Google Glass is, basically, a pair of eyeglasses coupled with a computer, a camera, and a microphone.

**Background:** In 2012, a mobile video communication system was introduced. It was called Google Glass. At its most basic, it was a pair of eyeglasses that was coupled with a computer, a camera, and a microphone. While it has been touted as another modality to deliver and monitor health care, specific studies related to its use in patient care have been few. However, there has been research with regards to mobile telephone in emergency department (ED) tele-dermatology.

**Objective:** To evaluate the feasibility and acceptance of Google Glass as another method of telemedicine with regard to ED dermatology.

**Design:** Prospective cohort study.

**Participants:** 348 adult patients with rash (age range, 18 to 89 years); 41 required a dermatology consultation; 39 were eligible for study; 31 completed the study.

**Methods:** The study occurred at an urban academic ED from March through July 2014. Patients were eligible for entry into the study if they presented with a skin condition that required a dermatology consultation. Each patient received a standard dermatology consultation that included a telephone call and, possibly, a static photograph of the rash. Then with a different dermatologist, the consultation involved a real-time video link with Google Glass and a HIPAA-compliant video platform. The video was transmitted via a Google Nexus 7 tablet. Once the patient finished with the 2 consultations, he/she was surveyed regarding the total experience.

**Results:** 91% of attempted connections were completed and were considered successful (31/34). Of patients, 29 (93.5%) stated they were satisfied with the video consultation. The majority (74.2%) preferred the Google Glass technique over the standard ED dermatology consultation and would recommend it to others (93.3% [28/30]). The majority of patients also believed that their privacy was maintained and expressed confidence in the novel technique (96.8% [30/31]). Interestingly, however, only 22.6% (7/31) preferred the Google Glass modality over the standard face-to-face personal contact at a clinic.

**Conclusions:** Google Glass utilization for the purpose of facilitating an ED dermatology consultation was both technologically feasible and acceptable to patients.

**Reviewer’s Comments:** This study did not address cost, accuracy of diagnosis, and adaptability to other EDs and consultations. However, in real-time, the consult was able to ask the patient more specific questions through the emergency physician as well as direct the physician to view the dermatoses from various and alternative perspectives. Bottom line: Don’t knock it until you try it. (Reviewer-Paul P. Rega, MD, FACEP).

© 2015, Oakstone Publishing, LLC

Keywords: Dermatology, Google Glass

Print Tag: Refer to original journal article
Initiating Chronic Antihypertensive Therapy in ED Associated With Acceptable BP Reduction

Safety and Efficacy of Antihypertensive Prescription at Emergency Department Discharge.

Brody A, Rahman T, et al:

Acad Emerg Med 2015; 22 (May): 632-635

Initiation of chronic antihypertensive therapy in the emergency department is safe, well-tolerated, and effective.

**Background:** Uncontrolled hypertension is common among emergency department (ED) patients, especially in impoverished settings, but it is unclear what role emergency specialists should play in the initiation of treatment for a chronic outpatient condition.

**Objectives:** To evaluate the safety and efficacy of prescribing antihypertensive therapy from the ED.

**Design:** Retrospective study of pooled data from 2 prospective, longitudinal, randomized controlled trials.

**Methods:** Both trials enrolled ED patients with asymptomatic hypertension who were then assessed within 2 weeks and subsequently randomized to other investigations not relevant to the present discussion. Medications at discharge were prescribed at physician discretion; hypertensive patients not given meds were still randomized and followed. Demographic data, blood pressure (BP) at subsequent visit, and adverse effects potentially related to antihypertensive therapy were compiled.

**Results:** Data were reviewed for 217 subjects, mean age 48 years, and predominantly African American. Age, sex, race, hypertension history, and mean duration of hypertension were equivalent between groups. The most commonly prescribed drugs were thiazide-like diuretics (54%), ACE inhibitors (26%), calcium channel blockers (10%), and beta blockers (6%). Of subjects, 76 (35%) received ≥1 prescriptions for antihypertensive therapy. Median interval from ED visit to randomization was 12 days. Mean ED BP was higher among those who received prescriptions and their mean systolic BP reduction from ED to randomization was significantly greater (difference, 19 mm Hg; 95% CI, 12 to 26 mm Hg). No patient in either group had a systolic BP <100 mm Hg at randomization. On multiple regression modeling, BP reduction was independently associated with antihypertensive prescription ($P=0.001$). The incidence of adverse effects was low and comparable in both groups. Overall, there were no new neurological deficits, ischemic events, or life-threatening anaphylactic reactions reported in either group.

**Conclusions:** Prescription of antihypertensive medication from the ED is associated with a well-tolerated, significantly lower systolic BP at short-term outpatient follow-up without an increased incidence of adverse events, suggesting that initiation of chronic antihypertensive therapy in the ED is safe and effective for at-risk populations.

**Reviewer's Comments:** Very kind of these folks, going that extra mile, but this is not for me. Of course, it is safe and effective, but safety is also very well established for doing nothing; the fact is that the most pressing requirement for hypertensive patients discharged to home is to get them to a primary care physician who can really own them and survey their course. So why would you add this to your discharge planning and send the patient out into an over-the-horizon scenario that is neither absolutely necessary nor likely superior to usual office care? Would you start dyspeptic patient on a proton pump inhibitor script with multiple refills and risk delaying the identification of a Barrett's esophagus? (Reviewer-Steven B. Abrams, MD).

© 2015, Oakstone Publishing, LLC

Keywords: Hypertension, Blood Pressure Reduction, Diuretics, ACE Inhibitors, Calcium Channel Blockers, Beta Blockers

Print Tag: Refer to original journal article
Alvarado Score May Help Reduce Unwarranted Appendicitis Axial Imaging

Prospective Comparison of the Alvarado Score and CT Scan in the Evaluation of Suspected Appendicitis: A Proposed Algorithm to Guide CT Use.
Tan WJ, Acharyya S, et al:
J Am Coll Surg 2015; 220 (February): 218-224

The Alvarado Score may help to limit the number of CT scans obtained in the diagnosis of appendicitis without increasing the negative appendectomy rate.

Background: The advent of axial imaging has reduced the negative appendectomy rate from a historic 20% to <10% in some series. The Alvarado Score has been developed in an effort to reduce the number of unwarranted CTs in patients with suspected acute appendicitis.

