviewer's Comments: The authors note that the study does not distinguish how many of the substantiated injuries were inflicted (ie, physical abuse). In fact, most cases were probably non-inflicted and thus in the category of neglect. Neglect in these scenarios would be placing a child with inadequate protection and inadequate supervision in settings of environmental hazards. Certain background features raise indices of suspicion for pathology. This study demonstrates that, for children with frequent injuries, in addition to providing supervisory guidelines for the caretaker, the pediatrician must be very mindful of the possibility of maltreatment, particularly neglect.

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Powered Scooters Lead to Worse Injuries Than Nonpowered Scooters

Comparison of Severe Injuries Between Powered and Nonpowered Scooters Among Children Aged 2 to 12 in the United States.

Griffin R, Parks CT, et al:
Ambul Pediatr; 8 (November-December): 379-382

Powered scooter injuries are more likely to be severe than are nonpowered scooter injuries.

Background: As the popularity of scooters has increased this decade, so has the number of injuries due to their use. In 2002, >13% of children aged 7 years used a scooter at least once a year. Not all scooters are the same, however. Some are nonpowered, requiring children to push them on their own. Others, however, are powered, and can have a small gas engine or electric/battery engine. The differences in injuries sustained using these differing types of scooters are unknown.

Objective: To determine the characteristics and demographics of injuries from powered and nonpowered scooters.

Methods: Data were obtained from the 2002 to 2006 National Electronic Injury Surveillance System, a database created by the Consumer Product Safety Commission. This database is a probability sample of 100 hospitals with a 24-hour emergency department. Injuries eligible for analysis were sustained by children age 2 to 12 years due to a scooter injury. Injuries were defined as severe if they required hospitalization, observation, or transfer. Data were also gathered on each patient's age, sex, region of injury, diagnosis, geographic location, and disposition. Analyses were performed to determine the relationship between the type of scooter and the severity of injury, after adjusting for confounding factors.

Results: Over the 4-year period, there were 484 powered scooter injuries and 6118 nonpowered scooter injuries in children between 2 and 12 years of age in the database. These represent almost 16,000 powered scooter injuries and >185,000 nonpowered scooter injuries nationwide. Powered scooter injuries occurred most frequently in children 10 to 12 years of age. Powered scooter injuries occurred more often at home, and nonpowered injuries occurred more often at school or on sports fields. Powered scooter injuries were significantly more likely to be severe (OR, 3.6), especially in girls (OR, 5.8).

Conclusions: Powered scooter injuries are more likely to be severe than are nonpowered scooter injuries. Scooter injuries are not uncommon in children <12 years of age. Powered scooter injuries occur most often at home, an area thought by many to be "safer."

Reviewer's Comments: It is no surprise that scooters with power can lead to worse injuries than those without, but the large number of injuries is surprising.

Additional Keywords: Injury Severity

print tag: () Refer to original journal article.
Car Seats and Seat Belts Prevent Death in MVAs

Rice TM, Anderson CL: Am J Public Health; 99 (February): 252-257

According to this study, car seat use in 0- to 3-year-old children decreases fatal injuries in MVAs by 67% compared to no restraint at all.

Background: Motor vehicle accidents (MVAs) are the number 1 cause of unintended accidental death for children >1 year of age. Child restraints, such as car seats and booster seats, have been shown to decrease injury in MVAs, and most states require the use of car seats for children aged <3 years. In 1996, >90% of infants and toddlers up to 3 years of age used car seats. Although several studies in the past have calculated the effectiveness of child restraints in decreasing injury or death, there is little information on how crash and vehicle characteristics impact the effectiveness of child restraints. 

Objective: To study the effectiveness of child restraints in preventing death in children aged 3 years and how this effectiveness is impacted by various characteristics.

Design: Matched cohort analysis.

Methods: The authors analyzed 1996 to 2005 data from the Fatality Analysis Reporting System, which collects information on fatal traffic collisions. Accidents with vehicles in which there were at least 2 people in the first 2 rows, with at least 1 person 3 years of age, and in which at least 1 person died were included in the study. The sample included 5732 vehicles and 19,293 occupants.

Results: In general, children in a car seat were 67% less likely to die in an MVA than those not restrained. This effectiveness increased with decreasing age, such that infants were 73% less likely to die while in a car seat. In contrast, seat belt effectiveness improved with increasing age. If the child was in a seat belt, the risk of death decreased by 48% for infants and 61% for 3 year olds. For 2- and 3-year-old children, car seats and seat belts were equally effective at preventing death. Seat belts in newer cars appeared to be more effective. Car seats and seat belts also were more effective in preventing death in sport utility vehicles and pickup trucks than in cars and minivans. In rollover accidents, car seats were most protective in those aged <1 year, and seat belts were most protective in 2 to 3 year olds.

Conclusions: Child restraints greatly decrease the risk of death in MVAs for 0 to 3 year olds.

Reviewer's Comments: This protective effect is due largely to prevention of ejection from the car, which is responsible for many serious injuries and deaths in MVAs. Although this study demonstrated equal efficacy of car seats and seat belts in preventing death in 2 and 3 year olds, it did not look at prevention of nonfatal injuries. Other studies have shown car seats to be more protective in this regard.

Additional Keywords: Child Restraints

print tag: () Refer to original journal article.
Neuroimaging Provides Important Information in Suspected Abuse

Neuroimaging Evaluation of Non-Accidental Head Trauma With Correlation to Clinical Outcomes: A Review of 57 Cases.
Foerster BR, Petrou M, et al:
J Pediatr; 154 (March): 573-577

CT is effective for the detection of neurologic injury in cases of suspected non-accidental trauma, and findings correlate with long-term neurologic outcomes.

Background: The diagnosis of nonaccidental head trauma (NAT), including shaken-baby syndrome, relies on history from caregivers (which may be unreliable or vague), physical exam findings (which are variable and may not reveal the extent of injury), and neuroimaging. Findings by CT and MRI may provide complementary information and may have long-term prognostic value.

Objective: To review the clinical presentation and radiologic findings of children with a high suspicion for NAT, and to evaluate the association between radiologic findings and long-term clinical outcomes.

Methods: Cases of suspected NAT were identified through 13 years of case logs of the institution's Child Abuse Review Committee. All selected cases had strong evidence of abuse as the etiology of cranial injury. Equivocal cases were excluded. All cases were evaluated by the Child Protection Team, had neuroimaging studies and skeletal surveys, and most had ophthalmologic exams. CT images were specifically evaluated for intracranial hemorrhage, extra-axial fluid collection, and loss of gray-white matter differentiation (indicative of global ischemia). MRI was specifically evaluated for intracranial hemorrhage, extra-axial fluid, dating of blood collections, restricted diffusion, and edema. History, physical exam, and follow-up details were recorded.

