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**Male Genital Tract**

**Abstract:**
In this review, long-held myths and misconceptions about the evaluation and management of testicular torsion are discussed, and recommendations for the management of patients who present with acute scrotal pain are presented.

**Airway Techniques**

**Abstract:**
Patients requiring emergency airway management are at great risk of hypoxemic hypoxia because of primary lung pathology, high metabolic demands, anemia, insufficient respiratory drive, and inability to protect their airway against aspiration. Tracheal intubation is often required before the complete information needed to assess the risk of periprocedural hypoxia is acquired, such as an arterial blood gas level, hemoglobin value, or even a chest radiograph. This article reviews preoxygenation and peri-intubation oxygenation techniques to minimize the risk of critical hypoxia and introduces a risk-stratification approach to emergency tracheal intubation. Techniques reviewed include positioning, preoxygenation and denitrogenation, positive end expiratory pressure devices, and passive apneic oxygenation. [Ann Emerg Med. 2012;59:165-175.]

**Submersion Incidents**

**Abstract:**
According to the World Health Organization (WHO), 0.7% of all deaths worldwide — or more than 500,000 deaths each year— are due to unintentional drowning. Since some cases of fatal drowning are not classified as such according to the codes of the *International Classification of Disease*, this number underestimates the real figures, even for high-income countries, and does not include drownings that occur as a result of floods, tsunamis, and boating accidents.

Drowning is a leading cause of death worldwide among boys 5 to 14 years of age. In the United States, drowning is the second leading cause of injury-related death among children 1 to 4 years of age, with a death rate of 3 per 100,000, and in some countries, such as Thailand, the death rate among 2-year-old children is 107 per 100,000. In many countries in Africa and in Central America, the incidence of drowning is 10 to 20 times as high as the incidence in the United States. Key risk factors for drowning are male sex, age of less than 14 years, alcohol use, low income, poor
education, rural residency, aquatic exposure, risky behavior, and lack of supervision. For people with epilepsy, the risk of drowning is 15 to 19 times as high as the risk for those who do not have epilepsy. Exposure-adjusted, person-time estimates for drowning are 200 times as high as such estimates for deaths from traffic accidents. Coastal drownings are estimated to cost more than $273 million per year in the United States and more than $228 million per year (in U.S. dollars) in Brazil. For every person who dies from drowning, another four persons receive care in the emergency department for nonfatal drowning.

**Patient Safety and Medical Errors**

**Abstract:**

**Study objective:** We describe patient perceptions of computed tomography (CT) and their understanding of radiation exposure and risk.

**Methods:** This was a cross-sectional study of acute abdominal pain patients aged 18 years or older. Confidence in medical evaluations with increasing levels of laboratory testing and imaging was rated on a 100-point visual analog scale. Knowledge of radiation exposure was ascertained when participants compared the radiation dose of one abdomen-pelvis CT with 2-view chest radiography. To assess cancer risk knowledge, participants rated their agreement with these factual statements: “Approximately 2 to 3 abdominal CTs give the same radiation exposure as experienced by Hiroshima survivors” and “2 to 3 abdominal CTs over a person’s lifetime can increase cancer risk.” Previous CT was also assessed.

**Results:** There were 1,168 participants, 67% women and mean age 40.7 years (SD 15.9 years). Median confidence in a medical evaluation without ancillary testing was 20 (95% confidence interval [CI] 16 to 25) compared with 90 (95% CI 88 to 91) when laboratory testing and CT were included. More than 70% of participants underestimated the radiation dose of CT relative to chest radiography, and cancer risk comprehension was poor. Median agreement with the Hiroshima statement was 13 (95% CI 10 to 16) and 45 (95% CI 40 to 45) with the increased lifetime cancer risk statement. Seven hundred ninety-five patients reported receiving a previous CT. Of 365 patients who reported no previous CT, 142 (39%) had one documented in our electronic medical record.

**Conclusion:** Patients are more confident when CT imaging is part of their medical evaluation but have a poor understanding of the concomitant radiation exposure and risk and underestimate their previous imaging experience. [Ann Emerg Med. 2011;58:1-7.]

**Forensic Examination**

**Abstract:**

This *Journal* feature begins with a case vignette highlighting a common clinical problem. Evidence supporting various strategies is then presented, followed by a review of formal guidelines, when they exist. The article ends with the author’s clinical recommendations.
A 20-year-old woman presents to the emergency department with a report of having been sexually assaulted 24 hours earlier. She reports that a man she had met at a campus party walked her to her apartment, where he assaulted and raped her, including vaginal penetration. She did not report the assault to the police but confided in a friend, who encouraged her to seek medical care. How should this patient be evaluated and treated?

