Hypothermia for Traumatic Brain Injury in Children

A nimal models and small studies in children and adults suggest a benefit for hypothermia therapy in the treatment of severe traumatic brain injury. In an international trial, researchers compared outcomes in children (age range, 1–17 years) with traumatic brain injury who were randomized to either hypothermia therapy for 24 hours (32.0°C–33.0°C) or normothermia (36.5°C–37.5°C). Eligible patients had Glasgow Coma Scale scores ≤8 at the scene or in the emergency department, needed mechanical ventilation, and had evidence of acute brain injury on computed tomography scan. Patients who were screened more than 8 hours after injury or who had refractory shock, nonaccidental injury, high cervical spinal cord injury, or acute isolated epidural hematoma were excluded.

Of 1441 patients who were screened during more than 5 years, 327 met eligibility criteria and 225 were enrolled. Complete data were available for 91% of enrolled patients. Mean time from injury to initiation of cooling was 6.3 hours, and mean time to achieve hypothermia was 3.9 hours. Significantly more patients in the hypothermia group than in the normothermia group received vasoactive drugs for hypotension, usually during the rewarming period.

The proportion of patients with an unfavorable outcome — defined as severe disability, death, or persistent vegetative state at 6 months (the primary outcome) — was 31% in the hypothermia group and 22% in the normothermia group, a nonsignificant difference (relative risk for an unfavorable outcome with hypothermia therapy, 1.41). After adjustment for clinical factors that might be associated with an unfavorable outcome, the odds ratio for an unfavorable outcome with hypothermia therapy was 2.33. Death rates did not differ significantly between the hypothermia and normothermia groups (21% vs. 12%). No evidence of benefit was detected in analyses of any of eight subgroups, including patients who were treated early.

**Comment:**

This study was remarkably ambitious, given the low incidence of eligible patients (5 per month in 17 pediatric hospitals in 3 countries). Despite this obstacle, the researchers showed unequivocally that hypothermia has no benefit. Although a greater proportion of children who were treated with hypothermia than with normothermia had poor outcomes, the difference did not reach statistical significance. Induced hypothermia is not indicated for treatment of acute severe brain injury in children.

— J. Stephen Boban, MD, MS, FACP, FACEP

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Corticosteroids Don’t Reduce Mortality in Children with Bacterial Meningitis

A dministration of adjuvant corticosteroids mitigates hearing loss in children with *Haemophilus influenzae* type B (Hib) meningitis. However, the introduction of vaccines against Hib in 1985 and against *Streptococcus pneumoniae* in 2000 has greatly altered the landscape of bacterial meningitis in children. In a retrospective cohort study, these authors reviewed data from 27 U.S. children’s hospitals to determine the effect of adjuvant corticosteroid therapy on mortality and time to discharge in children younger than 18 years who were discharged with a diagnosis of bacterial meningitis from 2001 through 2006.

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Facilitated PCI Is Not Effective for STEMI

Among 2780 children (median age, 9 months), 8.9% received adjunct corticosteroid therapy. The leading bacterial pathogens were *Streptococcus pneumoniae* (18%) and *Neisseria meningitidis* (10%). The overall mortality rate was 4.2%. Adjunct corticosteroid therapy did not reduce mortality or time to discharge in any age groups (<1 year, 1–5 years, or >5 years) or in subgroups of children with pneumococcal or meningococcal meningitis. Corticosteroid use increased significantly from 5.8% in 2001 to 12.2% in 2006.

**COMMENT:**

The putative beneficial effects of corticosteroids are ascribed to reduction of the inflammatory response caused by antimicrobial-induced bacteriolysis. But corticosteroids also have adverse effects, including the possibility of decreasing delivery of antibiotics into cerebrospinal fluid. The findings of a Cochrane review and a large clinical study both published in 2007 are in line with those of this analysis. However, guidelines from the American Academy of Pediatrics state that “adjunctive therapy with dexamethasone may be considered after weighing the potential benefits and risks.” Such equivocal recommendations and the failure of practitioners to appreciate the effect of vaccination have been partly responsible for the increase in use of corticosteroids for children with meningitis. The findings of this study, the largest multicenter study of its kind, suggest that healthcare providers should not administer adjunct corticosteroids to a child with suspected bacterial meningitis unless the child has not received Hib vaccination.