Results: 57 children with high clinical suspicion for NAT were identified, ranging in age from 0.5 to 39 months. The most common presenting complaint was mental status change, occurring in 47% of patients, followed by respiratory distress, seizures, and history of a fall. Of the 57 patients, 56 had a head CT as part of the initial workup, 48 underwent MRI (usually at a later stage of the hospitalization), and 47 had both. Subdural hematoma was the most common finding, occurring in 86%. Other findings included ischemic injury, subarachnoid hemorrhage, parenchymal hemorrhage, skull fracture, and diffuse axonal injury (DAI). In those completing CT and MRI, CT failed to identify NAT in only 1 patient. Eleven patients died during the course of the study, all of whom showed signs of global ischemia on CT. Of the surviving patients with severe developmental delay, all had evidence of complicated CNS injury on CT. For patients with mild to moderate developmental delay, MRI often detected abnormalities not seen on CT, specifically ischemia and DAI.

Conclusions: CT is an effective modality to suggest or confirm NAT of the head and can predict poor prognosis in those with severe injuries. MRI can detect additional abnormalities that may provide information regarding risk for poor neurologic outcome.

Reviewer's Comments: For all suspected cases of inflicted head trauma, CT is quick, accessible, and sensitive for identification of skull fracture, edema, ischemia, and blood collections of varying ages. MRI is indicated when the CT is negative as it can detect more subtle signs of abuse, such as DAI.

Additional Keywords: Neuroimaging

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What Is Most Common Cause of Unilateral Neural Hearing Loss in Children?

Etiology of Unilateral Neural Hearing Loss in Children.
Laury AM, Casey S, et al:
Int J Pediatr Otorhinolaryngol; 73 (March): 417-427

Of the causes for unilateral neural hearing loss in children, cochlear nerve aplasia is by far the most common etiology.

**Background:** In patients with hearing loss, basic audiometric testing can distinguish the various types since peripheral and central lesions have different signatures. Neural hearing loss is characterized by the presence of otoacoustic emissions but a significant deficit as detected by auditory brainstem response. In adults with unilateral sensorineural hearing loss, there is concern for the possibility of mass lesions, particularly vestibular schwannomas. However, little is known about the etiology of unilateral neural hearing loss in children.

**Objective:** To evaluate the causes of unilateral neural hearing loss in children.

**Design/Methods:** A retrospective study was performed of the records of patients seen at Children's Hospital of Philadelphia during 2005 and 2006 who had unilateral hearing loss as detected initially on an outpatient basis by audiologists. Patients with neural hearing loss were identified, and audiologic data, imaging findings, and clinical course were determined.

**Results:** Of 815 patients with unilateral loss, 480 were identified with unilateral sensorineural hearing loss; of these, 148 patients had otoacoustic emissions and, in this group, 11 (7.4%) had findings consistent with unilateral neural problems. Most patients had severe-to-profound hearing loss in the affected ear. Imaging studies, including high-resolution MRI data, were available on 10 of 11 patients. Four of these patients had CT studies. Eight patients (73%) had absent cochlear nerves identified. Only 3 of 8 cases had been detected with newborn screening. In 2 of the 11 patients, tumors were detected that had previously been unsuspected (a vestibular schwannoma and a brainstem glioma).

**Conclusions:** Of the causes for unilateral neural hearing loss in children, cochlear nerve aplasia is by far the most common etiology. Although less common, as is the case with adults, mass lesions must also be considered.

**Reviewer's Comments:** The authors note that both the absent cochlear nerves and the 2 tumors were not detectable or detected on CT and recommend MRI as the better modality in the evaluation of this problem. In patients with a neural pattern for hearing loss, an aggressive search for these 2 etiologies should be undertaken. When pediatric patients reach this stage of advanced hearing problems and complex diagnostic studies, pediatricians are typically out of the loop. However, the importance of diligence in getting patients into that loop needs to be stressed. In this study, <50% of the patients with little hearing in one ear had been identified early in life (age range, 3 to 5 years). This parallels national findings that, despite the implementation of universal screening, only approximately 50% of young children with severe permanent hearing loss are detected at birth. One reason is that, of the approximately 2% of patients referred for follow-up for newborn screening, only about 40% are documented to receive diagnostic evaluation. A key role for the pediatrician is to ensure that follow-up takes place.

**Additional Keywords:** Etiology

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Pure-Tone Audiometry Hearing Screenings Have Poor Sensitivity

Validity of Pure-Tone Hearing Screening at Well-Child Visits.
Halloran DR, Hardin JM, Wall TC:
Arch Pediatr Adolesc Med; 163 (February): 158-163

Pure-tone audiometry hearing screening has a poor sensitivity and fair specificity when used in primary care practice settings.

**Background:** Pure-tone audiometry is often used in primary care to screen children for hearing loss. However, this test's performance can be compromised by ambient noise or inadequate child participation. The test has been evaluated only under highly standardized conditions, not in primary care settings.

**Objective:** To estimate the sensitivity, specificity, and predictive value of pure-tone audiometry hearing screening in primary care practice settings.

**Methods:** From 1998 to 2003, children aged 3 to 19 years were recruited at well-child examinations from 9 pediatric practices in Alabama. Children were screened with pure-tone audiometers, and results were categorized as "pass," "did not pass," or "could not test." A child failed if he/she was unable to detect 1 or more frequencies at a 20-dB hearing level in either ear. Some children who failed screening were not referred to an audiologist. A stratified random sample of these children received an audiologic evaluation as part of this study. The authors calculated sensitivity, specificity, and predictive values of pure-tone audiometry, determined the percentage of children not compliant with referral, and identified factors associated with non-compliance.

**Results:** 1061 children were screened. Of these, 53% were male, and 77% were primarily insured by Medicaid. Of those screened, 28 were referred either because they failed the tests (n=25) or could not complete the screening (n=3). Only 25% of referred children went to their referral. There were no statistically significant demographic or developmental differences between children who complied with referral and those who did not. In the random sample of 102 children not referred, 16 failed and 10 could not complete the test. For children (referred and not referred) who completed screening, the test's sensitivity was 50%. Assuming a 12.5% prevalence of hearing loss in school-aged children, the likelihood that a positive test represents hearing loss is 7.6%. The specificity of the test was 78%, and the likelihood that a negative test correctly ruled out hearing loss was 91.6%. In addition, the likelihood that a child who could not complete the test did not have hearing loss was 86%.

**Conclusions:** Pure-tone audiometry hearing screening has a poor sensitivity and fair specificity in primary care practice settings.

**Reviewer's Comments:** It was interesting that, despite the label of hearing screening, pure-tone audiometry may not be an ideal hearing screening test in the primary care setting because of poor test performance and poor patient follow up. The failure to detect hearing loss in patients who did, in fact, have the problem is disturbing. Many children may not receive follow-up with a referring specialist after they have failed a hearing screen. Physicians in primary care practices may want to consider alternative methods of hearing screening.

**Additional Keywords:** Pure-Tone Audiometry

**print tag:** () Refer to original journal article.
Can Circumcision Reduce STDs?

Male Circumcision for the Prevention of HSV-2 and HPV Infections and Syphilis.


There were reductions in this study of the acquisition of herpes simplex-2 and high-risk human papillomavirus strains in men who were circumcised.

