What’s Happening Now?

AAP SOCC Provides Small Grants for Fellows & Junior Faculty
by Richard Mink, MD, MACM, FAAP

The Section on Critical Care is pleased to announce that it has awarded two small grants, each in the amount of $3000, to Erin Paquette, MD, JD, MBe, and Katherine Gregersen, DO.

Dr. Paquette, an Instructor at the Northwestern University Feinberg School of Medicine, is conducting a project entitled “Evaluating the effectiveness of a simulation based training to teach conflict resolution skills to providers in a pediatric ICU--a pilot study.” Dr. Gregersen, a Fellow at the Ann & Robert H. Lurie Children’s Hospital of Chicago, will examine “Multiplex PCR testing and antibiotic use in the pediatric intensive care unit.”

For three consecutive years, the SOCC has awarded these grants to fellows and junior faculty who are conducting research about education in Pediatric Critical Care Medicine and/or outcomes of quality and safety initiatives in the Pediatric Intensive Care Unit. All proposals undergo a competitive review, and each receives a critique to assist the applicant for future submissions. As a condition of accepting the award, recipients present results of their projects at the SOCC program at the AAP National Conference and Exhibition.

Last year’s awardees, Natasha S. Afonso, MD, MPH and Christina L. Cifra, MD, will be presenting their results during the SOCC program at the AAP National Conference & Exhibition in San Diego on Sunday, October 12, 2014. Dr. Afonso examined whether interventions designed to optimize learning increased adherence to clinical guidelines for pediatric septic shock while Dr. Cifra investigated whether a systems-oriented PICU morbidity and mortality conference improved safety and quality in the PICU.

The Section deeply appreciates the time spent by reviewers in evaluating the proposals and providing feedback. This year’s reviewers included Grace Arteaga, Barry Markovitz, Scott Penfil, Brad Poss, Samir Shah, Tom Spentzas, and Jenny Wang. The program could not be successful without the efforts of these individuals!

The dates for the next award cycle and application instructions will be announced in early 2015.
Who’s Advocating How?

**AAP Supports World Sepsis Day - September 13**

The 3rd Annual World Sepsis Day is less than two months away! The AAP remains an active supporter of the Global Sepsis Alliance (GSA) and World Sepsis Day (WSD). For more information, view the most recent [WSD Newsletter](#).

**AAP Helps Identify Recommendations for Care Following Death of a Child in the ED**

The AAP, American College of Emergency Physicians, and Emergency Nurses Association collaborated to identify practices and principles to guide the care of children, families, and staff in the challenging and uncommon event of the death of a child in the emergency department. The efforts led by Patricia J. O’Malley, MD, FAAP (lead author), Isabel A. Barata, MD, FACEP, FAAP (coauthor), and Sally K. Snow, RN, BSN, CPEN, FAEN (coauthor) were published in July’s *Pediatrics* as a joint policy statement and technical report.

**AAP Invites You to Webinar Update on Palivizumab Prophylaxis for RSV - July 28**

The AAP invites you to join a webinar that will provide an overview of the policy statement and technical report “Updated Guidance for Palivizumab Prophylaxis Among Infants and Young Children at Increased Risk of Hospitalization for Respiratory Syncytial Virus Infection,” scheduled to be released online July 28, 2014 and published in the August 2014 *Pediatrics*. The purpose of the webinar is to explain the basis of the new policy and to provide a summary of recommendations. Presenters will include James M. Perrin, MD, FAAP, H. Cody Meissner, MD, FAAP, and Shawn L. Ralston, MD, FAAP.

The webinar will take place on July 28, 2014 from 12:00 PM to 1:00 PM Central. There is no cost to attend this webinar but registration is required. After the webinar, content will be posted to [AAP Red Book Online](#).

What Opportunities Exist?

**Community Access to Child Health (CATCH) Grants - Application Deadline July 31**

Grants of up to $10,000 for pediatricians and fellowship trainees and $2,000 for pediatric residents are available from the Community Access to Child Health (CATCH) program for innovative initiatives that will ensure all children, especially underserved children, have medical homes and access to health services not otherwise available in their communities.

Applications for Planning, Implementation, and Resident Grants accepted until July 31, 2014.
AAP & AHA Offer APLS/PALS Pilot Pediatric Simulation Course - September 11-12

The Stanford University School of Medicine is pleased to offer the first-ever combined Advanced Pediatric Life Support (APLS)/Pediatric Advanced Life Support (PALS) course. This two-day pilot course, is offered in conjunction with the AAP and the American Heart Association (AHA), and will allow participants to earn course completion in both APLS, as well as PALS (either an initial or renewal provider).

Participants will complete the APLS/PALS curriculum through small group discussion and extensive hands-on simulation training at Stanford University's newly opened simulation center. Using real life simulation scenarios, the participants will encounter pediatric emergencies including traumas, sepsis, seizures, poisonings, and metabolic and cardiac disorders.

The course is offered September 11-12, 2014 at Stanford University in the Li Ka Shing Center for Learning and Knowledge. The cost is $899 and class size will be limited to 30 participants. Register today for your chance to participate in this first-ever combined APLS/PALS course!

PREP ICU Q&A

Each AAP SOCC Critical Results will include a question and answer courtesy of PREP® ICU – The AAP’s Premier Critical Care Self-Assessment. For a free trial or subscription to the PREP® ICU Self-Assessment programs, visit http://prepicu.aap.org.

