Kids' Head Injuries -- To CT or Not to CT...That Is the Question

Should a Head-Injured Child Receive a Head CT Scan? A Systematic Review of Clinical Prediction Rules.

Maguire JL, Boutis K, et al:

Pediatrics 2009; 124 (July): e145-e154

While unnecessary CTs are important to avoid, there is no definitive and expeditious system to decide which head-injured children do not need a CT.

Background: Head injuries in children are a common entity in the ED (annual rate of 60 to 100 per 100,000 children). To rule out a substantial injury, CTs of the head are commonplace, with up to 70% of the population receiving them. Depending on the study, 70% to 98% of these CTs are normal. With the growing realization that CTs are adding to the cancer risk in children (eg, lifetime estimated risk of cancer mortality is 1 for every 1400 head CTs), are there clinical predictive rules with sufficient validity to decrease the number of CTs ordered in this patient population?
Objective: To identify and evaluate the quality and performance of existing clinical predictive rules that have been used for children with head injury.
Design: Retrospective meta-analysis.
Methods: Of 3357 studies screened, 218 were assessed, and 8 fulfilled all the authors' inclusion criteria (ie, having a clinical predictive rule that included ≥3 historical, physical, or diagnostic variables that had outcomes or suggested a course of action per patient and is not a decision-type tool). Predictive rule quality was assessed by evaluating 14 items that have been used in the past. Clinical performance rules were evaluated with sensitivity, specificity, negative-predictive value, positive-predictive value, and the rule-predictive use of CTs. This information was based on 3 populations: (a) children of all ages and with all severities of injury, (b) children with a Glasgow Coma Scale (GCS) score of ≥13, and (c) children aged <3 years.
Results: Of all studies that were evaluated, 8 clinical prediction rules were identified. These included GCS, loss of consciousness, palpable skull depression or hematoma, size of laceration, mechanism of injury, and current mental status. The rules differed considerably among the 8 studies with regard to population, predictive quality, and outcomes. There were only 2 studies that were of sufficient quality and of high performance.
Conclusions: Of all studies on head-injured children undergoing head CTs, only 8 met the authors' minimal criteria. There were no adequate evidence-based rules that could be extrapolated because they varied in population, methodological quality, and performance. Future studies will be needed to validate high-quality performance rules, first in other populations and then in children.
Reviewer's Comments: The key is defining minor head injury by certain predictors and then not getting a CT. Surely, it's not in our genetic makeup to want to cause cancer in our pediatric patients, but at the same time we don't want to miss an imminent catastrophe. So far, this paper tells us that the evidence-based jury is still out on what to do. (Reviewer-Paul P. Rega, MD).

Keywords: Head Injury, CT Scan, Clinical Prediction Rules

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The Concern Is Real...Etomidate Does Suppress Adrenal Function

Etomidate Versus Ketamine for Rapid Sequence Intubation in Acutely Ill Patients: A Multicentre Randomised Controlled Trial.

Jabre P, Combes X, et al:

Lancet 2009; 374 (July 25): 293-300

Etomidate suppresses adrenal function in unselected emergency patients requiring intubation, but no adverse patient outcomes have been demonstrated.