— John A. Marx, MD, FAME, FACEP

**Mongelluzzo J et al. Corticosteroids and mortality in children with bacterial meningitis. JAMA 2008 May 7; 299:2049-2048.**

**Facilitated PCI**

A bciximab often is initiated immediately before percutaneous coronary intervention (PCI) and then continued for about 12 hours afterward. These authors hypothesized that initiating abciximab earlier and in combination with a lytic agent would improve outcomes. In a pharmaceutical company–sponsored, randomized, double-blind international study, 2452 patients older than 60 who had ST-segment-elevation myocardial infarction (STEMI; excluding localized inferior infarction) and who presented within 6 hours of symptom onset received one of three treatments: (1) half-dose reteplase plus abciximab started immediately after randomization (combination-facilitated PCI), (2) abciximab alone started immediately after randomization (abciximab-facilitated PCI), or (3) abciximab started in the catheterization lab (primary PCI). A larger enrollment had been planned, but the study was stopped early for a variety of reasons, including cost overruns and concern in the U.S. that the randomization process interfered with the 90-minute door-to-balloon goal.

The combination-facilitated PCI group had significantly greater ST-segment resolution 60 to 90 minutes after initiation of treatment and significantly lower creatine kinase (CK) levels (measured during the first 24 hours after enrollment) than the other two groups. However, the incidence of the primary endpoint (a composite of all-cause death, ventricular fibrillation occurring more than 48 hours after randomization, cardiogenic shock, and congestive heart failure within 90 days) was about 10% in all three groups. The incidence of major bleeding was significantly higher in the combination-facilitated PCI group than in the primary PCI group. The authors and an editorialist note that for patients undergoing PCI, reducing door-to-PCI time might be more important than use of adjunctive pharmacologic therapy.

**COMMENT:**

The finding that early ST-segment resolution and infarct-size reduction (as measured by CK level) did not improve outcome sounds a cautionary note for us when interpreting studies that use surrogate measures as opposed to hard outcomes. The message is to get STEMI patients as rapidly as possible to the catheterization lab and not to bother with potentially time-wasting “adjunctive” drug therapy.

— J. Stephen Boban, MD, MS, FACP, FACEP

Oral Prednisolone for Gout

Current standard treatments for gout (colchicine and nonsteroidal anti-inflammatory drugs [NSAIDs]) can have significant side effects. In a randomized, double-blind trial, Dutch researchers compared treatment with either oral naproxen (500 mg twice daily) or oral prednisolone (35 mg once daily plus placebo) for 5 days in 120 patients (89% men; mean age, 57) with microscopically confirmed monoarticular gout. Patients were referred by their family doctors within 24 hours of initial presentation. Another 96 patients with microscopically confirmed gout were excluded, mostly because of current use of NSAIDs or colchicine or contraindications to NSAIDs.

At 90 hours, mean reductions in pain (assessed on a validated visual analog scale [VAS]) were similar in the naproxen and prednisolone groups. Mean reductions in disability related to use of the affected joint and related to walking (both scored on unvalidated VASs) also were similar in the two groups. Adverse effects during treatment were minor and comparable between groups. At 3-week follow-up, all patients reported complete resolution of pain and disability.

Comment:

A 5-day course of prednisolone is as effective as traditional treatment with an NSAID (in this case, naproxen) for acute gout. Prednisolone is both a sound alternative for patients with an NSAID contraindication and an alternative first-line therapy.

— Kristi L. Koenig, MD, FACEP


Oligoanalgesia in Women with Abdominal Pain

Research shows that ethnic minorities are less likely than other people to receive opioid analgesics for acutely painful conditions. To determine whether a sex disparity exists in the administration of pain medication for acute abdominal pain, these authors conducted a secondary analysis of data from a prospective cohort study in adult patients who presented to a single emergency department with non–pregnancy-related abdominal pain of less than 72 hours’ duration.

