Head Injury...Revisited

If you managed to make it to any of the UAB basketball games this year (or evidently go see movies at the Rave in Vestavia), you’ve seen the ads for the concussion clinic. You may have sent patients there...I know I have, and it is a great resource. And, although they can help us with return to play decisions, we are still the ones on the front line...in the office and emergency department...that have to make the up front assessments and decisions. Where do we stand these days? When do we CT? And, what if we CT too much? I thought I would take this chance (as the weather gets nicer and nicer) to review head injury management, discuss the risks of radiation, and touch on return to play guidelines.

Clinical Decision Rules

We use them every day...sometimes knowingly, sometimes subconsciously...but they’re always there. The key is finding the best one and sticking with it. The majority of the pediatric head injury research that is used in the emergency department has been done by PECARN (Pediatric Emergency Care Applied Research Network), which is a large, multicenter research group, with multiple emergency department sites. The traumatic brain injury working group is responsible for circulating their findings. There are three main articles that should be reviewed.

### Head Injury...Revisited

The first study was a prospective, cohort study published in 2009 and its goal was to identify those patients at very low risk for significant intracranial injury. Or, who doesn’t need a CT. They looked at over 42,000 patients under the age of 18, and then divided them into two groups: younger than 2 years (who, historically, have been more difficult to clinically evaluate), and 2 years of age and older. Based on this study, the following decision rule for who did NOT need a CT was proposed:

**Children < 2 years of age (NPV 100%; sens 100%):**
- Normal mental status
- No scalp hematoma, except frontal
- No LOC, or LOC < 5 seconds
- Non-severe injury mechanism
- No palpable skull fracture
- Acting normally per parents

**Children ≥ 2 years of age (NPV 99%; sens 97%):**
- Normal mental status
- No LOC
- No vomiting
- Non-severe injury mechanism
- No signs of basilar skull fracture
- No severe headache.

It was postulated that following these guidelines would significantly decrease the number of CT scans obtained for head injuries in children.

Approximately 4–7 million CT examinations are performed annually on children in the U.S.

—National Cancer Institute

Head Injury...Revisited continued on page 6
Femur Fractures in the Pediatric Population: Abuse or Accidental Trauma?
Baldwin K et al.
I think we can all agree that a femur fracture, in the absence of underlying bone disease, is likely the result of a significant injury or force. But, we can also agree that there are femur fractures that are accidental in nature. Unfortunately, making that decision is not always easy. This study developed a predictive model for cause of femur fractures based on risk factors in the history, physical examination, and radiographic findings.

A retrospective review of patients with femur fractures from suspected abuse (30%) and accidental causes (70%) was performed. The following risk factors were identified:

<table>
<thead>
<tr>
<th># Risk factors</th>
<th>Risk of Abusive Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4.2%</td>
</tr>
<tr>
<td>1</td>
<td>24.1%</td>
</tr>
<tr>
<td>2</td>
<td>87.2%</td>
</tr>
<tr>
<td>3</td>
<td>92.3%</td>
</tr>
</tbody>
</table>

- Age < 18 months
- Physical and/or radiographic evidence of prior trauma
- Suspicious history.

Based on their regression model, they propose the following risk:

Of note, victims of abuse were more likely to have distal fractures, and accidental injuries were more likely to be diaphyseal. There was no difference in proximal fractures.

Although this model needs to be prospectively validated, it may give us a little more insight when we need it.

Decreased Use of Computed Tomography With a Modified Clinical Scoring System in Diagnosis of Pediatric Acute Appendicitis
Rezak A et al.
Recently, there has been a lot of attention focused on limiting the amount of radiation people, especially children, are exposed to. Head CTs for head injury is probably the most commonly mentioned, but abdominal CTs for potential appendicitis is another area of focus. Use of ultrasound is becoming more common, but there are issues with that as well. So, trying to create a clinical way to reduce the use of CT in pediatric appendicitis is of interest.

