Beware of Intra-Abdominal Injuries Caused by Seat Belts

Predictive Indicators for Bowel Injury in Pediatric Patients Who Present With a Positive Seat Belt Sign After Motor Vehicle Collision.

Paris C, Brindamour M, et al:

J Pediatr Surg 2010; 45 (May): 921-924

In children with AWB following an MVC, intra-abdominal injuries are frequent, particularly in patients with free intra-abdominal fluid, an elevated pulse, and an associated lumbar fracture.

Background: The term "seat belt sign" was originally coined in 1962 and refers to the pattern of bruising on the chest or abdominal wall of a victim of a motor vehicle collision (MVC) that corresponds to the position of the lap or shoulder belt.
Objective: To study clinical and radiographic predictors of the need for surgery in pediatric patients with this finding.
Participants/Methods: This was a retrospective review of patients involved in MVCs who were found to have abdominal wall bruising (AWB) and were admitted from 1998 to 2008 to a tertiary pediatric trauma center in Montreal. A wide range of clinical information was examined including demographics, vital signs, physical examination findings, radiographic studies, associated injuries, in-hospital management, and outcome.
Results: 53 children (median age, 9 years; range, 3 to 16 years) were included in the study. More than 80% had abdominal pain on arrival, and on an initial ultrasound or CT scan, nearly half (25/53) had free intra-abdominal fluid. Fifty-five percent of patients with AWB had intra-abdominal injuries. The most common injuries (in 25%) were mesenteric or bowel injuries. Thirteen percent had splenic injuries and 8% had liver injuries. One out of every 5 patients (10/53) needed a therapeutic laparotomy. These patients had abdominal pain, free intra-abdominal fluid, and tachycardia. Patients, who required surgery for an intra-abdominal problem, were much more likely to have a lumbar fracture compared to those who did not require surgery (50% vs 4%). The factors predictive of intestinal perforation in those with AWB included a heart rate >120 per minute, lumbar fracture, and free intra-abdominal fluid; 98% of the children survived their injuries, with only 1 death due to associated head trauma.
Conclusions: In pediatric patients with AWB after an MVC, intra-abdominal injuries are frequent. In patients with free fluid, an elevated pulse, and an associated lumbar fracture, an abdominal exploration should be considered because these 3 factors are significant predictors of intestinal injuries.
Reviewer's Comments: Most of us will not be at the forefront when the initial evaluation of an MVC occurs. But, if you are, note that AWB is associated with a significantly increased likelihood of intra-abdominal injury (55% in this study). Whenever you see families, remind them that in order to minimize problems with seat belt injuries, children should be in booster seats to assure that the lap and shoulder belts fit properly per AAP guidelines until the child is approximately 4 feet, 9 inches tall, which occurs between 8 and 12 years of age. (Reviewer-Mark F. Ditmar, MD).

Keywords: Vehicular Collisions, Abdominal Wall Bruising, Bowel Injury, Predictive Indicators

Print Tag: Refer to original journal article

Do Constipated Children Become Constipated Adults?

Long-Term Prognosis for Childhood Constipation: Clinical Outcomes in Adulthood.

Bongers MEJ, van Wijk MP, et al:

Pediatrics 2010; 126 (July): e156-e162

Nearly 25% of children with functional constipation have symptoms in adulthood.

Background: Functional constipation, a common disorder in children, has been thought to be self-limited. Data on the long-term prognosis into adulthood are scarce and conflicting.
Objectives: To determine the long-term outcomes of children with functional constipation and to determine if there are clinical features upon presentation that may predict a greater likelihood for constipation to persist.
Design: Longitudinal cohort study.
Participants: 401 children between 5 and 18 years of age with functional constipation followed in a tertiary care setting.
Methods: Eligible children had participated in previous studies for constipation between 1991 and 1999. Constipation was defined as ≥2 of the following: frequency of defecation <3 times per week; ≥2 episodes of fecal incontinence per week; passage of large stool every 7 to 30 days; or a palpable mass on abdominal or rectal examination. After an initial 6- to 8-week treatment period, children were followed at 6 months and then annually. Contact occurred in the clinic, by telephone, or by a letter requesting contact. A standardized questionnaire was used to collect data, such as defecation frequency, abdominal pain, stool consistency and size, and laxative use. A good outcome included a sustained period of at least 3 bowel movements per week for ≥4 weeks without fecal incontinence, with no use of laxatives (category 1) or with use of laxatives (category 2). Two additional categories describing poor outcomes were used.
Results: The median age of the children at entry was 8 years; 65% were male and the median duration of follow-up was 11 years. The dropout rate was 15%. At 1 year, 50% of children achieved a good outcome, with 11% using laxatives. At 10 years, the overall success rate was approximately 80%. When assessed by biologic age, approximately 75% of adults were successfully treated. Three baseline characteristics were associated with poor outcome including treatment delay (OR, 1.24; 95% CI, 1.10 to 1.42; *P* =0.001), age at onset (OR, 1.10; 95% CI, 1.02 to 1.30; *P* =0.04), and defecation frequency (OR, 0.92; 95% CI, 0.84 to 1.00; *P* =0.03). Women were more likely than men to relapse. After 7 years, 40% of women demonstrated a relapse compared to 20% of men.
Conclusions: Nearly 25% of children with functional constipation have symptoms persisting into adulthood. A delay in referral, older age at onset, and decreased frequency of defection are associated with a poor outcome.
Reviewer's Comments: Although this study was limited to a tertiary care population, the long-term follow-up is impressive. This study dispels the myth that all children will outgrow their constipation. It also suggests better outcomes can be achieved if children are referred early to a pediatric gastroenterologist if first-line treatment fails. (Reviewer-Seth L. Schulman, MD).

Keywords: Childhood Constipation, Prognosis, Clinical Outcomes

Print Tag: Refer to original journal article

Pay Attention to Ticking Clock in Suspected Postop Small Bowel Obstruction

The 16 Golden Hours for Conservative Treatment in Children With Postoperative Small Bowel Obstruction.

Feigin E, Kravarusic D, et al:

J Pediatr Surg 2010; 45 (May): 966-968

In this series of pediatric patients admitted for postoperative small bowel obstruction, no bowel strangulation was found in patients managed medically for 16 hours, but after 48 hours, the likelihood of spontaneous resolution was low.

Objective: To assess the length of time that surgery could be safely deferred in children with postoperative small bowel obstruction.
Design/Participants: Retrospective study of children admitted to their tertiary pediatric hospital in Israel from 1991 to 2008 with a diagnosis of complete or partial small bowel obstruction.
Methods: Causes other than postoperative adhesions were excluded. The patients were followed for signs of bowel strangulation by repeated examinations, blood tests, and abdominal imaging. Indications for surgery included features such as peritonitis on physical examination, severe pain, tachycardia, leukocytosis, and increasing nasogastric output. In cases of spontaneous resolution, the time of resolution was considered to have occurred when the patient began oral intake in the course of tolerating a full diet.
Results: 128 children with 174 episodes of postoperative small bowel obstruction were included in the study. The 4 most common types of prior surgery were for appendicitis, congenital bowel defects, abdominal tumor, and necrotizing enterocolitis. Spontaneous resolution occurred in 109 of the 174 patients (63%). In 37% (65/174), signs of strangulation or clinical deterioration prompted emergent surgery. Of those cases taken to the operating room (OR), 30% had compromised bowel and 70% had viable bowel. The authors found that approximately half (52%) of the cases of spontaneous resolution occurred within 24 hours, 85% by 48 hours, and 94% by 72 hours. Of those who required surgery, 15% went to the OR within 16 hours, 39% within 24 hours, 82% within 48 hours, and 93% within 72 hours. No strangulation or need for bowel resection occurred in patients operated on within 16 hours. However, in patients with bowel compromise, strangulation occurred in 30% of cases who went to OR at 24 hours and 76% who went to the OR at 48 hours.
Conclusions: Prolonged conservative observant treatment of children with postoperative small bowel obstruction for >48 hours yields only a small benefit in terms of the likelihood of spontaneous resolution. The index of suspicion for bowel compromise should be raised after 16 hours, and raised regarding a decision for surgery at 48 hours.
Reviewer's Comments: One can see from the data why this is a tricky clinical situation. Previous studies have shown that there are no good sensitive clinical predictors regarding which patients will require surgery. Nearly two-thirds of the patients in this study had spontaneous resolution and surgery was not needed. Unfortunately, the authors did not provide information on the length of time from the previous surgery to admission. Would patients with more distant surgery be more likely to require repeat surgery for adhesions? This is unknown. The paper does, however, give some possible temporal guidelines for when expectant management begins to assume greater risks. (Reviewer-Mark F. Ditmar, MD).