Among 981 patients (65% women), men and women had similar mean pain scores. Women were less likely than men to receive any analgesia (60% vs. 67%) and opioids (45% vs. 56%). In logistic regression analysis that controlled for potential confounders, women were 13% to 25% less likely than men to receive opioids, although the two sexes were equally likely to receive nonopioid analgesic medications. Among patients who received analgesia, women waited a median of 16 minutes longer than men to receive medication (median time to administration, 65 vs. 49 minutes).

Comment:

Use of a nonopioid medication might be appropriate in women with pain related to a gynecologic condition, but the time delay to administration in this study is cause for concern. Although more time might be required to assess abdominal pain in women because of the need to perform a pelvic examination, this should not delay the administration of pain medication. Prompt administration of analgesics to both women and men should be a treatment priority.

— Diane M. Birnbauemer, MD, FACEP


Bivalirudin During PCI in Patients with Acute MI

Bivalirudin alone has been shown to be as effective as and safer than heparin plus a glycoprotein (GP) IIb/IIIa inhibitor for suppressing ischemia in patients with unstable angina and non–ST-segment-elevation myocardial infarction (NSTEMI) who undergo percutaneous coronary intervention (PCI; JW Cardiol Jan 2007, p.4, and N Engl J Med 2006; 355:2203). To assess bivalirudin’s efficacy and safety in patients with STEMI who undergo PCI, researchers conducted a randomized, open-label, multicenter, international trial funded by the maker of bivalirudin.

Some 3600 patients who presented within 12 hours of symptom onset and who had ST-segment elevation ≥1 mm in two contiguous leads, new left bundle branch block, or true posterior MI received either bivalirudin or unfractionated heparin plus a GP IIb/IIIa inhibitor. All patients underwent coronary angiography and received aspirin and clopidogrel at enrollment and for at least 6 months thereafter.

At 30 days, the bivalirudin group had significantly lower rates of adverse clinical events (major bleeding, death, reinfarction, stroke, and target-vessel revascularization for ischemia) than the heparin group (9.2% vs. 12.1%), including death from cardiac causes (1.8% vs. 2.9%) and death from all causes (2.1% vs. 3.1%). The authors attributed the lower death rates in the bivalirudin group to significantly lower rates of thrombocytopenia (1.3% vs. 3.8%) and major bleeding (4.9% vs. 8.3%).

An editorialist notes that bleeding might be a marker, as opposed to a mediator, of mortality risk; thus, the mechanism by which bivalirudin improves outcomes is not clear. The editorialist concludes that the new evidence from this study indicates that bivalirudin “warrants consideration among the alternatives for ancillary antithrombotic therapy” in patients with STEMI who undergo primary PCI.

Comment:

Ever since therapeutic phlebotomy and use of leeches passed into history, the common wisdom has been the less bleeding the better. Thus, an editorialist correctly advises that bivalirudin “warrants consideration among the alternatives for facilitated PCI. The FDA likely will agree with him that more-rigorous, blinded study is needed before bivalirudin alone can be approved as a replacement for heparin and GP IIb/IIIa inhibitors. However, less death and less bleeding (even if they do not exist in a cause-and-effect relation) have innate appeal. — J. Stephen Boban, MD, MS, FACP, FACEP

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Clinical Performance of the Airway Scope

The Airway Scope is a rigid, indirect video laryngoscope that provides a non–line-of-sight view of the glottis by way of a camera and a color screen. Previous small trials have suggested that the Airway Scope is easy to use and is associated with less upper cervical spine motion than the Macintosh laryngoscope (JW Emerg Med Nov 2007, p. 85, and Anaesthesia 2007; 62:1050). In the current study, the authors evaluated the performance of the Airway Scope in clinical anesthesia practice and compared glottic visualization between the Airway Scope and the Macintosh laryngoscope.