The Clinical Problem

Sexual assault is a broad term that includes rape, unwanted genital touching, and even forced viewing of or involvement in pornography. Rape is a legal term and in the United States refers to any penetration of a body orifice (mouth, vagina, or anus) involving force or the threat of force or incapacity (i.e., associated with young or old age, cognitive or physical disability, or drug or alcohol intoxication) and nonconsent. The definition of rape includes spousal rape, although proof of spousal rape often relies more on evidence of force.

Sexual assault is a complex problem, with medical, psychological, and legal aspects. Large population-based surveys indicate a lifetime prevalence of 13 to 39% among women and 3% among men. These data are most likely an underestimation, because most large studies do not sample vulnerable populations (e.g., homeless, sheltered, or institutionalized persons). Certain populations are at increased risk for sexual assault, including the physically or mentally disabled; homeless persons; persons who are gay, lesbian, bisexual, or transgendered; alcohol and drug users; college students; and persons under the age of 24 years. Sexual assaults that are facilitated by the use of alcohol and drugs, which in some cases are voluntarily ingested by the victim, are increasingly recognized and are more common than classic forcible assaults among college students.

Only 16 to 38% of rape victims report the rape to law enforcement, and only 17 to 43% present for medical evaluation after rape; one third of victims of rape never report the assault to their primary care doctor. Although this review focuses on the evaluation of women, men may also present after sexual assault. Men who report physical injuries may be more hesitant to report the sexual component of an assault.

Even in the absence of physical injury, which occurs in about half of cases, victims are often frightened, emotionally traumatized, and embarrassed. They often fear that they will not be believed or that information about their rape will be released to the public. They may also fear for their safety if they know the assailant or if the assailant has access to their personal information. Many rape victims doubt that their case will be prosecuted successfully, a fear that is often justified: in the United States, fewer than half of rape cases are successfully prosecuted.

This review addresses the adult patient who is a victim of sexual assault and focuses on short-term care. Care of the sexually abused child differs in many respects, and evaluation in such cases is often referred to practitioners specializing in pediatric child abuse

Head Trauma


Abstract:
Concussion in youth athletes is a growing problem world-wide. During the past decade, significant progress has been made in standardization of the assessment of young athletes, and a growing appreciation of metabolic vulnerability, activity, and cognitive challenges has led to guidelines and suggestions for rest from the field as well as cognitive rest from school. Outcome data have begun to establish groups linked to symptom class, genetics, and sex who are at risk of worse outcomes from concussions. Decisions regarding return to activity are now based on at-rest symptoms, graded increases in activity, and neuropsychological testing. Using the case of Ms X, a 15-year-old otherwise healthy high school student who fell while skiing, evaluation, prognosis, and management of concussion are discussed.

**Hematemesis**


**Abstract:**

**Context:** Emergency physicians must determine both the location and the severity of acute gastrointestinal bleeding (GIB) to optimize the diagnostic and therapeutical approaches.

**Objectives:** To identify the historical features, symptoms, signs, bedside maneuvers, and basic laboratory test results that distinguish acute upper GIB (UGIB) from acute lower GIB (LGIB) and to risk stratify those patients with a UGIB least likely to have severe bleeding that necessitates an urgent intervention.

**Data Sources:** A structured search of MEDLINE (1966-September 2011) and reference lists from retrieved articles, review articles, and physical examination textbooks.

**Study Selection:** High-quality studies were included of adult patients who were either admitted with GIB or evaluated in emergency departments with bedside evaluations and/or routine laboratory tests, and studies that did not include endoscopic findings in prediction models. The initial search yielded 2628 citations, of which 8 were retained that tested methods of identifying a UGIB and 18 that identified methods of determining the severity of UGIB.

**Data Extraction:** One author abstracted the data (prevalence, sensitivity, specificity, and likelihood ratios [LRs]) and assessed methodological quality, with confirmation by another author. Data were combined using random effects measures.