Keywords: Postoperative Small Bowel Obstruction, Conservative Treatment

Print Tag: Refer to original journal article

Body Checking Is Hazardous Play

Risk of Injury Associated With Body Checking Among Youth Ice Hockey Players.

Emery CA, Kang J, et al:

JAMA 2010; 303 (June 9): 2265-2272

Competitive hockey in 11 and 12 year olds carries >3 times the risk of serious injury or concussion if they play in a league that allows body checking.

Objective: To examine the risk of concussion and other injuries during hockey games for 11- to 12-year-olds in a league with body checking versus a league without body checking.
Methods: The authors examined competitive youth hockey leagues for 11- to 12-year-old players in 2 Canadian provinces (Alberta and Quebec) during the 2007 to 2008 season. Alberta's leagues allowed body checking, and Quebec's leagues did not. To determine injury rates and types, an injury surveillance system was established involving weekly sessions with a trainer or physical therapist and surveys.
Results: 1,108 players from Alberta and 1,046 players from Quebec completed the study. Overall, there were 241 total injuries (78 concussions) in the checking league. There were 91 injuries (23 concussions) in the non-checking league. For all injuries, the checking versus non-checking incidence rate ratio (IRR) was 3.26. For concussions, the IRR was 3.88. The IRR for injuries requiring at least 1 week without a return to hockey was 3.30. There was no difference between the leagues for practice-related injuries.
Conclusions: Players in a hockey league that allowed checking for 11 to 12 year olds faced >3 times the risk to sustain a concussion, any injury, or serious injury compared to players in a league that did not allow checking.
Reviewer's Comments: The authors of this study took advantage of a slight variation in competitive youth hockey leagues in Canada to investigate the impact of checking on injury risk in 11- to 12-year-olds. While the results that checking increases risk of injury are not too surprising, they are well researched. These results should give pause to competitive youth hockey leagues for 11- to 12-year-old children that allow checking. Given the inherent risks for injury that contact sports carry, the minimum age to allow full contact in a given sport will always be up for debate. Well-researched outcome studies like this one allow the debate to focus on evidence, however, instead of conjecture. (Reviewer-Daniel Coghlin, MD).

Keywords: Hocking, Body Checking, Injury Risk

Print Tag: Refer to original journal article

Small Number of Petechiae in Well-Appearing Infants Likely Innocuous

Prevalence and Location of Petechial Spots in Well Infants.

Soheilifar J, Ahmadi M, et al:

Arch Dis Child 2010; 95 (July): 518-520

Finding ≤4 petechiae during a routine well child care visit in well-appearing infants does not merit further work-up.

Background: Research has determined that patients with fever and petechiae, who are otherwise well appearing, do not necessarily need to be admitted. Research has not looked at the health risk and, therefore, necessary work-up of afebrile, well-appearing children with petechiae.
Objective: To assess the prevalence and location of petechiae in well-appearing infants seen for well child care to determine if there is an association between petechiae and age and to try to provide demographic information that could help define those infants with petechiae who merit further work-up.
Design: Descriptive study.
Participants: 500 Iranian children <1 year of age seen for well child care, who were not febrile nor had any abnormalities in their history or examination.
Methods: All participants completed a detailed history; age, sex, and birth rank demographic data were obtained. The infants also had a thorough physical examination with number and location of petechiae pictorially documented in the chart. All parents of participants with petechiae were asked to keep a log denoting progression of the petechiae, with any signs of deterioration noted. Participants with persistent or progressive petechiae were re-evaluated 2 weeks later.
Results: 10% of the participants had petechiae, with 7% having a singular petechial lesion and 3% having >1. Approximately 20% of those with petechiae had them solely above the nipple line, while the remainder had them distributed below the nipple line. There was a statistically significant relationship between age and the presence of petechiae, as almost 70% of participants with petechiae were >6 months of age. Persistent petechiae were found in 6 participants. No participant experienced clinical deterioration.
Conclusions: Petechiae were more likely to be found in infants >6 months of age and were more likely to be distributed below the nipple line. In all well-appearing, afebrile infants with ≤4 incidental petechiae, no further medical work-up is needed.
Reviewer's Comments: I am struggling to see the applicability of this study, because I think it looked at the wrong cohort. It is not the afebrile, well-appearing infant with a few petechiae that worries me. I worry about the infant who comes in because of parental worry and is found to have petechiae or the afebrile, well-appearing infants with >4 petechiae. That is a population that would cause me to pause and wonder, "Is it safe to just watch?" (Reviewer-Lisa Humphrey, MD).

Keywords: Well Infants, Petechiae, Location, Prevalence

Print Tag: Refer to original journal article

Prenatal Diagnosis of CCHD Not Associated With Decreased Mortality

The Impact of Prenatal Diagnosis of Complex Congenital Heart Disease on Neonatal Outcomes.

Levey A, Glickstein JS, et al:

Pediatr Cardiol 2010; 31 (July): 587-597

Prenatal diagnosis of complex congenital heart disease is most likely to diagnosis hypoplastic left heart syndrome and can decrease rates of emergent surgery and mechanical ventilation.

Background: More and more cases of complex congenital heart disease (CCHD) are being diagnosed prenatally. The data on the effect of a prenatal diagnosis of CCHD on neonatal outcomes are inconsistent.
Objective: To examine the effect of a prenatal diagnosis of CCHD on clinical and surgical outcomes.
Design/Participants: Retrospective chart review of infants who underwent CCHD repair at a tertiary care children's hospital in New York between January 1, 2004, and January 1, 2008.
Methods: Information on clinical and surgical characteristics, as well as clinical outcomes, was collected. The following relationships were examined: (1) the effect of birth characteristics on prenatal diagnosis; (2) the differences in CCHD diagnoses among those diagnosed prenatally versus postnatally; and (3) the effect of prenatal diagnosis on morbidity and mortality.
Results: 439 infants underwent CCHD repair; of these, 67% were diagnosed prenatally. Although not clinically significant, children diagnosed prenatally were more likely to be younger (37.9 ± 2.1 weeks vs 38.6 ± 2.4 weeks) and lighter (3.0 ± 0.6 kg vs 3.1 ± 0.6 kg). Infants with hypoplastic left heart syndrome were more likely to be diagnosed prenatally (OR, 4.1; 95% CI, 1.9 to 8.9), whereas infants with transposition of the great arteries or total anomalous pulmonary venous return were less likely to be diagnosed prenatally (OR, 0.4; 95% CI, 0.3 to 0.7 and OR, 0.02; 95% CI, 0.0 to 0.1, respectively). Infants diagnosed prenatally were less likely to receive preoperative mechanical ventilation (OR, 0.6; 95% CI, 0.4 to 0.9), antibiotics (OR, 0.2; 95% CI, 0.1 to 0.4), cardiac catheterization (OR, 0.5; 95% CI, 0.3 to 0.9), or emergent surgery (OR, 0.2; 95% CI, 0.1 to 0.5). However, prenatal diagnosis did not affect the day on which surgery was performed or the length of stay. Prenatal diagnosis was not associated with decreased mortality.
Conclusions: Infants with hypoplastic left heart syndrome can be diagnosed prenatally, while transposition of great vessels or anomalous pulmonary venus return may be missed prenatally.
Reviewer's Comments: General wisdom suggests that looking for disease before it presents, or screening, leads to better medical outcomes. In the case of CCHD, the picture is not clear. Part of the problem is that ultrasound only identifies CCHD with distortion of the heart chambers. But even for those cases of CCHD, that can be diagnosed prenatally; like the hypoplastic left heart, it can be difficult to prove that prenatal diagnosis improves outcomes. Prenatal screening is so prevalent that there are few postnatally diagnosed cases for comparison. (Reviewer-Beth A. Tarini, MD).

