

2009 ACEP RESEARCH REVIEW:

ACEP's 2009 Research Forum took place October 5-6, 2009 in Boston, Massachusetts and featured 462 abstracts. Below are two EPM editors' independently identified selections on the most significant scientific findings.

by Michael Breyer, MD & Christopher R. Carpenter, MD, MSc

The Impact Rating Scale

- ★ Interesting, potentially practice changing for some
- ★★ Moderate impact, practice changing for many
- ★★★ High impact, practice changing for most
- ★★★★ A must read, practice changing for all
- ★★★★★ Landmark abstract, practice changing for all

Abstract Title (Abstract #)	The Effect of Etomidate on Hospital Length of Stay of Patients With Sepsis: A Prospective, Randomized Study (#8)*	Should the Deeply Comatose Trauma Patient Be Intubated by EMS? (#245)	Change in Acuity of Emergency Department Visits After Massachusetts Health Care Reform (#268)	A Lean-Based Triage Redesign Process Improves Door-to-Room Times and Decreases Number of Patients at Triage (#308)*	Prospective Randomized Trial of Trimethoprim-Sulfamethoxazole vs Placebo on 30-Day Recurrence Rates for Uncomplicated Skin Abscesses in Patients at Risk for Community-Acquired MRSA (#331)*
What were they looking for?	To determine whether a single dose of etomidate given in the ED resulted in an increase in LOS vs. patients given midazolam	To compare outcomes of Scene Intubated and Not Scene Intubated trauma patients with GCS>3	To determine whether the near-Universal Health Care Plan resulted in a change in ED use for low- and high-acuity conditions	Analyzing whether Lean-based triage redesign process improves door-to-room time for ESI 4 & 5 patients and decreases # of patients waiting at triage	To determine whether prescribing TMP/SMX to patients who had I+D for uncomplicated abscesses resulted in recurrence of abscesses at 30 days
Methods	Prospective, double-blind, randomized study -116 patients -92 septic -Mean age of 71 -Mean MEDS score of 12	Retrospective cohort -Trauma Data Base Registry -11,109 patients	Retrospective, before-and-after study -3 urban tertiary care teaching hospitals	Before-and-after study -28,446 pre-intervention, -32,099 post-intervention	Multi-center, double-blinded, RCT of TMP/SMX vs placebo -58 patients
Results	In-hospital mortality for septic patients given etomidate (42%) was similar to those who received midazolam (35%). There was no difference in hospital LOS.	Mortality rate 35% for Not Scene Intubated and 62% for Scene Intubated	Total ED visits increased from 169,665 to 190,465. No change in % of low or high acuity visits	Door-to-room time decreased from 64.2 min to 43.5 min. Number of ESI 4 & 5 patients waiting at triage decreased from 4.2 to 2.9	Recurrence rate for patients on placebo (33%) vs. TMP/SMX (8%) was significant
How does this change our practice?	While the clinical significance of a single dose of etomidate on adrenal suppression remains controversial, this study shows that concern may be over-stated. More research is needed to determine if these results can be replicated at other institutions but for now it seems reasonable to continue using etomidate if that is your induction agent of choice for patients with sepsis.	More evidence that calls into question whether EMS should intubate severely injured trauma patients. Every situation needs to be evaluated on a case-by-case basis, of course, but EMS Directors and EPs should look at this data very closely to determine their county and state EMS provider practices.	If national health care reform is modeled on the Massachusetts model, this study suggests we should prepare nationally for a potential increase in ED volume.	While these results can't be generalized to other institutions, it does underscore the need that new paradigms of seeing and working patients up can yield positive results. As systems continue to evolve, striving to eliminate unnecessary steps should be embraced by EDs nationally and hopefully best practices documents will be developed.	Based on this interim data, practice patterns of I+D and no antibiotics for simple abscesses may change. We should look for the manuscript to be published prior to changing practice patterns but this initial research is compelling.
Rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★

