THE SULLIVAN GROUP

TSG PEDS EM NEWS

SAVING LIVES - REDUCING RISK

From The Editor

Welcome to the 2012 Fall issue of TSG's Peds EM News. In this issue, we take a look at a new type of ingestion in children that is directly related to new formulations of soaps and detergents. We also explore the website of a large medical malpractice plaintiff attorney firm to see what kinds of cases they are looking for. With winter approaching, we will be seeing more patients with diarrheal illnesses in our EDs; we review Lactobacillus and the benefits to diarrheal illnesses in children. Winter also makes us think about bronchiolitis, so we review a relatively newly identified "player" called Human Metapneumovirus. We bring this issue to a close with a short summary of Febrile Urinary Tract Infections in Infants and Children.

We hope you enjoy this issue of Peds EM News. We welcome suggestions for future articles.

Dr. Todd Zimmerman

In This Issue...

A New Ingestion Making Waves

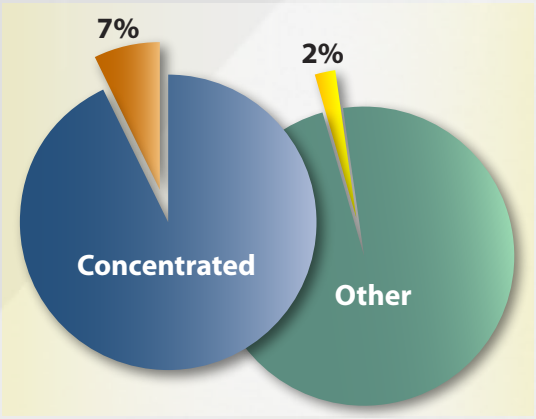
by Dr. Todd Zimmerman

There is a new danger to children that we have been seeing more often lately; it involves the colorful concentrated single dose packets of laundry detergent. These packets are usually shiny and have vibrant colors; they commonly look like candy or even a chew toy for toddlers and young children.

There is a real threat to children ingesting detergents. They can experience symptoms from vomiting to GI burns from the alkaline ingredients in the detergent. What is very interesting, however, is that when children ingest the super concentrated packets versus other laundry detergents, they experience a higher

percentage of rapidly induced drowsiness and lethargy.

In May and June of 2012, it was reported that 864 children had a detergent ingestion or exposure; most of these children were under 5 years of age. Seven percent of the children that ingested the concentrated packets were reported to have suffered from drowsiness and lethargy compared to 2% from other detergent exposures. The mechanism of this lethargy and drowsiness is not completely understood. Therefore, in addition to the customary workup, evaluation, and routine care for ingestions in children, treat these cases as follows:



- Call the Poison Control Center (800.222.1222) early in the care of this patient.
- Conduct cardiac and oxygen saturation monitoring.
- Have a very low threshold for observing these children in a monitored setting within the hospital.

The detergent manufacturers are also aware of these unusual reactions from the ingestion of their products and are taking steps to help with the problem; for example:

- Adding warning labels to the packaging
- Adding a double latching mechanism to the packet containers
- Changing the packaging altogether

In the meantime, educate families about the dangers of children ingesting detergents and explain proper storage techniques; i.e., on a high shelf away from children. When you encounter these types of ingestions in the ED, provide supportive care and prolonged monitoring. ■

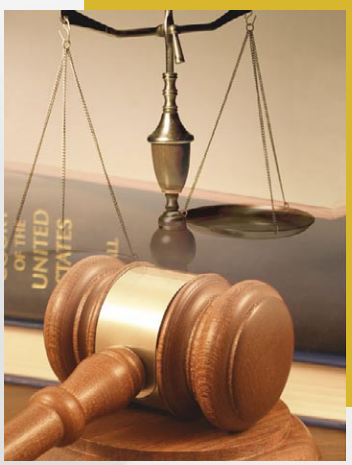
http://www.npr.org/blogs/health/2012/10/18/163187054/more-clues-about-hazards-from-laundry-detergent-pods

http://online.wsj.com/article/SB10001424052702304840904577426251502712674.html

Surfin' the Net for Med Mal Plaintiff Attorney Sites

by Dr. Todd Zimmerman

I was trying to think outside the box to come up with something creative to write about in Pediatric Emergency Medicine to help us take better care of children while decreasing risk exposure. "Risk Exposure" occurs when physicians do something in the ordinary, everyday practice of medicine that creates avenues that put not only the patient, but



also the practitioner, the practice, and/or the hospital at greater risk of having a medical malpractice claim that will be difficult to defend.

