Despite potential problems with variability in drug metabolism among those being treated, codeine will likely remain a commonly used pediatric analgesic due to the lack of other useful well-studied agents.

**Background:** The widespread use of codeine in children has been questioned in recent years because of concerns about unpredictable analgesia and side effects compared to other agents.

**Objective:** To debate the advantages and disadvantages of the use of codeine as an analgesic for children.

**Design/Participants:** 2 debaters (a pediatrician from the United Kingdom and a pharmacist from New Zealand) present arguments for and against the use of codeine. The pharmacist lays out his objections against codeine, which has been used for its analgesic, anti-tussive, and anti-diarrheal properties. Codeine's analgesic action is mediated through its metabolite, morphine. Clinicians have long noted variability and lack of analgesia in the response to codeine among certain patients, which is likely due to variations in a particular gene—CYP 2D6—that governs the metabolism of codeine to morphine. Metabolizers can be poor, intermediate, or extensive; 7% to 10% of whites are slow metabolizers, so codeine's conversion to morphine is limited, and this would partly explain the lack of efficacy. Only 2% of Asians are slow metabolizers. Neonates have enzymatic immaturity, and codeine is an impractical drug in this age group. Codeine has 1/10 the potency of morphine, so 60 mg of codeine has a morphine equivalence of 6 mg. The pharmacist makes a pitch for the use of oral morphine, compared to codeine, in hospital settings. This is not common in the United States, in part because of its taste as well as greater familiarity with intravenous use. The pediatrician argues that codeine has a long history of clinical usage with effective dose regimens and is available in liquid formulations for children. He concedes, however, that there are no large randomized trials involving codeine in discrete age-specific clinical situations. He argues that it should not be the drug of choice for acute severe pain in cases in which morphine, in particular, is a drug of choice. Until medications such as Tramadol, hydromorphone, or oxycodone are better studied in children, he believes codeine remains the main oral medication if acetaminophen and nonsteroidal anti-inflammatory medications are ineffective. Regarding safety, he notes that the use of codeine for many years and in many patients suggests a good safety record.

**Conclusions:** Both discussants note that experience with codeine is extensive and that alternatives for moderate pain currently are limited. They agree that codeine is likely to remain a popular drug in pediatric medicine for the foreseeable future.

**Reviewer's Comments:** The fact of slow versus fast metabolizers of codeine is likely under-appreciated by clinicians. It is something to consider if you have a patient on codeine who is not responding to standard dosing. Also, be sure to think about adding acetaminophen in some combination for the synergistic effects. (Reviewer-Mark F. Ditmar, MD).

© 2010, Oakstone Medical Publishing

Keywords: Codeine, Children

Print Tag: Refer to original journal article
Neurosurgical intervention may not be needed for defecation disorders even when MRI is abnormal.

**Background:** Constipation and non-retentive fecal incontinence (NRFI) are common pediatric problems. In >90% of cases, no organic pathology can be found, and the etiology is deemed functional. A small proportion of children have lumbosacral spine (LSS) abnormalities on physical examination. There have been reports of improvement after neurosurgical intervention despite the absence of neurological symptoms, prompting recommendations for MRI in children with intractable defecation disorders.

**Objective:** To identify rates of LSS abnormalities in children with defecation disorders, and to determine if a relationship exists between LSS on MRI and neurologic symptoms on examination.

**Design:** Prospective study.

**Participants:** 130 children with intractable constipation and 28 children with NRFI were seen at a tertiary pediatric motility center.

**Methods:** Inclusion criteria were intractable functional defecation disorder and age 6 to 18 years. Children with a known organic etiology for bowel dysfunction (such as Hirschsprung disease), those with known spinal cord abnormalities, and those with mental retardation were excluded. After a thorough history, a pediatric neurologist blinded to the MRI results performed a neurologic examination focusing on pareses, reflexes, and sensory disturbances of the LSS and lower extremity. All children had an MRI, with special attention given to detect findings such as occult spina bifida (OSB) or abnormalities of the filum terminale. Some children had studies evaluating colonic transit. All children were started on a standard behavioral regimen as well as laxatives and disimpaction treatment as indicated.

**Results:** 158 children (96 males; median age, 10 years; range, 6 to 18 years) were eligible for the study. MRIs were not performed in 6 patients. MRI results were abnormal in 4 of 125 children (3%) with constipation, 3 of whom had a gluteal cleft abnormality. Terminal filum lipoma was found in 2 children with normal examination, who responded to laxative treatment. OSB was found in one child without neurologic complaint; fecal incontinence improved after treatment. Another child with a terminal filum lipoma had sensory abnormalities and gluteal cleft deviation, but fecal incontinence resolved after treatment. One child with NRFI had terminal filum lipoma and normal examination, with resolution after treatment. Overall, every child with an abnormal MRI obtained relief with treatment. None required neurosurgical intervention.

**Conclusions:** Rates of LSS abnormalities detected on MRI are low. MRI to assess LSS is not required if neurologic examination is normal and can be limited to cases in which complaints and/or symptoms are present.

**Reviewer's Comments:** This is a valuable study because it teaches us to depend on our ability to obtain a history and perform a physical examination to limit unnecessary and expensive tests. The fact that children improved despite potentially correctible abnormalities on MRI should lead one to question the value of neurosurgical intervention in cases in which the history and physical examination are normal. (Reviewer-Seth L. Schulman, MD).

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Keywords: Defecation Disorders MRI

Print Tag: Refer to original journal article
The studies that evaluate prognostic factors associated with constipation are of poor quality, and most of the evidence is insufficient, limited, or conflicting.

**Background:** Constipation in children is an extremely common problem in general pediatric practice. In spite of this, very little is known about factors that affect the course of constipation.

**Objective:** To perform a systematic review of the evidence on factors that predict the course of constipation in children with and without treatment.

**Methods:** The authors conducted a keyword search of MEDLINE (1965-2009) and Embase (1980-2009). Two reviewers independently evaluated abstracts for the following inclusion criteria: age 0 to 18 years; prospective observational design; prognostic evaluations of determinants of constipation duration or recurrence; and at least 8-week follow-up. Reviewers assessed study quality using a list of modified criteria for systematic reviews of prognostic studies. Agreement between reviewers’ scores was assessed. Two reviewers performed independent data extraction. Primary outcome was recovery from constipation.

**Results:** The search yielded 2882 abstracts. Only 20 abstracts were deemed potentially relevant; after further review, 6 articles were excluded, leaving 14 articles for analysis. The reviewers agreed on 86% of items on the quality criteria list. They found only 21% of articles to be of high quality. Some problems included measurements not being independent of prognostic factors, non-standardized measures of prognostic factors, and absence of multivariate analysis. In addition, duration, outcome, and severity were measured differently across studies. In children followed up for 6 to 12 months across studies, 49% (±12%) recovered and stopped laxative use, whereas 61% (±19%) recovered regardless of laxative use. Studies conducted in the gastroenterology department had a higher recovery than those conducted in general pediatric departments. Evidence was insufficient regarding the influence of previous urinary tract infection or relaxation of the anal sphincter and recovery. There was conflicting evidence regarding the effect of sex, age, fecal incontinence (presence or frequency), palpable rectal mass or abdominal mass, and recovery. There was limited evidence to suggest no association between abdominal pain or colonic transit time and recovery. There was strong evidence to suggest no association with family history and recovery.

**Conclusions:** Most of the studies that examine prognostic factors for constipation course in children are of poor quality and provide limited, insufficient, or conflicting evidence on these factors.

**Reviewer’s Comments:** Physicians who rack their brains wondering why some children with constipation recover better than others will continue to rack their brains after reading this study. The positive side is that physicians who don't know what factors affect a child's recovery from constipation can be reassured that they are not alone. This study demonstrates that no one else knows either. (Reviewer-Beth A. Tarini, MD).

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**Probiotics Help Suspected Allergic Colitis**

*Lactobacillus GG Improves Recovery in Infants With Blood in the Stools and Presumptive Allergic Colitis Compared With Extensively Hydrolyzed Formula Alone.*

Baldassarre ME, Laforgia N, et al:

J Pediatr 2010; 156 (March): 397-401

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*Lactobacillus GG* added to an extensively hydrolyzed casein formula hastens the resolution of hematochezia in infants with suspected cow's milk allergic colitis.