10 Abstracts that Could Change Your Practice

Abstract Title (Abstract #)	Utility of Additional Radiographs in ED Patients with Extremity Injury (#83)	Diagnostic Accuracy of Non-contrast CT for Appendicitis in Adults: A Systematic Review (#95)	Quantitative Meaning of Common Terms Like “Very Low Risk” and “Low Risk” for Chest Pain Patients (#184)	Cognitive Impairment and Comprehension of ED Discharge Instructions in Older Patients (#257)	Significant Bacterial Infections in Febrile Children Less than 2 Years of Age with Influenza A (#337)
What were they looking for?	The incidence of positive radiographs when additional X-rays ordered by consulting trauma surgeon	The diagnostic test characteristics of non-contrast CT for adult ED patients.	To quantitatively describe common terms for minimal risk chest pain patients along with the threshold for discharge and/or admission.	To describe the impact of cognitive impairment on discharge instruction comprehension.	To describe the prevalence of significant bacterial infections in Influenza A positive infants.
Methods	Retrospective chart review in single suburban academic ED over 5 months	Systematic review including all trials assessing CT for appendicitis with at least 2 weeks follow-up.	Web-based survey of EM residents from 11 programs based upon 5 chest pain scenarios encompassing a broad range of ACS risk.	Cross-sectional survey at single academic Level I trauma center ED for English-speaking patients > 65 years discharged to home.	Prospective cohort less than 2-years at single hospital during 7-month flu-season.
Results	1979 subjects underwent 3719 extremity X-rays. 142 (7.1%) had surgical consult of which 32 had additional X-rays ordered revealing 4 new injuries (2.8% of consults)	From 1258 publications, 7 met inclusion criteria including 1060 patients. Pooled estimates: Sensitivity 92% (95% CI 89-95) Specificity 96% (95% CI 94-97) LR+ = 23 LR- = 0.08	217 (91%) completed the survey. -Very low risk = 0.088% with admission rate 7.1% -Low = 0.45% with admission rate 31.6% -Moderate = 1% with admission rate 93.8% -High = 3.3% with admission rate 100% -Very high = 10% with 100% admission rate	114 patients enrolled with median age 73 and 53.8% prevalence of cognitive impairment. Cognitively impaired patients were less likely to understand their discharge diagnosis, ED return or follow-up instructions.	330 children assessed including 85 (25.4%) positive for Influenza A (median age 10 months, 68% African American, 21% Hispanic). There were 14 (16.6%, including 10 pneumonias, 4 UTI, and 1 meningitis) significant infections in the Influenza group compared with 52 (21.1%) in the non-Influenza cohort.
How does this change our practice?	Cost-ineffective care begins with inductive-reasoning-based fishing expeditions. Optimizing test-ordering will require deductive-based rationale based upon disease or injury likelihood. This abstract demonstrates that consultant-based ancillary extremity imaging may be one focus to reduce over-ordering.	The diagnostic accuracy of non-contrast CT for acute appendicitis in ED patients is adequate for clinical decision making. ED length-of-stay should not be delayed awaiting oral contrast to transit to the appendix.	Quantitative risk gestalt-based estimates for moderate, high, or very high risk patients do not differ significantly. Epidemiologically, the risk profiles of these patients differ substantially. These findings suggest the need for validated risk stratification tools to minimize variations in care they disparate estimates will produce.	Occult cognitive dysfunction is prevalent among geriatric ED patients. Brief (< 1-minute) screening tools that do not require paper, pencil, or special equipment have been validated in this setting but remain underutilized. While the full impact of unrecognized dementia and delirium has yet to be described, insufficient discharge communication will undoubtedly contribute to adverse consequences.	Young or old, influenza patients present with symptoms widely overlapping over infectious processes. The identification of Influenza by point-of-care testing does not eliminate the likelihood of a serious bacterial illness among infants although the risk is reduced. The most common concurrent serious bacterial illness in this population is pneumonia, but UTI is also common.
Rating	☆☆☆	☆☆☆☆☆	☆☆☆☆	☆☆☆☆	☆☆☆☆

Dr. Breyer is an Associate Program Director at Christiana Care Health System in Newark, Delaware. His research interests include Medical Education and Ultrasound.

Dr. Carpenter is a funded geriatric and patient safety researcher with a particular interest in Evidence Based Medicine, Knowledge Translation, and the cognitive psychology of clinical decision-making.

*Independently selected by both authors as ACEP Research Symposium highlights.