Background: Etomidate is a possible selection for rapid sequence intubation (RSI). There is persistent, low-level grumbling from some quarters in the medical community regarding use of etomidate in RSI because it might cause reversible adrenal insufficiency, which is potentially associated with increased in-hospital morbidity.
Objective: To compare early and 28-day morbidity after a single dose of etomidate or ketamine for emergency intubation.
Design/Participants: Prospective, randomized, controlled single-blind trial enrolling critical patients from 12 emergency medical services or EDs and 65 ICUs.
Methods: Patients were randomly assigned to receive etomidate (0.3 mg/kg) or ketamine (2.0 mg/kg) for intubation. Succinylcholine was administered afterward as a 1-mg/kg bolus. The primary end point was maximum score of the sequential organ failure assessment (SOFA) during the first 3 days in the ICU. Adrenal insufficiency was defined as a random cortisol concentration of <276 nmol/L or a difference from baseline concentration of <250 nmol/L at 30 or 60 minutes after adrenocorticotropic hormone (ACTH) stimulation test. Patients who died before reaching the hospital or who were discharged from the ICU before 3 days were excluded.
Results: 234 patients were randomized to etomidate and 235 to ketamine. The mean maximum SOFA score between groups did not differ significantly (10.3 for etomidate vs 9.6 for ketamine; *P* =0.056). Patients in both groups required comparable durations of mechanical ventilation, need for pressor support, need for fluid loading, and 28-day mortality. Intubating conditions following medication administration were comparable between groups, with most being easy (median intubation difficulty score 1 for both groups; *P* =0.70). The percentage of patients given etomidate who demonstrated adrenal insufficiency and non-response to ACTH stimulation was nearly twice that of the ketamine group (*P* <0.0001; odds ratio, 6.7; 3.5 to 12.7). Among 116 fully evaluable patients in the etomidate group, 100 (86%) developed adrenal insufficiency. Final diagnoses across etomidate and ketamine groups were trauma (24%, 20%, respectively), sepsis (18%, 15%), and "other" (58%, 65%). There were no significant differences in maximum SOFA score nor mortality between drugs for patients with trauma or sepsis (n=180), sepsis patients only (n=76), trauma patients only (n=104), or patients with neither sepsis nor trauma (n=289). There were no serious adverse events with either study drug.
Conclusions: Etomidate suppresses adrenal function. Ketamine is a safe and valuable alternative to etomidate for endotracheal intubation in critically ill patients and should be considered in those with sepsis.
Reviewer's Comments: Finally an airway study based on emergency intubation of unselected ED patients, rather than anesthesiologists intubating otherwise healthy patients undergoing elective surgery. In these critical ED patients, etomidate appears to pack quite a punch as far as adrenals are concerned. But at study end, the effect of adrenal insufficiency on patient outcome remains unknown. (Reviewer-Steven B. Abrams, MD).

Keywords: Adrenal Insufficiency, Rapid Sequence Intubation, Etomidate, Ketamine

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Controversy Still Exists Over Use of Contrast for CT Scans

All About Contrast.

Joe Lex, MD

Joe Lex, MD -Special Presentation

Rapid helical scanners have little motion artifact that, in previous eras, made oral and IV contrast so crucial to study quality.

Oral contrast does not appear to affect the accuracy of abdominal CT. New helical technology supports extremely rapid scanning that has essentially removed motion artifact from peristalsis and respiration. This artifact was the reason that contrast was needed. IV contrast also does not affect CT accuracy, but it adds other issues. Allergic reactions are perceived as a great hidden danger but, in fact, allergy rates are negligible, especially with newer ionic agents. There is absolutely no concordance of iodine, seafood, and contrast allergy. **Bottom Line:** Rational use of contrast for scanning depends on radiologists reading their own literature. **References:** (1) Basak S, Nazarian LN, et al. Is unenhanced CT sufficient for evaluation of acute abdominal pain? *J Clin Imaging* 2002; 26: 405-407. (2) McLaughlin JR, Kreiger N, et al. An historical cohort study of cardiac catheterization during childhood and the risk of cancer. *Int J Epidemiol* 1993; 22: 584-591. (3) Huynh LN, Coughlin BF, et al. Patient encounter time intervals in the evaluation of emergency department patients requiring abdominopelvic CT: oral contrast versus no contrast. *Emerg Radiol* 2004; 10: 310-313. (4) Delaney A, Carter A, Fisher M. The prevention of anaphylactoid reactions to iodinated radiological contrast media: a systematic review. *BMC Med Imaging* 2006; 6: 2. (5) Hoffmann U, Fischereder M, et al. The value of N-acetylcysteine in the prevention of radiocontrast agent-induced nephropathy seems questionable. *J Am Soc Nephrol* 2004; 15: 407-410.