Objective: To identify a subset of patients benefiting most from axial imaging in their workup for acute appendicitis.

Design: Prospective data collection.

Participants: 450 consecutive patients admitted for suspected appendicitis.

Methods: Patients undergoing preoperative axial imaging were enrolled into the study. The Alvarado Score was calculated by the attending surgeon prior to obtaining CT results. Confirmation of appendicitis was based on pathologic findings. Patients not undergoing appendectomy were followed for readmission and were considered to not have appendicitis if they were not readmitted for appendectomy within 2 weeks of discharge from the index admission. CT was determined not to be helpful in the range of Alvarado scores where the predictive value of score did not differ from the predictive value of the CT.

Results: The final analysis included 134 male and 216 females undergoing axial imaging for presumed appendicitis. The negative appendectomy rate was 7.7%. Alvarado Scores of ≥7 in males and ≥9 in females performed similarly to CT scan. This did not change after excluding equivocal CT scans.

Conclusions: For patients presenting with an Alvarado Score ≥7 (or ≥9 for females), axial imaging offers no further information and should not be performed. Patient with scores ≤3 should be discharged home. The remaining patients may benefit from axial imaging as part of their diagnostic workup.

Reviewer's Comments: Overall, this is a well-done study highlighting the potential clinical utility of the Alvarado Score. The authors highlight some limitations in the study design. These included the lack of patients with scores ≥9 undergoing preoperative axial imaging and using 2-week readmission in order to capture the missed diagnoses. The next step would be to incorporate the score into a decision guideline and study it in a truly prospective fashion. Such a study will be necessary to understand the ability and power of this simple score to reduce the number of unnecessary CTs (and thereby cost, ED time, and radiation exposure) while maintaining the relatively low negative appendectomy rate to which we have grown accustomed. (Reviewer-David J. Milia, MD).

© 2015, Oakstone Publishing, LLC

Keywords: CT Scan, Alvarado Score, Appendicitis, Appendectomy

Print Tag: Refer to original journal article
Good Neurologic Outcome After ED Thoracotomy for Blunt Trauma Unlikely

To Be Blunt: Are We Wasting Our Time? Emergency Department Thoracotomy Following Blunt Trauma: A Systematic Review and Meta-Analysis.

Slessor D, Hunter S:


Without signs of life or vital signs in the emergency department and/or a thoracotomy within 15 minutes of arrest, the likelihood of survival with good neurological outcome is very low.

Background: Emergency department (ED) thoracotomy may salvage those in cardiac arrest after penetrating trauma, but its role after blunt trauma is controversial.

Objective: To determine whether patients treated with an ED thoracotomy after blunt trauma survive and whether these survivors have acceptable neurologic outcome.

Design: Systematic review of publications identified through queries of MEDLINE, EMBASE, CINAHL, and PubMed.

Methods: Outcomes assessed were mortality and neurologic result. Customary sophisticated statistical maneuvers were employed to meta-analyze data and assess heterogeneity.

Results: The authors identified 27 articles for inclusion. All were case series encompassing 1369 patients of whom 21 (1.5%) survived with a good neurologic outcome. All 21 patients had vital signs present on scene or in the ED, and all had a maximum duration of cardiopulmonary resuscitation of 11 to 15 minutes. Of studies, 13 were subsequently included in the meta-analysis, which demonstrated that, even with vital signs or signs of life present in the ED, the probability of a poor outcome was overwhelming, calculated at 99.2% (95% CI, 96.4% to 99.7%). Without signs of life or vital signs in the ED and/or a thoracotomy within 15 minutes of arrest, the likelihood of survival with good neurological outcome is very low. The question of whether the optimal time for ED thoracotomy is, in fact, pre-arrest upon identification of poor response to fluid therapy or obviously massive abdominal bleeding was addressed in 1 study, but no recommendations can be made due to low numbers; a trend toward less miserable results may have been due to not wasting valuable time transferring patients to the operating room. Finally, the authors propose a guideline to determine which patients should be considered for an ED thoracotomy, according to level 4 evidence; it is essentially directed to finding patients who have vital signs and did not sustain a major head injury that would be incompatible with a good outcome.

Conclusions: There is a possible role for ED thoracotomy after blunt trauma, but only in a limited group of patients whom it is difficult to identify prospectively; good outcomes have been achieved for an extremely small percentage of patients, most of whom had vital signs on admission or received an ED thoracotomy within 15 minutes of cardiac arrest.

Reviewer's Comments: You need a perfect storm of initial vitals, witnessed arrest, no grievous head trauma, and the necessary skill set to perform the procedure in order to achieve this most dismal rate of patient salvage. But remember others have looked at thoracotomy for organ preservation for potential transplant, and that is a worthy, life-changing outcome that can extend to several recipients. It's always a tough call.

(Reviewer-Steven B. Abrams, MD).

© 2015, Oakstone Publishing, LLC

Keywords: Blunt Trauma, Resuscitation, Thoracotomy, Cardiac Arrest

Print Tag: Refer to original journal article
Background: According to the literature, atopic dermatitis (AD) can affect up to 25% of infants. In fact, it may be the first step on the march to asthma and allergic rhinoconjunctivitis. While topical corticosteroids (TCSs) are often the first-line therapy, there are no hard data regarding their long-term impact on infants. Nevertheless, steroids' possible adverse reactions are cause for concern both for clinicians and parents. Pimecrolimus cream 1% (PIM; trade name, Elidel®) has been used for atopic dermatitis. It is a non-steroidal topical calcineurin inhibitor that selectively suppresses T cell and mast cell activation. While PIM's safety and efficacy have been proven after 2 years of use, its long-term consequences, especially on the immune system, have not been studied.

Objective: To evaluate the safety of PIM in the long-term management of AD in children and compare it with TCS.

Design: Prospective 5-year open-label study.

Participants: 2418 infants.

Methods: In random fashion, 1205 infants were assigned to the PIM group (TCSs were available for AD flare-ups). The other 1213 were assigned to the TCS group. Efficacy was based on the Investigator's Global Assessment (IGA) score (0 = all clear; 1 = almost clear).

Results: By 3 weeks, both regimens achieved treatment success (overall and facial) for >50% of both populations (ie, IGA <1). At the end of the 5-year study period, >85% in both groups achieved overall treatment success. Similarly, 95% of both groups achieved facial treatment success. Adverse effects in both treatment groups were similar. In addition, for both groups, there is no evidence of any cellular or humoral immunity impairments.