The Alvarado score that was created in 1986 identified 8 factors that were most predictive of acute appendicitis:

- RLQ tenderness (2)
- Leukocytosis (2)
- WBC differential with left shift (1)
- Migration of pain (1)
- Fever (1)
- Nausea/vomiting (1)
- Anorexia (1)
- Direct rebound pain (1)

Taking these into account, a retrospective review of pediatric patients with acute appendicitis was performed, with some weighting of factors based on diagnostic importance as noted above, creating a modified score (max score = 10).

They found the greatest accuracy in using CT in those patients that have a (modified) Alvarado score of 5-7, and by using this, the use of CT would have been reduced by 27%. For scores of 1-4, CT should be considered, and for scores of 8-10, appendectomy should be performed without further testing.

This algorithm does not take into account other labs, such as C-Reactive protein, which is something we use in the ED on a regular basis. Will this change our practice and CT usage? Only time will tell...
In 1998, a live attenuated rotavirus vaccine was released for use, but withdrawn from the market in 1999 due to a concern for increased risk of intussusception following vaccination. After further studies and refinement, 2 new rotavirus vaccines were released and recommendations for routine vaccination were re-released in 2007. This study was performed to evaluate the incidence of post-vaccine intussusception since re-introduction.

A cross-sectional analysis of U.S. hospitals was performed, identifying children < 1 year of age with a discharge diagnosis of intussusception. They reviewed 4 years of data prior to reintroduction, and one year after. They looked at the trend of intussusception hospitalizations and discharges for the time prior to vaccine reintroduction, and predicted the post reintroduction rate. The predicted rate was 36 per 100,000 infants, while the measured rate was 33.3 per 100,000 infants. Although there was only 1 year of data available for post-vaccine use, thereby limiting the strength of the data, it appears that there has not been any increase in hospitalizations for intussusception since reintroduction of the vaccine.

I'll be the first to say it...“Why didn't you call your doctor before you came to the ED today?” is a question that comes up pretty often when I am seeing patients. In adults, self referral has been associated with non-urgent issues, but is it the same for children?

Fever is one of the most common chief complaints seen in the ED and, although less likely, serious bacterial illnesses are still encountered in a certain percentage of these children. This study investigated parents' capabilities to assess their child's illness severity and decide to self-refer to the ED. They did a cross-sectional observational study of children < 16 years of age presenting to the ED with fever. In their study, 38% were referred by their PMD, and 62% were self-referred.

Self-referred patients were more likely to present during non-office hours, and were more likely to come by ambulance. The most common accompanying complaints in both groups were dyspnea, GI symptoms, neurologic symptoms, or no other specific symptoms. Cases were considered “high urgency” in 46% of PMD referrals and 45% of self-referrals.

PMD referred patients were more likely to undergo diagnostic and/or therapeutic interventions, and were more likely to be admitted. However, 25% of self-referred patients required significant intervention and/or hospitalization, without any difference in associated complaints. I in 4. Sometimes, mom does know best.
Macrolide Treatment Failure in Streptococcal Pharyngitis Resulting in Acute Rheumatic Fever
Logan LK et al.
Pediatrics 2012;129:e798

The residents have heard me say it before...I love a positive rapid strep. It’s treatable, and it can cause just about anything: fever, rash, headache, vomiting, etc. In reality, it is a self limited disease (like most other childhood illnesses), but treatment is aimed at preventing the suppurative complications and acute rheumatic fever. For compliance issues, often times, azithromycin is prescribed for treatment of strep, but this article suggests that maybe we should be rethinking that.

Group A Streptococcus (GAS) is the most common form of bacterial pharyngitis in the school age child, accounting for about 30% of pharyngitis cases in those 5-11 years of age. Failure to diagnose and/or treat GAS appropriately can lead to development of acute rheumatic fever (ARF) and rheumatic heart disease. The diagnosis of ARF is based on criteria developed by T. Duckett Jones in 1944 and, therefore, are known as the Jones criteria. They include:

- **Major Criteria:**
  - Migratory polyarthritis
  - Carditis
  - Subcutaneous nodules
  - Chorea
  - Erythema marginatum

- **Minor Criteria:**
  - Fever
  - Elevated acute phase reactants
  - Arthralgias
  - Prolonged PR interval on EKG

Diagnosis of ARF requires presence of 2 major, or 1 major and 2 minor criteria together with evidence of antecedent strep infection.