Background: In Africa, the HIV crisis is at epic level, and one of the limitations is access to condoms. There are also concerns that other sexual transmitted diseases (STDs) are the reason for the increased risk for transmission of HIV.

Objective: To determine if circumcision reduces STDs, such as herpes simplex 2 (HSV-2), human papillomavirus (HPV), and syphilis.

Methods: The studies looked at 2 trials in Africa in Uganda. There were 4996 HIV-negative uncircumcised boys and men between 15 and 49 years of age. A proportion of the group was randomized to be circumcised. These men were interviewed and had physical examinations at initiation of the study and at 6, 12, and 24 months. HSV-2 testing was done via an enzyme-linked immunosorbent assay (ELISA) test. HPV testing was performed, and genotypes of HPV were identified. Syphilis was detected by a positive rapid plasma reagin test or a toluidine red unheated serum test and confirmed by Treponema pallidum particle agglutination assay. The analysis was designed to determine if the rate of acquisition of these diseases could be reduced with circumcision.

Results: 1544 subjects were in the circumcision group and 1572 were in the control group. After 24 months, 1370 subjects were in the circumcision group and 1395 were in the control group. The reductions were due to death or subjects who were lost in follow-up. As far as rates of HSV and its relationship to circumcision were concerned, 7.8% of the males in the circumcision group had acquired HSV-2 compared to 10.3% in the control group. In the HPV detection part of the study, the authors evaluated men who acquired the high-risk strains of HSV. Of the men who acquired HPV, 15% of the men in the circumcision group had the higher-risk strain compared to 26% in the control group. There were no significant differences in the rates of syphilis in the circumcised group or control group.

Conclusions: There were reductions of acquisition of HSV-2 and high-risk HPV strains in men who were circumcised.

Reviewer's Comments: The data show that circumcisions can have a significant impact in reducing HIV, HPV, and HSV-2 infections. In many nurseries, circumcisions have been an optional choice for parents. The choice will continue, but this article confirms that a reduction of disease should be discussed with parents who are ambivalent about circumcisions. It is difficult to talk about reduction of STDs to parents who are looking at their healthy 1-day-old infant.

print tag: () Refer to original journal article.
Risk of Autism After Prenatal Stress


Li J, Vestergaard M, et al:
Pediatrics; 123 (April): 1102-1107

Prenatal stress in the form of bereavement does not appear to be significantly associated with a later diagnosis of autism in children.

Background: Autism spectrum disorder, with a prevalence of 6 to 8 per 1000 individuals, is one of the most common neuropsychiatric disorders in childhood. The cause of autism is unknown, although it is widely believed to be multifactorial. Some have hypothesized that maternal stress during pregnancy may affect development of the fetus and may be involved in autism. Prior work has shown that prenatal stress is related to social or emotional issues, congenital malformations, and psychiatric disorders.

Objective: To determine if prenatal stress from maternal bereavement is related to the later development of autism.

Design/Methods: This was a large cohort study created by merging data from a number of national registries, including the Danish Civil Registration System, the Danish Medical Birth Register, the Danish Psychiatric Central Register, and the Integrated Database for Longitudinal Labor Market Research. All single-born children between 1978 and 2004 were identified. Exposed children were those whose mothers lost a child, spouse, sibling, or parent either during pregnancy or up to a year before pregnancy. The diagnosis of autism was drawn from ICD-8, ICD-9, and ICD-10 classifications. Data such as perinatal factors were also collected and used as covariates in analysis. Children in the cohort were followed up until 2006 or death, migration, or the onset of autism.

Results: Overall, 1,492,709 children were identified and were part of the cohort; of these, 37,275 were born to mothers who experienced bereavement in the established time period. Approximately 5% of children were lost to follow-up. Autism was identified in 2367 children by the end of 2006. After adjusting for confounding variables, the risk of autism was not significantly different between the exposed and unexposed children. There were still no differences even after stratifying by relationship of the mother to the person who died and caused the bereavement, and in the specific time when bereavement occurred.

Conclusions: Maternal stress, caused by bereavement, does not appear to be related to the incidence of autism in children. This held true even when looking at different types of bereavement and the timing of stress with respect to fetal development. This was an excellent use of population level data to answer an important epidemiological question.

Reviewer’s Comments: With so much information about the increase in autism rates, it is good to see studies directly addressing the potential causes, even if it is to rule them out.

Additional Keywords: Prenatal Stress

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Extreme Preterm Infants at Increased Risk to Screen Positive for Autism

Positive Screening on the Modified Checklist for Autism in Toddlers (M-CHAT) in Extremely Low Gestational Age Newborns.
Kuban KCK, O'Shea TM, et al:
J Pediatr; 154 (April): 535-540

Extreme preterm infants without neurological impairments are 3 times more likely than term infants to have a positive M-CHAT screen.

**Background:** The Modified checklist for Autism in Toddlers (M-CHAT) is a screening tool used to identify children at risk for autism. Previous studies have shown preterm infants to be more likely to have a positive M-CHAT screen than term infants, whose risk is 5.7%. It is unclear whether it is their neurological impairments or their preterm status that puts these preterm infants at increased risk for a positive M-CHAT screen.

**Objective:** To determine the effect of neurological impairments on the likelihood of a positive M-CHAT screen for extremely low gestational age newborns.

**Methods:** Infants were eligible if <28 weeks gestation. Surviving children underwent a developmental assessment at 23 to 28 months of age: neurological examination; gross motor assessment; a Bayley Scales of Infant Development; M-CHAT; and parent assessments. Examiners were aware of the child's corrected age, but not their chronological age. This study compared rates of M-CHAT positive screens between children with and without motor, vision, hearing, and cognitive impairments. The study did not determine whether or not the children developed autism.

**Results:** Overall, 21% of children had a positive M-CHAT screen. Of those without motor, vision, hearing or cognitive impairments, 10% had a positive M-CHAT screen. Because children with autism usually have cognitive impairment, excluding them may remove children at real risk for autism. Sixteen percent of children screened positive on the M-CHAT when only those with cognitive impairment were included in the reference sample. Children with cognitive, motor, visual or hearing impairments were more likely to have a positive M-CHAT, and this correlated with impairment severity. Compared to children who could walk, children were more likely to screen positive if they needed assistance to walk (OR, 7.4) or could not sit or stand independently (OR, 23). Compared to children without a cerebral palsy diagnosis, children were more likely to screen positive if they had quadriaparesis (OR, 13) or hemiparesis (OR, 3.8). When all impairments were considered together, motor and cognitive impairments were those most likely to predict a positive M-CHAT screen.

**Conclusions:** Extreme preterm infants without neurological impairments are at increased risk to have a positive M-CHAT screen. The presence of cognitive, motor, or sensory impairments further increases this risk.

**Reviewer's Comments:** In this study, the authors are trying to isolate whether extreme preterm infants screen positive on the M-CHAT because of neurological impairments or their preterm status. It seems that both are true. We do not know how many of these children go on to have autism after a positive M-CHAT, so it may be that in the future, the M-CHAT needs to be revised for preterm infants. For now though, it seems reasonable that an extreme preterm with a positive M-CHAT screen should be referred for further evaluation until we have a better tool to screen for autism in these children.