Conclusions: Long-term use of PIM in the management of infant AD had a similar pattern of efficacy and safety as TCS. Since it is also steroid-sparing, PIM can be considered first-line therapy in children with mild-moderate AD.

Reviewer's Comments: This presentation was simply to introduce a drug that may become more popular as primary care providers begin prescribing more Elidel based on the results of this large study. (Reviewer-Paul P. Rega, MD, FACEP).
Should We Slow Down With FAST for Blunt Trauma?

Do We Really Rely on FAST for Decision-Making in the Management of Blunt Abdominal Trauma?

Carter JW, Falco MH, et al:

Injury 2015; 46 (May): 817-821

The Focused Assessment with Sonography in Trauma examination has insufficient sensitivity for blunt intraabdominal injury in both stable and unstable patients.

**Background:** The Focused Assessment with Sonography in Trauma examination (FAST) is recommended in the evaluation of injured patients, often as an adjunct to the primary survey for patients sustaining blunt abdominal trauma. While non-invasive, convenient, and rapidly performed at bedside, the utility of FAST for the evaluation of blunt abdominal trauma has been questioned in several series, mostly because of widely variable sensitivity of the exam for intraabdominal injury when performed by non-radiologists in general, and junior housestaff in particular.

**Objective:** To examine the hypothesis that FAST is not an efficacious screening tool for identifying intraabdominal injuries.

**Design:** Retrospective chart review of all patients with confirmatory diagnosis of blunt abdominal injuries on either CT and/or laparotomy over a 1.5-year period.

**Methods:** The authors identified cases where initial FAST was performed by emergency department (ED) residents and considered positive when free intraabdominal fluid was visualized.

**Results:** The authors identified 1671 blunt trauma patients admitted to and evaluated in the ED during the study period. Overall, 146 patients sustained intraabdominal injuries confirmed by CT and/or laparotomy. Intraoperative findings include injuries to the liver, spleen, kidneys, and bowel. FAST was positive in 139 patients. Among 114 hemodynamically stable patients, FAST was positive in 25, for a sensitivity of 22%. In 32 hemodynamically unstable patients, FAST was positive in 9, for a sensitivity of 28%. Free peritoneal fluid and splenic injury were associated with a positive FAST on univariate analysis, and were independent predictors for a positive FAST on multiple logistic regression. The authors maintain that (1) in hemodynamically stable patients, a negative FAST without a CT may result in missed intraabdominal injuries and (2) in hemodynamically unstable blunt trauma patients with clearly alarming physical findings on examination, the decision for exploratory laparotomy should not be distracted by a negative FAST.

**Conclusions:** FAST has a very low sensitivity in detecting blunt intraabdominal injury.

**Reviewer's Comments:** Sort of a philosophical, heuristic issue here. The takeaway is not to discard the FAST, which is rapidly morphing into a cardiac and pulmonary assessment tool as the machines and techniques get better and better. Bottom line is trauma merits all available hands on deck deploying all readily available modalities to define the dimensions of the problem. FAST is not simply a formality; it can quickly define multisystem issues and foster forward thinking. If negative, most patients with significant mechanisms of injury proceed to pan-scan anyway. FAST in inexperienced, junior hands is an altogether different issue, but it's a local workflow and education issue. (Reviewer-Steven B. Abrams, MD).

© 2015, Oakstone Publishing, LLC

Keywords: FAST Exam, Blunt Trauma

Print Tag: Refer to original journal article
Laundry Detergent Pods Pose a Serious Poisoning Risk to Young Children

Pediatric Exposure to Laundry Detergent Pods.
Valdez AL, Casavant MJ, et al:

Pediatrics 2014; 134 (December): 1127-1135

Laundry detergent pods pose a serious poisoning risk to young children in the United States, especially in those aged <3 years, with ingestion being the major mode of exposure due to pods left in plain sight.

**Background:** Laundry detergent pods became available in 2012 in the United States (U.S.). Due to their candylike and colorful designs, they have emerged as a commonly ingested household item.

**Objective:** To investigate the characteristics and outcomes of exposures to laundry detergent pods in children aged <6 years in the U.S.

**Design:** Retrospective cohort study.

**Methods:** Review of reports to the National Poison Data System from March 2012 to April 2013.

**Results:** There were 17,230 children aged <6 years exposed to pods during the study period. The reason for ingestion was most commonly unintentional. Children aged <3 years represented 73.5% of cases, those aged 1 year represented 33.3%, and those aged 2 years represented 31.5%. Major route of exposure was ingestion, occurring in 79.7%. A total of 98.9% of cases occurred at the residence, and 42.3% occurred because the pods were in sight or left out of the container. A total of 53.5% of cases were managed at a non-health facility, 4.4% were hospitalized, and there was 1 confirmed death.

**Conclusions:** Laundry detergent pods pose a serious poisoning risk.

**Reviewer's Comments:** Interestingly, detergent pods have been available in Europe since 2001. Previous studies in the United Kingdom have demonstrated ocular effects, and in Italy these pods have become the most commonly ingested household item. In the U.S., household cleaning products are the third leading poison exposure. In the spring of 2013, 1 of the major manufacturers of the detergent pods changed the packaging and added warning labels and latches to the containers. Although these changes may have resulted in a 25% decrease in cases from April to December 2013, this could have also been due to the seasonal trend. Not surprising is the increased number of children ages 1 and 2 years representing the majority of cases, as they are exploring their environment. Several prior studies have found an increased rate among this age group as well. The good news with the effects of exposure is that half of the children were managed outside of a health facility, which conflicts with previous studies that reported higher numbers of health care-related treatment. This study highlights the need for more prevention measures. The majority of cases reported the pods were left in sight, left open, in a low unlocked cabinet, or inappropriately stored. The reported numbers may be lower than actual numbers, because calls to poison control centers are voluntary and children may have been treated by their primary care physician or in a health care facility without a report made. (Reviewer-Candice S. Dawes, MD).

© 2015, Oakstone Publishing, LLC

Keywords: Laundry Detergent Pods, Ingestion, Poisoning

Print Tag: Refer to original journal article
Pneumonic Plague Outbreak Comes to Colorado -- Was There Human-to-Human Transmission?