Conventional therapy for GAS is penicillin VK or IM bicillin. For those with severe penicillin (anaphylactic) allergy, a regimen of azithromycin 12 mg/kg/day for 5 days has been recommended, and for those with non-severe allergies, a first generation cephalosporin. This paper discusses two cases (11 and 13 years of age) of GAS that were macrolide resistant, leading to treatment failure and development of ARF. Increasing resistance has been an issue since increased use in the 1970s. In some U.S. studies, a seasonal macrolides resistance has been as high as 48%. **Because of these findings, the authors recommend reserving macrolides therapy for only those with anaphylactic penicillin allergies, and using first generation cephalosporins in patients with non-severe allergies.**

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**Did You Know...**

- ...that motor vehicle crashes are the number one cause of death for teens??
- ...that Alabama ranks second in the nation for teen driving deaths??

While you are at the Alabama State AAP meeting this May, make a point to go to the safe teen driving workshop, to be held on Friday May 4th at 1 pm. You only have a short time with teens in the office...this workshop is geared to help you find ways to communicate effectively with parents and patients regarding safe driving habits in the brief time you have. Don’t miss it...you won’t be disappointed!
Trends in Computed Tomography Utilization in the Pediatric Emergency Department
Menoch MJA et al.

As you read through this edition, you will notice that there seems to be quite a bit on the utilization of CT for various ailments. It is something we are all acutely aware of, and decisions regarding imaging occur daily. Has our attention to the potential risks of radiation affected our rates of ordering CTs in the ED?

This was a retrospective study of charts reviewed from January 2003 and December 2010. The trends in CT use, as well as other radiographic modalities, were noted for three chief complaints:

- Seizures
- Head injury
- Abdominal pain

Almost 55,000 patients met criteria to be included in analysis. The number of patients seen annually remained steady. Interestingly, the acuity rates and admission rates both increased significantly across the board during the time frame evaluated. Overall, the rates of CT utilization did not change, with peak use noted in 2008. However, the rates of head CT in patients with seizure or head injury significantly declined. The rates of abdominal CT in patients with abdominal pain did not change, but the rates of abdominal ultrasound increased. As this is a retrospective study, it cannot be determined why the rates of head CT decreased, but one could postulate it is being aware of potential adverse side effects of radiation in children.

Risk of Febrile Seizures and Epilepsy After Vaccination with Diphtheria, Tetanus, Acellular Pertussis, Inactivated Poliovirus, and Haemophilus Influenzae Type b
Sun Y et al.

Previously, whole cell pertussis vaccines were thought to be associated with increased risk of seizures and neurologic impairment (although it is now postulated that the immunization simply uncovered an already present underlying predisposition to such illnesses). The acellular vaccine has replaced the whole cell in most countries, as it has equal efficacy and decreased side effects, such as fever. Smaller studies have not shown a difference in development of a seizure disorder between the two. This study examined the risk of both febrile seizures and development of epilepsy after getting the above immunizations.

This was a population based cohort study. 378,834 patients were eligible for the study, that was done between January 1, 2003 and December 31, 2008. This study was performed in Denmark, where the recommended immunization schedule is 3, 5, and 12 months. The majority of the patients studied completed all three, and were available for 12 month follow up.

What they found was that although DTaP-IPV-Hib immunization was associated with a higher risk of febrile seizures on the day of the first two immunizations (but not on the third), this was only a modest increase from those outside the immunization window. There was no increased rate of seizure disorder noted. Just one more piece of information confirming the safety of immunizations. Sorry, Jenny McCarthy.
Using the same cohort of patients, the research group performed a sub-analysis of patients with head injury who were observed for a period of time in the emergency department and its effect on CT usage (study #2). They found that a period of observation can be especially helpful in those patients at intermediate risk, and did result in a decrease in scans. Now, you and I both know that sometimes we don’t have the luxury, time, or space to observe someone. Although with 53 beds opening soon, I’m sure I could find somewhere…