**Additional Keywords:** M-CHAT Positive Screening
Update of New Vaccine to Prevent Congenital CMV Infection

Vaccine Prevention of Maternal Cytomegalovirus Infection.
Pass RF, Zhang C, et al:
N Engl J Med; 360 (March 19): 1191-1199

The CMV vaccine has the potential to reduce maternal and congenital infections.

Background: Cytomegalovirus (CMV) can cause auditory, cognitive, and neurological impairment in a fetus exposed to this virus. It has been difficult, and it has taken over 30 years of different types of vaccines to help prevent CMV infections in mothers in an effort to protect fetuses.

Objective: To determine if vaccine administered to women could protect women and their potential fetuses from a congenital CMV infection.

Methods: Women (14 to 40 years of age) were screened in the 2 university hospitals in Alabama's postpartum wards. The women had to be CMV negative, nonbreastfeeding, and not pregnant. The vaccine was a CMV glycoprotein B vaccine with MF59 adjuvant. The women were randomized to the vaccine group or a placebo group. Women were tested for IgG antibodies to CMV proteins other than the glycoprotein B to determine if the participant had a CMV infection. If the participant had a positive antibody titer, it was confirmed by cultures of the blood, mouth, urine, and vagina. All women were tested for pregnancy prior to each injection (total of 3 injections). If they became pregnant, they were excluded from continuing in the study. Women were given thermometers and a diary to record any adverse events or fevers.

Results: 464 seronegative women were enrolled and randomized, and some patients were excluded. In the vaccine group, 178 women received all 3 doses, 36 received 2 doses, and 11 received a single dose. In the vaccine group, there were 18 women with confirmed CMV infection and 31 in the placebo group. There was a greater proportion of women in the placebo group who became pregnant during the study. CMV infection was found in 1 of the 81 infants (1%) in the vaccine group and in 3 of 97 infants in the control group (3%). There were no significant adverse side effects between the groups. There were some increased complaints of side effects after the third dose was administered, such as chills and myalgias. Local reactions were more common at the site of injection in the vaccine group.

Conclusions: The CMV vaccine has the potential to reduce maternal and congenital infections.

Reviewer's Comments: This study shows the potential for a new wave of vaccines that target congenitally acquired infections. As with many vaccine studies, there needs to be more participants to see if there is a true significance in preventing CMV infections. Vaccines for group B strep infection are also being studied to hopefully reduce morbidity and mortality in neonates.

Additional Keywords: Vaccine Prevention

print tag: () Refer to original journal article.
RSV Has Widespread Prevalence and Increased Hospitalization Rate

The Burden of Respiratory Syncytial Virus Infection in Young Children.

Hall CB, Weinberg GA, et al:

N Engl J Med; 360; (February 5): 588-598

Of the estimated 2 million children <5 who require care for RSV infections annually, 61% are >over the ages of 2 to 5 years old.

**Objective:** To determine the contribution of respiratory syncytial virus (RSV) infection to hospitalizations, emergency department (ED) visits, and primary care visits among children from infancy through 60 months of age.

**Design/Participants:** This prospective population-based surveillance of patients with acute respiratory infections who presented at several locations (Rochester, NY, Nashville, TN, and Cincinnati, OH) over several years (2000 to 2004) included eligible children <5 years of age with an acute respiratory infection (fever, cough, earache, nasal congestion, rhinorrhea, sore throat, vomiting after coughing, wheezing, and/or labored breathing).

**Methods:** Nasal and throat swabs were tested for RSV. Examined covariates included sex, age group, time in day care, smoke exposure, breastfeeding, the presence of high-risk coexisting conditions, prematurity, and other children in the house.

**Results:** RSV was identified in 919 of the 5067 specimens (18%) and was associated with 20% of annual hospitalizations, 18% of ED visits, and 15% of office visits for acute respiratory infections from November through April. The authors estimate that in the U.S., RSV causes 1 out of every 334 children <5 years old to be hospitalized annually, 1 out of 38 to visit the ED, and 1 out of 13 to visit their primary care office. Among RSV patients, the only variables that correlated with an increased chance of inpatient admission were a younger age (0 to 6 months) and prematurity. Among RSV-positive inpatients <12 months old, 85% were diagnosed with bronchiolitis, compared with 31% for RSV-positive inpatients between 24 and 59 months old. The major diagnoses for the older group were pneumonia (51%) and asthma (60%). For outpatients with RSV, 61% were between 2 and 5 years of age.

**Conclusions:** This prospective study demonstrated RSV’s widespread prevalence and its increased hospitalization rate for younger children compared to older children. It also found a wider impact of RSV on children than just in infants and toddlers, with the majority of RSV-related illness occurring in children between 2 and 5 years of age. Surprisingly, the study did not find an increased risk of RSV causing hospitalization with high-risk coexisting conditions, day care exposure, sex, smoke exposure, other children in the household, or lack of breastfeeding. The authors speculate that palivizumab may have attenuated the connection between inpatient RSV and high-risk medical conditions.

**Reviewer’s Comments:** This prospective study provides solid evidence of the large burden of RSV on children from infancy up to at least 60 months of age, well beyond the conventional age range of RSV bronchiolitis. Interestingly, this study failed to find a link between risk factors, such as smoke exposure, day care and other children in the home, to increased RSV hospitalization rate compared with the outpatient visit rate.

**Additional Keywords:** Health Care Burden

**print tag:** () Refer to original journal article.
Prognosis for Spondylolysis With Nonoperative Management Is Excellent

Nonoperative Treatment of Spondylolysis and Grade I Spondylolisthesis in Children and Young Adults: A Meta-Analysis of Observational Studies.

Klein G, Mehlman CT, McCarty M:
J Pediatr Orthop; 29 (March): 146-156

Nearly 9 out of 10 teenagers with spondylolysis and Grade 1 spondylolisthesis will have clinical improvement after 1 year if managed nonoperatively. However, bracing does not appear to influence the outcome.

Objective: To perform a meta-analysis on the effectiveness of nonoperative treatment for spondylolysis and Grade 1 spondylolisthesis in children and young adults.

Methods: A broad database of articles was examined (1950 to 2007) for studies that targeted pediatric and young adult patients who had spondylolysis, including those with up to 25% spondylolisthesis, and who had nonoperative interventions (including bracing, activity restriction, and therapeutic exercises) and clinical follow-up of at least 1 year duration. At follow-up, treatment was defined as successful if there was only occasional or no pain with activities of daily living, no requirement for bracing, and full unrestricted activities. Therapy was defined as unsuccessful if there was more frequent pain with vigorous activities or activities of daily living, an ongoing brace requirement, or patients who were considered candidates for spinal fusion. Radiographic evidence of a union of the pars defect was also studied as an outcome. Radiographic findings at the start of intervention were classified as acute (showing a hairline defect), progressive (moderate widening with rounded edges), or chronic (a wide defect with sclerotic changes).