Keywords: CT Scanning, Contrast, Oral, IV, Allergy, Nephropathy

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Reduce Unwarranted Antibiotics With Proposed Clinical Predictive Model

Prospective Validation of a Clinical Prediction Model for Lyme Meningitis in Children.

Garro AC, Rutman M, et al:

Pediatrics 2009; 123 (May): e829-e834

Duration of headache, presence of cranial neuritis, and percentage of mononuclear cells in the cerebrospinal fluid can be used to differentiate aseptic meningitis from Lyme meningitis.

Background: Aseptic meningitis (AM) is typically a disease requiring little management except supportive. Lyme disease (LD) can be complicated by a type of meningitis (LM) that mimics a viral etiology and for which parenteral antibiotics have been found to significantly reduce acute and long-term complications. The meningitis associated with LD is particularly important since 2% to 12% of children with LD develop this complication. To differentiate between meningitis of LD and meningitis of viral etiology, a clinical predictive model was created.
Objective: To validate this clinical predictive model.
Design: Prospective analysis.
Participants: 50 children with a mean age of 10.4 years; 60% were males.
Methods: The study occurred in Rhode Island, an LD-endemic state. Patients were enrolled if they were suspected of having meningitis and if their cerebrospinal fluid (CSF) white blood cell count was >8/μL. Those with chronic neurological problems, a recent history of antibiotic usage, or a positive CSF Gram stain were excluded. The CSF underwent usual diagnostic studies plus Lyme antibody testing. Each patient was then assigned a probability of having LM based on 3 clinical predictive findings in the LD predictive model: (1) number of CSF mononuclear cells, (2) duration of headache, and (3) presence of cranial neuritis. Definite LM was defined as CSF mononuclear cells plus an erythema migrans rash or a positive Lyme serology. Possible LM was defined as CSF pleocytosis and positive CSF Lyme antibodies. Not meeting these criteria placed patients in the AM category.
Results: Of 50 children enrolled, 14 were considered to have definite LM, 6 were possible LM, and 30 were AM. Median duration of headache was 14 days and 3 days, respectively, for LM and AM cases. The mean percentage of mononuclear cells/μL was 96.0 and 58.5 in LM and AM, respectively. The number of patients with cranial neuritis was 6 and 0, respectively, in LM and AM. The calculated probability of <10% for LM had a negative likelihood ratio of 0.006 for both definite and possible LM. The calculated probability of >50% for LM had a positive likelihood rate of 100.
Conclusions: The proposed clinical predictive model can be used to differentiate children with LM from children with AM.
Reviewer's Comments: Scientifically speaking, this study validates a model that can distinguish between LM and AM and thus reduce unwarranted antibiotic administration. However, speaking clinically, if I were in an LD-endemic area, I'd feel more comfortable administering appropriate antibiotics regardless of the lack of certain parameters. It's a question of sleeping at night. (Reviewer-Paul P. Rega, MD).

Keywords: Lyme Disease, Meningitis, Clinical Prediction Model

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Striving to Achieve Higher Sensitivity for Subarachnoid Hemorrhage Dx

Does 16-Detector Computed Tomography Improve Detection of Non-Traumatic Subarachnoid Hemorrhage in the Emergency Department?

Lourenco AP, Mayo-Smith WW, et al:

J Emerg Med 2009; 36 (February): 171-175

If there is a high enough clinical suspicion for a subarachnoid hemorrhage, CT alone--not even a 16-detector CT-- is not sensitive enough to rule out a subarachnoid hemorrhage, and further workup needs to be pursued.