Often times, those “intermediate risk” patients are in that group solely because of injury mechanism. I know there have been several times I have looked at a child and wondered “How in the world did they not break something?!” And, despite a very reassuring exam, I have sent those kids to the CT scanner solely based on mechanism. To attempt to answer this question, the group, again, looked at the same cohort of patients (study #3). They looked at the group of patients with severe injury mechanisms, defined as:

- MVC with:
  - Patient ejection
  - Death of another passenger, or
  - Rollover
- Pedestrian or cyclist struck by a motorized vehicle
- Head struck with high impact object
- Fall:
  - > 3 feet for children < 2 years of age
  - > 5 feet for children ≥ 2 years of age

What they found was that in the absence of other signs or symptoms, the mechanism being severe did not result in more significant intracranial injuries. Once again, giving us permission to trust our exams. So, that’s a good thing, right? Kids are resilient, and they are usually OK despite what we do...but there are still going to be the ones I think long and hard about imaging. I think I used to have the attitude that if I am thinking that hard about it, I should just do it...sort of like a spinal tap. But, I wonder if that is always the right approach.

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**Pediatric Radiation Exposure**

We have become more cognizant of the cumulative effects of radiation of children, and CT is responsible for 40-60% of the total dose administered. It is known that because of growth associated cell division, younger children are more sensitive to radiation than adults. And, since they will have a longer life expectancy, they have a longer period of time to develop potential malignancies. In 2001, the Food and Drug Administration issued guidelines attempting to minimize the amount of radiation exposure in pediatric patients to as low as reasonably achievable (ALARA). This concept is standard and endorsed in pediatric imaging, but there is still concern that the recommendations may not be universally adopted. One study comparing trauma patients at a children’s hospital and a trauma center showed significant variance in radiation doses, with the highest doses being administered to the youngest patients.

One group of patients that faces this dilemma are children with VP shunts, so this was a prime population to study regarding effects of cumulative doses. They reviewed 67 children who received a total of 687 scans. They found that some of these children surpassed the presumed threshold for dosage causing impaired cognitive function. The most recent article regarding this issue in children was published in France in January of this year. It, too, confirmed that radiosensitive organs and tissues were getting high doses, with the highest doses being absorbed by the optical lens and the brain. Since widespread use of CT is relatively new, however, we don’t know what the true long-term effects will be. But, there has been an association noted between early childhood exposure to radiation at doses equivalent to a single head CT and poor academic achievement and cognitive performance at 18 years of age.

The Alliance for Radiation Safety in Pediatric Imaging is a group of organizations that developed the “Image Gently” campaign. In New York, parents are given cards, much like immunization records, to track a child’s x-rays (Figure 1). Just to put it in perspective (sort of): one head CT exposes children to 200-600 times as much radiation as a 2 view chest radiograph.

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**Figure 1** Childhood Imaging Record
Source: www.imagegently.org
Put Me In, Coach

From 2001 to 2009, the number of sports and recreation related traumatic brain injuries that were seen in emergency departments annually increased 62%. The activities associated with the highest rates of visits were football, soccer (the other football), bicycling, basketball, and playground activities. One could also extrapolate that visits to your office for head injury are also increasing. And, often the first question asked is, “Can he/she play on Saturday?” So, what do you tell them?

The initial diagnosis of concussion is often straightforward, and simply defined, is a disturbance in brain function caused by a direct or indirect force to the head (see Figure 2 for more formal definition). As many of the symptoms seen with concussions can be seen with other conditions, to make the diagnosis there needs to be a temporal relationship between onset of symptoms and injury. Loss of consciousness was once considered a hallmark of concussion, but in actuality is seen in only about 10% of patients. Since it is a functional rather than a structural injury, symptoms can be somatic, emotional, cognitive, and sleep related (see Table 1). Most symptoms will present immediately after injury and spontaneously resolve in 7-10 days. Headache has been shown to be a common persistent finding, even three months or more after minor injury. They can share many of the same characteristics of primary headache disorders, and are more commonly seen in girls and adolescents (don’t judge). Factors predictive of recovery have been difficult to define, and have previously been extrapolated from studies on moderate-severe injuries. Brief loss of consciousness and seizure occurring immediately after the incident have not been shown to prolong recovery. It has been suggested that prolonged headache (more than 2 1/2 days), fatigue, fogginess, or presence of > 3 symptoms at presentation are associated with longer recovery times.