Question

An 11-year-old boy is brought to the hospital by his father because of abdominal pain that started when he fell while doing trick biking with his friends at a skate park 1 hour ago. The boy is awake but crying in pain. The emergency room physician performs a Focused Assessment with Sonography for Trauma (FAST) that yields normal results, then provides morphine for pain. She obtains a complete blood count (CBC). Vital signs when you arrive to evaluate the patient show a temperature of 36.9°C, heart rate of 135 beats/min, respiratory rate of 29 breaths/min, and blood pressure of 95/70 mm Hg. The remainder of his examination findings are normal, except for diffuse abdominal tenderness.

Of the following, in addition to providing a fluid bolus, the MOST appropriate next step in management is:

A. abdominal computed tomography scan with contrast
B. diagnostic laparotomy
C. serum amylase, lipase, and coagulation studies
D. transfusion of 1 unit of packed red blood cells
E. upright and lateral radiographs of the abdomen
Answer

A patient who complains of abdominal pain after a traumatic event can have a variety of intra-abdominal injuries, including liver and spleen lacerations, bowel contusions and perforations, pancreatic trauma, and renal trauma. FAST scanning is a useful, quick screening tool for traumatic injury, but it can miss serious injuries and rarely can localize the injury or quantitate the severity. In addition, the quality of FAST scanning depends on the training and experience of the person performing the study and the equipment being used. Obesity, generous bowel gas, and subcutaneous emphysema limit the ability to obtain a good study. Fluid seen on FAST scan may be blood, urine, bile, or ascites. Blood clots may be isoechoic and, therefore, missed. Parenchymal injuries that have not spilled blood into the abdomen may be missed. A FAST scan demonstrating free fluid suggests that the patient requires further evaluation, but normal findings, as reported for the boy in the vignette, do not indicate a lack of serious injury. A repeat FAST scan may be of value after a few hours if computed tomography (CT) scanning is not performed to see if free fluid has developed in the interim.

The patient described in the vignette has tachycardia, tachypnea, and a narrow pulse pressure along with severe abdominal pain and requires further evaluation for injuries that might require urgent surgery. CT scan of the abdomen (including the pelvis) is the most important diagnostic test to perform while supporting the boy with intravenous isotonic volume boluses. The CT scan should include at least intravenous contrast and preferably enteral contrast as well. CT scans without intravenous contrast may miss serious injury.

Bowel injury is best seen with enteral contrast, which is important in this case, because blunt abdominal trauma most often injures the duodenum. Enteral contrast can be administered through a nasal or orogastric tube. Enteral contrast is less important than intravenous contrast but improves the ability to see bowel and pancreatic injury. Free abdominal air, even in small quantities that could be missed with plain films, is an absolute indication for laparotomy. It is important to note that CT scan can miss some pancreatic and small bowel injuries, so ongoing signs and symptoms should lead to further evaluation.

Most blunt abdominal trauma in children is managed without surgery. Lacerations to the liver, spleen, and kidney rarely require surgery. Therefore, laparotomy or laparoscopy before an initial CT scan exposes a child to unnecessary harm. Immediate laparotomy may be indicated for penetrating trauma and in the rare case of a shocky child who does not stabilize with moderate fluid administration or who arrives when CT scanning is not currently available. The results of the CT scan may identify a bleeding injury that could be amenable to embolization therapy in the catheterization laboratory. Such an approach may be associated with reduced morbidity compared with open laparotomy.
Pancreatic injury can be hard to detect, even with CT. Elevated amylase and lipase concentrations can help suggest pancreatic injury. CT usually demonstrates pancreatic injury sufficiently severe to merit specific therapy, such as operative repair, and pancreatic enzyme concentrations do not help in determining whether surgery is indicated. Elevated amylase concentrations can result from injury to parotid or salivary glands. Lipase is more specific to pancreatic injury.

Results of coagulation studies usually are normal in trauma patients unless they have a pre-existing bleeding disorder or have lost a large amount of blood to hemorrhage. Administration of fresh frozen plasma is appropriate for major blood loss whenever packed red blood cell transfusions exceed about 50 mL/kg. Certainly the patient described in the vignette demonstrates clinical signs of possible significant hemorrhage and may require transfusion, but a CT scan can aid in determining any source of bleeding. Blood should be typed and cross-matched to be ready for transfusion. The risk of transfusion is significant, so transfusion of blood products should be reserved for shock not responsive to isotonic fluid resuscitation or a decrease of hemoglobin to less than 7 g/dL (70 g/L) (or ongoing hemorrhage with a hemoglobin falling toward 7 g/dL [70 g/L]). A patient losing enough blood to require transfusion often requires surgery to stop bleeding.

Upright and lateral radiographs of the abdomen provide a quick, inexpensive method of searching for free air that would prompt laparotomy. Other possible diagnoses seen on plain films include large areas of gaslessness that may suggest intra-abdominal fluid or blood and traumatic diaphragmatic hernia. Unfortunately, the sensitivity and specificity of plain films is low enough that major injuries and the specific location of injuries likely are often missed.

Suggested Readings:


American Board of Pediatrics Content Specifications:

- Recognize external evidence of internal abdominal injury
- Know the indications for CT scan in patients with abdominal trauma
- Know the indication for laparotomy after penetrating injury of the abdomen
- Plan the laboratory evaluation of a penetrating abdominal injury
- Know that lacerations occur with blunt abdominal trauma
- Know the diagnostic procedures to define a lacerated viscus
- Recognize the life-threatening complications of intra-abdominal laceration