Runfola JK, House J, et al:

MMWR Morb Mortal Wkly Rep 2015; 64 (May 1): 430-434

There has not been a case of human-to-human transmission of plague in the United States since 1924.

Case Study: A pneumonic plague outbreak occurred in Colorado in 2014. Besides a canine-human transmission it is possible that a human-human transmission also occurred (the first in the U.S. since 1924). On June 24, the family dog, owned by Patient A, is taken ill and brought to the vet where Patients B and C work. The dog, having developed difficulty breathing and bloody sputum, is euthanized shortly thereafter. Patients A, B, C, and D were in contact with the animal before and after euthanasia. On June 28, Patient A develops a fever and cough and on June 29, after manifesting hemoptysis, is hospitalized. Patient D, a close friend of Patient A, had been in close contact for a prolonged period of time. On June 30, Patient B has a cough and fever and eventually self-medicates with amoxicillin/clavulanic acid. On July 1, Patient A's blood culture is reported as positive for *Pseudomonas luteola* and is placed on levofloxacin. On July 4, Patient C complains of fever and chest tightness; July 5, Patient B is diagnosed with pneumonia and is placed on azithromycin. Meanwhile, Patient D is now developing fever and chest tightness and is placed on levofloxacin on July 6. On July 8, (1) Patient A's blood culture is now correctly interpreted as *Yersinia pestis*; (2) The dog's specimens are also positive for *Y pestis*; and (3) Patient D now requires hospitalization and is placed on levofloxacin and streptomycin. On July 9, Patient C receives notification of plague exposure and is started on doxycycline. Meanwhile, Patient D is discharged from the hospital with oral doxycycline. On July 10, Patient B is now notified about the plague exposure and is placed on levofloxacin. It was on July 15 that Patient B's sputum polymerase chain reaction results return positive for *Y pestis*. Finally, on July 22, Patient A is discharged from the hospital. Patients A, B, C, and D survived. During this time, medical personnel and all personal contacts were investigated for possible exposure to plague (36 in the veterinary setting, 58 in the human health care setting, and 20 personal contacts). Prophylaxis was recommended for 88. Why the dog got plague has yet to be established.

Reviewer's Comments: Several points to be made: (1) Albeit rare, domesticated animals can carry plague and can transmit to humans; (2) *Y pestis* can be misread by automated blood culture systems as being *P luteola*; (3) A delay in the diagnosis of pneumonic plague can result in a local public health crisis as close and casual contacts are tracked down for possible prophylactic interventions. (Reviewer-Paul P. Rega, MD, FACEP).

© 2015, Oakstone Publishing, LLC

Keywords: Pneumonic Plague

Print Tag: Refer to original journal article
Emergency physicians rely on ≥1 of 4 main clinical approaches to manage patients presenting with palpitations.

**Background:** Palpitations are a common emergency department (ED) complaint, subject to wide regional variance in testing and rates of admission. Incomplete understanding of clinical decision-making processes from an emergency care perspective impedes guideline or algorithm construction.

**Objective:** To describe perceptions and clinical approach of emergency physicians (EPs) to patients with palpitations, in order to generate hypotheses for future studies and interventions.

**Methods:** The authors conducted 21 semi structured interviews with emergency physicians from academic and community practice settings across the United States. The transcribed interviews were analyzed. Palpitations were defined as a sensation of irregular, rapid, slow or forceful pulsations in the chest.

**Results:** A majority of EPs perceive palpitations to be a common chief complaint associated with a generally low or very low risk of an adverse outcome, and tend to use 4 main clinical approaches to identifying those outliers for whom palpitations are a marker of meaningful acute disease. Toward this end, the authors categorized EPs’ clinical approach to palpitations as relating to ≥1 of the following themes: (1) risk stratification (19 respondents), with particular emphasis on age, history of structural heart disease, chest pain, stimulant meds, and syncope/presyncope; (2) diagnostic categorization (9 respondents), to determine an organic or functional etiology; (3) algorithmic management, whereby certain clinical variables dictate specific action, such as end-stage renal disease patients automatically getting blood tests, or palpitations actually witnessed on an ED monitor warranting a work-up; and (4) case-specific gestalt. Over half of respondents indicated that their clinical approach developed primarily with experience or anecdotally, devoid of studies or guidelines. Four main criteria emerged regarding disposition decisions: (1) presence of a serious diagnosis; (2) perceived need for further cardiac testing/monitoring; (3) presence of key associated symptoms; and (4) request of other physician or patient desire.

**Conclusions:** EPs perceive palpitations to be a common but generally benign chief complaint, and rely on ≥1 of 4 main clinical approaches to manage these patients; these findings could help guide future efforts at developing risk-stratification tools and clinical algorithms.

**Reviewer’s Comments:** To build a better palpitation algorithm, better find a better definition, which currently is almost always imprecise and subject to broad application. Absent that, you all know the rule -- if you talk to the patient long enough, they'll tell you the diagnosis. When you hear something like "it just took off..." your path is clear. And don't forget to ask patients if they took their pulse -- if they had time for that, these were not just transient butterflies in the chest cavity. I always listen for denial or endorsement of a sustained (key word), racing (key word), or pounding (key word) pulse, and no mention of dizziness, near-syncope, effort-related, or fall. (Reviewer-Steven B. Abrams, MD).

© 2015, Oakstone Publishing, LLC

**Keywords:** Palpitations, Medical Decision Making, Risk Stratification, Dysrhythmia

**Print Tag:** Refer to original journal article
Important Drug Interaction to Avoid - Trimethoprim-Sulfamethoxazole and Sulfonylureas

Coadministration of Co-Trimoxazole With Sulfonylureas: Hypoglycemia Events and Pattern of Use.
Tan A, Holmes HM, et al:

Hypoglycemia risk nearly quadruples when trimethoprim-sulfamethoxazole is co-administered with a sulfonylurea.

**Background:** The effect of sulfonylurea medications may be increased by drugs that inhibit cytochrome P450 2C9 (abbreviated CYP2C9), an enzyme that is involved in the metabolism of these agents. Trimethoprim-sulfamethoxazole inhibits CYP2C9 and has been associated with increased risk for hypoglycemia when given to patients on sulfonylureas.