**Objective:** To determine (1) whether the addition of *Lactobacillus rhamnosus* GG (LGG) to an extensively hydrolyzed casein formula improves the recovery of infants with suspected cow's milk allergic colitis (s-CMAC), and (2) whether fecal calprotectin can be used as a marker for s-CMAC.

**Methods:** Infants from 0 to 12 months of age with s-CMAC were referred from primary care offices to the principal investigator; s-CMAC was defined as the presence of macroscopic blood in the stool with or without mucus and with or without diarrhea, in the absence of any systemic symptoms. All infants with s-CMAC underwent a history and physical examination, prick testing and patch testing for cow's milk proteins, stool cultures, and stool parasite testing. At the initial visit and 4 weeks later, occult blood was checked on 3 different samples, and fecal calprotectin was checked as well. Formula-fed infants were randomized in a double-blind, placebo-controlled manner to either receive Nutramigen with or without LGG. Mothers of breastfed infants were advised to adhere to a dairy-free diet. A separate cohort of demographically matched healthy infants was also followed, with monitoring of their fecal calprotectin levels.

**Results:** 30 infants with s-CMAC and 32 matched healthy infants were enrolled. At diagnosis of s-CMAC, 18 patients had mucus in their stools, and 7 had loose stools; the skin test was positive in 3 infants, and the patch test was positive for one patient. None of the healthy infants had occult blood in their stool. After the 4-week dietary intervention on the patients with s-CMAC, stool occult blood was negative in 12 of 12 infants given LGG and 5 of 14 infants not given LGG (*P* =0.027). Two of the 4 breastfed infants continued to have hematochezia. Fecal calprotectin levels were significantly higher in patients with s-CMAC than for the matched control group at presentation (mean, 326 vs 132; *P* <0.0001) and less so after the 4 weeks of dietary intervention (158 vs 94; *P* =0.03).

**Conclusions:** LGG added to an extensively hydrolyzed casein formula improved the resolution of hematochezia in infants with suspected cow's milk allergic colitis. The authors also conclude that calprotectin levels are higher in patients with s-CMAC, suggesting that it is a useful marker of intestinal inflammation in patients with s-CMAC.

**Reviewer's Comments:** What can't probiotics do? From upper respiratory infections to gastroenteritis to antibiotic-associated diarrhea, probiotics show promise. According to the results of this small study, add suspected cow's milk allergic colitis to the list. LGG seems to reduce inflammation and hematochezia (when used in addition to an extensively hydrolyzed casein formula). While it's nice to know that calprotectin could be a marker of intestinal inflammation, it seems to have little practical benefit in the diagnosis and management of s-CMAC. (Reviewer-Daniel Coghlin, MD).

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Keywords: Probiotics, Cow's Milk Allergic Colitis

Print Tag: Refer to original journal article
Although 6 weeks of griseofulvin therapy is better than 4 weeks for tinea capitis, mycologic and clinical cure rates are only moderately successful.

**Objective:** To assess cure rates (both clinical and microbiologic) with longer-term griseofulvin therapy, and to determine the reliability of the clinical exam in distinguishing tinea capitis from other differential diagnostic entities, such as atopic dermatitis.

**Design/Participants:** This was a prospective unblinded intervention study involving children aged 1 to 12 years who were seen at an outpatient clinic in Cleveland with a clinical diagnosis of tinea capitis; 98% of the children were black.

**Methods:** Clinical evaluation and culture of the scalp lesion for dermatophytes were performed at enrollment, and the patients were seen at 4, 6, and 8 weeks. Initial evaluation included assessment of symptoms and signs including the presence of alopecia, scalp itching, lymphadenopathy, and scaling. After the culture, patients were begun on oral griseofulvin at a dose of 20 to 25 mg/kg per day for 6 weeks, as well as twice-weekly topical selenium sulfide 2.5% shampoo. The addition of shampoo therapy has been associated with earlier mycologic cure rates. Of the 99 patients originally enrolled, 79 had a positive dermatophyte culture obtained on the first day. Of these 79 patients, 19 were lost to follow-up after the first visit, and another 19 missed one or more follow-up visits. Therefore, complete data were available on 41 patients.

**Results:** The authors found an observed mycologic cure rate of 89% in those who were seen for recheck up to 8 weeks. Clinical cure, defined as complete resolution of symptoms, occurred in only 66% of patients by 8 weeks. Complete cure, both mycologic and clinical, was seen in only 49% of patients. The additional 2 weeks of therapy from 4 to 6 weeks resulted in significant increases in both mycologic and clinical cure rates. Regarding symptoms and signs as predictors, the authors found that any one finding—itching, lymphadenopathy, alopecia, or scaling—was as predictive as combinations, with positive predictive values in the 77% to 88% range.

**Conclusions:** The use of griseofulvin at a dose of 20 to 25 mg/kg per day in a high-risk population for 6 weeks with adjunctive shampooing was, in the authors’ words, "moderately successful" as a treatment. In high-risk populations, the use of cardinal symptoms may be considered reasonable to diagnose tinea capitis in lieu of culture.

**Reviewer's Comments:** The authors concede problems with their study. The lost-to-follow-up rate was high, and they did not objectively measure compliance. Were cure rates lower due to lack of medication administration or medication ineffectiveness? The authors also question whether a culture is truly necessary given the imperfect sensitivity of fungal culture, the cost of culture, and their documentation of the high reliability of cardinal symptoms for the diagnosis. If you treat empirically without culture, this paper gives you some ammunition because of the high false-negative rates of culture seen in the diagnosis of tinea capitis. (Reviewer-Mark F. Ditmar, MD).

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Keywords: Tinea Capitis, Griseofulvin

Print Tag: Refer to original journal article
Because of a high likelihood of intracranial abnormalities in infants aged <2 years with new-onset afebrile seizures, some type of neuroimaging (CT or MRI) should be obtained.

**Background:** In a child who has a seizure not associated with a fever, there has been controversy as to which diagnostic modalities, if any, should be used to evaluate for a possible underlying problem.

**Objective:** To investigate presenting characteristics of new-onset afebrile seizures in younger children and the yield of neuroimaging.

**Design/Participants:** Prospective data were obtained on 317 patients between 1 and 24 months of age who presented with new-onset afebrile seizures at the Children's National Medical Center.

**Methods:** As part of a protocol, patients underwent basic laboratory studies as well as imaging with a head CT. MRIs were performed if there continued to be focal findings or the CT was abnormal or equivocal. Seizures were classified, and the witnessed duration of seizures and the total number of seizures were noted.

**Results:** EEG studies were performed on 90%, CT on 94%, and MRI on 57%. Most seizures were classified as tonic-clonic, with the second most common type in patients aged <1 year being infantile spasms. Recurrence was common. Most patients had >1 seizure on presentation, and these seizures were typically brief in nature. In 44% of patients, seizures lasted <1 minute; in 8%, they lasted >20 minutes. One-third of CT studies were abnormal; in 9% of patients, the CT required acute medical or surgical management, such as treatment for diffuse edema, acute hydrocephalus, vascular malformation, stroke, trauma, or tumor. Of the MRIs, more than one-half were abnormal. The most common abnormality was cerebral dysgenesis in 16%. In patients whose CT was originally normal, MRIs were obtained in about one-third. However, only 1 MRI study resulted in altered medical management.

**Conclusions:** New-onset seizures in afebrile infants aged <24 months are usually brief. Recurrence is common, and strong consideration should be given to admitting patients in younger age ranges. In addition, a CT scan can alter management significantly in nearly 1 of 10 infants. MRI should be strongly considered for all infants in these settings, as nearly 1 of 6 has cerebral dysgenesis.

**Reviewer's Comments:** There has been debate about the value of early imaging in infants with afebrile seizures. This paper demonstrates a high yield in these younger patients when early imaging is performed. The radiation risk of CT appears to be outweighed by the likelihood of detecting an important abnormality. In these patients, 9% of those who underwent CT required acute intervention. The value of the MRI is more debatable. MRI did pick up abnormal findings in more than one-half of infants, although it did not alter management except in a single case. However, identifying cerebral dysgenesis and possible etiologies can potentially make a significant difference in terms of counseling and prognosis, which are vital for parents. (Reviewer—Mark F. Ditmar, MD).