Table 1: Selected Symptoms of Concussion

<table>
<thead>
<tr>
<th>Emotional</th>
<th>Cognitive</th>
<th>Somatic</th>
<th>Sleep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>Amnesia</td>
<td>Blurred vision</td>
<td>Decreased sleep</td>
</tr>
<tr>
<td>Clinginess</td>
<td>Confusion</td>
<td>Dizziness/poor balance</td>
<td>Increased sleep</td>
</tr>
<tr>
<td>Depression</td>
<td>Delayed response time</td>
<td>Seizures</td>
<td>Difficulty initiating sleep</td>
</tr>
<tr>
<td>Emotional lability</td>
<td>Difficulty concentrating</td>
<td>Fatigue</td>
<td>Drowsiness</td>
</tr>
<tr>
<td>Irritability</td>
<td>Disorientation</td>
<td>Headache</td>
<td></td>
</tr>
<tr>
<td>Personality changes</td>
<td>Feeling “foggy”</td>
<td>Light sensitivity</td>
<td></td>
</tr>
<tr>
<td>Sadness</td>
<td>Inability to focus</td>
<td>Noise sensitivity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Slurred speech</td>
<td>Nausea/vomiting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vacant stare</td>
<td>Tinnitus</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Numbness/tingling</td>
<td></td>
</tr>
</tbody>
</table>

To attempt to demonstrate the pathophysiologic injury that occurs with head injury, a neurosurgical group in Ohio performed a study evaluating twelve children with neurocognitive testing and MR/MRA at three intervals post injury. What they found was that although there was improvement in physical testing, there was persistent alterations in cerebral blood flow in a significant number of patients that lasted for greater than one month post injury. This is in contrast to adult with brain injury, as one study of NFL players, only 1.6% required longer than 2 weeks to return, suggesting that brain growth and development do play a part in concussion recovery. Although further research on a larger scale needs to be performed to assess the impact of this finding, this sheds some light on what is going on that we can’t see.

Another recently published study showed that a significant number of children with mild head injury have persistent symptoms that are associated with considerable functional and cognitive impairment. Although the symptoms improved with time, they were present for 12 months after the incident. Children were at higher risk if they had loss of consciousness or abnormal neuroimaging, making injury severity a factor, but again, further research needs to be done to identify other potential risk factors, as these children have decreased health related quality of life and increased need for educational interventions.

There are several assessment tools available for the evaluation of the patient with concussion, they are most beneficial when there are baseline measurements available for comparison. Symptoms checklists are the most commonly used and allow for patients to self report, but because of that carry their own limitations, and none have been proven to be better than another. Neuropsychological testing can be written or computer based and is designed to detect subtle changes. These, however, can be labor and resource intensive, and have not been validated, especially in the younger child. Sideline assessment protocols, which include postural stability testing, are also widely used by trainers and team physicians. Many of these have been validated for the junior high school age child and older.

Same day return to play should not occur, although I think we have all seen happen on national TV at the collegiate or professional level. Now, it seems to avoid the scrutiny, there are more and more “neck injuries” that end up coming back in the game...really?

Anyway, little is known regarding concussions in children, so there are special recommendations for those patients (Figure 3). It has been shown that repeat concussions can occur more frequently, and with less force or less significant injury. The second impact syndrome can occur if an athlete returns to play before complete resolution of a concussion episode. The underlying cause is a catecholamine surge from an impact causing vascular congestion, cerebral edema, or increased intracranial pressure because the brain is already more highly susceptible to these changes after an injury. This can lead to coma and death and although its existence is controversial, all reported cases have occurred in people < 20 years of age...i.e. our patients.
### Figure 3: Special Considerations in Managing Childhood and Adolescent Concussions