During a 1-year period, 320 adult patients who were scheduled for elective surgery underwent laryngoscopy, first with the Macintosh laryngoscope and then with the Airway Scope. All intubations were performed by anesthesiologists skilled in both techniques. Compared with the Macintosh, the Airway Scope significantly improved the laryngeal view: 46 patients with poor views (Cormack-Lehane grade 3 or 4) with the Macintosh had excellent views (grade 1 or 2) with the Airway Scope. All intubations with the Airway Scope were successful (96% on the first attempt and 4% on the second). Mean time to intubation with the Airway Scope was 20 seconds. The Intubation Difficulty Scale score with the Airway Scope ranged from 0 to 2 (a score >5 indicates moderate-to-major difficulty). The authors conclude that the Airway Scope is useful in routine practice and might confer advantages over the Macintosh laryngoscope in cases involving difficult intubation.

Comment:
This study provides even more evidence of the value of video laryngoscopy in routine operating room practice. Video laryngoscopy clearly is superior to conventional laryngoscopy, and emergency physicians should familiarize themselves with this new technology.
— Aaron E. Bair, MD, MSc, FAAEM, FACEP

C-Spine Movement: Macintosh vs. Airtraq Laryngoscope

The Airtraq is a single-use, indirect laryngoscopic device with an image transfer channel that transmits a view of the glottis without the need to align the oral, pharyngeal, and tracheal axes. Previous research suggests that the Airtraq is easy to use (JW Emerg Med Dec 2006, p. 94, and Anaesthesia 2006; 61:1093). The authors of this unsponsored study compared cervical spine (C-spine) motion during laryngoscopy using the Airtraq and Macintosh laryngoscopes.

Twenty adult patients who required routine intubation for elective gynecologic surgery in the operating suite underwent laryngoscopy with both the Airtraq and Macintosh devices, in random order. Patients with a history of difficult intubation or C-spine injury were excluded. All laryngoscopies were performed by a single anesthesiologist who was skilled in both techniques. Lateral radiographs were taken at baseline with the patient in a neutral position and during laryngoscopy when the best view of the larynx was obtained. Two radiologists reviewed the radiographs to measure the degree of vertebral body displacement. C-spine extension was significantly less with the Airtraq than with the Macintosh: 29% less at the occiput–C4 segment and 44% less at the C3–C4 segment.

Comment:
How much C-spine movement is clinically significant still is not known. However, with acute spine injury, any reduction in movement is desirable. While we await reports of experience with the Airtraq in the emergency department, we can add this study to the others that will eventually help to put the Macintosh laryngoscope out to pasture.
— Aaron E. Bair, MD, MSc, FAAEM, FACEP

Management of Cocaine-Associated Chest Pain and MI

The American Heart Association (AHA) has published a review of recent literature and recommendations for management of patients with cocaine-associated chest pain and myocardial infarction. Cocaine use leads to increased cardiac demand and accelerated atherosclerosis and coronary vasospasm. The AHA recommendations indicate that treatment of cocaine-associated myocardial ischemia differs in several important ways from treatment of non-cocaine-associated ischemia.

- Aspirin and nitrates continue to be strongly recommended as they are for non-cocaine-associated acute coronary syndrome (ACS), but β-blockers (including agents with mixed α-adrenergic antagonist effects, such as labetalol) are considered contraindicated, despite a relatively weak evidence base. Theoretically, β-blockade might induce or worsen hypertension and vasospasm.
- If cocaine intoxication is suspected, benzodiazepines are recommended as the primary treatment for anxiety, tachycardia, and hypertension.
- Calcium channel blockers are not recommended. Some evidence from studies of patients with non–cocaine-associated ACS suggests that calcium channel blockers increase mortality rates when used as a first-line agent for control of hypertension.
- Early percutaneous coronary intervention is particularly preferred over fibrinolysis in patients with cocaine-associated ACS because of increased risk for intracranial hemorrhage after administration of fibrinolytic agents in cocaine users.