Keywords: Complex Congenital Heart Disease, Diagnosis

Print Tag: Refer to original journal article

CAP in Children -- Back to Basics

Validation and Development of a Clinical Prediction Rule in Clinically Suspected Community-Acquired Pneumonia.

Bilkis MD, Gorgal N, et al:

Pediatr Emerg Care 2010; 26 (June): 399-405

A model to predict the probability of a child having community-acquired pneumonia has been developed and validated, but it may be too complicated to use in everyday practice.

Background: Community-acquired pneumonia (CAP) is a prevalent and concerning infection occurring outside the hospital environment that affects primarily the elderly and young. Algorithms for treatment of adults with CAP in the emergency department exist, but real validation of rules has not been performed in children.
Objective: To use a mathematical model to predict the probability of having CAP based on clinical symptoms.
Methods: In the first year of this study, children between 1 and 16 years of age who presented with fever and clinically suspected CAP were enrolled in the study. Clinical signs and symptoms were recorded with a standardized chart and included sex, age, respiratory rate, days with fever, maximum temperature, and a number of signs such as cough, tachypnea, wheezing, chest pain, or retractions. Chest radiographs were taken on all patients and were considered positive if pulmonary consolidation or an asymmetric infiltrate was seen. All radiographs were interpreted by 2 radiologists who had not seen the clinical charts.
Results: Over the study period, 257 children were included in the analysis. To be considered positive for CAP, the chest radiographs had to confirm the diagnosis of pneumonia. Among the participants, 179 (69%) had a clinical diagnosis of CAP with radiologic confirmation, and 78 (30%) had presumptive CAP without radiologic confirmation. The 5 variables that comprised the best prediction rule included grunting, cough, rales, decreased breath sounds, and vomiting. A complicated rule was developed, with each variable having a specific coefficient that could predict a child having CAP with >90% sensitivity.
Conclusions: A model to predict the probability of a child having CAP was developed and validated, but it may be too complicated to use in everyday practice. This clinical prediction rule was created with excellent sensitivity to predict CAP in children using symptoms of grunting, cough, rales, decreased breath sounds, and vomiting. Unfortunately, the use of this rule would necessitate a computer or spreadsheet and, therefore, may not be useful in everyday practice. Further work is needed to find a way to adapt important work like this for easier application.
Reviewer's Comments: I applaud the efforts of the authors to create and validate a clinical prediction rule to diagnose pneumonia. However, the rule is complicated, and the authors correctly state you would need help in the form of a computer to apply it. It seems that we are back to basics, such as taking a good history (cough, grunting, vomiting) and carefully listen to the chest (rales) and then relying on the chest x-ray if the diagnosis is not established. (Reviewer-Aaron E. Carroll, MD, MS).

Keywords: Pneumonia, Clinical Prediction Rule

Print Tag: Refer to original journal article

PACT Improves Parent-Child Interaction

Parent-Mediated Communication-Focused Treatment in Children With Autism (PACT): A Randomised Controlled Trial.

Green J, Charman T, et al:

Lancet 2010; 375 (June 19): 2152-2160

A parent-mediated communication-focused treatment does not decrease autism severity scores, but does improve parent-child communication.

Background: Studies evaluating autism treatments are generally underpowered, with small sample sizes, and it is generally difficult to detect changes as a result of a particular intervention. Because the clinical symptoms may change with age, there is a vast spectrum of different symptoms within autism, and there continues to be lack of agreement as to what specific symptoms constitute a diagnosis of autism.
Objective: To study the efficacy of a parent-mediated communication-focused treatment (Preschool Autism Communication Trial [PACT]) in children with autism.
Design: Randomized controlled trial.
Participants: Children aged 2 to 5 years who met criteria for autism based on communication and social skills.
Methods: Families were randomized to receive usual treatment or usual treatment plus the PACT intervention. The PACT intervention consisted of biweekly 2-hour long clinic sessions with the parent and a therapist over a period of 6 months, followed by monthly booster sessions for an additional 6 months. These sessions involved the teaching of strategies for interacting with the child, videotaping the parent and child playing together for 10 minutes, and immediate feedback to the parent. Successful strategies were identified and reinforced, and alternative strategies were discussed. Parents then identified goals for communicating with the child for the next 2 weeks. The primary outcome measure was the severity of autism symptoms as measured by the social-communication algorithm of the Autism Diagnostic Observation Schedule (ADOS-G) 13 months after study entry. Secondary outcomes included parent-child interaction in a play setting, child language and social communication skills, and adaptive functioning in school.
Results: 152 families were randomized, 77 to PACT and 75 to usual treatment. Seventy-four of the 77 families in the PACT group and 72 of the 75 families in the usual treatment group completed the study. At the 13-month end point, the autism severity score decreased by 3.9 points in the PACT group and 2.9 points in the usual treatment group, which was not a significant difference. However, there were some improvements in some of the secondary outcomes in the PACT group. This group demonstrated improved parent-child interaction (as reported by therapists) and improved language and communication (as reported by parents).
Conclusions: The PACT intervention cannot be recommended to decrease autistic symptoms. However, it does seem to improve parent-child interaction.
Reviewer's Comments: This was a very time-intensive study. I was impressed at how many parents completed the study, even though the intervention involved 18 2-hour sessions. Although the results are disappointing, the improved parent-child social communication is potentially an important outcome, as this is associated with other positive long term outcomes. In addition, the investigators limited this study to children with a diagnosis of autism, not less severe autism spectrum disorder. It is possible that the effects may be more pronounced in children who are less affected. (Reviewer-Rachel Moon, MD).

Keywords: Autism, Intervention, PACT

Print Tag: Refer to original journal article

Hospital Costs Significant After Very Preterm Birth

Hospital Costs and Quality of Life During 4 Years After Very Preterm Birth.

Korvenranta E, Linna M, et al:

Arch Pediatr Adolesc Med 2010; 164 (July): 657-663

Although the cost per quality-adjusted life-year is significant for very premature babies, it still falls under a threshold acknowledged by most to be cost-effective.

Background: Very premature infants require significant care both soon after birth and as they grow. However, little is known about the costs of this care beyond the first year of life.
Objective: To determine how gestational age, as well as morbidities due to prematurity, affect hospital costs and the cost per quality-adjusted life-year (QALY) in the first 4 years of life.
Methods: Data were abstracted from a database of all live-born infants of <32 weeks gestational age or with a birth weight of <1501 grams born in Finland from 2000 through 2003. Of the 2495 very preterm infants born, 395 were stillborn. The control group consisted of >200,000 full-term infants born during the same period. Costs were collected from hospital databases, and were available for 20% to 30% of all health-care visits. Morbidity related to prematurity was defined beforehand and included such issues as cerebral palsy, seizure disorders, obstructive airway disease, and hearing or visual problems. QALYs were calculated by a health-related quality-of-life questionnaire.
Results: Children born preterm had significantly higher costs and health-care utilization than full-term children; children born very prematurely had approximately 10 times the number of outpatient visits. The cost per QALY was also significantly different ($1736 for full-term children and $28,920 for very premature infants). The cost per QALY also increased with decreasing gestational age. Children who had no sustained morbidity due to prematurity had a cost per QALY of $21,121 versus over $53,000 for those with at least 2 comorbidities. The cost of the initial hospital stay accounted for approximately 80% of all costs.
Conclusions: Although the cost per QALY is significant for very premature babies, it still falls under a threshold acknowledged by most to be cost-effective. The cost per QALY for very premature infants appears to be acceptable. Since the vast majority of costs are accounted for in the initial hospitalization, it is likely that the cost per QALY year will decrease over time. Neonatal care, although expensive, appears to be relatively cost-effective.
Reviewer's Comments: We often talk about how much intensive care costs, and it certainly is expensive. But it is interesting to see that in the scheme of things, the cost of such care is actually quite cost-effective when compared to other therapies. With a large number of babies having this degree of prematurity, the $30,000 increment for the first 5 years may be misleading as the educational costs, and for some, caretaking expenses after 5 years will continue to increase the price of care. (Reviewer-Aaron E. Carroll, MD, MS).

Keywords: Prematurity, Hospital Costs, Quality of Life

Print Tag: Refer to original journal article

Sleep Deprivation Increases Chance of Abnormal Interictal EEG

The Complementary Value of Sleep-Deprived EEG in Childhood Onset Epilepsy.