<table>
<thead>
<tr>
<th>Special Considerations</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Developmental</strong></td>
<td></td>
</tr>
<tr>
<td>Grade school children may not be able to understand the symptoms checklist, or adequately describe symptoms</td>
<td>Enlist the help of caretakers, teachers, coaches</td>
</tr>
<tr>
<td>Early adolescence may not comprehend significance of injury (concrete thinkers)</td>
<td>Use simple language, involve caretakers</td>
</tr>
<tr>
<td>Mid-adolescence: are sensitive to peer pressure, have growing sense of independence, and feel invincible so may not follow activity restrictions</td>
<td>Educate on significance of injury, involve caretakers and coaches/trainers to ensure compliance, observe closely for reactions to limitations (i.e. depression)</td>
</tr>
<tr>
<td>Late adolescence: more capable of grasping abstract thinking and concerns for future planning</td>
<td>Stress potential consequences of noncompliance with restrictions</td>
</tr>
<tr>
<td><strong>Contextual</strong></td>
<td></td>
</tr>
<tr>
<td>Patients lack personal independence</td>
<td>Educate caretakers who have an impact on activities</td>
</tr>
<tr>
<td>Despite looking well on return to school, there may still be incomplete recovery</td>
<td>Ensure communication with educators; may involve use of individualized education programs</td>
</tr>
<tr>
<td><strong>Assessment</strong></td>
<td></td>
</tr>
<tr>
<td>No guideline focuses exclusively on children</td>
<td>Consider a more conservative approach in that population</td>
</tr>
<tr>
<td>No data exists for the use of symptom checklist in children &lt; 6 years of age, and symptoms may be very different in children than in adults</td>
<td>Have a higher index of suspicion if the mechanism is significant</td>
</tr>
<tr>
<td>Limited data exists for baseline neuropsychological data in children &lt; 12 years of age</td>
<td>Cognitive testing should be targeted to the appropriate developmental level and, if possible, interpreted by a trained neuropsychologist</td>
</tr>
<tr>
<td>Postural stability testing requires more developed balance mechanisms</td>
<td>Consider using gait and coordination if unable to use other methods</td>
</tr>
<tr>
<td><strong>Recovery</strong></td>
<td></td>
</tr>
<tr>
<td>Most children and adolescents will recover fully, but data suggests it takes longer than in adults (7-10 additional days)</td>
<td>Consider a more conservative approach, plan for prolonged follow-up, evaluate for persistent symptoms, issues with school performance, or behavioral changes</td>
</tr>
<tr>
<td>Increased concern for second impact syndrome</td>
<td>Never allow same-day return to play, and consider longer asymptomatic rest periods before starting a graded return to play protocol</td>
</tr>
</tbody>
</table>

Asthma is the most common chronic disease of childhood affecting more than 9% of children and is a leading cause of pediatric hospitalization and emergency department visits. Over the last several years, asthma remains the leading diagnosis to the general inpatient services at COA and hospital length of stay and hospital charges were increasing. In 2009, Children’s of Alabama Quality Improvement Council chose Pediatric Asthma as the medical area of focus for quality improvement. The designated leadership of this initiative felt that COA should be working to effectively bridge acute asthma management with chronic disease management through this initiative.

The first step in this plan was the development and implementation of an inpatient asthma clinical pathway. This pathway is started on admission under the order of the admitting physician for qualified patients that are admitted through the Emergency Department at COA. This pathway standardizes a respiratory clinical assessment scoring system, bronchodilator dosing and pulse oximetry monitoring, staff response and initial intensification therapy for patients with clinical deterioration, criteria for weaning bronchodilator therapy, and patient discharge criteria. This pathway was implemented in March 2011, and has shown a significant decrease in length of stay for those patients on the pathway and decreased hospitalization charges. Additionally, there has not been an increase in 30 day readmission rates when compared to usual care. A key component of this pathway transitions patients to metered dose inhaler when they transition to every 4 hour bronchodilator that allows reinforcement of device technique and home disease management. This transition also led to the development of a consistent discharge plan for patients that recommends dosing Albuterol HFA MDI 4 puffs every 4 hours for home use until their exacerbation is improved and to use this as standard dosing for home treatment of symptoms.