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Keywords: Afebrile Seizures, Infants, Neuro-Imaging

Print Tag: Refer to original journal article
The evidence behind newborn hearing screening is based on a few small studies with methodological limitations.

**Background:** The goal of universal newborn hearing screening is to identify children with hearing deficits soon after birth in order to initiate interventions to improve health outcomes.

**Objective:** To evaluate the benefits and harms of universal newborn hearing screening.

**Methods:** The authors searched 11 bibliographic databases (including MEDLINE, EMBASE, and Cochrane Reviews) without language or publication year restrictions through October 2007. Two reviewers independently selected studies and extracted and assessed data. Study types were categorized into diagnostics, screening, and treatment. Validated instruments were used to evaluate the quality of the studies. The authors could not perform a meta-analysis based on the heterogeneity of studies.

**Results:** The search yielded 15,354 citations. After review of 302 relevant articles, 274 were excluded. The authors reported the studies to be of poor quality and noted major deficiencies in all but one. For diagnostics, 12 publications (9 studies) were identified. Most studies focused on the performance of otoacoustic emissions (OAE), which had a sensitivity range of 0.50 to 1.0 and a specificity range of 0.49 to 0.97. However, the reference test for studies, auditory brainstem response (ABR), had a high error rate. A study of 2-stage screening (OAE, then ABR) showed better test performance (sensitivity, 0.917; specificity, 0.985). For screening, 10 publications (2 studies) were identified. One study (Kennedy) compared outcomes across regions that screened and those that did not, while the other (Yoshinaga-Itano) compared outcomes between hearing-impaired and screened children, a weaker methodology. Both studies reported improvements in receptive language development for screened children. Only Yoshinaga-Itano found significant improvements in expressive language. Neither study evaluated outcomes of quality of life, educational development, or social or emotional development. For treatment, 6 studies were identified, but they provided information on language development in hearing-impaired children only. In general, most studies found improved receptive and expressive language development in children treated early with cochlear implants or those enrolled in an early intervention program.

**Conclusions:** The quality of evidence behind various aspects of newborn hearing screening (diagnostic, screening, treatment) is of modest quality and reveals a potential for hearing screening to improve language outcomes.

**Reviewer’s Comments:** The take-home message is that the evidence behind various aspects of newborn hearing screening is poor. This should not be surprising to anyone who follows this technology; we face a knowledge chasm in many aspects of evidenced-based medicine. Although there are benefits to screening of newborns, there is potential harm through false positives (although no studies evaluated this). Nonetheless, care must be taken to explain to parents the meaning of a false-positive result and to emphasize that it does mean the child will have future hearing problems. (Reviewer-Beth A. Tarini, MD).

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Keywords: Hearing Screening, Newborns, Accuracy, Effectiveness

Print Tag: Refer to original journal article
One Solution to Malpractice Problem -- Change the Evidence Standard

Solving the Medical Malpractice Crisis: Use a Clear and Convincing Evidence Standard.

Engel E, Livingston EH:

Arch Surg 2010; 145 (March): 296-300

A change of the evidence standard from "more likely than not" to "clear and convincing" might sharply reduce malpractice judgments against physicians.

Objective: To propose a change in the evidence standard upon which malpractice judgments are based.

Design: A review article on the current evidence standard for malpractice awards with recommendations on change.

Results: Rather than the current tort reform proposals that rely mainly on damage control after a malpractice verdict is rendered, the authors believe attention should be directed to the courtroom process before decisions are made. Evidence standards vary in courtroom settings. In criminal cases, the most rigid standard—beyond a reasonable doubt—is applied. An intermediate standard—clear and convincing—is applied for custody decisions and medical board actions. The most liberal standard is "preponderance of the evidence," which equates to "more likely than not," meaning any probability >50% that actions are improper. It is this standard that is applied in medical malpractice cases. The authors argue that changing the standard from the "more likely than not" to "clear and convincing" would solve most malpractice problems for physicians in a way that they believe would be palatable to the public and the legal community. There can be a high false-positive rate with a physician who is innocent potentially having only a 50/50 chance of being found not guilty in a trial. Clear and convincing equates to a 95% probability standard, while beyond a reasonable doubt equates to 99%. Studies have found an overall incidence of 0.8% to 1% of true negligence in hospital admissions. At these prevalence rates, if there are 1000 cases, 10 would constitute true malpractice, with 990 cases in which no malpractice was committed. Using the current preponderance of evidence standard (essentially 50/50) for those remaining 990 cases would result in 495 innocent and 495 falsely guilty verdicts, with a positive-predictive value of a trial at only 2% that a guilty verdict has identified a guilty physician. Increasing to the 95% standard improves the rate to 17% (only 50 of 990 who are not guilty will be found guilty). By changing the evidentiary standards, the authors believe there could be an 8- to 9-fold reduction in the number of trials wrongly finding innocent physicians guilty of medical malpractice.

Conclusions: Adopting a different evidence standard should be considered. The new standard would not necessarily limit compensation for injuries in cases in which there was negligent practice, but rather limit the number of improper judgments.

Reviewer’s Comments: The authors make the point that the approach to malpractice reform needs to take place before the verdict and suggest changing the rules of evidence. Others have argued for more stringent rules of what constitutes expert witnesses or even the utilization of medical tribunals, rather than juries, to hear the evidence. In all cases, the emphasis is on pre-verdict decisional intervention rather than post-verdict economic limitations. (Reviewer-Mark F. Ditmar, MD).

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Keywords: Malpractice

Print Tag: Refer to original journal article
Background: Cancer survival rates in the United States among children have significantly improved in the last 3 decades, from about 60% in the 1970s to >80% today. Cancer survival rates among young adults are not as well understood, however, as they are sometimes combined with measurements of adults. Lymphomas account for about one-fourth of cancers in this age group. The incidence of lymphomas in young adults aged 20 to 29 years are increasing faster than in those aged <20 years.

Objective: To determine if differences exist between survival rates of children/adolescents and young adults with non-Hodgkin lymphoma.

Methods: This analysis used data from the Surveillance, Epidemiology, and End Results (SEER) database, which collects data from 13 areas across the country. Data were abstracted for patients <30 years old who had non-Hodgkin lymphoma between 1992 and 2001. Data abstracted included sex, race, cancer stage, year of diagnosis, treatment, income and poverty level, histology, and migration. Cases were followed through 2005 for vital status. Patients still alive after 5 years were censored. The main outcome of interest was the 5-year survival rate for non-Hodgkin lymphoma.

Results: Over the study period, 2442 people aged <30 years were diagnosed with non-Hodgkin lymphoma; 40% were <20 years of age, and 60% were between 20 and 29 years. There were about twice as many were males as females. A higher percentage of young adults were diagnosed at stage I (35%) than were children/adolescents (30%), and a lower percentage were diagnosed at stage IV (34% vs 38%). The hazard ratio for young adults diagnosed with non-Hodgkin lymphoma was 2.1, meaning that they were more likely to die from their disease compared to children/adolescents. Those diagnosed at later stages (III and IV) were significantly more likely to die than those diagnosed at stage I. The 5-year survival rates were 85% for children/adolescents and 75% for young adults.

Conclusions: When diagnosed with non-Hodgkin lymphoma, young adults and those diagnosed at later stages are at increased risk of death. Young adults are at a higher risk of death than children or adolescents when diagnosed with non-Hodgkin lymphoma. Children diagnosed at later stages are at higher risk as well. Efforts should be made to diagnose and treat patients as early as possible.

Reviewer's Comments: This study confirms the suspicion that young adults aged 20 to 29 years are at higher risk of dying from non-Hodgkin lymphoma than are children and adolescents <20 years of age. Resources and protocols need to be adjusted accordingly. (Reviewer-Aaron E. Carroll, MD, MS).

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Keywords: Non-Hodgkin Lymphoma, Survival

Print Tag: Refer to original journal article
Be Careful When Diagnosing Group A Strep With Single Antibody Titer

The Human Immune Response to Streptococcal Extracellular Antigens: Clinical, Diagnostic, and Potential Pathogenetic Implications.