Shahar E, Genizi J, et al:

Eur J Paediatr Neurol 2010; 14 (July): 308-312

Approximately 25% of children with suspected seizures and normal interictal electroencephalography (EEG) have abnormal interictal EEGs when studies are repeated with sleep deprivation.

Objective: To investigate the value of sleep deprivation in assessing the likelihood of obtaining increased abnormal interictal discharges in children with suspected seizures.
Participants/Methods: The authors identified patients, ages 5 to 18 years, with at least 2 recurrent seizures, either generalized or focal, whose initial electroencephalography (EEG) did not demonstrate any abnormal epileptiform discharges. From 2003 to 2007, they were prospectively studied with repeat EEG recordings. None of the patients were on antiepileptic medications. Repeat awake EEGs following normal rest were done with hyperventilation and photic stimulation. No sedatives or hypnotics were used beforehand. Patients then had sleep-deprived studies for which the parents had to keep a child awake for at least 6 hours prior to the testing, which took place in all patients between 7 and 9 AM. EEGs were done on the awake child at the conclusion of sleep deprivation and then on the child if he or she fell asleep.
Results: 55 children (mean age, 10 years) were enrolled. Ninety-three percent of the children did fall asleep following sleep deprivation. The authors found that epileptic discharges, obtained during a period following sleep deprivation, were found in 27% (15/55) of those with previously normal awake EEGs. Most of the abnormal studies were noted during the sleeping phase following sleep deprivation. Forty percent of the patients (8/18) with a history of focal seizures had an abnormality compared to 20% (7/35) of those with a history of general seizures.
Conclusions: In patients with overt clinical seizures, sleep deprivation appears to impose an apparent activating impact that uncovers epileptic discharges not previously noted during awake recordings.
Reviewer's Comments: The EEG remains the most accurate measurement of epileptic discharges, but it is well-known that intermittent EEG changes may occur infrequently so that a routine EEG recording may be normal in a patient with an underlying seizure disorder. So-called activation procedures have been done in an attempt to resurrect epileptiform discharges. These include hyperventilation, photic stimulation, recordings during sleep, and recordings following sleep deprivation. The types of EEGs ordered can include sleep-deprived, sleep with oral sedation, and prolonged EEG monitoring, such as a 24-hour-ambulatory EEG. Some pediatric neurologists prefer one over the other. In this paper, >25% of the patients studied had abnormal EEGs when following sleep deprivation. What is the typical practice of your local EEG unit and the neurologists that recommend or read them? It is probably worth asking to determine if (a) aspects of sleep are factored into the EEG and if (b) you need to better inform parents of what to expect and what to do the night before the study. It is not often a child gets to watch the late, late, late show for possibly beneficial reasons. (Reviewer-Mark F. Ditmar, MD).

Keywords: Electroencephalography, Sleep Deprivation, Epilepsy

Print Tag: Refer to original journal article

Treatment Options for Late Diagnosis of Hip Dislocation

Results of Pavlik Harness Treatment in Children With Dislocated Hips Between the Age of Six and Twenty-Four Months.

Pollet V, Pruijs H, et al:

J Pediatr Orthop 2010; 30 (July-August): 437-r42

The Pavlik harness can be successful in Graf type 3 dislocated hips in children ages 6 to 24 months.

Objective: To determine the effectiveness of a Pavlik harness for hip dislocation in children from 6 to 24 months of age.
Methods: This study was done in the Netherlands and included children ages 6 to 24 months with Graf type 3 or 4 hip dislocations on x-ray. The children had to have had follow-up 1 year after treatment and placed in the Pavlik harness to be included in the study. Ultrasounds and pelvic radiographs were used after the initial diagnosis and 1 year after treatment.
Results: Over a 20-year period, there 313 patients treated for dislocated hips between ages 6 and 24 months at the study hospital. After selecting those who only used the Pavlik harness, there were 24 patients who met the criteria for the study. Some of the children had bilateral hip dislocations. Twelve of the 26 hips (46%) were successfully reduced. Sixteen of the 24 patients had abduction splints after initial Pavlik treatment to improve abduction; 7 patients had successful reposition with the abduction splint, and 5 patients had improvement without the abduction splint being added. Therefore, after analysis, the use of an abduction splint did not increase the success for repositioning of the femur. Fourteen patients failed to have repositioning of the hip and required either closed or open reposition. Three of the patients (11%) developed avascular necrosis. Two of these 3 patients developed a condition called coxa magna, which is an enlargement and deformation of the head of the femur. Sixty percent of the patients with type 3 dislocations had success with the Pavlik harness, while none of the more severe type 4 had a correction of the dislocation.
Conclusions: The Pavlik harness can be successful in a Graf type 3 dislocated hip in children from 6 to 24 months of age. Harness treatment should be abandoned if there is no reduction of the femur in the hip after 6 weeks.
Reviewer's Comments: Although the primary care provider does not make the decision about which procedure or treatment is given to their patient with dislocated hips, it is the primary care doctor that usually makes the diagnosis of the problem. Parents have many questions after the dislocation is found. Parents or caregivers need reassurance that there are nonsurgical and surgical options to correct this problem. The improved success rate with the type 3 dislocations using the Pavlik harness has the potential option for parents who do not want surgery or spica casting. (Reviewer-Charles I. Schwartz, MD).

Keywords: Hip Dislocation, Pavlik Harness

Print Tag: Refer to original journal article

We Need to Improve Consumer Medical Information for Pediatric Prescriptions

Evaluation of Consumer Medical Information and Oral Liquid Measuring Devices Accompanying Pediatric Prescriptions.

Wallace LS, Keenum AJ, DeVoe JE:

Acad Pediatr 2010; 10 (July-August): 224-227

Many of the accompanying informational materials with prescriptions for children are written at inappropriate levels for parents to understand.

Background: Approximately one-third of parents with children ≤18 years of age have limited health literacy skills. These parents usually have not only low health knowledge, but their children also often have worse health outcomes than children of parents with high literacy skills. Patient educational materials for children are often poorly designed and difficult to read, which compounds the problem. This also holds true for medication labeling. Since it is often more difficult to give liquid medications than pills or tablets, children are at increased risk for medication errors because of poor information transmission.
Objective: To assess the readability and layout of pharmacy information for 2 commonly prescribed pediatric medications and the types and features of the measuring devices provided for liquid medications.
Methods: A single physician wrote 2 prescriptions for a sample 2-year-old girl weighting 24 pounds for prednisolone and amoxicillin suspension. These prescriptions were filled at 20 different pharmacies in 3 states, including national and regional grocery store chains, national pharmacy chains, national superstore chains, and independent pharmacies. Readability of the consumer medical information provided was measured with the Flesch-Kincaid formula and McLaughlin's Simplified Measure of Gobbledygook. Text font size was also measured. Measuring devices were described as an oral syringe, dropper, or cylindrical spoon, and the largest marked dose was recorded.
Results: 3 pharmacies provided no consumer medical information, so only 34 samples were available for analysis. The average reading grade level of the information was 9.6 by the Flesch-Kincaid formula and 11.2 by the McLaughlin's Simplified Measure of Gobbledygook. The average font size of the accompanying text was 9.8. Although 80% of the prescriptions included a measurement device, almost 70% of those would require that parents make multiple measurements for a single dose, which could lead to more errors.
Conclusions: Many of the accompanying informational materials with prescriptions are written at inappropriate levels for parents to understand. Many parents, especially those with low literacy, will have difficulty understanding the consumer medical information that accompanies prescriptions. Although most prescriptions came with measuring devices, they were sized in such a way as to require multiple measurements per dose. We should encourage pharmacies to improve both their information and measuring devices to protect children from medication errors.
Reviewer's Comments: This is another confirmation that while focusing on reducing medication errors, we cannot forget about children. It is too hard for parents to measure a dose and it is too hard for them to understand the materials we are giving them. Standard wisdom recommends the reading level at 6th grade standard, far below what was available in these so-called information sheets. (Reviewer-Aaron E. Carroll, MD, MS).

Keywords: Medications, Consumer Information, Liquid Measuring Devices

Print Tag: Refer to original journal article

Turn the MP3 Player Down -- It May Save Your Hearing

Short-Term Auditory Effects of Listening to an MP3 Player.