Results: 15 studies, encompassing 665 patients, were identified that met the inclusion criteria. The average age of the patients was 15 years, and 70% were male. In 88%, the defect was at the L5 level. Overall, 84% of patients treated nonoperatively had a successful outcome. However, in subgroup analysis, bracing did not result in any significant difference in outcome compared to those without bracing ($P = 0.75$). There were insufficient data to examine other therapies, such as exercise. Radiographic outcome was not as positive. Acute defects healed at a rate of 68% and progressive lesions at a rate of 28%. No chronic lesions healed in any study.

Conclusions: More than 8 out of 10 patients with spondylolysis and minor spondylolisthesis will have a successful outcome at 1 year after initiation of nonoperative management. Data suggest that bracing is not responsible for improvements in the clinical parameters. Radiographic healing was not as common.

Reviewer's Comments: The authors note that the pooled studies were entirely observational rather than controlled trials. They do, however, call for a re-examination of the role of bracing, one of the standard treatments utilized. They hypothesize that activity restriction and perhaps the natural history of spondylolysis to clinically improve may be more important. It raises the question whether functional improvement would have been noted without any intervention. Until activity restriction alone is compared to bracing in a large randomized controlled trial for these pars defects, the precise value of conservative treatments will not be clearly known.

Additional Keywords: Nonoperative Tx

print tag: () Refer to original journal article.
Social Networking Sites Often Display Risk Behaviors

Display of Health Risk Behaviors on MySpace by Adolescents: Prevalence and Associations.
Moreno MA, Parks MR, et al:
Arch Pediatr Adolesc Med; 163 (January): 27-34

More than 50% of 18-year-olds with public MySpace.com profiles display references to risk behaviors.

Background: More and more teenagers are using social networking sites (SNSs), such as MySpace.com or Facebook.com, to communicate with each other. However, many SNS users display personal information and pictures or text reflecting risk behaviors. Even if the behaviors displayed do not reflect what the profile owner is actually doing, they can imply that this behavior is, in fact, occurring, and can potentially attract cyberbullies or sexual predators.

Objective: To determine the prevalence of displays suggesting risk behavior, such as sexual behavior, substance use, and violence, on SNS profiles.


Methods: The authors searched MySpace.com for public profiles of 18-year-olds. Public profiles are those open to anyone; private profiles are open only to those people designated by the profile owner as “friends.” The authors then randomly selected 750 profiles to review. Data were collected on demographics, including age, sex, ethnicity, relationship status, sexual orientation, whether the profile owner was a parent or expecting a child, and whether the owner smoked or drank. Profiles were then reviewed for references to sexual behavior, substance use, violence, religious affiliation, sports, and hobbies.

Results: 500 profiles met inclusion criteria and were analyzed; 62% of profile owners were male, 42.4% were Caucasian, 63% were single, 90% were heterosexual, and 10% were a parent or expecting a child. In addition, 10.6% had religious involvement and 16.4% were involved in sports or hobbies. Approximately 54% of profiles referred to at least 1 risk behavior (41% substance use, 24% sexual behavior, 14% violence). Females were 33% as likely as males to display references to violence. Sexual orientation other than heterosexual was associated with a 4-times increased likelihood of displaying references to sexual behavior. Profile owners with religious involvement were 33% as likely to display references to sexual behavior or substance use and 10% as likely to display references to violence. Sports or hobby involvement was also associated with a decreased likelihood of references to any of the risk behaviors.

Conclusions: More than 50% of 18-year-olds with public MySpace.com profiles displayed references to risk behaviors. Those involved in outside activities, such as religious activities, sports or hobbies, were less likely to display references to risk behaviors.

Reviewer's Comments: Nobody knows how truthful teenagers are on SNS profiles. However, similar proportions are reflected in national surveys that show that 50% of 18-year-olds have had sex, 50% drink alcohol, and 30% have been in a physical fight. SNSs have become very popular as a forum for teenagers to communicate with each other. Pediatricians need to acquaint themselves with the risks and benefits of SNSs so as to appropriately counsel teen patients.

Additional Keywords: Health Risk Behaviors

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About 21% of Children/Teens Who Are Equestrians Will Have Serious Injuries

Equestrian Injuries in Children.
Cuenca AG, Wiggins A, et al:

One-half of the children who sustain injuries from horseback riding require hospitalization.

**Background:** More than 2 million children and teens participate in horseback riding activities and 21% will sustain serious injuries.

**Objective:** To review one hospital's experience of diagnosing and treating pediatric equestrian injuries and increase the awareness of doctors about the nature of these injuries.

**Methods:** Retrospective review of records from 11 years.

**Results:** There were 164 patients seen in the emergency department; these included 135 girls and 29 boys, with a median age of 12 years (range, 3 to 18 years). Approximately 82% of the injuries occurred during recreational activities, while 12% were from competitive events and 6% were from being kicked or injured by the horse. Children not wearing helmets were more likely to require hospital admission. Injuries requiring admission were orthopedic (31%), head injury (20%), abdominal injury (18%), skin or soft tissues (13%), pneumothorax or lung contusion (8%), facial injury (8%), and polytrauma (13%). Among the patients admitted, 37% required surgery, including 19 orthopedic procedures, 4 laparotomies, 3 facial reconstructions, and 2 craniotomies. Inexperienced riders and those who do not wear helmets have a higher incidence of injuries. The high speeds of horses of up to 40 miles per hour and the 1 ton of force of their kicks explains the seriousness of injuries from horseback riding. The site of injuries in children differs from adults who have more trauma sustained to the chest and abdomen.

**Conclusions:** Orthopedic trauma is the most common site of injuries in children who are involved in horseback riding activities. Children who do not wear helmets are more likely to have more serious head injuries pointing out the need for more education about helmet use to prevent head injury. Inexperienced riders are more likely to have injuries, so this group should be targeted for prevention education. Boys have more serious injuries, as they are more likely to participate in competitive riding in rodeos and racing.

**Reviewer's Comments:** The table in the original article that lists the most common injuries is a check list for doctors who see these trauma patients in the emergency department. Careful examination should address not only the obvious injuries, but also the possibilities of head and abdominal trauma, as well as pneumothorax and lung contusion. These findings will add another topic for discussing prevention of injuries to your patients, when appropriate.

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Which Infants Are at Increased Risk for Extreme Events?

Risk Factors for Extreme Events in Infants Hospitalized for Apparent Life-Threatening Events.


Most extreme events in infants hospitalized with ALTE occur in those with respiratory infection.

Background: An apparent life-threatening event (ALTE) is one that is frightening to the observer and is characterized by apnea, color change, change in muscle tone, and choking/gagging. Apnea <30 seconds and bradycardia <10 seconds are normally seen in healthy babies. Extreme cardiorespiratory events are episodes that exceed these time limits for apnea and bradycardia. Oxygen saturation level <80% for at least 10 seconds is also considered an extreme cardiorespiratory event.

Objective: To determine if there are risk factors associated with extreme cardiorespiratory events.

Design: Retrospective cohort study.

Participants: Patients admitted for ALTE.