The next step in this process is to develop a multidisciplinary discharge plan that complements required Joint Commission asthma discharge planning. This includes assessment of baseline disease severity and control in order to guide controller therapy choices and educates all members of the hospital asthma care team to identify high risk asthma patients and consistently refer those patients for appropriate subspecialty outpatient asthma care.

To further bridge acute asthma management with improved chronic disease management, group asthma education classes were started in August 2011 and are now held daily 7 days a week for all parents and children during their hospitalization and attendance is required before discharge. Historically, individualized asthma education was done at the bedside by multiple nurse case managers, nurses, and respiratory therapists. These classes have been well received and parent surveys rate these classes as “helpful” and “important for their children’s health”. In addition, the educators feel that the interaction of families and open dialogue during the class has really been beneficial to facilitate learning and understanding. Streamlining this educational approach to a class format also allows time for the educators to target additional individualized education for families when appropriate. This educational team has made concerted efforts to maintain simple consistent terminology during education for all families to decrease health literacy barriers. Key messages of this education include that asthma can be controlled with appropriate medication use, trigger avoidance, and most importantly with an on-going relationship and chronic disease management plan with their Primary Care Physician or for some patients an Asthma Specialist.
This new education initiative is exciting as it is consistent with the asthma education content and terminology developed and provided in the Emergency Department, through PHIL Line, and outpatient pulmonary clinics. Our goal is to send a consistent educational message from our health system to empower families to better manage asthma in the home setting and provide them the tools and knowledge to do so. Currently on the horizon is a COA Emergency Department Asthma Pathway and community asthma education initiatives to target childcare centers and community agencies that care for children. We are very excited about the progress that has been made and look forward to continue efforts to decrease asthma related morbidity and mortality for the patients we serve. New Family Guides for Asthma Care are also available through the Check Center at Children’s of Alabama.

For further information please email Dr. Terri Magruder tmagruder@peds.uab.edu.

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Pediatric Advanced Life Support
PALS 2012

PALS HeartCode Part II:

AM Session - 7:30 am to 12:30 pm
PM Session - 12:30 pm to 5:30 pm

Fridays:
April 6 – AM Session
May 18 – AM Session
July 27 – AM Session
August 24 – PM Session
September 21 – AM Session
October 19 – PM Session

PALS Registration questions, please call
Angie @ 939-9127
angela.gilmore@chsys.org
Although helmets and protective gear have shown a reduced risk of skull fractures, the rates of concussion are unchanged. Having said that, the use of safety equipment should ALWAYS be used when appropriate. But, the changes may need to occur on a higher (i.e. legislative) level. In this vein, Alabama passed the State of Alabama Concussion Law in 2011, outlining specific requirements for both coaches and players and their parents (Figure 4).

So, going back to my original thought, we are very fortunate to have the Concussion Clinic at Children's of Alabama. It is a resource with interdisciplinary pediatric input (emergency medicine, neurosurgery, sports medicine, rehab medicine, and neuropsychology, nurses, and trainers) that assists in evaluation and treatment of school aged and teenaged athletes in our community with concussion. Probably most helpful, is the input they give in the decision for when these players can return to play. If you have a patient you would like to refer to this clinic, please call (205) 934-1041. It’s an amazing service we have here...use it.

Head injuries are going to continue to be a part of childhood and adolescence, as is the love of sports. But, we can help protect these kids with preplanning, education, and awareness. Let’s work together to keep our kids active, healthy, and safe.

References:
Come out and support the Coat of Arms pediatric residency advocacy program for the

**6th Annual Spring Scramble 5K!!**

**On Saturday, April 28th in downtown Homewood,**
we are once again stepping out against childhood obesity, with proceeds going to the
Children’s Center for Weight Management.
Even if you are like me and don’t run, you can still help!
Visit [www.springscramble.org](http://www.springscramble.org) for more info on registering and/or volunteering!

**There’s an app for that...**
Download a “Couch to 5K” app for your mobile device!
Challenge your friends and co-workers!
Or, just come and have fun!
Hope to see you there!
Get Your Pencils Out...