**Objective:** To assess the prevalence of co-administration of trimethoprim-sulfamethoxazole with sulfonylureas and the subsequent risk of emergency department (ED) visits for hypoglycemia among older persons with diabetes. Also, factors that might contribute to exposure to this potential drug-drug interaction were explored.

**Design:** Retrospective cohort study of the records of 34,239 Medicare beneficiaries taking glyburide or glipizide in 2008.

**Methods:** Subjects' records were reviewed for trimethoprim-sulfamethoxazole ("trim-sulfa") prescriptions and subsequent ED visits for hypoglycemia between 2008 and 2010. Subjects prescribed amoxicillin, cephalaxin, or azithromycin (antibiotics that do not interfere with the metabolism of sulfonylureas) served as controls.

**Results:** Trimethoprim-sulfamethoxazole was prescribed to 17% of sulfonylurea users between 2008 and 2010. These patients had a much higher risk of ED visits for hypoglycemia relative to controls prescribed noninteracting antibiotics (odds ratio [OR], 3.89; 95% confidence interval [CI], 2.3 to 6.6 for glipizide; and OR, 3.78, 95% CI, 1.8 to 7.9 for glyburide) and relative to those prescribed amoxicillin. Patients with polypharmacy (taking > 5 drugs) and those with more prescribers were more likely to have been prescribed trimethoprim-sulfamethoxazole. Patients with an identifiable primary care provider were less likely to have received a trimethoprim-sulfamethoxazole prescription.

**Conclusions:** Trimethoprim-sulfamethoxazole is often prescribed to older diabetic patients taking sulfonylureas, and this combination is associated with a substantially increased risk for serious hypoglycemic events.

**Reviewer's Comments:** Drug interactions are common, and providers may suffer from desensitization to drug-interaction alerts that can come in high volume from electronic prescribing systems. One of my gripes is that system-generated drug-interaction alerts often include minor interactions that are usually not clinically relevant. On the other hand, providers need to be dialed in to important drug interactions; this potential interaction between trimethoprim-sulfamethoxazole and sulfonylureas is one in which all providers should be aware. Ideally, this combination should be avoided. If and when this combination is clinically necessary, I favor either reducing or holding the sulfonylurea medication or at a minimum heighten patient attention to glucose monitoring and possible hypoglycemia while ill and on treatment with trimethoprim-sulfamethoxazole.

(Reviewer-Jeff Wallace, MD, MPH).

© 2015, Oakstone Publishing, LLC

Keywords: Co-Trimoxazole, Sulfonylureas, Drug Interaction, Hypoglycemia

Print Tag: Refer to original journal article
Local Anesthetic Blockade of Key Neural Center Fails to Improve Headache Symptoms

Noninvasive Sphenopalatine Ganglion Block for Acute Headache in the Emergency Department: A Randomized Placebo-Controlled Trial.
Schaffer JT, Hunter BR, et al:

Noninvasive sphenopalatine ganglion block for acute headache is no better than saline placebo for management of acute headache.

**Background:** Current headache therapy in the emergency department (ED) does not target specific neural sites implicated in the perception of headache.

**Objective:** To evaluate the efficacy of noninvasive sphenopalatine ganglion block for the treatment of acute anterior headache in the ED using the Tx360 introducer.

**Design:** Randomized, double-blind, placebo-controlled trial completed in 2 large academic EDs.

**Participants:** 93 patients aged 18 to 65 years presenting with a frontal-based, crescendo-onset headache and a normal neurologic examination.

**Methods:** The Tx360 is described as a novel noninvasive intranasal delivery device designed to position a flexible microcatheter near the ganglia in the posterior nasopharynx. A small delivery port sprays local anesthetic medication superiorly, laterally, and anteriorly to the sphenopalatine ganglion. The procedure takes as little as 10 seconds per side to perform in awake, seated patients. Bupivacaine or normal saline solution was delivered intranasally with the device. Pain and nausea were measured at 0, 5, and 15 minutes using a 100-mm visual analog scale. Primary end point was a 50% reduction in pain at 15 minutes. Telephone follow-up assessed the durability of symptom relief at 24-hours using a 0- to 10-point verbal scale. Adverse effects were evaluated.

**Results:** Median reported baseline pain in the bupivacaine group was 80.0 mm (interquartile ratio [IQR] 66.0 mm to 93.0 mm) and 78.5 mm (IQR 64.0 mm to 91.75 mm) in the normal saline solution group. A 50% reduction in pain was achieved in 48.8% of the bupivacaine group (20/41 patients) versus 41.3% in the normal saline solution group (19/46 patients), for an absolute risk difference of 7.5% (CI, -13.0% to 27.1%). At 24 hours, more patients in the bupivacaine group were headache free (24.7% difference; 95% CI, 2.6% to 43.6%) and more were nausea free (16.9% difference; 95% CI, 0.8% to 32.5%). No severe adverse events were reported in either group during the ED stay or at 24 hours.

**Conclusions:** For patients with acute anterior headache, sphenopalatine ganglion block with the Tx360 device with bupivacaine failed to achieve a significant increase in the proportion of patients achieving a ≥50% reduction in headache severity at 15 minutes compared with saline placebo.

**Reviewer's Comments:** The authors weren't quite sure whether to discuss the results as revealing a considerable placebo effect among the saline group, too little dwell time among the bupivacaine group, or other mysterious factor short of obvious failure of the device group. Some of you will remember the era of 2% viscous lidocaine applied to a swab and inserted against the lateral nasal wall of the nostril on the same side as the headache. Or just dribbling lidocaine solution over the same area. What's old is new again, and still doesn't work. (Reviewer- Steven B. Abrams, MD).

© 2015, Oakstone Publishing, LLC

Keywords: Headache, Migraine, Bupivacaine, Sphenopalatine Ganglion, Nerve Block, Regional Anesthesia

Print Tag: Refer to original journal article
NSAIDs Still Not Safe in Patients Who Have Had a Heart Attack

Association of NSAID Use With Risk of Bleeding and Cardiovascular Events in Patients Receiving Antithrombotic Therapy After Myocardial Infarction.

Olsen AMS, Gislason GH, et al:

JAMA 2015; 313 (February 24): 805-814

Even short-term NSAIDs should be avoided in patients with known coronary artery disease treated with anti-thrombotic medications.