Objective: To determine the sensitivity of the 16-detector CT scan to detect a subarachnoid hemorrhage compared to previously published sensitivities of the single-detector CT scan.
Design: Retrospective chart review.
Participants/Methods: Patients who presented to the ED and had a non-contrast 16-detector CT scan of the brain and had a discharge diagnosis of non-traumatic subarachnoid hemorrhage during the 16-month period from September 2003 to December 2004 were included in the study. Patient records were reviewed for onset of symptoms, time of CT scan, demographics, spinal fluid analysis, and cerebral angiogram results.
Results: During the 16-month study period 12,183 non-contrast brain 16-detector CT studies were performed. Only 61 patients had a 16-detector CT scan and a discharge diagnosis of non-traumatic subarachnoid hemorrhage and were eligible for enrollment. Of these 61 patients, 60 had positive CT findings of a subarachnoid hemorrhage. One patient had a negative CT scan but then had a positive lumbar puncture examination. The cerebral angiogram of this patient showed an aneurysm that was clipped. Cerebral angiogram detected etiologies for subarachnoid hemorrhage in 37 of 47 patients who had an angiogram. This study found the sensitivity of 16-detector CT scan for subarachnoid hemorrhage to be 97% (95% CI, 84% to 100%).
Conclusions: Previous studies using single-detector CT scans of the brain to diagnose subarachnoid hemorrhage demonstrated sensitivities ranging from 91% to 98%. This study, using 16-detector CT scans of the brain, found a sensitivity of 97%. 16-Detector CT scans were noted in this study to be faster and to have less artifact in the posterior fossa compared to single-detector CT scans.
Reviewer's Comments: The findings of this study will not change our basic algorithm for the workup of a severe headache. If there is a high enough clinical suspicion for a subarachnoid hemorrhage, CT alone--not even a 16-detector CT-- is not sensitive enough to rule out a subarachnoid hemorrhage, and further workup needs to be pursued. (Reviewer-Lisa Cabral, MD).

Keywords: 16-Detector CT, Spinal Puncture, Subarachnoid Hemorrhage

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Should We Be Prepared for Explosion-Related Injuries in Our EDs?

Blast Injuries.

Wolf SJ, Bebarta VS, et al:

Lancet 2009; 374 (August 1): 405-415

Explosions cause multi-dimensional injury patterns, of which most civilian physicians are unfamiliar.

Background: Apart from periodic explosives accidents, the advent of terrorism means that emergency specialists must face the possibility of caring for large numbers of people injured in explosions.
Objective: To discuss major aspects of primary blast injuries and their management. **Discussion:** While injuries due to shrapnel, fragmentation, and heat from military and improvised explosive devices can be managed essentially like more typical penetrating or blunt traumatic injuries, injuries caused by the blast pressure wave itself are unique and require special management. Blast waves in a non-compressible medium, such as water, do not dissipate rapidly and thus do more damage than those in air. An individual's exposure to peak explosion pressure varies with the cube of the distance to the device. A 1-kg charge generates lethal pressure at 1 meter, while at 3 meters, it may cause little or no injury. However, people in confined spaces or next to walls may be injured because the maximum pressure is not only contained, but also it is amplified. Fragments from rocks, ball bearings, and other matter placed in a bomb, or soiled material such as feces, can cause secondary injuries hundreds to thousands of meters from the epicenter. The blast wind physically displaces people and leads to blunt trauma, closed head injury, fractures, and tissue contusions. The blast pressure wave itself exerts forces mainly at air-tissue interfaces within the body, so the air-filled pulmonary, gastrointestinal, and auditory systems are at greatest risk. The ears are injured at the lowest blast pressure, and are most frequently involved. Survivors of explosions who have intact tympanic membranes have a low likelihood of occult lung or intestinal primary blast injury. "Blast lung syndrome" manifests as dyspnea, cough, and hypoxia following an explosion. Blast lung injury induces poor lung compliance, and lung-protective ventilation strategies are required (permissive hypercapnia, low tidal volumes, etc). Arterial air emboli from severe pulmonary injury can cause ischemia in the brain, heart, and intestinal tract. Compartment syndromes are common after blast exposure and may be overlooked. Upwards of 7% of people injured in blasts have traumatic amputations. About 10% will have ocular trauma, and 27% have blast-induced, highly lethal burns. Secondary injuries from ball bearings, nails, and scrap metal are more common than primary blast injuries. Commonly, small puncture wounds represent secondary injuries, and in fact hide these fragments and the severe underlying injuries that may be evolving.
Reviewer's Comments: People wounded in explosions have multiple injuries, creating what has been termed a "multi-dimensional" injury pattern. The chaos that follows a mass casualty event may lead to poor triage and missed diagnosis of blast injuries. These injuries can be subtle and their presentation delayed. We in emergency medicine have been largely spared from managing these injuries, because most happen in combat settings, but things have changed. (Reviewer-Steven B. Abrams, MD).