Keppler H, Dhooge I, et al:

Arch Otolaryngol Head Neck Surg 2010; 136 (June): 538-548

There are significant short-term temporary changes in hearing sensitivity after 1 hour of exposure to loud music from an MP3 player.

Objective: To determine the short-term effects after listening to an MP3 player.
Methods/Participants: The Apple Nano was used for this study, and 25 participants were recruited. They were subjected to variable decibels of pop-rock music for 1 hour. Two types of listening were evaluated: ear phones (the standard ear bud type) and the supra-aural type. Hearing measurements were done before and after audio listening exposure. There were different levels of gains (decibels used for the study). There were 6 sessions with at least 48 hours between consecutive sessions. Four of the sessions had preset decibel levels selected. Some participants could not listen to the full gain of sound due to being uncomfortable with louder sound levels. The types of testing included pure tone audiometry, transient-evoked otoacoustic emissions, and distortion audiometry.
Results: There was a difference in decibels delivered to the ear from the ear buds compared with the supra-aural headphones by 5 decibels. There was a significant deterioration in hearing thresholds at certain frequencies. There were also significant differences with pure tone audiometry at 75% volume gain. Changes were also noted in the transient evoked otoacoustic testing. There were no differences in the distortion otoacoustic amplitudes testing.
Conclusions: There were significant temporary changes in hearing sensitivity after 1 hour of exposure to a loud MP3 player.
Reviewer's Comments: There was no surprise concerning the changes in hearing after exposure to a loud MP3 player. Although the long-term effects were not studied, in reality, adolescents usually listen to music for >1 hour at a time. This prolonged exposure to loud music may have long-term implications as these adolescents mature into adulthood. There are settings on an iPod and other MP3 players that allow you to set the maximum volume output. There are also ear buds/headphones that set the maximum volume levels. Once these preset volume controls become more popular, it is the responsibility for the parents to reduce the volume as much as possible. Reminding teens about the potential risks of listening to loud music may have the long-term benefit of preventing hearing loss. (Reviewer-Charles I. Schwartz, MD).

Keywords: Hearing Loss

Print Tag: Refer to original journal article

Cervical Intraepithelial Lesions in Teens May Regress Spontaneously

Prognosis of Intraepithelial Cervical Lesion During Adolescence in Up to Two Years of Follow-Up.

Monteiro DLM, Trajano AJB, et al:

J Pediatr Adolesc Gynecol 2010; 23 (August): 230-236

Cervical intraepithelial lesions caused by HPV infection are likely to regress within 1 to 2 years, with a low risk of progression to higher-grade lesions.

Background: Human papillomavirus (HPV) infection in adolescents has a high potential for resolution within 12 to 24 months, with a low risk of progression to invasive carcinoma. Guidelines recommend conservative management, including annual Pap smear, for low-grade lesions (atypical squamous cells of uncertain significance [ASCUS], low-grade squamous intraepithelial lesion [LSIL], or cervical intraepithelial neoplasia grade 1 [CIN-1]). However, the natural history of squamous intraepithelial lesions (SIL) in teenagers has been poorly studied.
Objective: To determine the prognosis of SIL at 12- and 24-month follow-up, including the risk of progression, persistence, and regression of different grades of disease.
Methods: Subjects included sexually active females aged 11 to 19 years who were evaluated at a public outpatient gynecology clinic from 1993 to 2006. Both retrospective and prospective data were gathered. All subjects initiated sexual activity within a year before the study, and intraepithelial cervical lesions were guaranteed as recent by a negative cytopathological result within 6 months before the study. Patients were categorized according to the need for biopsy within the follow-up period. Patients were excluded if the biopsy was normal or if lesions were high grade and required treatment. Follow-up appointments were completed every 6 months, with new Pap smears done at 2 consecutive 12-month periods from diagnosis. Cytopathologic/histologic results were analyzed for persistence, regression, or progression at 12 and 24 months.
Results: 144 girls were included for study. The mean age at diagnosis of SIL was 16.1 years, with an average age at sexual debut of 14.8 years. The median time from sexual debut to abnormal cytopathology was 12 months. Cytopathologic diagnosis was ASCUS in 15.3%, LSIL in 77.1%, and HSIL in 7.6%. Of specimens that were not submitted to biopsy within the study period, regression occurred in 91% of ASCUS, 63.6% of LSIL, and 50% of HSIL cases. Although most of the remaining patients showed persistence of the same graded lesion, 6.1% did progress from LSIL. There was no progression of HSIL to invasive disease. For cases in which biopsy was not performed, 59.4% of CIN-1 lesions and 74.1% of CIN-2 lesions showed regression, while 3.1% progressed from CIN-1 to CIN-2.
Conclusions: Although girls are susceptible to development of SIL within the first year after sexual debut, there is a significant regression of lesions of all grades at 2 years of follow-up.
Reviewer's Comments: It is staggering to consider that approximately 70% of adolescents will contract HPV infection within 3 years of sexual debut; 25% will develop LSIL during this period. This study reassures that many cases will regress spontaneously, but there is no definite method to identify which LSIL cases will regress, persist, or progress. As such, conservative management may be a reasonable approach, with one major obstacle—adolescents are notoriously lost to follow-up (as often as 30% to 65% of cases in prior studies). The study highlights (perhaps unintentionally) the value of prevention, if not through abstinence, then through wider acceptance of the HPV vaccine. (Reviewer-Alyssa Siegel, MD).

Keywords: Cervical Neoplasia, HPV, Pap Smear, Management

Print Tag: Refer to original journal article

Beware of Wearing Rubber Clogs on Escalators

Escalators, Rubber Clogs, and Severe Foot Injuries in Children.

Lim KBLL, Tey IK, et al:

J Pediatr Orthop 2010; 30 (July/August): 414-419

Escalator-related foot injuries while wearing rubber clogs can include crush injuries and traumatic amputation.

Background: Rubber clogs, frequently referred to by their trade name, "Crocs," have become extremely popular as footwear for children. There have been media reports about injuries on escalators that are related to Crocs.
Objective: To describe the types of injuries associated with wearing rubber clogs on escalators.
Design: Case series.
Methods: The authors reviewed the medical records of children with traumatic foot injury on an escalator during a 2-year period (September 2006 to September 2008). They also interviewed parents of children who sustained severe foot injuries while wearing rubber clogs.
Results: 17 children ranging in age from 2 to 9 years (mean, 5.5 years) sustained foot injuries on escalators. Of these, 13 children (77%) were wearing rubber clogs. Of the 13 children with rubber clogs, 9 had severe foot injuries requiring emergency surgery. The other 4 had mild-moderate injuries, requiring outpatient treatment. The spectrum of injuries while wearing rubber clogs included toe amputation, fractures or dislocations, degloving injuries, toenail avulsions, and lacerations. Common associated factors identified during parent interviews included the following: the foot was entrapped in the side panel of the escalator; the child was standing in the central part of the escalator stair at the time of injury; the rubber clog was crushed; and all children were supervised by an adult. No injuries occurred during horseplay, turning, or spinning on the escalator step.
Conclusions: While this is the first published report of escalator-related foot injuries associated with rubber clogs, the Consumer Product Safety Commission has reported 77 escalator-related entrapments since 2006; half of these cases resulted in injury, and 75 of 77 cases were associated with rubber clogs. The authors suggest that clog design characteristics predispose to accidental entrapment: the broad toe box gives a false perception of the space between the foot and the side of the escalator, and the soft pliable rubber is easily crushed by escalator steps. Based on this case series, the authors make several recommendations for preventing rubber clog-related foot injuries on escalators: (1) children should be accompanied and supervised by an adult; (2) children should not stand too close to the side of the escalator but close to the middle of the step; (3) children should face forward and hold the handrail; (4) parents should be careful of children’s clothing with straps and strings; (5) children should not be allowed to play, sit, or turn around on escalators; and (5) passengers should note the location of the emergency stop button.
Reviewer's Comments: Crocs, to many, would not win a beauty contest or a safety award. This article reminds us, in general, that escalators have the potential for injury, and that children should be closely supervised at all times when near or on an escalator. This is true, regardless of whether one is wearing Crocs. (Reviewer-Rachel Moon, MD).