Background: The use of NSAIDs remains pervasive in higher-risk patients despite studies indicating NSAID use is associated with bleeding and recurrent cardiovascular events in people with known coronary disease.

Objective: To assess the risk for bleeding and cardiovascular events in people with a first-time myocardial infarction (MI) treated with antithrombotic drugs and co-prescribed NSAIDs.

Design: Nationwide (cohort) study.

Methods: Danish national registries identified people aged >30 years after a first-time MI. Prescriptions for antithrombotic medications (aspirin, clopidogrel, and vitamin K antagonists or their combination) and concurrent NSAIDs (including cyclooxygenase 2 [COX-2] inhibitors) were identified. Primary outcome of interest was major bleeding events leading to hospital admission. The secondary outcome of interest was a composite cardiovascular outcome including MI, cerebrovascular accident, transient ischemic attack, cardiovascular death, and systemic arterial emboli.

Results: Included were >60,000 subjects; mean age was 67 years and 63% were men. Median follow-up was 3.5 years, during which 34% of subjects had at least 1 prescription claim for NSAIDs. The adjusted hazard ratio for bleeding with NSAIDs + anti-thrombotics was 2.02 (confidence interval [CI], 1.8 to 2.3) versus no NSAIDs. The most common combinations were as follows: aspirin + clopidogrel + NSAID (HR, 2.4) and an oral anticoagulant + antiplatelet + NSAID (HR, 2.7). All NSAIDs in combination with antithrombotic therapy resulted in an increased risk of bleeding. The increased bleeding risk was present within days 0 to 3 of NSAID initiation. The combined cardiovascular end point with NSAID exposure was HR 1.4 (CI, 1.3 to 1.5). However, when vitamin K antagonists were omitted, the harm was greater: use of aspirin + clopidogrel + NSAIDs (HR, 2.6) and aspirin + NSAIDs (HR, 1.6).

Conclusions: Concomitant use of NSAIDs and antithrombotic medications in patients with a history of MI increased the risk for major bleeding and increased the risk of adverse cardiovascular outcomes.

Reviewer's Comments: Providers have a misconception that short-term NSAID use may be less harmful than other pain control modalities, but this study shows that there is no "safe" therapeutic window. The risk for major bleeding with combination NSAIDs and anti-thrombotic medications is immediate. There is no "safe" NSAID. COX-2 inhibitors were just as culprit as non-selective NSAIDs. None of us would fail to prescribe an antithrombotic to a patient after an MI, so why are we still prescribing NSAIDs that effectively negate the protective effect of anti-thrombotics? The use of acetaminophen and narcotics (except methadone) has not been associated with increased cardiovascular events. However, acetaminophen, even short term, can cause supratherapeutic INRs in patients on vitamin K antagonists. (Reviewer-Genevieve L. Pagalilauan, MD).

© 2015, Oakstone Publishing, LLC

Keywords: Adverse Effects, Medication, NSAIDs

Print Tag: Refer to original journal article
Infant Botulism Type F -- Don't Think BIG; Think BAT!

Notes From the Field: Infant Botulism Caused by Clostridium baratii Type F -- Iowa, 2013.
Moodley A, Quinlisk P, et al:

MMWR Morb Mortal Wkly Rep 2015; 64 (April 17): 400

Baby-Botulism Immune Globulin Intravenous (Human) is only licensed for the management of botulinum toxin A and B.

Case Report: This is a case report involving a 9-day-old male infant in June 2013. This baby was the product of a normal full-term pregnancy and delivery. He was brought to the emergency department (ED) for the following complaints: a 2-day history of constipation, poor feeding, and acting fussy. Further questioning of the mother revealed that the baby exhibited excessive crying, was reluctant to suck, and was having difficulty swallowing formula. Other than commercial formulas, the baby received nothing else by mouth. There was no consumption of honey or exposure to soil. Within hours, the baby became less responsive, developed increasingly poor muscle tone (“floppy”), and respiratory failure. He required aggressive airway management and was intubated. In the differential diagnosis was infant botulism and by hospital day number 2, the baby received Baby-BIG or Botulism Immune Globulin Intravenous (Human). This therapy is Food and Drug Administration approved for the treatment of botulism Type A or Type B in infants. By hospital day number 3, preliminary stool studies indicated that the botulinum toxin was Type F and shortly thereafter, stool cultures returned positive for Clostridium baratii type F. Therefore, it should come as no surprise that the baby did not improve clinically and still required mechanical ventilation 3 days after receiving Baby-BIG considering that it's licensed to be effective against botulinum types A & B. So, on hospital day number 6, the baby received BAT which is equine-derived botulism anti-toxin heptavalent (A-G). This baby is only the second pediatric case in the United States to receive BAT. Apparently the only adverse effect of BAT was the baby developing a low-grade fever within 1 hour of the drug's administration. The fever was intermittent, but it lasted for 3 days. One day later, the baby began having spontaneous movements of the extremities and by hospital day number 8, was removed from the ventilator. Reports on hospital day number 9 revealed that the baby's muscle tone had significantly improved and he was taking oral liquids. He was discharged to home on the twelfth day of hospitalization. At the 2-week follow-up visit, baby was doing well and there were no sequelae. During this period of time, there was an intense effort to identify the source of the bacteria. Parents reported periods of high winds in their neighborhood as well as minor construction. The household also contained a menagerie of warm-blooded and cold-blooded fauna. However, samples of inert and living things in and around the baby's house failed to identify the source of botulinum toxin type F.

Reviewer's Comments: Infant botulism caused by Cl baratii type F is rare. Only 13 cases have been reported in the U.S. up to 2012. Interestingly, this is the third case that's coming from Iowa. (Reviewer-Paul P. Rega, MD, FACEP).

© 2015, Oakstone Publishing, LLC

Keywords: Infant Botulism, BIG BAT, Clostridium baratii, Botulinum Toxin Type F

Print Tag: Refer to original journal article
Reliable algorithms for predicting massive transfusion in trauma patients are needed.

**Background:** Predefined massive transfusion (MT) protocols at trauma centers facilitate rapid, early recognition and treatment of trauma patients requiring massive transfusion, and have been shown to reduce mortality. However, while many risk factors predicting MT have been demonstrated, there is no universally accepted method or algorithm to identify these patients, and clinical gestalt is frequently employed to make treatment predictions.