Keywords: Blast Injury, Overpressure Syndromes, Mass Casualty Events

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CT Scans in Young Children With Headache -- Helpful or Harmful?

Headache in Young Children in the Emergency Department: Use of Computed Tomography.

Lateef TM, Grewal M, et al:

Pediatrics 2009; 124 (July): e12-e17

Children with primary headaches who present to the ED will rarely be diagnosed with a CT.

Background: In the ED, headache is an unusual presenting complaint in young children. Research indicates that the prevalence of any headache ranges from 37% to 51% in children aged 7 years. This percentage grows anywhere from 57% to 82% by age 15 years. Emergency physicians must decide whether a child is having a "dangerous" headache or a migraine/tension headache. As part of the diagnostic work-up, a CT may be ordered.
Objective: To determine whether CTs improve the care of children with headache who present to the ED.
Design: Retrospective analysis.
Participants: 364 children aged 2 to 5 years who presented to a large urban ED with a headache complaint.
Methods: Records were examined. Based on a review of the history and physical, the authors identified patients with secondary headache. These were patients who had readily identifiable causes of the headache, such as ventriculoperitoneal shunts, known brain tumors, and acute illnesses like fever, trauma, and meningitis. The rest were classified as primary headache and their charts were analyzed for history, physical findings, laboratory and neuroimaging results, final diagnosis, and disposition.
Results: 306 children (84%) had secondary headache. In almost three fourths of that group, the headache was related to acute febrile illnesses and viral respiratory syndromes. Of 58 children (16%) who had primary headache, 28% (n=16) underwent CTs of the head; of these, 1 had an abnormal CT brainstem glioma. For the remainder, the CT did not contribute to diagnosis or management. Overall, 59% of these children with primary headache had no family history taken.
Conclusions: CTs are not helpful in the diagnosis and management of children with primary headache who had a negative exam and a benign history.
Reviewer's Comments: Most of these children with primary headache were followed at various health venues for a period of time. There was no evidence that an important diagnosis was missed because a CT wasn't done initially, and this underscores the sad truth that emergency physicians are placing too much reliance on imaging studies that could be harmful if we take the long view. The oncologic-potential burden we're placing on children is particularly troublesome, and we need to be more conscious of whether ordering a CT is appropriate or whether it is just to cover our posteriors. (Reviewer-Paul P. Rega, MD).

Keywords: Pediatric Headache, CT Scans

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TASERS Are Painful, but Won't Shock the Heart

Physiology and Pathology of TASER® Electronic Control Devices.

Kroll MW:

J Forensic Leg Med 2009; 16 (May): 173-177

The likelihood of ventricular fibrillation following a TASER shock is essentially zero, but falls are an entirely different matter.