Comment:
Early aggressive treatment continues to be the mainstay of therapy for patients with suspected ACS. However, treatment for cocaine-associated ACS differs in several important ways from treatment for non-cocaine-associated ACS. Clarifying whether cocaine was recently
Early Repolarization: Maybe Not So Benign After All

Experimental evidence suggests that early repolarization is associated with ventricular dysrhythmias, but no clinical evidence is available. In a case-control study, researchers reviewed data from 22 dysrhythmia centers in several countries to evaluate the prevalence of early repolarization and its association with dysrhythmia in patients younger than 60 who had idiopathic (no evidence of structural heart disease) sudden cardiac arrest and had received implantable defibrillators.

The researchers identified 206 cases (60% men; median age, 36) and compared them with 412 matched controls who had not had cardiac arrest and did not have evidence of heart disease. Early repolarization (defined as a J-point elevation ≥1 mm) was significantly more frequent in the cardiac-arrest group than in the control group (31% vs. 5%) and, when present, was significantly greater in magnitude in the cardiac-arrest group (2.0 vs. 1.2 mm). Nearly 30% of patients in the cardiac-arrest group had a history of syncope. Defibrillator interrogation (in 18 patients) showed that dysrhythmias were preceded by an increase in J-point elevation. In the one third of cardiac-arrest patients who had early repolarization and had pre-arrest electrocardiograms available, the pre-arrest ECGs showed early repolarization. During a mean follow-up of 61 months, the three patients with the highest J-point elevation (>5 mm) together had more than 50 episodes of ventricular fibrillation (VF), resulting in the death of one patient. Few patients in the cardiac-arrest group were athletes or blacks, groups in which repolarization abnormality is most common.

An editorialist notes that while repolarization abnormality is common, sudden cardiac arrest is not, and that patients with the characteristic ECG findings who are symptomatic (i.e., syncope, palpitations, chest pain) require close monitoring, with particular attention to intermittent increases in J-point elevation.

**COMMENT:**
Although ventricular fibrillation is uncommon in young people, this study suggests that we make two important changes in our approach to “benign” early repolarization. First, an ECG that shows early repolarization should not be considered as normal in patients who have had syncope or symptoms of dysrhythmia. Second, patients undergoing electrocardiography in the emergency department for unrelated reasons who have findings of early repolarization abnormality should be told about the symptoms of dysrhythmia and advised to seek care if these symptoms should arise. — J. Stephen Boban, MD, MS, FACP, FACEP


**Femoral Vein Central Lines in Children: Another Case for Ultrasound Guidance**

External landmarks typically are used to guide placement of femoral central venous catheters in adults and children. In this study, researchers used ultrasound to determine the depth, location, and diameter of the femoral vein and its relation to the femoral artery in children.

A single pediatric fellow performed femoral artery and vein ultrasonography in a convenience sample of 84 euvolemic children younger than 9 years. The femoral artery and vein were identified according to specific criteria. The femoral artery partially overlapped the femoral vein in 4% of cases and completely overlapped the vein in 8%. Depth of the femoral vein increased with age, ranging from a mean of 6.5 mm in neonates to 11.2 mm in 9-year-olds. Mean diameter also increased with age, ranging from 4.1 mm in young infants to 10.9 mm in 9-year-olds.

**COMMENT:**
Studies have shown that using ultrasound for guidance when placing inter-}

nal jugular central venous lines is safer and more effective than using external landmarks alone. This study extends those findings to children, although lines were not actually placed in the study subjects. The results suggest that the femoral artery overlies the femoral vein either partially or completely in up to 12% of children younger than 9 and that ultrasound can determine this relation, thereby allowing the operator to choose an approach that will avoid inadvertent arterial puncture. — Diane M. Birnbaum, MD, FACEP


Death After Syncope: Can We Predict It?