Johnson DR, Kurlan R, et al:

Clin Infect Dis 2010; 50 (February 15): 481-490

Single throat cultures and single antibody titers often overdiagnose strep infections due to high carrier rates and persistently elevated titers following infection.

**Objective:** To evaluate the immediate and long-term immunokinetics of the antibody response to strep infections.

**Participants/Methods:** 160 participants between the ages of 6 and 15 years were enrolled in this prospective study. For a 2-year period, duplicate throat swabs were obtained monthly and blood samples every 3 months for anti-streptolysin O (ASO) and anti-DNase B (ADB) antibody titers. If β-hemolytic streptococci were identified, M-protein gene typing (the so-called emm-type) was done to more completely characterize the isolate. If a patient did develop symptoms of a strep throat infection between scheduled visits, additional throat and blood samples were obtained. Over this approximate 2-year period, from these 160 participants, 3491 cultures (about 22 per person) and 1679 serum samples (about 11 per person) were obtained. The mean age of the patients was 10 years.

**Results:** A variety of patterns were noted. There was the classic response with an increase in both titers. However, this occurred in only one-third of the patients with clearly defined new group A strep acquisitions. Numerous instances were documented when a significant immune response was mounted to only 1 of the 2 streptococcal extracellular antigens. If only 1 antigen had been measured, about 1 in 5 true infections would have been missed. The rate of decrease of these antibodies following infection was unexpectedly slow. For absolute ASO titers, approximately 80% remained high for 6 months and 67% for 1 year despite subsequent negative cultures. Carrier states were common; one-third had group A strep persistence for >26 weeks without significant increases in antibody titers. Previously published upper limits of normal antibody titers, felt to be diagnostic of an acute infection, were not valid in many instances. There was a markedly improved diagnostic utility with paired antibody titers compared to a single measurement.

**Conclusions:** Single throat cultures and single antibody titers are often misleading when diagnosing strep because strep carrier states are common, and ASO and ADB titers can remain high for months even without the presence of group A strep. Paired or sequential samples are much more accurate.

**Reviewer's Comments:** These data demonstrate the potential pitfalls in interpreting antibody titers, particularly if one is evaluating the association of group A strep infections with the development of immune-mediated nonsuppurative sequelae such as rheumatic fever or acute glomerulonephritis or other proposed Streptococcus-associated syndromes, such as the pediatric autoimmune neuropsychiatric disorders associated with strep (PANDAS) syndrome. Reliance on an upper limit of normal value alone can result in significant problems, both false negative and false positive. The most reliable way to diagnose an acute strep infection is to document increases in titers over time. Carriers may harbor strep for months, but their antibody titers will not increase. (Reviewer-Mark F. Ditmar, MD).

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Keywords: Streptococcal Infections, Immune Response, Antigens

Print Tag: Refer to original journal article
Parents of Dying Children Consider Hastening Their Death

Considerations About Hastening Death Among Parents of Children Who Die of Cancer.

Dussel V, Joffe S, et al:
Arch Pediatr Adolesc Med 2010; 164 (March): 231-237

Many parents of children who have died acknowledge considering hastening their child’s death due to concerns of pain or other suffering.

**Background:** Adult studies show that 10% of dying patients discuss hastening death (HD), but pediatric data do not exist. The Institute of Medicine encourages discussions about HD in order to discuss the underlying issues driving the request.

**Objective:** "To better understand consideration of HD by parents of children with cancer and to examine the role of the child’s suffering in prompting HD conversations."

**Design:** Retrospective, cross-sectional survey.

**Participants:** 141 bereaved parents.

**Methods:** A semi-structured questionnaire was administered primarily over the phone; however, 35 occurred face to face. The average time between the death of the child and survey completion was 3.3 years. The survey explored: consideration of HD, discussion of HD, asking someone to HD, and actually HD. The survey also asked participants if particular considerations (ie, uncontrollable pain) would have affected their decision to HD. Finally, 2 vignettes that each involved a dying 9-year-old oncology patient were posed to the participants, and they were asked to choose more aggressive symptom management or to HD. In one vignette, the child had uncontrollable pain, and in the other vignette, the child was comatose.

**Results:** 13% of participants had considered HD, 9% had discussed it, 4% asked to hasten their child's death, and 2% stated that their child's life had been intentionally ended with medication (specifically, morphine). Those who identified themselves as Catholics were less likely to consider HD, while participants who earned >$75,000/year were more likely to consider it. Consideration to HD increased with increasing pain symptoms. One-third of participants acknowledged that they would have considered HD if circumstances (ie, uncontrollable pain) were different. Ninety-four percent approved medication escalation for uncontrolled pain symptoms, but only 54% did if coma existed. Fifty percent endorsed HD in at least 1 vignette. Finally, 54% of participants would be amenable to a physician discussing considerations to HD.

**Conclusions:** More than 10% of participants acknowledged considering hastening their child's death, half endorsed physicians discussing considerations to HD, and many felt that uncontrolled pain would have encouraged consideration to HD.

**Reviewer's Comments:** The investigators took great pains to highlight that they do not endorse HD. They chose to perform the study to determine how often parents consider HD, what drives this, and if physicians should be overtly discussing these considerations. As with many aspects of palliative care, a lot of work needs to be done to lift the veil of silence and allow for honest conversations about what people are thinking so we can help alleviate stress and provide greater symptom control for patients and greater psychosocial support to families. (Reviewer-Lisa Humphrey, MD).

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Keywords: Cancer, Euthanasia, Palliative Care

Print Tag: Refer to original journal article
Objective: To determine risk factors for premature death in children without diabetes from obesity, hypertension, hypercholesterolemia, and glucose intolerance.

Participants/Methods: Pima and Tohono O'odham Indians from Arizona were selected to be studied. There were 4857 children evaluated who had examinations between 1966 and 2003. Children who resided on the reservation and were born between 1945 and 1984 were included. The researchers assessed the body mass index (BMI), 2-hour plasma glucose level after a glucose tolerance test, blood pressure, and cholesterol level of each participant. Death certificates for this cohort were obtained if one of the participants died. Endogenous death was defined as caused by disease or self-inflicted injury such as acute alcohol or drug intoxication. External causes of deaths resulted from accidents or homicide. All people who entered the study had a standard glucose tolerance test as per the World Health Organization standards. Blood pressure and weight was measured, as well as serum fasting cholesterol levels. Adult alcohol dependence was assessed using the CAGE questionnaire.

Results: 559 (11%) of the 4857 participants died prior to age 55 years. A total of 166 deaths were from endogenous causes: 59 from alcoholic liver disease, 22 from cardiovascular disease, 12 from cancer, 10 from diabetes, and 21 from infections. Nine died from alcohol/drug overdose or poisoning and 33 died from other causes. BMI was a positively associated risk of death from endogenous causes. Children in the highest quartile of BMI had significantly higher rates of death than did children in the lowest quartile. Two-hour plasma glucose levels after a 75-gm oral glucose challenge were not associated with premature death. However, children in the highest quartile for glucose level had a 73% higher risk of endogenous cause than did children in the lowest quartile. There were no observed associations with blood pressure or elevated cholesterol with overall premature deaths. There was a strong association with childhood hypertension with endogenous cause of premature death. Most of the deaths were not associated with diabetes, but of the 559 who had diabetes, 14% died (half endogenous and half external).

Conclusions: Childhood obesity, hypertension, and glucose intolerance had increased rates of premature death. Childhood hypercholesterolemia was not a predictor of premature death.

Reviewer's Comments: This article, although in a select Native-American population, showed that risk factors in adults, such as obesity, diabetes, and high blood pressure, had a significant risk of premature death when present in children. In a previous article reviewed, when parents view obesity as an illness, they are more likely to take action for their children. Pediatricians frequently discuss the benefits of vaccines to prevent illness and death, now they need to have the same vigilance when discussing obesity and other risk factor that may lead to a premature death. (Reviewer-Charles I. Schwartz, MD).

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Keywords: Obesity, Hypertension, Glucose Intolerance

Print Tag: Refer to original journal article
Should We Recommend Circumcision for Long-Term Benefits?