Keywords: Foot Injury, Escalator, Shoes, Clogs

Print Tag: Refer to original journal article

Active Video Games Promote Low to Moderate Activity

Active Video Games to Promote Physical Activity in Children and Youth: A Systematic Review.

Biddiss E, Irwin J:

Arch Pediatr Adolesc Med 2010; 164 (July): 664-672

Children get mild to moderate exercise from playing active video games.

Background: Nearly one-half of preschool children do not meet the recommended levels of physical activity (60 minutes daily). Since the average child spends about 60 minutes a day playing video games. It makes sense to have children switch to active video game (AVG) play.
Objective: To review levels of metabolic expenditure and changes in activity patterns associated with active video game play.
Methods: Review of articles from 1998 to 2010 relating to video games and activity for patients aged <21 years. Eighteen articles were selected for the study.
Results: The mild to moderate increase in energy expenditure was similar to brisk walking, skipping, or stair climbing. The percentage increase ranged from 100% to 499% (mean, 222%). For games that relied on upper body movement, the increase was 116%; for lower body games, the mean percentage in energy expenditure was 212%. The heart rate increase was 43% for upper body AVG and 65% for lower body exercise.
Discussion: According to some experts, the heart rate increase must exceed 80%. Since the heart rate did not reach this level after AVG play, this activity should not be thought of as a replacement for strenuous physical activity but should be considered a light to moderate form of exercise. Although this information shows promise for improving energy expenditure, the limited amount of studies in the literature limits generalization of these results. Because the studies were performed under supervision in an exercise laboratory in contrast to the home environment when the activity may be more episodic, the results may not be as strong outside the research setting.
Conclusions: New-generation AVGs are an emerging technology that have shown promise to increase low to moderate activity levels in children. Ideally, these games should involve both the upper and lower extremities as AVGs using only upper arm activity do not increase energy expenditure as much as those involving the legs and lower back.
Reviewer's Comments: There were a limited number of studies in this review; however, this paper points out that the AVGs are one small answer to the challenge of how to get children to exercise more. Although children will be attracted to video games, active games are superior to passive games. Just as computers and phones are changing the way we read books and journals, game technology may replace some of the gym equipment as the preferred mode of exercise for our children and ourselves. It makes sense that using more muscles will increase energy expenditure; this review begins the important task of documenting the changes. The next challenge for the game developers is to produce products that involve more muscle groups. (Reviewer-Charles I. Schwartz, MD).

Keywords: Exercise, Video Games

Print Tag: Refer to original journal article

Uterine Exposure to Caffeine in Soft Drinks Affects Later Childhood Behavior

Intrauterine Exposure to Caffeine and Inattention/Overactivity In Children.

Bekkhus M, Skjøthaug T, et al:

Acta Paediatrica 2010; 99 (June): 925-928

Mothers consuming high levels of caffeine during pregnancy, derived from soft drinks rather than from coffee or tea, are likely to report hyperactive behavior in their 18-month-old toddlers.

Background: The products of caffeine have been found to accumulate in the fetus when exposed in utero. Dysfunction of dopaminergic neurotransmission is thought to be part of the etiology of attention-deficit/hyperactivity disorder (ADHD), and caffeine may affect these pathways. While substantial and consistent findings have shown the effects of caffeine on overactive behavior in animals, similar studies in children have heretofore been flawed.
Objective: To examine the role and timing of in utero caffeine exposure on later signs of inattention and hyperactivity.
Methods: Data were obtained from the Norwegian Mother and Child Cohort Study (through the Norwegian Institute of Public Health), for which pregnant women were recruited from 1999 to 2008. Mothers responded to questionnaires at 17 and 30 weeks' gestation and when the child was 18 months of age, for a sample size of 25,343 mother-child pairs. Measure of caffeine intake was based on maternal report of number of beverages consumed per day. Milligrams of caffeine were calculated using estimates of caffeine per beverage as delineated in prior studies. Infant inattention and hyperactivity were determined by items on the Child Behaviour Check List. Confounding factors (including maternal education level, mood, alcohol consumption, smoking, marital status, and child's head circumference) were considered.
Results: For caffeine consumption at 17 weeks' gestation, there was a small effect of high caffeine intake on the combined measures of inattention and hyperactivity. High caffeine intake at 17 and 30 weeks' gestation also showed a small effect on hyperactivity (when investigated separately from inattention) but not on inattention. These effects were found for caffeinated soft drinks but not for coffee or tea.
Conclusions: Intrauterine exposure to caffeinated soft drinks, but not coffee or tea, is associated with maternal reports of hyperactivity in their 18-month-old children.
Reviewer's Comments: Although the authors hypothesized that caffeine would affect later behavior, they were surprised to find an effect from only soft drinks rather than coffee. They question, in that case, whether there are other components that may pose a greater risk to behavior than the caffeine itself. They recognize limitations of the study, including reliability of the diagnosis of ADHD based on young age at assessment and on low number of items on the behavior check list. Also, genetic risks, including maternal ADHD and individual rate of caffeine metabolism, were beyond the scope of this study. (Reviewer-Alyssa Siegel, MD).

Keywords: Caffeine, ADHD, Pregnancy

Print Tag: Refer to original journal article

Is Oseltamivir Safe in Infants Less Than 12 Months Old?

Oseltamivir for Treatment of Influenza in Infants Less Than One Year: A Retrospective Analysis.

Siedler K, Skopnik H:

Pediatr Infect Dis J 2010; 29 (June): 495-498

The main side effects of oseltamivir in infants <12 months of age are vomiting, diarrhea, and feeding problems. Central nervous system adverse effects appear to be uncommon.

Objective: To review symptoms, length of fever, and adverse effects of oseltamivir on infants <12 months old with influenza.
Design/Methods: The authors retrospectively reviewed the medical records of all infants aged <12 months who were treated with oseltamivir at a major German teaching hospital from 2003 to 2007 for flu-like symptoms and with a positive rapid influenza test. Infants who were vaccinated against influenza, who were receiving immunosuppressants, or who began oseltamivir >48 hours after the start of symptoms were excluded. Infants were treated with oseltamivir 2 mg/kg twice daily for 5 days.
Results: 157 infants were included in the study; 78 infants (50%) suffered what the authors termed “adverse behaviors” after starting oseltamivir. The most common problems were vomiting (39%), diarrhea (22%), refusal to feed (4%), and restlessness (4%). Only one patient's oseltamivir regimen was discontinued due to an adverse side effect (refractory vomiting). The authors also found that 54% suffered what they called "complications." The most common were feeding difficulties (26%), nutritional difficulties requiring IV fluids (15%), pneumonia or bronchitis (12%), conjunctivitis (8%), febrile convulsions occurring before the start of oseltamivir (4%), otitis media (1.2%), meningitis (0.6%), and sepsis (0.6%). The authors report that 90% of the infants started oseltamivir within 24 hours of symptom onset. Defervescence below 38°C occurred within 36 hours of the start of oseltamivir for 82% of the infants.
Conclusions: The authors note that, while this study was limited by the lack of a control group, the data suggest oseltamivir is reasonably tolerated. Gastroenterological adverse effects were common, but not severe enough to discontinue therapy. Oseltamivir's adverse effects on the central nervous system were not common or severe in this study. All cases of febrile convulsions had no reoccurrence upon initiation of oseltamivir. Reduced awareness was not observed in any patients during therapy, but restlessness was observed in 6 patients. One of these 6 patients had sepsis, and another had meningitis. Furthermore, the authors are hopeful that oseltamivir is as effective in infants as in children 1 to 15 years old. The result that 82% of the patients in this study defervesced within 36 hours was consistent with previous studies of children aged 1 to 15 years (2.5 and 2.7 days); controls in the studies of 1 to 15 year olds averaged significantly longer (4.2 days of fever).
Reviewer's Comments: Given the paucity of data regarding the safety and utility of oseltamivir on infants aged <12 months, any studies regarding this issue are welcomed. However, this study's small sample size and descriptive design obviously weaken its conclusions. That being said, it seems clear that gastrointestinal symptoms are the most common adverse effect of oseltamivir in infants <12 months of age, and those adverse effects are generally not severe. (Reviewer-Daniel Coghlin, MD).