Syncope has myriad causes, ranging from benign to serious, but the causes are difficult to distinguish because presentations often are similar. In a prospective cohort study of 1418 consecutive patients (mean age, 62) who presented to a single emergency department with syncope during a 45-month period, the researchers who derived the San Francisco Syncope Rule assessed whether the rule can predict death within 1 year.

For patients who died, the researchers determined the cause of death, judged whether the cause was related to the cause of syncope, and retrospectively applied the rule. The rule, which has previously been shown to predict short-term outcome, stratifies patients into low- and high-risk categories based on presence of any of five risk factors: history of congestive heart failure, hematocrit <30%, abnormal electrocardiogram, shortness of breath, or systolic blood pressure <90 mm Hg (JW Emerg Med Aug 2006, p. 57, and Ann Emerg Med 2006; 47:448).

All-cause mortality rates were 1.4% at 1 month, 2.9% at 3 months, 4.3% at 6 months, and 7.6% at 1 year. Syncope-related mortality rates were 1.3% at 1 month, 1.8% at 3 months, 2.3% at 6 months, and 3.8% at 1 year. At 6 months, the rule predicted overall mortality with a sensitivity of 89% and a specificity of 53% and predicted syncope-related mortality with a sensitivity of 100% and a specificity of 52%. At 1 year,
Noninvasive Ventilation Is Safe and Effective in Acute Decompensated Heart Failure

Although noninvasive ventilation (NIV) is frequently used to treat patients with acute decompensated heart failure, its efficacy and safety have remained controversial. To evaluate the safety and efficacy of NIV, researchers retrospectively analyzed data from the Acute Decompensated Heart Failure National Registry (ADHERE) for patients who were admitted from emergency departments. Among patients with complete data, 34,942 did not receive NIV and 670 received only intubation. Rates of in-hospital mortality were 3.2% in the no-ventilation group, 7.9% in the failed-NIV group, and 15.4% in the intubation group. After adjustment for risk factors for mortality (e.g., age, history of heart disease), the likelihood of in-hospital death was significantly less in the successful-NIV group than in the intubation group (odds ratio, 0.51) but did not differ significantly between the failed-NIV group and the intubation group (OR, 1.43).

**Comment:**

In this single-hospital study, the San Francisco Syncope Rule was sensitive for predicting 1-year mortality in patients who presented with syncope. As initially conceived and studied, the rule was meant to predict which patients (without any of the 5 risk factors) could be safely discharged from the ED and worked up as outpatients. Pending validation of these findings in a multicenter study, a reasonable approach is to consider discharge only for patients who have none of the five San Francisco criteria and are judged to have a benign presentation by the attending emergency physician.

— Richard D. Zane, MD, FAAEM


Needle-Free Powder Lidocaine Delivery

Needle insertion can be one of the most painful and distressing procedures for a child and often leaves a traumatic, lasting impression. Topical anesthetic creams that are used to ameliorate the pain of a needlestick often are impractical in an emergency department because of the delay between application and analgesic effect. In a multicenter, randomized, double-blind, sham-placebo-controlled trial, researchers evaluated the efficacy and safety of a needle-free powder lidocaine delivery device in 597 hospitalized children (age range, 3–18 years) who were undergoing venipuncture or intravenous cannulation on the dorsal hand or antecubital fossa. The device manufacturer provided the devices and funded the research, and one author was an employee of the manufacturer.

The device uses helium-generated pressure to deliver 0.5 mg of lidocaine hydrochloride powder to the anticipated needle insertion site, where the particles penetrate the epidermis. In this study, the device was used to deliver lidocaine powder or no powder approximately 1 to 3 minutes before the venous access procedure. Patients rated the pain of the subsequent needlestick using a modified Wong-Baker Faces Pain Rating Scale (0 = no pain to 5 = worst pain), and patients aged 8 to 18 years also used a 100-mm visual analog scale (VAS). Parents used the VAS to rate their child’s pain.