Tobian AAR, Gray RH, Quinn TC:

Arch Pediatr Adolesc Med 2010; 164 (January): 78-84

Numerous recent randomized trials have demonstrated significant benefits of circumcision for the prevention of acquisition and transmission of STIs prompting calls for its routine use for newborn males.

**Background:** As recently as 2005, the American Academy of Pediatrics (AAP) stated that there is not enough existing scientific evidence for medical benefits to recommend routine neonatal circumcision.

**Objective:** To review recent studies regarding the effect of circumcision as prevention for sexually transmitted infections (STIs).

**Design:** Review article from a group of physicians from Johns Hopkins University.

**Results:** The authors argue that since that 2005 AAP recommendation, there have been multiple randomized trials that have evaluated male circumcision for prevention of STIs, and these warrant a look from the AAP. Regarding the transmission of human immunodeficiency virus, 3 large randomized controlled trials of >10,000 men conducted in South Africa, Kenya, and Uganda found that circumcision in heterosexual males reduced the HIV acquisition by 50% to 60% compared to those who were not circumcised. Based on these data, the World Health Organization recommended circumcision as a preventative measure to reduce HIV acquisition. Of note, whether circumcision can definitively reduce HIV acquisition among men who have sex with men is less certain. Regarding herpes simplex type 2 infections, 2 randomized trials published in 2009 found that male circumcision decreased HSV-2 acquisition by 28% to 34%. The data on bacterial STIs, such as gonorrhea, are equivocal. For syphilis, 1 meta-analysis estimated a decreased risk of approximately one-third. Other studies have found slight decreases in *Trichomonas vaginalis* and *Chlamydia trachomatis* among circumcised males. However, among female partners of circumcised men, bacterial vaginosis was reduced by 40% and *Trichomonas* by 48%. For human papillomavirus, randomized trials are also very impressive, with circumcision resulting in decreases in HPV prevalence by 32% to 35% in men. These preventive factors are counterbalanced by the risks of circumcision with a generally accepted rate of 0.2% to 0.6%, most commonly bleeding and local infection. Other more sinister complications, such as meatal stenosis, are extremely rare.

**Conclusions:** New information on the long-term benefits of circumcision in preventing STIs should prompt the AAP to revise their policy on circumcision.

**Reviewer's Comments:** The authors note that the AAP’s blessing is not just window dressing. Medicaid coverage does not cover the cost of male circumcision in 16 states, potentially disproportionately affecting disadvantaged minorities who, as adults, have the highest risk of HIV and STIs. If the AAP says the procedure is indicated, Medicaid coverage would hopefully increase. (Reviewer-Mark F. Ditmar, MD).

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Keywords: Prevention, Transmission, Circumcision

Print Tag: Refer to original journal article
Asymptomatic gallstones discovered incidentally on ultrasound can be managed conservatively, as the complication rate, including the need for surgery, is low.

**Background:** With the widespread use of ultrasound for various conditions, gallstones are often detected as an incidental finding. There is limited information regarding the natural history of asymptomatic gallstones in children, including risks for complications and ideal management strategies.

**Objective:** To review risk factors, complications, and outcomes of asymptomatic gallstones at a single pediatric institution.

**Methods:** Medical and imaging records were reviewed for children (0 to 18 years of age) diagnosed with gallstones by ultrasound. Patients were categorized as "symptomatic" or "asymptomatic." Demographic information, medical history, predisposing factors, features of presentation, imaging findings, and complications were recorded. Patients not requiring cholecystectomy were followed with clinical examination and ultrasound for 1 to 2 years. Further follow-up was determined by symptoms or was available as patients continued monitoring for other underlying illnesses.

**Results:** 382 patients were diagnosed with gallstones during the 6-year study period, with males and females equally represented. Indications for initial ultrasound included confirmed renal, bowel, or liver pathology and screening in high-risk individuals. Approximately 50% of those with sonographic evidence of gallstones were asymptomatic. Symptomatic patients were significantly older than asymptomatic patients, with an average age of 10.5 and 8.2 years, respectively. Though >50% of the patients had no risk factors, significant risk factors for patients with asymptomatic gallstones included prior cardiac surgery, exposure to cephalosporins, diuretics, or total parenteral nutrition. Risk factors for symptomatic patients included hemolytic disease (sickle cell or spherocytosis) and Down syndrome. In the asymptomatic group, only 5% experienced complications (specifically choledocholithiasis, pancreatitis, and acute cholecystitis) versus 29% in the symptomatic group. Cholecystectomy was required in 59% of the symptomatic group, more often for ongoing pain management, but in only 3% of the asymptomatic group. Of the 58 infants with gallstones (≤1 year of age), 81% were asymptomatic and few (9%) had complications. In cases with sonographic follow-up, spontaneous resolution of gallstones was demonstrated in 19% of asymptomatic patients, including 34% of infants.

**Conclusions:** Compared to symptomatic patients, asymptomatic gallstones in children have a low complication rate. Benefits of conservative management include the possibility of spontaneous resolution.

**Reviewer's Comments:** Due to increases in exposure to risk factors delineated here (cardiac surgery, cephalosporins, diuretics, and total parenteral nutrition), it is likely that not only detection but the true incidence of pediatric gallstones has increased in recent years. The impact that childhood obesity will have on the rate of gallstones may also prove important in the future. In terms of complications, a longer follow-up period than utilized here will be more valuable when arguing for conservative versus surgical management. Prior to this study, there has been no literature documenting disappearance of stones in children >1 year of age, but the relatively high resolution rate observed is encouraging. (Reviewer-Alyssa Siegel, MD).

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Keywords: Cholelithiasis, Gallstones, Biliary Calculi

Print Tag: Refer to original journal article
Gastric banding is significantly more successful for weight loss than a lifestyle program for morbidly obese adolescents.

**Background:** Almost 20% of adolescents in the U.S. are obese, and this proportion is increasing. Weight loss programs emphasizing lifestyle changes have been largely unsuccessful. Bariatric surgery, including laparoscopic adjustable gastric banding, has been generally more successful than lifestyle changes for weight loss in adults.

**Objective:** To determine if gastric banding in obese adolescents results in more weight loss than a program emphasizing lifestyle changes.

**Design:** Prospective randomized controlled trial.

**Participants:** 50 adolescents between 14 and 18 years of age with a body mass index (BMI) >35 kg/m2, identifiable medical complications, physical limitations, or psychosocial difficulties, and weight loss attempts through lifestyle changes for >3 years were included.

**Methods:** Patients completed a 2-week food and activity diary, clinical and laboratory assessment, and a 2-month educational program about healthy eating and physical activity. Patients were then randomized to gastric banding (GB) or a lifestyle program (LP). LP participants started an individualized diet (800 to 2000 calories/day), with increased activity (target of >10,000 steps/day). Each LP participant also had a personal trainer for 6 weeks. GB participants had the LAP-BAND adjustable gastric banding system placed. Eating rules after the procedure included ≤3 small (125 mL each) protein-containing meals/day, eaten slowly and chewed well. GB participants were encouraged to exercise >30 minutes/day and remain active. Band adjustments were made during office visits. All participants were followed every 6 weeks for 2 years. The primary outcome measure was weight loss, with the goal being the loss of 50% of excess body weight.

**Results:** 24 of 25 GB participants and 18 of the 25 LP participants completed the study. Participants were statistically similar in baseline demographics, anthropometric, clinical, and laboratory measurements. Twenty-one (84%) of the GB participants and 3 (12%) of the LP participants lost >50% of excess body weight. Mean weight loss was 34.6 kg (28.3% of total body weight) in the GB group and 3 kg (3.1% of total body weight) in the LP group. Insulin resistance and symptoms of metabolic syndrome improved to a greater degree in the GB group. Eight GB patients required surgical revisions or replacements of the band. In quality-of-life measures, both groups had significant improvements in general health. The GB group also had improved family activities, physical function, self-esteem, and change in health.

**Conclusions:** GB resulted in significant weight loss in the majority of obese adolescents and was significantly more successful in resulting in weight loss than a lifestyle program.

**Reviewer's Comments:** GB is currently a last resort for morbidly obese patients. It requires long-term and frequent follow-up by trained professionals to assure that the patient is not overeating. Given the relatively high success rates that have been demonstrated, GB is likely going to become a viable option for selected morbidly obese adolescents. (Reviewer-Rachel Moon, MD).