Keywords: Influenza, Infants, Oseltamivir

Print Tag: Refer to original journal article

Overall Heritability of Pyloric Stenosis Is Eighty-Seven Percent

Familial Aggregation and Heritability of Pyloric Stenosis.

Krogh C, Fischer TK, et al:

JAMA 2010; 303 (June 16): 2393-2399

In Danish children, there is a strong heritability of pyloric stenosis seen in both siblings and twins.

Objective: To determine the heritability of pyloric stenosis.
Methods: In Denmark, there is a national civil registration system. Since 1968, data have been recorded to track information such as birth, death, parental information, and medical procedures. Patients who had a pyloromyotomy were identified, and children aged <1 year who had a pyloromyotomy were considered to have pyloric stenosis. Using this model for identification, the rates of heritability between siblings, parents and cousins were determined. Specific attention was paid to twins, both monozygotic and dizygotic.
Results: Almost 2 million children were born during the study period. There were 3362 children aged <1 years who had surgery for a pyloromyotomy, for a rate of 1.7 per 1000 children; 81% of these children were boys. When looking at twins, the rate of pyloric stenosis was 3.1 per 1000 person-years for twins and 1.8 for singletons. The rate ratio (RR), which is the ratio between the rates of pyloric stenosis for children with an affected relative compared to the rate of pyloric stenosis in children without an affected relative, was calculated. The RR for twins was 67. When looking at monozygotic twins, the RR was 182 versus 29 for dizygotic twins. There were no differences in the RR in maternal and paternal relatives with pyloric stenosis. The overall heritability of pyloric stenosis was 87%.
Conclusions: In Danish children, there was a strong heritability of pyloric stenosis.
Reviewer's Comments: There are few developed countries that use tracking systems like that used in Denmark. Pyloric stenosis is a very serious condition. What scares parents even more would be having a second child with pyloric stenosis. The increased rates in monozygotic twins show that there is significant risk to future siblings. Although this study was done in a small country, the genetic heritability shows that parents need the information that future children may have an increased rate of pyloric stenosis after already having one child with this condition. (Reviewer-Charles I. Schwartz, MD).

Keywords: Pyloric Stenosis, Heritability

Print Tag: Refer to original journal article

Seasonality, Age Preference Found for K. kingae Infections

Invasive Pediatric Kingella kingae Infections: A Nationwide Collaborative Study.

Dubnov-Raz G, Ephros M, et al:

Pediatr Infect Dis J 2010; 29 (July): 639-643

Include *Kingella kingae* on the differential for children with bony pain between the ages of 6 and 36 months of age, especially between July and December.

Background: Interest in *Kingella kingae* as an invasive organism has been on the increase since detection capabilities have improved through nucleic acid amplification. However, studies have been underpowered to help us better understand this disease and its presentation.
Objective: To more precisely define the epidemiological, clinical, and laboratory features of invasive *K. kingae* disease.
Design: Retrospective, case-control, multi-center study.
Participants: Israeli children <18 years of age with laboratory-confirmed *K. kingae* invasive infection.
Methods: Researchers contacted pathologists and infectious disease physicians from 22 hospitals in Israel to see if they could recollect cases of *K. kingae* that they had managed and if they were able to retrieve supporting data. In centers where cases had occurred and documentation was present, a center representative performed a chart review of each case to collect data on symptoms (both before and during presentation), laboratory data (CBC, C-reactive protein [CRP], blood culture, synovial cultures if obtained, and erythrocyte sedimentation rate [ESR]), antibiotics administered, and site of infection.
Results: The annual incidence of *K. kingae* infection was 9.4 per 100,000. The most common site of infection was skeletal, then bacteremia, followed by endocarditis. Many participants described antecedent upper respiratory symptoms approximately 1 week before presentation, but few patients had fever or other systemic symptoms upon presentation. Laboratory results were often normal except in cases of *K. kingae* endocarditis. Participants with endocarditis often had fevers, which appeared to be more toxic on presentation, and were more likely to have leukocytosis and an elevation in CRP and ESR. The rates were higher in July through December. In additional, the range of ages in previously healthy children with an invasive *K. kingae* infection was 6 to 36 months; however, those with chronic health conditions were 4 months to 15 years of age.
Conclusions: Participants found to have *K. kingae* infections were often diagnosed between July and December, were 6 to 36 months of age, and typically did not have systemic symptoms or abnormal laboratory values. Exceptions to these were participants with chronic health issues, who spanned the pediatric age range, and those with endocarditis, who were more likely to have systemic symptoms, including fever and abnormal laboratory values. In all cases, a high index of suspicion for *K. kingae* was necessary to make the diagnosis.
Reviewer's Comments: This is a nice study that provides the necessary numbers to support what anecdotes and case series studies have suggested in terms of presentation and site of infection. Since *K. kingae* requires such a high index of suspicion and is so fastidious in its growth patterns, I suspect the incidence is much higher than indicated by this retrospective study. As always, this means a prospective study is in order to increase our understanding of all its variability in presentation and progression. (Reviewer-Lisa Humphrey, MD).

Keywords:*Kingella kingae*

Print Tag: Refer to original journal article

Telephone Coaching for Asthma -- Does It Work?

Telephone Coaching for Parents of Children With Asthma: Impact and Lessons Learned.

Garbutt JM, Banister C, et al:

Arch Pediatr Adolesc Med 2010; 164 (July): 625-630

The telephone coaching program for asthma evaluated in this study improved parent asthma-related quality of life but had no other significant effects.

Background: Under perfect conditions, asthma can be well controlled with inhaled corticosteroids and careful monitoring for the need for bronchodilators. Unfortunately, outside of study conditions, care is often less than optimal. It is difficult and time consuming to provide care management outside of the clinical setting, and few offices can provide this care for their patients.
Objective: To determine if an asthma coaching program can improve the quality of life for families of children with asthma, as well as reduce the need for urgent care.
Design/Participants: This was a randomized, controlled trial of patients who had sought out after-hours care for asthma in 2004 and 2005 in a large clinic system. To be eligible, a child had to be between 5 and 12 years of age and have had asthma for at least 1 year with at least 1 exacerbation.
Methods: Families were randomized to 1 of 2 groups. The intervention group received a 12-month structured telephone coaching program that focused on the proper use of controller medications, when to use albuterol, keeping the asthma action plan up to date, and fostering a collaborative relationship with the primary care provider. After an initial 2-week training period, group meetings occurred approximately every 6 weeks. The control group received usual care. The main outcome of interest was the parent and child quality of life, which was measured with the Pediatric Asthma Quality of Life Questionnaire. Medical records were also audited in order to measure the use of urgent care for asthma. Over the 2-year period, 362 children were randomized in the study. Over the study period, the parent asthma-related quality of life improved in both groups, although the improvement was significantly better in the intervention group (0.7) than in the control group (0.3). There were, however, no significant improvements in child asthma-related quality of life measures or in the average number of urgent care events.
Conclusions: The telephone coaching program for asthma improved parent asthma-related quality of life but had no other significant effects.
Reviewer's Comments: Although it did not involve a significant amount of physician time, this was a time-intensive program. However, since it did not reduce utilization, it may be hard to justify the cost. Before accepting the conclusions, however, it would be helpful to examine the program's educational content, survey the participants to see how well the teaching and coaching was received, and evaluate the overall satisfaction with the program. Perhaps it is the message and not the principle that needs fine tuning. (Reviewer-Aaron E. Carroll, MD, MS).

Keywords: Asthma, Telephone Coaching

Print Tag: Refer to original journal article

Children Hospitalized for H1N1 Likely Have Underlying Illness

Clinical and Epidemiologic Characteristics of Children Hospitalized With 2009 Pandemic H1N1 Influenza A Infection.

Kumar S, Havens PL, et al:

Pediatr Infect Dis J 2010; 29 (July): 591-594

In this study, children hospitalized with severe H1N1 influenza disease were older and more likely to have a co-morbid illness (such as neuromuscular disease) compared to children hospitalized with mild disease.