The lidocaine and placebo groups had similar patient and procedural characteristics at baseline. Pain scores were significantly lower in the lidocaine group than in the placebo group, as assessed by patients on both the faces scale (1.8 vs. 2.1) and the VAS (22.6 vs. 32.0) and by parents on the VAS (21.4 vs. 28.7). Differences in treatment effect across age categories were similar in both groups. Treatment-related adverse events were rare in both groups, and all resolved without sequelae; most adverse events were attributed to minor dermal reactions at the administration site.

**Comment:**

Children should receive local anesthesia before venipuncture, whenever possible. Existing topical anesthetics can require as long as 1 hour to achieve a desired effect, and their use often requires multiple clinician assessments to determine patient readiness; this device avoids both drawbacks. This study shows that the needle-free system is effective and safe, and, although the study was limited to hospitalized children, the device seems perfect for the ED setting. The measured benefit as scored on the faces scale was modest and perhaps of no clinical significance, but the differences on the VAS exceeded 25% and likely were real. Although cost data were not provided by the authors, a higher cost could easily be justified by the benefits.

— Jill M. Baren, MD, MBE, FACEP, FAAP


Risk Factors for Delay in Presentation of AMI Patients

With widespread attention to “door-to-balloon time” brought about by Medicare’s national standards, time to treatment of acute myocardial infarction after patient arrival at the hospital is improving. The problem that persists, however, is getting patients to come to the hospital promptly after symptom onset. Two research groups used different methods to determine...
factors that might contribute to delays in presentation.

In one study, 3522 patients from the U.S., Australia, and New Zealand who had a preexisting diagnosis of ischemic heart disease were surveyed about their knowledge, attitudes, and beliefs about coronary heart disease. On a standardized instrument that included questions about perceived vulnerability to a future acute coronary syndrome event, a score of 70% or higher was judged to reflect “adequate knowledge.” The mean knowledge score was 71%, and 44% of patients scored lower than 70%. Female sex, being under the care of a cardiologist, and participation in a cardiac rehabilitation program were associated with higher scores. No specific factors in the clinical history (e.g., coronary artery bypass graft [CABG]) or cardiac risk factors predicted knowledge scores. Overall, 43% of this study’s high-risk population considered their risk for AMI during the next 5 years to be the same as or lower than that of other people of the same age. Characteristics significantly associated with perception of low risk were history of CABG and age younger than 80.

In the other study, researchers reviewed data for nearly 500,000 patients enrolled in the National Registry of Myocardial Infarction from 1995 through 2004 to identify risk factors for delay. The mean time from symptom onset to presentation decreased significantly during the study period from 123 to 113 minutes. Older age, female sex, black race, Latino ethnicity, and presence of diabetes were associated with longer times to presentation. Analysis of combinations of these risk factors for delay showed, for example, that black women aged 70 and older with diabetes arrived an average of 64 minutes later than white men younger than 70 without diabetes (mean time to arrival, 170 vs. 106 minutes, respectively).

**Comment:**
The decline in time from symptom onset to presentation during the 10-year study period probably reflects increasing public awareness of symptoms of AMI and the importance of getting to the hospital quickly, but the message is not reaching all segments of the population equally. The discrepancy indicates that both the content and delivery method of the message needs to be targeted to vulnerable audiences. Emergency physicians should support and participate in programs that promote awareness of symptoms of ischemia and the importance of getting to the hospital quickly. — J. Stephen Boban, MD, MS, FACP, FACEP


### Minimal Risk for Shock to Rescuers During Biphasic Defibrillation

Avoiding interruption of chest compressions during cardiopulmonary resuscitation potentially can improve patient outcomes by supporting continuous coronary and cerebral circulation. However, in the absence of automated resuscitation systems, a “hands-off” period during delivery of shocks is recommended to protect rescuers from potentially dangerous electrical discharge. In the current era, with use of conforming pre-gelled electrodes and advanced biphasic defibrillators, the risk to the rescuer might be minimal.