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Keywords: Bariatric Surgery, Obesity

Print Tag: Refer to original journal article
Monovalent acellular pertussis vaccine at birth and at 1 month induces IgG antibodies by 2 months without any effects on future pertussis levels or other routine immunization antibody levels.

**Objective:** To determine antibody responses at birth and after 1-month of doses of a monovalent acellular pertussis vaccine (aPV).

**Methods:** In this unblinded study, aPV was given randomly to infants. The first group received 2 doses of the vaccine; the first dose was given within 5 days of birth and the second was given at 1 month. The second group only received the birth dose, and group 3 received no pertussis vaccine in the first 2 months. Based on this schedule, group 1 would receive 5 doses of pertussis vaccine, group 2 would receive 4 doses, and group 3 would have received 3 doses of pertussis vaccine by 6 months of age. The babies had to be born after 36 weeks gestation, and the mother had to have a negative hepatitis B antigen status. The vaccine contained pertussis toxin, pertactin, and filamentous hemagglutinin. Four samples of blood were taken from the infant and 1 sample from the mother. The mother's blood was used to determine the mother's antibody status to pertussis and, therefore, the birth status of the infant prior to vaccination. The 4 samples from the infants were taken at 2, 4, 6, and 8 months to determine pertussis antibody status as well as antibody status to the other routine vaccinations. Reaction to the vaccination(s) was recorded.

**Results:** 68 infants were remained enrolled to completion of all follow-up testing. There was a slightly higher antibody to pertussis toxin in group 2 than group 3 prior to vaccinations. Group 1 had significantly higher antibodies to all 3 types of antigens as compared to the other groups. The anti-pertussis toxin antibodies were higher at 2, 4 and 6 months in group 1, but no difference was seen at 8 months. The anti-pertactin antibodies were higher at 4 months in group 1, but no differences were observed at 6 and 8 months. In group 1, 88% of patients had antibodies to pertussis as compared to 43% in group 2 and 15% in group 3 (with no doses). There was no significant effect on the other routine vaccines. No severe adverse events were detected. There was some local reaction in 2 infants with the birth dose. There was an infant in group 1 who had pertussis infection 30 day after the fifth dose at 6 months.

**Conclusions:** aPV at birth and at 1 month induced IgG antibodies by 2 months without any effects on future pertussis levels or other routine immunization antibody levels.

**Reviewer’s Comments:** This study had a small number of newborns enrolled. However, based on this preliminary information, in the future, pertussis vaccine may be as routinely given in the nursery as hepatitis B vaccine is today. Like many studies, a larger number of patients need to be studied before any absolute change in the immunization schedule is made. (Reviewer-Charles L. Schwartz, MD).

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Keywords: Pertussis Vaccine, Newborns

Print Tag: Refer to original journal article
Azithromycin 1.5% ophthalmic drops are effective for the rapid microbiologic and clinical cure of bacterial conjunctivitis.

**Objective:** To determine the effectiveness of twice daily dosing of azithromycin 1.5% ophthalmic drops for bacterial conjunctivitis in pediatric patients.

**Design:** Multicenter, multinational, randomized, parallel-group, investigator-masked study.

**Participants/Methods:** The pediatric population (n=150) was a subset of a larger adult and child study. This study was unblended, and no placebo was used due to the different dosing schedule. The azithromycin drops were given 1 drop twice a day for 3 days. Tobramycin drops were given 1 drop every 2 hours while awake for 2 days, and then 4 times daily for 5 days. Clinical cure was determined by the clinical appearance of the eye 9 days after infection and treatment was started. Microbiology swabs were taken on days 0 and 3 except for those patients <3 years of age. Adverse events with drops were recorded.

**Results:** This subset of 150 patients was taken from the larger study that had >1000 people. Nine patients did not complete the study. On day 1 of the study, 39% of the patients had a positive culture (25 in the azithromycin group and 33 in the tobramycin group). *Haemophilus* was the predominant bacteria in both groups. Eighty percent of the azithromycin group and 81% of the tobramycin group were clinically cured at the day 9 visit. The clinical cure on day 3 was 48% in the azithromycin group and 27% in the tobramycin group. Microbiologic cure at day 3 was 94% for azithromycin and 76% for tobramycin. Only 3 patients complained with eye stinging/burning (2 in the tobramycin group and 1 in the azithromycin group).

**Conclusions:** Azithromycin 1.5% ophthalmic drops are effective for the rapid microbiologic and clinical cure of bacterial conjunctivitis.

**Reviewer's Comments:** There are currently many effective ophthalmic drops on the market for the treatment of bacterial conjunctivitis. Azithromycin with 6 doses in 3 days was very successful in the treatment of conjunctivitis. Children who are a challenge to get drops in their eyes may benefit from this drug's dosing schedule. The national shortage of erythromycin ointment has led many to use tobramycin as an alternative in the nursery. Perhaps with additional testing, azithromycin drops (a macrolide, like erythromycin) could be an alternative to tobramycin and have a broader spectrum than erythromycin for ophthalmic prophylaxis after delivery. (Reviewer-Charles I. Schwartz, MD).

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Keywords: Bacterial Conjunctivitis, Treatment, Azithromycin

Print Tag: Refer to original journal article
Ambulatory visits and hospital discharges have significantly declined since the introduction of the varicella vaccine.

**Background:** Since the advent of the varicella vaccine in 1995, reports of hospitalization and mortality have declined considerably. Reports focusing on specific geographic regions and a database of an insured population have confirmed the same, but a nationally representative data set has not been evaluated.

**Objective:** To identify trends in ambulatory care and hospital discharges both prior to and since the advent of varicella vaccination.

**Design:** Survey data obtained pre- and post-vaccine licensure periods.

**Participants:** Over 1 million records in 2 ambulatory databases and 3 million records in a hospital discharge database were surveyed.

**Methods:** Data were obtained through 3 major sources: the National Ambulatory Medical Care Survey (NAMCS), which collects data on patient visits to community office-based physician practices; the National Hospital Ambulatory Medical Care Survey (NHAMCS), which obtains information on patient visits to hospital outpatient and emergency departments; and the National Hospital Discharge Survey (NHDS), which is a representative sampling of discharges from non-federally funded hospitals. Data were collected from January 1993 through December 2004, with the pre-vaccine period defined as 1993 to 1995 and the post-licensure period defined as from 1996 to 2004. Records with a specific ICD-9-CM code for varicella were extracted.

**Results:** Of the over 1 million records in the NAMCS and NHAMCS databases, 601 (0.06%) contained a discharge diagnosis of varicella corresponding to >6 million varicella ambulatory care visits over the 12-year period. Varicella-related ambulatory discharges decreased from 106.6 (95% CI, 80.5 to 132.6) per 100,000 population in the pre-vaccine period to 36.4 (95% CI, 29.3 to 43.5) per 100,000 population in the post-licensure period, a decrease of 65.8% ($P < 0.001$). The decreases were driven primarily by substantial decreases among children ≤14 years. Specifically for children ≤4 years of age, rates in 1995 were 567 per 100,000 down to 11.4 per 100,000 in 2004. There were 0.02% hospital discharges in the NHDS corresponding to 79,309 vaccine-related hospital discharges. Rates decreased from 30.9 (95% CI, 24.4 to 37.3) per 100,000 population pre-vaccine to 14.4 (95% CI, 12.1 to 16.8) per 100,000 post-licensure, a decrease of 53.1% ($P < 0.001$). Whites and nonwhites showed significant decreases over time; however, rates comparing whites to nonwhites persisted with 43.3% more discharges for nonwhites in the post-licensure period compared to whites.

**Conclusions:** There has been a significant decline in ambulatory and hospital discharges since licensure of the varicella vaccine.

**Reviewer's Comments:** The authors' use of National Health Statistics is a practical way to monitor trends in diseases and to assess the impact of vaccinations. In fact, now rates are so low, estimates are difficult to obtain and compare, and since most cases of varicella do not require hospitalization, access to ambulatory care statistics is essential. The persisting differences between whites and nonwhites remain troubling suggesting a lack of access to primary care. (Reviewer-Seth L. Schulman, MD).