**Objective:** To evaluate the utility of experienced trauma surgeons' clinical gestalt for identifying patients who will require MT.

**Design:** Subgroup analysis of the Prospective Observational Multicenter Major Trauma Transfusion (PROMMIT) Study.

**Methods:** PROMMIT evaluated the relationship between early transfusion and mortality at 10 U.S. Level-1 trauma centers in patients who survived ≥30 minutes after admission and received ≥1 unit of red blood cells within 6 hours of arrival. MT patients were defined as those who received ≥10 units within 24 hours of admission. As part of the enrollment, trauma surgeons were asked 10 minutes after patient arrival to opine on whether the patient was likely to be massively transfused. The performance of this gestalt to predict MT was assessed using various statistical methods to compare its utility to existing scoring systems.

**Results:** 966 trauma patients met inclusion criteria and 221 (23%) received MT. On clinical impression alone, 415 (43%) were predicted to have a MT, yet only 145 (35%) required MT and 270 (65%) did not. On clinical impression alone, 551 (57%) were predicted not to require MT and, in this group, only 76 (14%) required MT while 475 (86%) did not. Patients predicted to require MT were younger, more often sustained penetrating trauma, had higher injury severity scores, higher heart rates, and lower systolic blood pressures (all \(P<0.05\)). Overall, Gestalt sensitivity was 65.6% and specificity was 63.8%. Positive and negative predictive values were 34.9% and 86.2% respectively. Comparison with standard scores was difficult due to missing data, and the comparison cohort was only 486 patients. The Trauma Associated Severe Hemorrhage (TASH) score was superior to gestalt, the Assessment of Blood Consumption (ABC) and McLaughlin scores were not.

**Conclusions:** Predicting the need for MT continues to be a challenge, and a more reliable algorithm is needed.

**Reviewer's Comments:** Many unanswered questions here. How many of the surgeons had results of a Focused Assessment of Sonography in Trauma (FAST) exam, if performed, prior to offering an opinion? Subgroup analyses are generally useful only for hypothesis generation, and the hypothesis here that opinion just gets you so far in a trauma scenario is not all that helpful. Might as well study the ability of someone to predict which car in the mega-mall parking lot is going to get into an accident tomorrow. (Reviewer-Steven B. Abrams, MD).
Let’s Add Butyrfentanyl as Another Opioid of Abuse...Watch Out for Major Hemoptysis

 Butyrfentanyl Overdose Resulting in Diffuse Alveolar Hemorrhage.

 Cole JB, Dunbar JF, et al:

 Pediatrics 2015; 135 (March): e740-e743

 Butyrfentanyl is 7 times more potent than morphine, but less potent than fentanyl.

Background: Butyrfentanyl is an analog of fentanyl. It is a potent short-acting opioid. Animal studies reveal that it is 7 times more potent than morphine, but less than that of fentanyl. Given that opioid overdoses are a growing problem in U.S. emergency departments (EDs), there are no human studies associated with butyrfentanyl overdoses.

Objective: To present a case associated with a butyrfentanyl overdose and a coincidental complication. Case Study: A male aged 18 years was found unconscious with labored breathing by his mother. Drug paraphernalia was nearby. EMS was called and he improved dramatically with naloxone. In the ED, his vital signs were: temperature 37.3ºC; pulse 113 per minute; blood pressure 105/70 mm Hg; respirations 28 per minute; and an SaO₂ of 97% (100%). He was awake enough to indicate he had no medical problems other than a tendency to drug abuse. He snorted what he thought was acetyl fentanyl through the Internet and went unconscious. In the ED he complained a dyspnea and then began coughing up frank blood. Course rales were evident on auscultation. A CXR revealed diffuse interstitial markings and significant perihilar opacities. Other than a leukocytosis, routine chemistries were non-contributory. Immunoassays were positive for opiates and fentanyl. Gas chromatography and mass spectroscopy indicated that the illicit drug was actually butyrfentanyl. His dyspnea worsened and eventually he was intubated. Bronchoscopy and cytology findings were consistent with diffuse alveolar hemorrhage. The hemoglobin dropped 3 points over time. It took 4 days before he improved enough to be extubated and, by hospital day 7 he was discharged. Other than ventilator-induced pneumonia, the boy sustained no other adverse sequelae.

Reviewer’s Comments: This is the first well-documented butyrfentanyl overdose. This case reports that it can be associated with pulmonary edema, acute lung injury, and even diffuse alveolar hemorrhage. The first 2 complications are well-known with opiate overdoses, but the hemorrhage is a rare manifestation. Something to be on the lookout for. However, unless you have significant drug screens you may never be able to make a lab diagnosis. (Reviewer-Paul P. Rega, MD, FACEP).

© 2015, Oakstone Publishing, LLC

Keywords: Butyrfentanyl, Alveolar Hemorrhage

Print Tag: Refer to original journal article
5Es Provide Easy Way to Remember Key Components of Cardiac US Exam


Hall MK, Coffey EC, et al:

Acad Emerg Med 2015; 22 (May): 583-593

The focused cardiac ultrasound is neither taught, practiced, nor interpreted consistently.

**Background:** Focused cardiac ultrasound (FOCUS) is a crucial tool to help clinicians diagnose and treat potentially life-threatening conditions. There are a number of FOCUS applications and protocols and none are specialty-specific. While emergency physician FOCUS (EP-FOCUS) is widely recognized as invaluable, EP-FOCUS is not taught, practiced, or interpreted consistently between institutions.

**Objective:** To present a protocol for teaching and performing EP-FOCUS described as "The 5Es," based on the authors' multiyear experience in a large-volume, high-acuity academic emergency department (ED).