Methods: All patients were monitored with an apnea monitor and pulse oximetry. Data relating to the precipitating event, symptoms of illness, risk factors (eg, gestational age, postconceptional age, gender), and the diagnostic tests performed were recorded.

Results: 625 cases were included in the analysis. Extreme cardiorespiratory events were documented in 46 (13.6%); 94% of these included oxygen desaturation for >10 seconds, often preceded by a central apnea. All but 7 of these events occurred within the first 24 hours of hospitalization; 90% of the infants did not appear "sick" upon admission. The median duration of extreme events was 4 days. Fifteen patients required mechanical ventilation, 2 required continuous positive airway pressure and supplemental oxygen, and 16 required supplemental oxygen. The most common diagnosis was respiratory infection (including respiratory syncytial virus (RSV), pertussis, and parainfluenza) in 66%. Gastroesophageal reflux was found in 5 cases (0.8%). Prematurity (OR 5.2), being <43 weeks postconceptional age (OR, 6.3), and having respiratory symptoms (OR, 11.2) increased the risk of extreme events in these infants. Male gender and winter months did not increase the risk of extreme events. All patients with extreme events were <48 weeks postconceptional age.

Conclusions: Infants born prematurely, who are <43 weeks postconception, and with respiratory symptoms are at higher risk of extreme events. The authors recommend that infants who present with an ALTE be monitored for at least 24 hours if they are <48 weeks postconception.

Reviewer's Comments: Most of these extreme events occurred in infants with respiratory infection. This is consistent with data suggesting that infants with bronchiolitis or pertussis may present with apnea. This study does not answer the question of which infants with ALTE might be at increased risk for sudden death. However, it does provide some additional information that may be helpful when one is making a decision to admit a patient with ALTE or send the infant home.

Additional Keywords: Risk Factors

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Is Bacteriotherapy the Answer to Secretory Otitis Media?

Spray Bacteriotherapy Decreases Middle Ear Fluid in Children With Secretory Otitis Media.

Skovbjerg S, Roos K, et al:
Arch Dis Child; 94 (February): 92-98

Nasal spray bacteriotherapy with *Streptococcus sanguinis* appears to resolve or improve persistent secretory otitis media in children.

**Background:** Secretory otitis media (SOM), or the persistence of middle ear fluid (MEF), is common sequelae of acute otitis media (AOM). While it often spontaneously resolves, on occasion, tympanostomy tubes are placed. In previous studies treatment with a probiotic nasal spray decreased the development of SOM in children with AOM. However, it is unclear whether this nasal spray leads to resolution of SOM in children once it has developed.

**Objective:** To determine whether nasal bacterial spray can lead to resolution of SOM.

**Design/Participants:** This double-blind, placebo-controlled pilot trial included children (median age, 32 months) being followed at the Lundby Hospital Ear Nose and Throat (ENT) clinic in Gothenburg, Sweden, for at least 2 months for SOM.

**Methods:** 10 days prior to tympanostomy tube placement, children were randomly assigned to receive nasal spray containing *Streptococcus sanguinis* or *Lactobacillus rhamnosus* or placebo spray. On day 0 (day of surgery) and day 10, an ENT physician blinded to treatment assignment conducted a clinical examination by otomicroscopy and obtained a sample of MEF to assess for bacteria and inflammatory mediators. The assessment of the fluid change was defined as "no improvement" (no change in fluid amount), "some improvement" (slightly less fluid than at inclusion in at least 1 ear), "much better" (significantly less fluid and more air in the middle ear), or "cured" (no fluid seen through the tympanic membrane). The authors did not specify a priori what level of improvement that they considered to be clinically significant.

**Results:** 73% of patients had bilateral SOM. Three patients were excluded because they were noncompliant and 3 others were excluded because they developed AOM during the study. There were no adverse events in any treatment group. An intention-to-treat analysis showed that 7 out of the 20 patients in the *S. Sanguinis*-treated group were "cured" or "much better" compared to 1 out of 20 patients in the placebo group (*P* =0.044); in contrast, 3 of the 20 patients in the *L. Rhamnosus*-treated group were "cured" or "much better" compared to 1 out of 20 patients in the placebo group (*P* =0.60). There were no significant differences in pathogens detected by polymerase chain reaction or the inflammatory mediators in the MEF between groups. No significant changes in nasopharynx flora occurred in response to treatment.

**Conclusions:** Nasal spray bacteriotherapy with *S. sanguinis* appears to resolve or improve persistent SOM in children. The mechanism behind this treatment success remains unclear.

**Reviewer's Comments:** Nasal spray bacteriotherapy shows promise to treat persistent SOM in children who have qualified for tympanostomy tube placement. This was a small study and additional larger studies with clearly defined outcomes are needed before this therapy is incorporated into routine care of SOM.

**Additional Keywords:** Bacteriotherapy
How Effective Is a PDA-Based Adolescent Risk Behavior Screening Tool?

Use of Inexpensive Technology to Enhance Adolescent Health Screening and Counseling.


This PDA-based screen enhanced the quality and incidence of discussions between adolescents and their health care providers.

Background: Screening adolescents at their well visits for risky behaviors is difficult to do in an efficient and effective manner.

Objective: To examine the impact of a Personal Digital Assistant (PDA)-based screening tool on this problem.

Participants/Methods: Cross-sectional exit surveys were performed on adolescents aged 11 to 19 years before and after the implementation of a PDA-based screening tool in 5 primary care practices in the New Hampshire-Vermont area. The screening program was adapted from Guidelines for Adolescent Preventive Services questions and included questions determining readiness to change. The program contained 90 questions, but due to branching logic, only 60 to 65 questions were typically required to complete the survey. The PDAs were $100 Palm units.

Results: 1052 adolescents completed the PDA-based screen. Exit surveys were completed by 65 adolescents before and 98 adolescents after implementation of the PDA screen. The PDA screen averaged 9 to 11 minutes to complete. Exit surveys showed that discussions about fruit/vegetable intake (60.4% vs 41.7%), tobacco use (54.9% vs 40%), and alcohol use (53.9% vs 38%) increased significantly after implementation of the PDA screen. There was no significant increase in discussions about milk intake, exercise, television viewing, drug use, or mood issues. More adolescents felt like they were listened to carefully (87.8% vs 64.6%) and were very satisfied (87.8% vs 63.1%) after implementation of the PDA tool. When asked if there was an issue they wanted to talk about but did not, significantly fewer answered yes after the PDA tool's implementation (2% vs 10.8%). With regard to readiness to change risky behaviors, there was strong interest in nutrition changes (71%) and exercise changes (80%), but little interest in changing substance use (38% for tobacco, 25% for marijuana, and 8% for alcohol) in the 15- to 19-year-old population group.

Conclusions: This PDA-based screen enhanced the quality and incidence of discussions between adolescents and their health providers. Its unique inclusion of participant's readiness to change behaviors and its automatic summary of the screen's results prior to the encounter may explain how the screen prompted more discussions about some behaviors and improved the adolescents' perceptions that their provider listened to them.