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Keywords: Varicella, Immunization

Print Tag: Refer to original journal article
Improving Breastfeeding Rates Among Urban Low-Income Mothers

A Randomized Controlled Community-Based Trial to Improve Breastfeeding Rates Among Urban Low-Income Mothers.

Pugh LC, Serwint JR, et al:

Acad Pediatr 2010; 10 (January-February): 14-20

An intensive breastfeeding support intervention increased rates of breastfeeding at 6 weeks after delivery, but not at 12 and 24 weeks.

**Background:** As current recommendations advocate for exclusive breastfeeding for infants in their first 6 months of life, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) aggressively promotes breastfeeding as the preferred feeding method. This is because, in part, women with lower socioeconomic status are less likely to exclusively breastfeed. Approximately 74% of mothers from all sociodemographic groups in the U.S. initiate breastfeeding, but only 68% of WIC mothers do so. At 6 months, only 43% of all U.S. mothers and 34% of WIC mothers are still breastfeeding their newborns.

**Objective:** To determine if a breastfeeding support team can increase breastfeeding rates of urban, low-income mothers at 6, 12, and 24 weeks after delivery.

**Design/Participants:** This randomized controlled trial recruited mothers from 2 urban hospitals. Participants were eligible if they were mothers of a singleton full-term infant, intended to breastfeed, spoke English, were WIC eligible, had a telephone, and lived within 25 miles of the birth hospital. Participants were excluded if the infant had craniofacial abnormalities, if any drug screens were positive, or if the infant required a NICU stay.

**Methods:** Qualified participants were randomized to an intervention or usual-care group. The intervention was a 24-week program intended to strengthen competence and commitment to breastfeeding, provide education, provide support, emphasize ways to combat fatigue and discomfort, and improve linkages to community services. It included impatient visits by a breastfeeding support team, home visits, phone support, and round-the-clock pager access. The main outcome of interest was self-reported breastfeeding status measured at 6, 12, and 24 weeks after birth.

**Results:** Overall, 328 other-infant dyads participated in this study. The mothers were 23 years old on average and were predominantly African American (87%) and single (80%). Most (74%) of the women had at least a high school education and 64% were employed. Most (68%) had no breastfeeding experience. Women in the breastfeeding intervention group were significantly more likely to be breastfeeding at 6 weeks (67% vs 57%; OR, 1.7). The differences in breastfeeding rates were still there at 12 weeks (49% vs 41%) and 24 weeks (29% vs 28%), but they were not statistically significant.

**Conclusions:** This intensive breastfeeding support intervention increased rates of breastfeeding at 6 weeks after delivery, but not at 12 and 24 weeks. This could be because the intervention was most intense at 6 weeks. Although this was a step in the right direction, more needs to be done.

**Reviewer’s Comments:** This intervention increased breastfeeding rates, but only for 6 weeks. This is not long enough and likely would make the intervention expensive for its limited benefit. (Reviewer-Aaron E. Carroll, MD, MS).

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Keywords: Breastfeeding, Low Income Mothers, WIC, Community Intervention

Print Tag: Refer to original journal article
Primary caregivers of children with tracheostomies and ventilators who live at home are facile with airway emergencies; however, they also demonstrate knowledge deficiencies in some technical aspects of the ventilators and their alarm system.

Background: Caregivers of children requiring tracheostomies and ventilatory support for chronic respiratory failure undergo extensive inpatient teaching prior to the child’s discharge and are often required to demonstrate competency prior to discharge. However, little is known about how much information they retain over time, especially information concerning airway emergencies and the alarm systems of home mechanical ventilator (HMV) systems.

Objective: To determine how much primary caregivers (PC) know about emergency care for tracheostomies and ventilator malfunctions.

Design: Questionnaire, descriptive study.

Participants: The PCs of patients from the Pulmonary Center at Children’s Hospital Los Angeles, who were sent home with tracheostomies and ventilators, were evaluated. All had PCs initially received training through the Pulmonary Center. The home care nurses of these children were also evaluated.

Methods: A 25-question survey, designed by the investigators, was administered to PCs and nurses. Responses were analyzed for percentage and mean of questions answered correctly.

Results: 108 PCs and 44 nurses participated. Overall, they answered a mean of 20 questions (81%) correctly. They frequently missed the following questions: (1) "If the tracheostomy tube comes out from the stoma, the low pressure alarm will sound" (63% incorrectly answered that it would alarm); (2) "Using the HT50 ventilator, the low pressure alarm will not sound with mucous plugging" (52% incorrectly believed it would sound); (3) "Using the HT50/LTV ventilator, the high pressure alarm will not alarm with mucous plugging" (40% incorrectly answered that it would alarm); (4) "Once fully charged, the battery of the suction machine can last for 5 hours" (43% did not know length); and (5) "The apnea monitor will alarm immediately if the ventilator senses a mucous plug" (37% thought it would and did not rely on clinical changes in the child). There was no difference in percentage of correct answers by PCs versus nurses.

Conclusions: PCs and home health nurses demonstrate knowledge about tracheostomy and ventilator emergencies, but show some knowledge deficits concerning ventilator alarms and their implications for the clinical state of the child.

Reviewer’s Comments: I like the study attempt to show us what caregivers retain after their tracheostomy and ventilator training; however, without validating their questionnaire ahead of time, I wonder how valid the results are. Even so, it is interesting to realize that the caregivers appear to retain a good understanding of emergencies, but may not retain the warning signs that a ventilator can and cannot give to warn of a pending emergency. Such knowledge of their comprehension may allow for better tailoring of continuing educational efforts by pulmonologists and general pediatricians alike. (Reviewer-Lisa Humphrey, MD).

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Keywords: Ventilators, Tracheostomy Care, Emergency Care, Primary Care Givers

Print Tag: Refer to original journal article
Short-course IV antibiotics for cellulitis results in greater treatment failures than PO or hospital admission with longer course IV antibiotics.

**Background:** Historically, children with cellulitis have been treated with IV antibiotics because of the risk of bacteremia. However, bacteremia rates have decreased in the era of Hib and PCV7 vaccination, calling into question how long a course, if any, of IV antibiotics is needed.

**Objective:** To determine the failure rate of short-term IV antibiotics for cellulitis compared with oral and long-term IV antibiotics.

**Design/Participants:** Retrospective study of children treated for cellulitis at The Hospital for Sick Children emergency department (ED) in 2005. Data (demographics, clinical factors, physician characteristics) were extracted from medical records. Primary outcome from 10% of charts were abstracted by a second investigator to establish interrater reliability for diagnosis and primary outcome. Cellulitis was defined as soft-tissue erythema with ≥1 of the following signs: swelling, lymphangitis, pain, fever, or ulceration. Treatment was categorized as outpatient oral antibiotics, IV-short course antibiotics in the ED, and admission for IV antibiotics within 10 hours of physician evaluation. Treatment failure was defined as a subsequent ED visit within 7 days accompanied by a change in antibiotic treatment, the administration of IV antibiotics, or hospitalization. Primary outcome was the difference in failure rates between all outcome groups.

**Results:** 321 patients met inclusion criteria; 51% had seen a physician prior to ED evaluation, while 37% had received prior antibiotics. There were no significant differences between clinical and demographic factors for children who received IV short-course antibiotics and admission, except that admitted children were more likely to have cellulitis in the head and neck area (vs extremity for oral and short course). Fifty-two percent received IV antibiotics, with almost equal proportions receiving IV-short course or IV-inpatient. Four children had positive blood cultures, but only 1 was due to a pathogen. Most treatment failures came from the short-course group (short course, 13%; oral, 8%; IV-inpatient, 2%). The odds of failure were higher for IV short-course compared with IV and admission. (OR, 7.2; 95% CI, 1.6 to 33.1) and with oral (OR, 3.2; 95% CI, 1.3 to 8.3). In a multivariate model, only ED treatment plan (eg, oral, short course, admit) remained significantly predictive of failure.

**Conclusions:** This retrospective study found that children with cellulitis treated with a short course of IV antibiotics were more likely to fail treatment than those treated with oral antibiotics or admitted for IV antibiotics.