So I decided to search the Internet for the most successful and popular medical malpractice plaintiff attorneys in the United States. I found a large group in the eastern U.S. that seemed to be the best of the best; they really know how to sue physicians! I went to their website and clicked on the "Medical Malpractice" tab; there were numerous links for what you would expect to see - wrongful births, labor and delivery incidents, surgery mishaps, etc.

Then I happened upon a section on Emergency Medicine. Review of this section of their website and their advertising reveals the types of cases they are most often looking for. I've listed them below and provided information for managing your risk in those areas:

- Failing to follow guidelines. Review your department policies, procedures and guidelines and make sure the whole team is educated on these standards.

- Rendering treatment that is contraindicated. Be sure you review your patient's medical and surgical histories and ensure that the medication lists are accurate. Consult with your hospital's pharmacist to discuss any potential drug interactions.

- Making an incorrect diagnosis. Document a thorough history and physical examination and use a solid and well thought out interpretation of clinical and/or laboratory data. It should be clear to anyone looking at the medical record which diagnoses you considered and whether you ruled them out. Physicians do not have the benefit of using the "retrospectoscope" as plaintiff's attorneys do.

  In addition, explain the diagnosis and the potential complications to patients; tell them what to be on high alert for; and advise them to seek additional help when necessary. Be sure to document this discussion! This places some of the responsibility for their own care as well as some of the risk back on the patients.

- Failing to embrace the "golden hour." The "golden hour" is the interval of time right after a significant medical event or trauma in which the treatment you pro-

...explain the diagnosis and the potential complications to patients; tell them what to be on high alert for...

vide will have the greatest chance of helping your patient. Try to avoid any delays in treatment for your patients. It is critical to not only document your care, but to document in a non-accusatory way the reasons for any delays in care or treatment.

Medical malpractice is obviously a serious topic, and as emergency medicine physicians, we are in the trenches every day trying to heal the sickest of the sick. Practicing medicine according to the standard of care as dictated by evidence is obviously paramount. However, knowing specifically what medical malpractice attorneys are looking for may provide the practitioner with some additional insight on how to care for patients and keep them safe. ■

Human Metapneumovirus... A (Relatively) New Kid on the Block

By Jennifer Boote
Edited by Dr. Todd Zimmerman

As the snow begins to fall, we all begin to prepare for the traditional illnesses of the winter: rotavirus, influenza, and of course, bronchiolitis. None of these are new to us, and for the most part, the treatments have not changed through the years. However, in 2001, a new virus that causes bronchiolitis was "discovered" - human metapneumovirus (hMPV)! This close cousin of the Respiratory Syncytial Virus (RSV) can easily be mistaken for a number of other viral syndromes, and just knowing that hMPV is out there can help with the diagnosis of illnesses with RSV-like presentations.

Because hMPV is relatively new, the studies relating to prevalence have come from retrospective analysis of nasal washings of patients who tested negative for RSV and influenza. Of these washings, it has been estimated that 15% to 20% are positive for hMPV. Of these patients, it was found that over half of them also had acute otitis media. Most children will have at least one case of hMPV before the age of one, and it is believed that nearly all children are seropositive by the age of five. Though RSV remains the number one cause of bronchiolitis and para-influenza virus the number two cause, hMPV should certainly be considered when these diagnoses are ruled out.

As mentioned, hMPV is a close cousin of RSV, both being a part of the paramyxoviridae family. Both viruses cause a spectrum of illnesses ranging from mild self-limiting illness

of 3-5 days to severe bronchiolitis and pneumonia. Though hMPV usually causes a milder syndrome, it is commonly indicated in acute asthma exacerbations and moderate to severe upper respiratory infection. Most patients will present with cough, rhinitis, fever and wheezing, with cough being the most prevalent of these symptoms. hMPV replication in animal models primarily produces inflammation, but mucus hypersecretion and epithelial hyperplasia are also dominant factors. Like RSV, infection causes airway hyperresponsiveness and is associated with risk for development of asthma.