**Data Synthesis:** The majority of patients (N = 1776) had an acute UGIB (prevalence, 63%; 95% CI, 51%-73%). Several clinical factors increase the likelihood that a patient has a UGIB, including a patient-reported history of melena (LR range, 5.1-5.9), melenic stool on examination (LR, 25; 95% CI, 4-174), a nasogastric lavage with blood or coffee grounds (LR, 9.6; 95% CI, 4.0-23.0), and a serum urea nitrogen:creatinine ratio of more than 30 (summary LR, 7.5; 95% CI, 2.8-12.0). Conversely, the presence of blood clots in stool (LR, 0.05; 95% CI, 0.01-0.38) decreases the likelihood of a UGIB. Of the patients clinically diagnosed with acute UGIB, 36% (95% CI, 29%-44%) had severe bleeding. A nasogastric lavage with red blood (summary LR, 3.1; 95% CI, 1.2-14.0), tachycardia (LR, 4.9; 95% CI, 3.2-7.6), or a hemoglobin level of less than 8 g/dL (LR range, 4.5-6.2) increase the likelihood of a severe UGIB requiring urgent intervention. A Blatchford score of 0 (summary LR, 0.02; 95% CI, 0-0.05) decreases the likelihood that a UGIB requires urgent intervention.
**Conclusions:** Melena, nasogastric lavage with blood or coffee grounds, or serum urea nitrogen:creatine ratio of more than 30 increase the likelihood of a UGIB. Blood clots in the stool make a UGIB much less likely. The Blatchford clinical prediction score, which does not require nasogastric lavage, is very efficient for identifying patients who do not require urgent intervention.

**Interpersonal and Communications Skills**

**Abstract:**

**Study objective:** Understanding the nontechnical skills specifically applicable to the emergency department (ED) is essential to facilitate training and more broadly consider interventions to reduce error. The aim of this scoping review is to first identify and then explore in depth the nontechnical skills linked to safety in the ED.

**Methods:** The review was conducted in 2 stages. In stage 1, online databases were searched for published empirical studies linking nontechnical skills to safety and performance in the ED. Articles were analyzed to identify key ED nontechnical skills. In stage 2, these key skills were used to generate additional key words, which enabled a second search of the literature to be undertaken and expand on the evidence available for review.

**Results:** In stage 1, 11 articles were retrieved for data analysis and 9 core emergency medicine nontechnical skills were identified. These were communicating, managing workload, anticipating, situational awareness, supervising and providing feedback, leadership, maintaining standards, using assertiveness, and decision making. In stage 2, a secondary search, using these 9 skills and related terms, uncovered a further 21 relevant articles. Therefore, 32 articles were used to describe the main nontechnical skills linked to safety in the ED.

**Conclusion:** This article highlights the challenges of reviewing a topic for which the terms are not clearly defined in the literature. A novel methodological approach is described that provides a structured and transparent process for reviewing the literature in emerging areas of interest. A series of literature reviews focusing on individual nontechnical skills will provide a clearer understanding of how the skills identified contribute to safety in the ED.

**Abdominal Trauma**

**Abstract:**

This clinical policy from the American College of Emergency Physicians is an update of the 2004 clinical policy on the critical issues in the evaluation of adult patients presenting to the emergency department with acute blunt abdominal trauma. A writing subcommittee reviewed the literature as part of the process to develop evidence-based recommendations to address 4 key critical questions:
(1) In a hemodynamically unstable patient with blunt abdominal trauma is ultrasound the diagnostic modality of choice? (2) Does oral contrast improve the diagnostic performance of computed tomography (CT) in blunt abdominal trauma? (3) In a clinically stable patient with isolated blunt abdominal trauma, is it safe to discharge the patient after a negative abdominal CT scan result? (4) In patients with isolated blunt abdominal trauma, are there clinical predictors that allow the clinician to identify patients at low risk for adverse events who do not need an abdominal CT? Evidence was graded and recommendations were based on the available data in the medical literature related to the specific clinical question.

**Neonatal Resuscitation**

**Abstract:**

The following guidelines are an interpretation of the evidence presented in the 2010 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. They apply primarily to newly born infants undergoing transition from intrauterine to extrauterine life, but the recommendations are also applicable to neonates who have completed perinatal transition and require resuscitation during the first few weeks to months following birth. Practitioners who resuscitate infants at birth or at any time during the initial hospital admission should consider following these guidelines. For the purposes of these guidelines, the terms newborn and neonate are intended to apply to any infant during the initial hospitalization. The term newly born is intended to apply specifically to an infant at the time of birth. Approximately 10% of newborns require some assistance to begin breathing at birth. Less than 1% require extensive resuscitative measures. Although the vast majority of newly born infants do not require intervention to make the transition from intrauterine to extrauterine life, because of the large total number of births, a sizable number will require some degree of resuscitation. Those newly born infants who do not require resuscitation can generally be identified by a rapid assessment of the following 3 characteristics:

- Term gestation?
- Crying or breathing?
- Good muscle tone?

If the answer to all 3 of these questions is “yes,” the baby does not need resuscitation and should not be separated from the mother. The baby should be dried, placed skin-to-skin with the mother, and covered with dry linen to maintain temperature. Observation of breathing, activity, and color should be ongoing.