Background: The TASER® is a trademarked, electronic control device (ECD). Misconceptions may complicate the approach to a subject in custody who has been "tasered" and now presents for evaluation. **Discussion:** The TASER is powered by 2 lithium camera batteries. Together they deliver 19 short-duration pulses per second for 5 seconds, with a typical peak voltage of 1400 to 2600 volts. The TASER also generates 50,000 volts by a separate circuit in order to arc the electrons through air or across thick clothing, where the resistance to electrical flow is extremely high. That voltage is not delivered to tissue. The arc is visible and intimidating; the mere display of the arc is often sufficient to gain suspect compliance. Two probes penetrate the skin to a depth of 4 to 5 mm. The pulse delivered has a 100-µs duration designed to capture alpha motor neurons that control skeletal muscle contraction without affecting cardiac muscle. The primary effect is local paralysis. Sensations of sharp pain are carried by type III myelinated fibers. Fibers for dull, aching, diffuse pain have a threshold about 20 times higher, and so the typical associated complaint is sharp discomfort. There are several reasons why heart muscle is unaffected by the device: (1) the chronaxie of the heart (contraction strength/duration time constant) is about 3 ms, so shorter duration pulses need much higher voltages than that delivered by the TASER; (2) total delivered current from all shocks over 5 seconds is 1.9 mA, about 2 orders of magnitude less than the current required to induce ventricular fibrillation (VF); (3) electrical current follows the "grain" of muscle fiber. ECD current follows thoracic skeletal muscle grain around, rather than into the thorax; and (4) the 5-second cycle was selected to give a minimum, rather than maximum, duration of electrical exposure with each trigger pull. The author points out that the first published ECD human study included volunteers with pre-existing coronary artery disease or diabetes; they were shot in the back for the full 5 seconds. ECGs, labs, and markers were unchanged. Studies with continuous echocardiographic monitoring showed no cardiac effects. One patient with an implantable cardioverter defibrillator (ICD) was tasered across the sternum; the ICD sensed the current, misinterpreted it as VF, but did not fire as the current disappeared before the device could engage. Tasering has not caused respiratory impairment or rhabdomyolysis. **Reviewer's Comments:** Evidently, there have been >780,000 training exposures and 630,000 field uses (for a total of >1.4 million human uses) without any credible evidence for cardiac arrhythmia. Kroll reported elsewhere that the theoretical probability of inducing VF with TASER current is 1:1,270,000, or essentially 0. Just remember that the TASER is designed to make people fall, and fatal head injuries have been reported. (Reviewer-Steven B. Abrams, MD).

Keywords: Electrical Injury, Ventricular Fibrillation, Rhabdomyolysis, TASER

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What You Need to Know About Hanging to Be Able to Help Your Patients

Hanging Injuries.

Joe Lex, MD

Joe Lex, MD -Special Presentation

Suicidal hanging and recreational hanging is not uncommon and is not always fatal, meaning that survivors may show up in your emergency department.

Summary: Just about everything you wanted to know about the cause of death from judicial and suicidal hanging, how acute respiratory distress syndrome (ARDS) develops in hanging survivors, tell-tale signs of "the hanging game" played by adolescents, and other issues relevant to one of society's most grotesque methods for dispatching its members can be learned from this presentation. Assuming a victim has not been decapitated by the drop in a judicial hanging, death comes from compression and distraction of the spinal cord. Suicidal hanging, where victims might be unsuccessful and actually survive to emergency department (ED) assessment, is an entirely different matter. The most important thing to note is that cervical fractures are unlikely, but not rare, in these individuals. Death usually comes from vessel occlusion and not airway asphyxia. The carotids and vertebral arteries are occluded within seconds, the tongue and epiglottis block the airway, and stagnant hypoxia of the brain results. One notes with interest that even patients with tracheostomies have successfully hanged themselves, even with the knot above the stoma, demonstrating quite emphatically that airway compression is not necessarily required to ensure death from a suicide attempt. For survivors arriving to the ED, aggressive resuscitation is necessary. The Glasgow Coma Scale (GCS) is not predictive of outcome in these cases. Failed suicidal hanging victims are susceptible to complications from massive sympathetic discharge and postobstructive sequelae that lead to neurogenic pulmonary edema and an ARDS pictures. Dr Lex also devotes a discussion to some of the characteristic physical findings associated with manual and ligature strangulation. He also mentions positional asphyxia (from intoxication, dementia, hospital restraints, and other causes), where patients get into positions from which they cannot extricate themselves and cannot breathe adequately. It is not uncommon. Traumatic asphyxia (due to compression of the thorax), once a torture accomplished with elephants, occurs in uncontrolled crowds, fires, rock concerts, and involves crush mechanisms. If people survive traumatic asphyxia, they usually do very well. The hanging game is a bizarre fad among teenagers. It is not for autoerotic pleasure; rather, it is achieves a "high" through a profound state of mental disassociation and dreamlike imagery. It happens in kids 13 to 14 years of age, males more than females, and is fuelled by internet support. Tell-tale signs include marks on the neck, personality changes, headaches, bloodshot eyes, a thud from the bedroom upstairs, a rope or strap lying around, or email emoticons.