Until recently, there was no accurate and quick method for testing for hMPV. However, this rapid testing is now available. If this testing is not available at your institution, keep the diagnosis of hMPV in mind when patients test negative for RSV, and remember that it is possible to have co-infections of RSV and hMPV. This combination is a bad one, and it often results in admission to the intensive care unit.

It is important to document the hydration status of a child with a suspected hMPV infection. Bronchiolitis and pneumonia patients are often tachypneic and mouth-breathing, which can lead to dehydration in children very quickly. Ideally, blood pressures should be taken on ALL children in the ED, but because children are often resistant to this, it is important to document the clinical picture, capillary refill, accurate urine output for the last 24 hours, and if they are able to drink any liquids during their stay in the ED. Other diagnostic testing of these children may include:

- Chest X-ray
- Tests for RSV and influenza
- CBC and blood culture

Treatment for these children is supportive, as no antiviral has been found to be effective for hMPV. Therapeutic modalities may include:

1. Continuous O_2 monitoring
2. Oxygen therapy, including high flow oxygen administration to help create PEEP
3. IV fluids if signs of dehydration are present or if the patient is unable to complete a PO challenge
4. Bronchodilation via three consecutive nebulizer treatments with Albuterol and Atrovent as a trial may be considered

Many patients with mild to moderate illness will be able to be discharged home. However, there should always be a low tolerance

for admission for the kids who look "sick" and are unable to take PO fluids.

Therefore, as the children start streaming into your EDs with runny noses, coughs and fevers this winter, keep in mind that human metapneumovirus is a relatively new player in the game of bronchiolitis and pneumonia. Though it is easily overlooked, being aware that this virus is out there and is prevalent in the population of children 6 months to 5 years of age can give you an alternative to consider when all of the typical viral syndrome tests are negative. ■

Febrile Urinary Tract Infections in Infants and Children

By Corrie Fletcher, OMS III
Edited by Dr. Todd Zimmerman

Urinary tract infections are one of the most common causes of fever and a frequent diagnosis in children under 2 years old who present to the ED. Most signs and symptoms of a urinary tract infection (UTI) in a young child are nonspecific: vomiting, diarrhea, fever, fussiness, poor or absent feeding. However, in a child with fever, a UTI should not be missed. A febrile UTI is the most common cause of serious bacterial infections in febrile infants less than 90 days old. It causes up to 7% of fevers in all children who have "fever without a source" and 12% of fevers in non-circumcised boys less than 8 weeks old. Up to 2% of children will have a positive urine culture along with another definite source of fever such as otitis media. Up to 4% of children with a known but non-definitive source of fever (gastroenteritis) will have a positive urine culture.

With such prevalent rates of positive urine cultures, urinalysis (UA) and cultures are done on most febrile children in the ED. There are four UA collection methods: straight catheter, suprapubic aspiration, sterile urine bag, and clean catch. Bagged specimens have a false-positive culture rate of 12%-83%, while clean-catch urines have contamination rates of up to 29%, especially in non-potty trained children. As such, catheterized specimens for UA and culture should be sent for all children under 1 year old with fever without a source, all girls ages 1-2 years with fever without a source, and all ill or toxic-appearing children up to 3 years old.

When interpreting a UA, positive nitrites indicate bacteria, while positive leukocyte esterase indicates pyuria. Nitrites have a low sensitivity with a high specificity; leukocyte esterase has a high sensitivity and low specificity. This is important because a negative nitrite does not solely rule out a UTI, nor does a positive leukocyte esterase exclusively

rule in a UTI. For this reason, urine culture and sensitivity should always be ordered in children less than 2 years of age. Twenty percent of infants with the absence of pyuria on microscopy will have a UTI; 10%-50% of children under 2 years old will have culture positive infections, even with a negative urinalysis.

Morbidity with delayed or untreated febrile UTIs can be severe, as acute pyelonephritis develops in up to 75% of children under 5 years old who have a febrile UTI. This can lead to renal scarring, especially in kids under 1 year old. Prompt treatment is essential to prevent such morbidity. Febrile UTIs are treated with 10-14 days of antibiotics, not the 5-7 day therapy for a simple cystitis. Any child who is severely dehydrated, unable to tolerate oral antibiotics, or septic requires hospital admission and IV antibiotic therapy.