Reviewer's Comments: Adolescent screening is time-consuming and hard to implement practically in a typical busy practice. This study describes a screen that may make such screening easier and more effective. Similar results of obtaining sensitive information were found when adolescents interacted with a computer program. Now that teens use phones to communicate and twitter about personal information, using a PDA to efficiently obtain a history and even begin behaviour change makes good sense.

Additional Keywords: PDA

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Renal Scars After UTI Are Difficult to Predict

Do Systemic Symptoms Predict the Risk of Kidney Scarring After Urinary Tract Infection?

Coulthard MG, Lambert HJ, Keir MJ:
Arch Dis Child; 94 (April): 278-281

Febrile UTI is not a strong predictor of renal scarring.

**Background:** There is a general consensus (and guidelines in the U.K.) that suggest children with upper tract urinary tract infections (UTIs) manifested by symptoms of fever and flank pain should be treated differently from those with lower tract UTIs, although strong evidence suggesting a greater likelihood of scarring among the former group is lacking.

**Objective:** To determine if symptoms at the time of UTI predict scarring.

**Design:** Retrospective, case-controlled review.

**Participants:** 191 children up to 5 years of age with their first UTI.

**Methods:** Medical records were reviewed in a blinded fashion to determine if symptoms such as fever, malaise, vomiting, or anorexia were noted at presentation. All children had been referred for dimercaptosuccinic acid (DMSA) scans. A scar was defined as a defect at least 5 months after the infection and classified as single or multiple. For every positive scan, 3 subsequent children without scars post-UTI were used as controls. Children were placed in 3 groups consisting of <6 months, 6 months to 3 years, and >3 years. The primary outcome criteria were the ability to determine if symptoms or hospitalization predicted scarring in all age groups.

**Results:** Scarring was seen in 58 children (28 with multiple scars) and 140 served as controls. Girls were more prevalent in both groups (69% scarring, 65% controls) and infected boys were likely to be younger. Younger children were more likely to have systemic symptoms and require hospitalization. The presence of vomiting, malaise, or anorexia weakly correlated with scarring ($P = 0.02$), but other variables, such as age, fever and hospitalization, were not correlated with scarring. When separated by age groups, younger children with fever were more likely to have scarring. However, if the absence of fever precluded testing, >30% of younger children and 60% of older children with scarring would not be tested. Plots of proportionate reduction of uncertainty revealed that the predicted estimate of scarring for the presence or absence of each symptom did not correlate with the actual risk, with the exception of hospitalization in older children.

**Conclusions:** The presence of systemic symptoms, including fever, after young children develop their first UTI does not predict the subsequent presence of renal scarring.

**Reviewer's Comments:** The retrospective nature of this study and, therefore, the risk that the records reviewed may not have been accurate could affect the authors' findings. This study contradicts the dogma that one needs to worry more about febrile UTIs than afebrile infections. Scarring does not occur in most children with UTI, and fever and can occur in the absence of systemic symptoms. Guidelines suggesting that children <5 years of age with afebrile UTI need not be treated the same as those with fever may not be appropriate.

**Additional Keywords:** Renal Scarring

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No Lansoprazole for Tx of GERD in Children <12 Months Old

Multicenter, Double-Blind, Randomized, Placebo-Controlled Trial Assessing the Efficacy and Safety of Proton Pump Inhibitor Lansoprazole in Infants With Symptoms of Gastroesophageal Reflux Disease.


There is no difference in efficacy between treatment with lansoprazole and treatment with placebo for GERD in infants <12 months of age.

Background: Many infants have been switched to proton pump inhibitors based on their effectiveness in older children and adults. Even the product insert from the drug manufacturer documents its ineffectiveness in children <12 months old, yet the drug continues to be prescribed to this age group.

Objective: To evaluate the effectiveness and safety of lansoprazole in the treatment of gastroesophageal reflux disease (GERD) in children <12 months of age.

Design: Multicenter, double blind, randomized, placebo-controlled study.

Methods: Children <1 year old were recruited who had symptoms of GERD and remained symptomatic with crying, fussed during or within an hour of feeding, were irritable, or who had tried at least 1 week of nonpharmacological treatment. Children were evaluated in 3 phases: pretreatment, treatment, and post-treatment. In the pretreatment phase, parents were given a questionnaire (the Infant Gastroesophageal Reflux Questionnaire Medical History) about infant GERD. The dosage of lansoprazole was based on weight for all children in the treatment group and was given for 28 days. Post-treatment consisted of follow-up telephone calls to inquire about safety and global symptom assessment.

Results: 162 subjects were randomized for this study. Analysis of the data showed that both groups of children responded the same to either lansoprazole or placebo. The second part of this trial was allowing patients to continue on the drug on an unblinded, open-label study; there was no difference in improvement in GERD scores. Treatment of emergent adverse events occurred in 62% of the lansoprazole group and 46% of the placebo group. Events that would be associated with the drug did not differ between the groups. There was a slight increase in lower respiratory infections in the treatment group.

Conclusions: There was no difference in efficacy between treatment of GERD with lansoprazole versus placebo in infants <12 months of age. Slightly increased risks of lower respiratory infections were found in the treatment group.

Reviewer’s Comments: Data in this article and the manufacturer’s product information do not recommend this drug to children <12 months for symptoms of GERD. However, it is still common to find young infants on this drug for GERD-related symptoms. Although it is not clear why there was a slightly increased rate of lower respiratory infections with lansoprazole, physicians should avoid using this drug for GERD in children <12 months of age.

Additional Keywords: Lansoprazole

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**Distinguishing Organic From Non-Organic Infant Food Refusal**

*Diagnostic Clues for Identification of Nonorganic vs Organic Causes of Food Refusal and Poor Feeding.*

Levy Y, Levy A, et al:

*J Pediatr Gastroenterol Nutr;* 48 (March): 355-362

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**Infantile feeding disorders with a behavioral basis are distinguished by specific signs of food avoidance and abnormal parental feeding strategies.**

**Background:** Feeding problems, food refusal, and aversions are common in pediatric practice and an underlying cause (eg, gastroesophageal reflux disease (GERD), food allergy, or swallowing dysfunction) is often pursued. Infantile feeding disorders (IFD) with a behavioral basis may manifest with similar symptoms, mimicking an organic condition.

**Objective:** To determine parent and child behavior patterns, signs, and symptoms to distinguish IFD from medical disorders.

**Participants/Methods:** 2 outpatient cohorts of children referred to a specialized feeding clinic from mid-2005 to 2007 were evaluated. The first group consisted of children <6 years old with onset of symptoms prior to 2 years, no known underlying medical disorder, or children with additional medical pathologies, who ultimately responded to behavioral intervention. The second group presented with similar characteristics, but were diagnosed with GERD, food allergy, or failure-to-thrive (FTT), and ultimately responded to medical and nutritional intervention without behavioral therapy. All patients underwent a structured medical history and physical examination, including measurements and details of feeding patterns. Feeding history included age at food transitions, consistency changes, and onset of avoidance (including retching, gagging/anticipated gagging, and head turning). Dysfunctional caretaker feeding patterns, such as forced feeding, feeding during sleep, or feeding without cues, were also investigated. Tests for organic conditions included complete blood count, liver function tests, thyrotropin stimulating hormone, sweat test, celiac antibodies, barium swallow, and gastroscopy as indicated.