Background: Little is known about which children were at greatest risk for complications from H1N1 influenza during the 2009 pandemic.
Objective: To examine the demographics, clinical characteristics, and costs associated with pediatric hospitalizations for H1N1 influenza.
Methods: The researchers conducted a chart review of hospitalizations for children admitted to Children's Hospital of Wisconsin with laboratory-confirmed H1N1 influenza from April to August 2009. When requested by attending physicians, nasopharyngeal swabs were sent for polymerase chain reaction (PCR) testing to identify viral strain. Data on demographics, clinical characteristics, clinical outcomes, and charges were collected. Children were also classified according to whether their clinical outcomes were mild-moderate or severe. Multivariate logistic regression analyses were conducted to identify predictors of severe illness.
Results: 75 children were admitted to the hospital from April through August 2009 with laboratory-confirmed H1N1 influenza as their primary reason for hospitalization. Of these, 24% had upper respiratory infection alone, 57% had mild-moderate illness, and 19% had severe illness. Cough was the most frequent presenting complaint (96%). In total, 75% of children had an underlying medical condition, of which asthma was the most common (45%). Of children for whom body mass index data were available (n=41), 28% were obese, and 12% were overweight. Of the 52 blood cultures performed, none were positive for pathogens (5 were contaminated with coagulase-negative staphylococcus). No other viruses were present on PCR testing. Chest radiographs (n=67) were normal in 22% of children. A total of 19% of children were admitted to the PICU. Compared to others, children admitted to the PICU were more likely to be older (mean, 12.6 years vs 3.9 years), to be female (79% vs 36%), and to have an underlying illness (86% vs 72%). Two children admitted to the PICU died. Using a step-wise multiple logistic regression model, gender, neuromuscular disease, and intravenous steroids were associated with severe clinical outcome. The mean charges were $254,000 for children admitted to the PICU and $15,000 for children admitted to the general ward.
Conclusions: Children hospitalized with H1N1 influenza during 2009 had a wide range of clinical severity, and children admitted to the PICU were more likely to be older and have an underlying illness.
Reviewer's Comments: Although not nationally representative, this study provides important insights into the H1N1 epidemic among children. Since little was known about H1N1 before the pandemic, pediatric physicians were generalizing from their experiences with seasonal influenza. Although the youngest are usually at greatest risk for severe seasonal influenza, it turns out that older children were at most risk during the H1N1 pandemic. The challenge for the practicing physician during pandemic flu remains not only to identify which children have disease, but also to determine which children are at highest risk for severe disease. (Reviewer-Beth A. Tarini, MD).

Keywords: H1N1 Influenza, Illness Severity, Children, Adolescents

Print Tag: Refer to original journal article

Swaddling Safety Questioned

Influence of Swaddling Experience on Spontaneous Arousal Patterns and Autonomic Control in Sleeping Infants.

Richardson HL, Walker AM, Horne RSC:

J Pediatr 2010; 157 (July): 85-91

Infants introduced to swaddling at 3 months have significantly decreased cortical arousal compared to those swaddled soon after birth.

Background: The practice of swaddling has been thought to cause tranquil behavior and improve sleep by reducing arousability and startling. However, SIDS has been associated with an impaired ability to arouse from sleep in response to a respiratory or cardiovascular challenge. Studies have shown no changes in arousability when children routinely sleep swaddled. Little is known about the arousability of infants introduced to swaddling at a later age.
Objective: To identify the effects of swaddling on autonomic control, sleep, and arousal patterns.
Design: Prospective, longitudinal study.
Participants: 27 full-term healthy infants with normal birth weights; 15 infants were routinely swaddled, and 12 were naïve to swaddling.
Methods: Infants naïve to swaddling were introduced after 4 weeks of age. Infants had daytime polysomnography that included electroencephalography, electromyography, and electrocardiography (ECG); abdominal skin temperature, thoracic and abdominal movements, nasal/mouth airflow, expired CO_2, and oxygen saturation were also recorded. Infants were studied when swaddled and when not swaddled at 3 to 4 weeks and 3 months and were swaddled by the same investigator. Sleep states were defined as active, quiet, or indeterminate. Spontaneous arousal was defined as arousal without external stimuli and was classified as subcortical or cortical, expressed as arousals per hour of sleep. Heart rate variability was assessed using interbeat (R-R) intervals on ECG, which were thought to be a measure of autonomic nervous system balance.
Results: Decreases in subcortical activations and arousals were seen in both naïve and routine groups at all ages during quiet sleep. Consistent arousal frequencies were observed in the routinely swaddled groups regardless of whether they were swaddled. At 3 months during active sleep, the infants naïve to swaddling had decreased cortical arousals (3.4 per hour) compared to those with routine swaddling (7.1 per hour; $P < 0.05$). No variability in heart rate was seen in routinely swaddled infants; however, when infants were swaddled during active sleep, heart rate variability was significantly increased in the naïve group compared to the routine group ($P < 0.05$). The duration of sleep was longer at 3 months when naïvely swaddled infants were compared to those not swaddled. This difference was not significant in infants who were routinely swaddled. No differences in blood oxygen saturation were noted in either group at any time.
Conclusions: Autonomic control, arousability, and sleep time are affected by postnatal age and previous swaddling experience, such that infants naïve to swaddling show changes at 3 months that are not seen in infants who are routinely swaddled.
Reviewer's Comments: The findings in this study suggest that infants naïve to swaddling may be at greater risk of developing SIDS, and introduction to swaddling should occur early in life. Such conclusions are controversial and have not been substantiated in other trials. In any case, more research needs to be done before any recommendations on swaddling are implemented. (Reviewer-Seth L. Schulman, MD).

Keywords: Swaddling, Arousability

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Clinical Dehydration Scale Can Predict ED Stay in Gastroenteritis

External Validation of the Clinical Dehydration Scale for Children With Acute Gastroenteritis.

Bailey B, Gravel J, et al:

Acad Emerg Med 2010; 17 (June): 583-588

A clinical dehydration scale using features of general appearance, eyes, mucous membranes, and tears can reliably predict expected length of stay in the emergency department in patients with acute gastroenteritis.

Background: In 2004, a group of investigators from Canada developed a clinical dehydration scale (CDS) with 4 clinical characteristics: general appearance (normal, thirsty/restless/lethargic, drowsy/limp/sweaty/comatose), eyes (normal, slightly sunken, very sunken), mucous membranes of tongue (moist, sticky, dry), and tears (positive tears, decreased tears, absent tears). They assigned scores for each category as 0, 1, or 2. A total score of 0 indicated no dehydration, a score of 1 to 4 indicated some dehydration, and a score of 5 to 8 indicated moderate to severe dehydration. When validated prospectively at their hospital, higher scores correlated with a longer length of stay in the emergency department (ED).
Objective: To validate a CDS in a different hospital from the one where the CDS was originally derived.
Design/Methods: A prospective cohort study was performed over a 1-year period in which triage nurses were trained in applying the clinical criteria of the CDS. Patients studied were those aged 1 month to 5 years who had a CDS obtained at triage and had a final diagnosis of gastroenteritis, gastritis, or enteritis. Exclusion criteria included those with chronic disease, a repeat ED visit within 7 days, or diarrhea persisting for >10 days. The primary outcome studied was the length of stay (LOS), defined as the time first seen by a physician to the time of discharge.
Results: 150 patients (mean age, 22 months) were enrolled. Of these, 37% (n=56) had no dehydration, 49% (n=74) had some dehydration, and 13% (n=20) had moderate/severe dehydration by CDS scoring. LOS increased as the CDS scores increased, ranging from a median of 54 minutes for those with a lower CDS, to 128 minutes for the medium CDS, to 425 minutes for the highest CDS.
Conclusions: This CDS is further validated in a different pediatric center and is a good predictor of length of stay in an ED for children with acute gastroenteritis.
Reviewer's Comments: The authors also looked at whether the use of oral versus IV rehydration correlated with the CDS and found a "trend" toward greater IV use with the higher scores. Interestingly, they monitored bicarbonate (CO_2) and serum sodium values and CDS scores and did not find any significant differences among the assigned triage categories. The authors believe that, despite the extremely common problem of acute gastroenteritis, this is the only dehydration scale for children that has been derived and validated by recognized measurement methodology. A valid triage tool has multiple advantages. First and foremost, triage nurses can more correctly identify the sicker children, because the art of triage is sometimes difficult. In addition, investigation and treatment (such as types of rehydration warranted) could potentially be started before the initial assessment by the ED physician. (Reviewer-Mark F. Ditmar, MD).

Keywords: Dehydration, Gastroenteritis

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