ACROSS
3. City in the exact middle of Alabama
5. The new ED will have 52 of these...yikes!
8. State nut of Alabama
12. SLUDGE is the toxidrome for this poisoning
14. Most common broken bone in childhood
17. Most popular boys' name for 2011
18. Birth weight should triple by ___ months
19. A 4 year old should be able to draw this shape
20. Treatment for acute opioid toxicity

DOWN
1. A child should be able to use 2-4 word sentences at this age
2. Most common chief complaint in many pediatric EDs
4. Highest grossing animated movie of all time: ___ 3.
6. Most popular girls' name of 2011
7. Considered the father of UAB athletics
9. K2, Mr. Smiley, and Blaze are other names of the synthetic form of this drug
10. State flower of Alabama
11. The treatment for choice for strep pharyngitis
13. Children are the _____ of our lives
15. Original color of Children's of Alabama logo
16. Most effective treatment for bronchiolitis

Solution:
So, it's been about a year since my last shameless sports editorial (don't worry, Scott...no calling out of Jay Bilas this time). Evidently, I get passionate about sports this time of year...oh yeah...March Madness! On the same day Mizzou decided to ruin my bracket (welcome to the SEC, by the way), UAB men's basketball coach Mike Davis was fired. And that started me thinking...

It has been an emotional year for UAB sports. Neil Callaway was let go, with the hire of an enthusiastic Garrick McGee. I can only imagine what it's like to be a college football coach in Alabama, especially at a school with recent national championship programs within a two hour radius. The hopes of an on campus stadium was exciting, but felt to be not a priority at this time by University of Alabama trustees.

The passing of Gene Bartow in January was mourned across the nation, as evidenced by the people who came to his memorial, even though it was on the same day as the national championship game. He sounds like an amazing coach and person, and UAB was fortunate to have him for so many years. His legacy will live on forever, and I am proud he called UAB home.

This brings me to Mike Davis. He led the team for six seasons, with an overall record of 122-73. The team had four consecutive 20 win seasons, culminating in winning the C-USA outright last year, an appearance in the NCAA tournament and receiving C-USA coach of the year honors. He had several personal tragedies occur this year, including the death of his mother, and when asked about the rocky start to the season, he takes the blame completely on himself, even going so far as to say he shouldn't have coached the first part of the season.

For those of you who went to games this year, there was a noticeable difference in the play for the second half of the season. The players were more inspired, played better as a team, and subsequently, won more games. There were tough losses, many by 5 points or less, but that doesn't matter in the final tally, as our final record was 15-16. Disappointing? Yes. And I'm sure no one is more disappointed than the players and coaches.

One of the reasons given for the release of Mike Davis was fan apathy, and decreasing ticket sales. Another article I was reading said that UAB will never get an on campus stadium because the fan support is lacking. Honestly, this makes me sad. I know many of us came from other institutions, and still back those schools passionately. I know that a UAB game is likely something you do when you are stuck in town and don't have anything else to do...that is, if you go at all. And for the first several years I was here, I was the same way. But, those of you who know me, know that I am a big college basketball fan, and some of the best games I have seen have been right here in our own backyard. And I know several of you that are diehard basketball fans...I'm not expecting you to give up your Coach K fan club, but I know that if you are a true fan, you appreciate good basketball, and that's what you get at Bartow.

UAB is our institution, and the majority of us are likely alumnae (either from undergrad, medical school, or residency). These are the scholar athletes that are in our community. We expect them to be good role models for our youth. We expect them to represent UAB in a positive light. We expect them to work on Saturdays, or give up vacation, or pass out flyers. I'm asking you to go watch a basketball or football game or two. It's fun, it's inexpensive, and it's in our backyard. I promise, you won't be disappointed. Because even with a losing season, we still were home to the C-USA defensive player of the year, Cameron Moore. It was great to watch him rack up double-doubles and play the game he obviously loves.

For more information on season tickets, contact Brad Hardekopf, Assistant Athletics Director for Development at 996-5219, or hardebp@uab.edu. Tell him J.R.'s wife sent you.
Mark Your Calendars!!

Annual Rud Polhill Grand Rounds
Thursday, April 12, 2012
Noon
Bradley Lecture Center