Lastly, renal ultrasound is indicated for all children under 5 years old with a diagnosed febrile UTI, males of any age with a first UTI, girls under 3 years old with a first UTI, children with recurrent UTIs, and any child with a UTI that does not respond promptly to therapy in order to evaluate for abscess or obstruction.

Bauer R. New developments in the diagnosis and management in pediatric urinary tract infections. *Urology Clinic North America*. 35(1): 47-58.2008.

Heffner V, Gorelick M. Pediatric Urinary Tract Infection. *Clinical Pediatric Emergency Medicine*. 9(4); 233-237.2008.

Pollack CV, Pollack ES, Andrew ME. Suprapubic bladder aspiration versus urethral catheterization in ill infants: success, efficiency and complication rates. *Annals of Emergency Medicine*. 23. 225-230.1994.

Peds e-Learning Courses
for Healthcare Professionals

- Appendicitis
- Appendicitis in Children
- Case 02: A 15-year-old male with Abdominal Pain
- Case 04: A 14-month-old Febrile Child
- Case 06: A 23-month-old child with a Fever
- Case 13: Pediatric Missed Meningitis
- Cognitive Errors in Medicine Part 1
- Cognitive Errors in Medicine Part 2
- Community-Acquired Methicillin-Resistant Staph Infections (CA-MRSA)
- Head Injury
- Neonatal Emergencies
- Optimizing Communication in the Emergency Department
- Orthopedic Injuries Part 1
- Pediatric Abdominal Emergencies
- Pediatric Infections
- Pediatric Meningitis
- Pediatric Respiratory Emergencies
- Torsion Testicle
- Wound Care

Click on course name to see course description.

Shaikh N, Morone NE, Bost JE, et al. Prevalence of urinary tract infection in childhood: a meta-analysis. *Pediatric Infectious Diseases J.* 27. 302-308.2008.

Vaillancourt S, McGillivray D, Zhang X, et al. To clean or not to clean: effect on contamination rates in midstream urine collections in toilet-trained children. *Pediatrics.* 119. e1288-e1293.2007.

Whiting P, Westwood M, Watt I, et al. Rapid tests and urine sampling techniques for the diagnosis of urinary tract infection (UTI) in children under five years: a systematic review. *BMC Pediatrics.* 5. 4.2005.

Article Review: Lactobacillus and Acute Diarrheal Illness in Children

by Todd Zimmerman

This is a summary of the key points from an article recently published in *Pediatric Emergency Care* entitled The Effect of Lactobacillus GG on Acute Diarrheal Illness in the Pediatric Emergency Department.

- The purpose of the study was to evaluate the efficacy of Lactobacillus on children with acute diarrheal illnesses presenting to the Pediatric ED.
- Patients were between 6 months and 6 years of age, and were placed into either a placebo group or a group that received a Lactobacillus powder.
- Parents recorded daily episodes of diarrhea.
- A researcher followed the families, reviewed the diaries, and determined the time it took for the patient to attain normal stools.
- For all patients that completed the study, there was no significant difference in the number of diarrheal stools, nor was there a significant difference in the time to attain normal stools.
- However, in children that presented with diarrhea for more than 2 days, those that were given the Lactobacillus powder reported a fewer number of diarrhea stools and returned to normal stools quicker when compared to the patients that were given the placebo.

This study parallels other studies by showing a benefit of probiotic use in diarrheal illnesses in children. ■

Nixon AF MD, Cunningham SJ MD, Cohen HW DrPH MPH, Crain EF MD PhD. The Effect of Lactobacillus GG on Acute Diarrheal Illness in the Pediatric Emergency Department. *Pediatric Emergency Care.* Volume 28(10), October 2012, p 1048–1051.

CONTACT US

The Sullivan Group
1S450 Summit Avenue
Suite 320
Oakbrook Terrace, IL 60181

Toll Free
855.RSQ.INFO

Office
630.268.1188

Fax
630.268.1122

www.thesullivangroup.com