Reviewer's Comments: For many years, Dr Joseph Lex has been a periodic contributor to *Practical Reviews in Emergency Medicine*. He is widely renowned as a superlative speaker on a range of emergency medicine topics. This presentation is from the 6th Annual Critical Care Symposium, April 2009, in Manchester, United Kingdom. **References:** (1) Gill JR, Landi K. Traumatic asphyxial deaths due to an uncontrolled crowd. *Am J Forensic Med Pathol* 2004; 25: 358-361. (2) Nokes LD, Roberts A, James DS. Biomechanics of judicial hanging: a case report. *Med Sci Law* 1999; 3: 61-64. (3) Sharma BR, Harish D, et al. Injuries to neck structures in deaths due to constriction of neck, with a special reference to hanging. *J Forensic Leg Med* 2008; 15: 298-305.

Keywords: Cervical Spine Injury, Hypoxia, Asphyxiation, Traumatic, ARDS, Suicide

Print Tag: Refer to original journal article

New, Easier Chlamydia Test for Men

Performance Evaluation of a New Rapid Urine Test for Chlamydia in Men: Prospective Cohort Study.

Nadala EC, Goh BT, et al:

BMJ 2009; 339 (July 28): b2655

A new first-void urine test for chlamydia infection in males shows excellent promise as a rapid screening tool.

Background: Chlamydia testing in men requires a urethral swab and is invasive, uncomfortable, and time-consuming. For either gender, results are not typically available at point-of-care, and may require waiting additional hours for lab results, or burdening a follow-up officer with the task of chasing results. Given the frequency of Chlamydia in sexually active young people, an improved method for screening males would be desirable.
Objective: To evaluate the performance of a rapid test for Chlamydia infection in males that uses a first-void urine sample.
Design: Prospective cohort study.
Methods: In this study, urine collection required a special container supplied by the manufacturer that specifically captures the first few mL of a void, where the density of organisms is greatest. The rapid test must be run in a laboratory. The result is a visual signal (a line). A portion of the first-void urine was tested with a polymerase chain reaction assay (PCR) to assess the sensitivity, specificity, positive predictive value, and negative predictive value of the rapid test.
Results: 1211 men were enrolled from 2 sites, a sexual health clinic (not an STD clinic) and a typical urology clinic. Test results were available within an hour. Detection rates for *Chlamydia trachomatis* infection with PCR were 4.4% (20 of 454) at the sexual health clinic and 11.9% (90 of 757) at the urology clinic. Compared with PCR, the resolved sensitivity, specificity, positive predictive value, and negative predictive value of the rapid test was 82.6% (90 of 109), 98.5% (1085 of 1102), 84.1% (90 of 107), and 98.3% (1085 of 1104), respectively. The organism load in first-void urine samples that tested positive ranged from 7.28 x 102 to 6.93 x 106 plasmids/mL and correlated significantly with the visual signal of the rapid test (r=0.7897; *P* <0.001).
Conclusions: The performance of the chlamydia rapid test with first-void male urine samples indicates that it would be an effective diagnostic tool for chlamydial infection in men.
Reviewer's Comments: Annual cases of chlamydial infection reported to the CDC first went above 1 million 3 years ago. Even so, many, perhaps most, cases are asymptomatic and remain underdiagnosed. It is reported to be 3 times as common in women than in men, but there is an obvious clinical bias, since more women tend to be screened in typical practices, and tests such as this would be extremely useful for finding cases in men and directing them to appropriate treatment. Looking at the description of how the test is actually run in the lab, results within an hour are feasible and would allow for immediate treatment and contact tracing, possibly reducing the risks of persistent infection and onward transmission. Actual waiting time was not reported in this paper. (Reviewer-Steven B. Abrams, MD).

Keywords: Chlamydia Infections, Diagnosis, Male, Polymerase Chain Reaction, Urinalysis

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