**Results:** 151 children with food refusal/FTT were identified (83 in the behavioral group and 68 with organic disorders as the control). Neither age at onset of symptoms nor history of tube feedings was significantly different between groups. Signs of avoidance were more common in Group 1, including refusal of individual types of feedings (bottle, spoon, and solids). Poor weight gain was significantly more likely in the presence of an organic disorder, though >50% in the behavioral group also carried a FTT diagnosis. Both groups were equally likely to display low intake and vomiting. Abnormal parental feeding practices were more likely in the behavioral group.

**Conclusions:** FTT, low intake, and vomiting do not distinguish behavioral feeding problems from those with an organic cause. Food refusal, food fixation, anticipatory gagging, and abnormal parental feeding patterns suggest the presence of a behavioral etiology.

**Reviewer's Comments:** The main triggers for feeding aversion are represented by the authors' acronym "STOMP": Size (perception of a small or preterm infant leads to feeding beyond hunger cues to compensate), transition (a traumatic progression through feeding methods, including breast to bottle to solids), organic (disease causes food-associated pain or other discomfort, and the association continues beyond the duration of the disease itself), mechanistic (feeding at fixed intervals without hunger cues), and posttraumatic. For additional details regarding the STOMP triggers, description of the infant's abnormal feeding behaviors, and behavioral modification techniques, the appendices to this article are worth a read.

**Additional Keywords:** Diagnostic Clues

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Use of Tempered Glass Could Reduce Glass Table Injuries

Glass Table-Related Injuries in Children.
Kimia AA, Waltzman ML, et al:
Pediatr Emerg Care; 25 (March): 145-149

Glass table injuries are responsible for significant injuries, and the use of tempered glass could significantly reduce them.

Background: Although limited data exist on injuries caused by glass tabletop furniture, many believe that they are a significant concern with regard to small children. Glass is a major cause of lacerations in children. In Europe, glass tabletops must be made of safety glass, which breaks into harmless fragments with no jagged edges, but in the U.S., no such law exists.

Objective: To determine the epidemiology and etiology of injuries to children caused by glass tabletop furniture.

Design/Participants: Retrospective review of patients seen in an urban tertiary care pediatric emergency department.

Methods: Multiple reviews were conducted to identify potential glass-related injuries and then to weed out those that involved glass, but did not involve glass-table injuries. Injuries were classified into the following groups: (1) injuries that would not have occurred with tempered (safety) glass; (2) injuries that would have been lessened by tempered glass; (3) injuries that may or may not have been lessened by tempered glass; and (4) injuries where the type of glass had no impact. Data on the patients’ age, sex, history, physical examination, findings, imaging, interventions, and disposition were abstracted for analysis.

Results: After the review, 174 cases (age range, 3 days to 21 years; median age, 3.4 years) were identified for this study. Approximately three-fifths were male. Almost half of the injuries involved the face (46%), and most others involved the lower extremities (24%) and upper extremities (19%). Children <5 years of age were significantly more likely to have an injury to the face (OR, 6.0). Many of the patients (82%) required surgical repair, with 10% of those requiring sedation and an additional 6% requiring operative management. Overall, 42% were rated as category 1 and an additional 12% as category 2, meaning that tempered glass would have been helpful in >50% of the cases.

Conclusions: Glass-table accidents are responsible for significant injuries, and the use of tempered glass could significantly reduce them. More than 50% of the injuries would have been eradicated by the use of tempered glass. Parents should be discouraged from purchasing furniture with glass that is not tempered.

Reviewer’s Comments: Given the use of tempered glass in other objects and the regulations in other countries, it would be interesting to know why we do not have the same in the United States. Hopefully, an article such as this one will alert the public health advocates to change our requirements for furniture with glass. That is, if they can outshout the lobby people.

Additional Keywords: Injuries

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Protocol for Management of Pediatric Syncope Offers High Diagnostic Yield

_The Diagnostic Protocol in Children and Adolescents With Syncope: A Multi-Centre Prospective Study._

More than 81% of pediatric patients with syncope can be definitively diagnosed with few diagnostic studies by using a 2-step protocol.

**Background:** Up to 50% of college students report experiencing syncope at some prior point. The majority of these episodes are benign, but underlying cardiovascular abnormalities and risk of sudden death must be considered. Diagnostic protocols have been developed for management of adult syncope, but similar guidelines have not been assessed for use in children and adolescents.

**Objective:** To evaluate a newly developed diagnostic protocol for syncope in pediatric patients.

**Participants/Methods:** Patients <18 years of age were recruited through 5 Chinese hospitals with pediatric cardiac centers. Only patients with clear episodes of syncope were included, while those with seizures, vertigo, coma, and shock were excluded. The diagnostic algorithm for syncope was developed by a consensus of experts and was based on adult published guidelines, yield of diagnostic procedures, prevalence of syncope in pediatric patients, and experience of the study group. The initial step included a history, physical examination, electrocardiogram, and standing test. Based on this evaluation, patients were categorized as having a definite, suspected, or undetermined cause of syncope. In the second step, those with a suspected diagnosis followed a pathway to explore cardiogenic, metabolic, neurologic, or psychiatric etiologies (ie, echocardiogram, Holter, electrolytes, electroencephalogram (EEG), brain imaging, or psychiatric evaluation). Those with an undetermined cause underwent head-up tilt testing.

**Results:** 474 patients were prospectively enrolled during the 20-month study period. Following step 1, a diagnostic conclusion was reached for 12.4% of patients. Following the second step, 54 patients (11%) had a suspected cause of syncope; of these patients, a definitive diagnosis was established in approximately 61%. The final 382 patients with unexplained syncope had head-up tilt test, with diagnoses revealed in all but 23%. Overall, the diagnostic protocol achieved a diagnosis for >81% of the original patient sample. Autonomic mediated, including vasovagal syncope, was concluded in 73% of patients, cardiogenic in 2.9%, psychiatric in 2.3%, neurologic in 2.1%, and metabolic in <1%. Excluding the electrocardiogram (EKG) and standing test of step 1, an average of 1.3 tests were performed in patients requiring additional evaluation.

**Conclusion:** A simple 2-step protocol for pediatric syncope minimizes the number of diagnostic studies needed per patient and yields a conclusive diagnosis in >81% of cases.

**Reviewer’s Comments:** The distribution of syncope etiologies demonstrated here is consistent with other sources, with vasovagal response overwhelmingly responsible. In evaluating syncope, however, life-threatening cardiac disease is the prime concern. This protocol includes EKG as part of the initial study panel (perhaps because of the study setting), but it should be stressed that history is the most important determinant to guide the evaluation. Syncope that occurs with exercise, is associated with palpitations, is recurrent or occurs in a patient with a family history of similar episodes, cardiomyopathy, or sudden death is a significant indication for cardiac evaluation.

**Additional Keywords:** Diagnostic Protocol

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