If the answer to any of these assessment questions is “no,” the infant should receive one or more of the following 4 categories of action in sequence:
A. Initial steps in stabilization (provide warmth, clear airway if necessary, dry, stimulate)
B. Ventilation
C. Chest compressions
D. Administration of epinephrine and/or volume expansion

Approximately 60 seconds (“the Golden Minute”) are allotted for completing the initial steps, reevaluating, and beginning ventilation if required (see Figure). The decision to progress beyond the initial steps is determined by simultaneous assessment of 2 vital characteristics: respirations (apnea, gasping, or labored or unlabored breathing) and heart rate (whether greater than or less
than 100 beats per minute). Assessment of heart rate should be done by intermittently auscultating the precordial pulse. When a pulse is detectable, palpation of the umbilical pulse can also provide a rapid estimate of the pulse and is more accurate than palpation at other sites. A pulse oximeter can provide a continuous assessment of the pulse without interruption of other resuscitation measures, but the device takes 1 to 2 minutes to apply, and it may not function during states of very poor cardiac output or perfusion. Once positive pressure ventilation or supplementary oxygen administration is begun, assessment should consist of simultaneous evaluation of 3 vital characteristics: heart rate, respiration, and the state of oxygenation, the latter optimally determined by a pulse oximeter as discussed under "Assessment of Oxygen Need and Administration of Oxygen" below. The most sensitive indicator of a successful response to each step is an increase in heart rate.

**Stroke**


**Abstract:**

**Objective** To measure the sensitivity of modern third generation computed tomography in emergency patients being evaluated for possible subarachnoid hemorrhage, especially when carried out within six hours of headache onset.

**Design** Prospective cohort study.

**Setting** 11 tertiary care emergency departments across Canada, 2000-9.

**Participants** Neurologically intact adults with a new acute headache peaking in intensity within one hour of onset in whom a computed tomography was ordered by the treating physician to rule out subarachnoid haemorrhage.

**Main outcome measures** Subarachnoid haemorrhage was defined by any of subarachnoid blood on computed tomography, xanthochromia in cerebrospinal fluid, or any red blood cells in final tube of cerebrospinal fluid collected with positive results on cerebral angiography.

**Results** Of the 3132 patients enrolled (mean age 45.1, 2571 (82.1%) with worst headache ever), 240 had subarachnoid haemorrhage (7.7%). The sensitivity of computed tomography overall for subarachnoid haemorrhage was 92.9% (95% confidence interval 89.0% to 95.5%), the specificity was 100% (99.9% to 100%), the negative predictive value was 99.4% (99.1% to 99.6%), and the positive predictive value was 100% (98.3% to 100%). For the 953 patients scanned within six hours of headache onset, all 121 patients with subarachnoid haemorrhage were identified by computed tomography, yielding a sensitivity of 100% (97.0% to 100.0%), specificity of 100% (99.5% to 100%), negative predictive value of 100% (99.5% to 100%), and positive predictive value of 100% (96.9% to 100%).

**Conclusion** Modern third generation computed tomography is extremely sensitive in identifying subarachnoid haemorrhage when it is carried out within six hours of headache onset and interpreted by a qualified radiologist.
Abstract:

Out-of-hospital cardiac arrest (OHCA) is a common initial presentation of cardiovascular disease, affecting up to 325,000 people in the United States each year. In a recent meta-analysis of 140,000 patients with OHCA, survival to hospital admission was 23.8%, and survival to hospital discharge was only 7.6%. In patients who initially achieve return of spontaneous circulation (ROSC) after OHCA, the significant subsequent morbidity and mortality are due largely to the cerebral and cardiac dysfunction that accompanies prolonged whole-body ischemia. This syndrome, called the post cardiac arrest syndrome, comprises anoxic brain injury, post cardiac arrest myocardial dysfunction, systemic ischemia/reperfusion response, and persistent precipitating pathology (Table 1). The contribution of each of these components in an individual patient depends on various factors, including prearrest comorbidities, duration of the ischemic insult, and cause of the cardiac arrest. This review focuses on therapeutic strategies and recent developments in managing patients who are initially resuscitated from cardiac arrest. There are 3 major aspects that require consideration in the management of the post cardiac arrest patient. After resuscitation, a decision must be made in relation to the appropriate triage of the OHCA patient. The next phase of management concerns the in-hospital treatment, which must address each component of the postarrest syndrome as appropriate for the individual patient. Finally, there are issues relating to prognostication and the deployment of various secondary prevention measures. Our recommended treatment algorithm is summarized in the Figure. This ideally follows from the implementation of basic and advanced life support measures, including effective cardiopulmonary resuscitation and defibrillation when appropriate, which are major determinants of outcome. Such an approach to care may be further modified according to the presence of other comorbidities and precipitating factors, which should be assessed in as much detail as possible.