**Reviewer's Comments:** This study asks an interesting question. However, the retrospective study design makes it difficult to change practice based on its findings, as treatment decisions may have been influenced by unmeasured variables that affected physician treatment decisions but were not measured in the study. The definitive answer about which treatment course works best for children with cellulitis requires a prospective, well-controlled study. (Reviewer-Beth A. Tarini, MD).
Exfoliated deciduous teeth contain abundant pluripotent stem cells that hold promise for future medical therapy; as such, banking of baby teeth is emerging as a commercial prospect.

**Background:** Stem cell therapy holds great promise for treatment of a wide array of diseases and injury that may occur through the course of a lifetime. Abundant Stem cells found in Human Exfoliated Deciduous teeth (SHED) have the ability to develop into many types of body tissue cells. Because of this potential, tooth banking of primary teeth is gaining popularity.

**Methods:** The preservation techniques and applications of SHED are reviewed.

**Results:** SHED are immature, unspecialized cells in the teeth that have the ability to differentiate into specialized types, including adipocytes, chondrocytes, osteoblasts, and mesenchymal cells, with corresponding implications for treatment of cardiovascular disease, spine and other orthopedic conditions, plastic surgery (particularly craniofacial), spinal cord injury, and neurodegenerative disorders. Despite the emergence of information regarding stem cell use, long-term clinical studies are still needed to determine the oncogenic potential of SHED as well as issues related to immune rejection. The advantages of banking SHED include guaranteed matching donor as an autologous transplant, possible use in close relatives, painless collection, ability to generate solid tissue types that cord blood cells cannot, lower cost than cord blood storage, and fewer ethical concerns than embryonic stem cells. Teeth that are suitable for banking include exfoliated primary incisors and canines. Banking of SHED requires assessment for viability (blood flow to the pulp by trauma or disease may compromise utility), prompt transport of the tooth in a hypothermic state, sterile isolation and growth of cells in a proper culture medium, and storage by cryopreservation or magnetic freezing. Several commercial laboratories have been established throughout the world for this purpose, but the cost and technical difficulties of storing for decades remain challenging.

**Reviewer's Comments:** We have talked for years now about the "biological insurance" that banking of stem cells provides. The hypothetical uses for stem cells generate tremendous excitement in the scientific and lay communities. Spared the ethical debates of embryonic stem cells and hopeful that growth is more rapid and holds greater potential for differentiation than adult stem cells, researchers may be highly motivated to move forward with clinical trials using SHED. However, to date, information is limited only to animal models. Whether it is feasible to accept the cost of long-term SHED banking is difficult to imagine. Existing laboratories offering this service are surely banking on parents' fears, while parents are banking on promising cures that have not yet been realized. (Reviewer-Alyssa Siegel, MD).

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Keywords: Deciduous Teeth, SHED, Stem Cells

Print Tag: Refer to original journal article
Objective: To use history and physical examination findings to identify children at low risk for bacterial conjunctivitis, as defined by positive conjunctival culture.

Participants/Methods: The authors recruited children aged 6 months to 17 years who presented to an urban emergency department with acute conjunctival erythema and/or eye discharge over a 12-month period, forming a prospective observational cohort. Exclusion criteria included contact lenses, antibiotic use, or eye trauma within the past 5 days. The primary outcome was the result of a conjunctival culture. The authors then analyzed potentially significant clinical variables, deeming a variable significant if a negative culture was at least 3 times as likely in the presence of that variable.

Results: 402 children were eligible, and 368 (mean age, 3 years) formed the study population. Overall, cultures were negative in 35.3% of the participants. Factors deemed clinically significant for predicting a negative culture included: age ≥6 years (adjusted OR, 3.1), presenting in April through November (adjusted OR, 2.7), absent or watery discharge only (adjusted OR, 3.2), and no glued eye in the morning (adjusted OR, 3.3). When all 4 predictors applied, the probability of a negative culture was 92.3%. When 3 out 4 predictors applied, 76.4% had a negative culture. When 2 applied, 21.7% had a negative culture, and when 1 applied, 11.8% had a negative culture. A subanalysis of those <6 years old showed 2 predictors (absent or only watery discharge and no glued eye in the morning). When both predictors applied, there was a 66.7% chance of a negative culture, if 1 applied, there was a 34.9% chance of a negative culture, and if none applied, there was a 17.6% chance of a negative culture.

Conclusions: The authors identify 4 predictors that, if all are present, reliably predict the absence of bacterial conjunctivitis in patients presenting with conjunctival erythema and/or eye discharge. However, only 3.6% of the participants met all 4 criteria. Focusing on children <6 years old, if there was only watery discharge and the eye was not glued shut in the morning, then roughly two-thirds of those patients will have a negative culture.

Reviewer’s Comments: While it is useful to learn what aspects of the history and physical exam are most helpful in predicting a negative bacterial culture, it is up for interpretation how high or low the probability of a negative culture needs to be to change one’s management, especially if expectant management can be employed even for documented positive cases of bacterial conjunctivitis. Furthermore, could you convince daycare providers to allow a 3-year-old back without prescribing topical antibiotics if you told them there’s only a 32% chance that a bacterium is responsible? (Reviewer-Daniel Coghlin, MD).
Oral Ivermectin -- Possible Tx for Head Lice

Oral Ivermectin Versus Malathion Lotion for Difficult-to-Treat Head Lice.
Chosidow O, Giradeau B, et al:


Oral ivermectin may be a reasonable option for treatment of difficult-to-treat head lice.

Background: Head lice infestation is common in school-aged children. Usual treatment is topical with permethrin or malathion. However, there is widespread resistance to permethrin, and resistance to malathion is growing.

Objective: To investigate the efficacy and safety of oral ivermectin compared with malathion lotion in patients with difficult-to-treat head lice infestation.

Design: 2-stage, cluster-randomized, double-blind controlled trial. At the end of the primary stage (day 15), any patient with persistent infestation was switched to the alternative treatment in a double-blind crossover fashion.

Participants: Patients were ≥2 years of age and ≥15 kg in weight, with the presence of live head lice; patients or family members had to have persistence of head lice despite treatment with malathion or pyrethroid-based lotion 2 to 6 weeks prior to the day 1 visit.

Methods: All infested members in a household were cluster randomized to receive either oral ivermectin 400 µg/kg or malathion 0.5% lotion. The medication, along with a placebo dummy of the alternative medicine, was administered by research staff on days 1 and 8. The number of live lice seen when the hair was dry-combed with a fine-toothed comb were counted at baseline. The primary end point was absence of live lice seen with dry combing on day 15. Patients were asked about adverse effects.

Results: 376 households, with 812 patients, were enrolled; 90% completed the study. Among the patients, 86.9% were female, with a median age of 10 years. On day 15, 378 of 397 (95.2%) ivermectin patients (and 92.4% of ivermectin households) and 352 of 414 (85.0%) malathion patients (and 79.1% of malathion households) were lice-free (P<0.001). The ivermectin group was also 10.1 and 29.8 percentage points superior to the malathion group on days 2 and 8, respectively. On day 15, 39 patients (8 ivermectin and 31 malathion) had persistent infection and were switched to the alternate medicine. On day 29, 100% (8 of 8) malathion and 96.8% (30/31) ivermectin patients were lice free. There was no significant difference in the number of adverse effects. Serious adverse effects included a seizure in a 7-year-old ivermectin patient and a severe headache in an 11-year-old malathion patient. Adverse effects in the malathion group that led to drug discontinuation included rash/urticaria (3 patients) and gastroenteritis (2 patients). In the ivermectin group, patients discontinued the drug for impetigo (2 patients), nausea or vomiting (1 patient), gastroenteritis (3 patients), and seizures (1 patient).

Conclusions: Oral ivermectin was superior to topical malathion in treating difficult-to-treat head lice.

Reviewer's Comments: Anyone who has had personal experience with head lice knows how difficult and frustrating it can be. In many areas, there are professional lice- and nit-pickers. However, I am hesitant about prescribing oral ivermectin, given the potential for severe adverse effects. I would first try the nonmedicinal treatments, including persistent nit-combing or application of mayonnaise, olive oil, or Cetaphil. (Reviewer: Rachel Moon, MD).

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