**Pertinent Points:** The 5Es are effusion, ejection, equality, exit, and entrance. (1) Effusion is categorized as none/trace, small (<1cm), moderate (1 to 2 cm), and large (>2 cm). The subcostal long-axis or 4-chamber views are most reliable for visualization as the most dependent portion of the pericardium is closest to the face of the probe. (2) Ejection is graded as hyperdynamic (left ventricle [LV] ejection fraction [EF] >65%), normal (EF 50% to 65%), moderately depressed (EF 30% to 50%), severely depressed (EF <30%), or no significant myocardial activity. Any LV diameter >6 cm in diastole is abnormal. (3) Equality of ventricles, graded as normal (right ventricle [RV]:LV <1) or enlarged (RV:LV >1). Acute RV enlargement should always raise suspicion for pulmonary embolism (PE), while chronic RV strain is frequently associated with chronic obstructive pulmonary disease (COPD) and pulmonary hypertension. RV free-wall thickness >5 mm is indicative of chronic strain. (4) Exit assesses the aortic root for aneurysm or dissection. The normal root is <4 cm; thoracic aortic aneurysm (TAA) is anything >4.5 cm. (5) Entrance refers to inferior vena cava (IVC) diameter, typically measured at its largest diameter (found at end expiration). Measure about 2 cm distal to the junction of the IVC and right atrium (RA) or 1 cm distal to the where the hepatic veins join the IVC. The authors suggest grading as flat (<1 cm, >75% collapse), normal (1 to 2 cm), or full (>2 cm, <25% collapse; suggests plethora and high RA pressures). Use M-mode to calculate the caval index; a high caval index indicates lower preload.

**Conclusions:** While EP-FOCUS will likely continue to evolve, the 5Es provide a framework for the acquisition and interpretation of the most relevant and applicable components of echocardiography in the emergency setting.

**Reviewer's Comments:** Quite nice of this group to offer an easily mastered sequence of cardiac US waystations. If you're coming late to the US table, check out this article. Great sono shots and fantastic concept illustrations. Full video in the online version, too. As a suggested protocol, it's simple, limited in scope, and problem-oriented. Always be careful using US for catastrophes involving the aortic root; a recent ACEP review has found horrendous utility using transthoracic US as the basis for clinical decision making in this region. Contrast CT is the test of choice for diagnosing or excluding thoracic aortic disease. (Reviewer-Steven B. Abrams, MD).

© 2015, Oakstone Publishing, LLC

**Keywords:** Focused Cardiac Ultrasound, Pericardial Effusion, Cardiac Chamber Enlargement, Ventricular Strain

Print Tag: Refer to original journal article
Quiz Questions

1. In a recent study of telemedicine utilizing Google Glass, the majority of the study population was dissatisfied with the video consultation.
   Circle one: True False

2. Untreated hypertensive patients started on chronic therapy upon discharge from the emergency department have a higher incidence of adverse events versus those discharged to follow-up.
   Circle one: True False

3. The Alvarado Score can be applied in the same manner to both male and female patients.
   Circle one: True False

4. Approximately 15% of survivors of emergency department thoracotomy for blunt trauma achieve a good neurologic outcome.
   Circle one: True False

5. Atopic dermatitis can affect up to 25% of infants.
   Circle one: True False

6. The Focused Assessment with Sonography in Trauma examination has a low sensitivity in detecting blunt intra-abdominal injury.
   Circle one: True False

7. In a review of reports to the National Poison Data System from March 2012 to April 2013, it was found that almost half of laundry pod ingestions by young children were associated with the pods being left in sight or in an unlocked container.
   Circle one: True False

8. With automated blood culture systems, the bacterium that is said to be easily confused for *Yersinia pestis* is *Pseudomonas aeruginosa*.
   Circle one: True False

9. Most emergency physicians consider palpitations to be a generally benign chief complaint.
   Circle one: True False

10. Co-administration of trimethoprim-sulfamethoxazole with sulfonylureas nearly quadruples the risk of a serious hypoglycemic episode.
    Circle one: True False

11. Intranasal delivery of local anesthetic is superior to placebo for management of acute anterior headache.
    Circle one: True False

12. NSAIDs are safe to use (no increased bleeding risk) in post-myocardial infarction patients with anti-thrombotic medication co-use as long as use is limited to ≤3 days.
    Circle one: True False

13. Equine-derived botulism anti-toxin heptavalent is not Food and Drug Administration approved for botulinum toxin type F.
    Circle one: True False

14. Clinical impression is unreliable for predicting which trauma patients will require massive transfusion.
    Circle one: True False

15. Butyrfentanyl is more potent than fentanyl.
    Circle one: True False

16. The normal aortic root on cardiac ultrasound is <4 cm in diameter.
    Circle one: True False

To complete the quiz for credit, log onto www.practicalreviews.com. If you have not previously registered at the site, click on “New Customer Registration” located in the right navigational bar and follow the directions. You will need your account number (located above your name on the Table of Contents) and your mailing zip code. To access the quiz, click on the “Take a Quiz” link located in the right navigational bar. Enter the quiz code and select your answers. Once you click Submit, you will receive immediate notification of your score.
1. T In a recent study by Keim et al, up to 10% of the "human" milk samples from the Internet contained cow's milk.

2. F Icatibant is a selective histamine antagonist that is effective for treatment of ACE-inhibitor-related angioedema.

3. T Neurologically intact children who sustain minor blunt head injury, but who have isolated linear skull fractures, do not require hospitalization.

4. F In a recent study of early septic shock, the probability that early goal-directed therapy was cost-effective versus standard care was nearly 90%.

5. T Male gender is the greatest predictor of future firearm violence in those who present to the emergency department as a result of firearm violence.

6. T Hospital-based shooter incidents have increased over the past 15 years to at least monthly occurrences.

7. T Following a significant burn injury, the negative impacts on the heart and other organ systems have been documented for up to 3 years after a burn trauma.

8. T Of septic patients who develop shock following emergency department presentation, a majority manifest shock beyond 4 hours arrival.

9. F In a recent study by Gosner-Hafertepen et al on abdominal CT findings after blunt trauma, all 4 failures of nonoperative management had small isolated free fluid.

10. F In community settings, a negative CT scan obtained on a second-generation machine safely excludes aneurysmal subarachnoid hemorrhage if obtained <6 hours from symptom onset.

11. T Bacteremia accounts for about 7% of all children aged <5 years presenting to the emergency department with an acute febrile illness.

12. T When evaluated by alternate light sources, skin rashes, skin infections, deodorants and lotions can cause positive fluorescence.

13. T Length of hospitalization with respiratory syncytial virus is significantly increased when the infection occurs between April and October.

14. T Per federal law, conversations cannot be recorded without consent.

15. T Tapentadol is a µ-opioid receptor agonist, a weak serotonin reuptake inhibitor and a blocker of norepinephrine reuptake.

16. T Review of prehospital tourniquet use for victims of the Boston Marathon bombing indicates that the current military experience has not translated to the civilian setting.