In this study, researchers measured leakage voltage and current through four investigators who served as mock rescuers during elective cardioversion in 43 patients. With a gloved hand, the rescuer applied pressure to the patient's chest adjacent to the anterior chest electrode. Leakage voltage and current and peak potential differences in the rescuer were monitored during delivery of shocks. No shocks were perceptible to rescuers (even during delivery of 360 J). The current measured in the rescuer’s body ranged from 19 to 907 µA. In most cases, the leakage current measured below recommended safety standards. The authors conclude that pausing CPR for delivery of shocks might not be necessary because the risk to the rescuer is minimal.

**Comment:**
The current recommendations regarding cardiac arrest strongly support minimizing any interruption in chest compression. Keeping the “pump primed” has been shown to improve circulation by maintaining valve function, and any interruption of compressions requires significant time to reestablish forward flow. Based on these findings, there seems to be no reason to discontinue chest compressions for biphasic defibrillation during CPR. — Aaron E. Bair, MD, MSc, FAAEM, FACEP


### Patient Outcomes from Intensivist Care

Prior studies consistently have shown better patient outcomes when critical care specialists are substantially involved in care of patients in intensive care units (ICUs), but these studies all had methodological limitations. These authors reviewed data from a national ICU database to compare hospital mortality rates in more than 100,000 patients who were cared for either entirely by intensivists or entirely by nonintensivists. Intensivists were defined as physicians who were board certified in critical care medicine, trained in a critical care fellowship, or recognized by the institution as critical care specialists (e.g., burn surgeons).

The standardized mortality ratio (ratio of actual mortality to expected mortality measured by the Simplified Acute Physiology Score) was 1.09 for patients who were managed by intensivists and 0.91 for those who were managed by nonintensivists. A significant difference persisted after logistic regression analysis that included adjustment for illness severity (odds ratio for death, 1.40). The authors note that the startling results could be explained by the confounding effects of unrecognized, unmeasured contributors to illness severity or that, alternatively, the findings could be accurate and reflect, for example, that intensivists’ greater use of procedures might lead to more complications, with increased morbidity and mortality.

Editorialists emphasize the substantial evidence showing that patients cared for by intensivists have better outcomes and note the mechanistic explanations for the improved outcomes, whereas the authors of the current study provide no evidence to support an explanation for their findings. The editorialists also note...
that the specialty of the caregiver might not be as important as the mode in which the care is delivered (e.g., use of protocols).

**COMMENT:**
Common wisdom takes a real hit from this study, so much so that the results are hard to believe. The findings are as stunning as if a similar retrospective database study of emergency departments identified decreased mortality when nonemergency physicians provided emergency care. As an emergency physician, I breathe easier knowing that when I admit a patient to our ICU, a qualified intensivist is on the receiving end. — *J. Stephen Boban, MD, MS, FACP, FACEP*


**Don’t Delay Transfer of Trauma Patients to Specialty Centers**

Trauma systems improve survival. A fundamental principle of trauma care is that rapid transport of patients to appropriate facilities allows timely identification and treatment of life-threatening injuries. To determine whether obtaining a computed tomography (CT) scan before transfer affects length of stay in the initial hospital, researchers reviewed medical records of 249 consecutive adult trauma patients who were transferred to a regional trauma center in Canada during a 2-year period.

About one third of patients underwent CT before transfer. Mean injury severity scores were similar between patients who did and did not undergo CT. In no case was the CT result used to determine whether to transfer a patient, and in no case did it lead to a decision to perform surgery before transfer. Patients who underwent CT before transfer stayed in the initial hospital significantly longer than those who did not undergo CT (mean, 238 vs. 148 minutes). The authors note that the time difference is longer than the time required to perform a CT scan.

**COMMENT:**
This study was retrospective and from a single trauma center, but it emphasizes a valuable take-home point: The only reason to perform tests before transfer to a trauma center is if the results will inform a critical management decision (e.g., whether to perform laparotomy before transport) or will form the basis of the decision to transfer (e.g., CT scanning identifies an intracranial hemorrhage or spinal column injury in an otherwise-stable patient). If the results of a test will not change your management or disposition decisions, why do the test?

— *Kristi L. Koenig, MD, FACEP*