

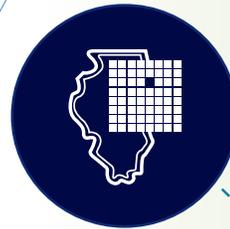
presented by Illinois College of Emergency Physicians  
& American College of Emergency Physicians



2015 ICEP  
*Spring* **SYMPOSIUM**  
& ANNUAL BUSINESS MEETING

*on the agenda:*

Choosing Wisely® Campaign  
Concussion Management  
ER/LA Opioid REMS  
Resident Speaker Forum  
Statewide Research Showcase



# Statewide Research Showcase eBook

April 30, 2015 ■ Northwestern Memorial Hospital ■ Chicago, IL

# 2015 ABSTRACTS

## TABLE OF CONTENTS

Click the title below to jump to the abstract:



### SELECTED ORAL PRESENTATIONS:

**Training the Trainers: Needs Assessment for Procedural Skill Maintenance Training Among Academic Emergency Medicine Faculty**

**Impact of a Chronic Pain Protocol on Emergency Department Utilization**

**A Comparison of Emergency Department Throughput in Geographical vs Rotational Patient Assignment Models**

**Mitochondrial Dysfunction Mediated Myocardial Stunning Following Asystolic Cardiac Arrest**

### SELECTED POSTER PRESENTATIONS:

**Idarucizumab, a Specific Reversal Agent for Dabigatran: Immediate, Complete and Sustained Reversal of Dabigatran Induced Anticoagulation Shown in Healthy Male Volunteers**

**Effectiveness of Resident Physicians as Triage Liaison Providers in an Academic Emergency Department**

**Analysis of Emergency Department Consultation Times**

**Trends in Demographics and Outcome of Patients Presenting with Traumatic Brain Injury**

**Bedside Rounding on Select High-Risk Patients During Emergency Department Handoffs Adds Potential Benefit and Little Time to the Handoff Process**

**Examining Insurance Status and Utilization in the Emergency Department Pre- and Post-Affordable Care Act Implementation**

**Optimization of Physician Scheduling Based on Prior Patient Presentations**

**Predicted Mortality as an Additional Measure of Critical Care Delivery in a Public Hospital Emergency Department**

**Abnormal Vital Signs Fail as a Predictor of Patients Returning to the Emergency Department**

**In-Flight Medical Emergencies (IFMEs): A Survey of Physicians' Knowledge Base**

### OTHER SUBMISSIONS:

**Assessment of a Therapeutic Hypothermia Protocol for Out-of-Hospital Cardiac Arrest at a Community Teaching Hospital**

**Identification and Follow-up for Incidental Findings at Emergency Department Discharge - A Coordinated Quality and Safety Improvement Initiative**

**An Emergency Medicine Orthopedics Rotation at a Large Urban Teaching Hospital: The Resident Experience**

**Patient-Identified Correlates of Emergency Department Use: A Qualitative Analysis of the Illinois Medical Home Network**

2015 ICEP  
*Spring* SYMPOSIUM  
April 30, 2015 | Chicago, IL

STATEWIDE  
RESEARCH  
SHOWCASE

**Malignant Hyperthermia: How Prepared  
is the Emergency Department**

**There's an App for That? Difficulty in Finding  
Clinically Relevant Apps for Use in the  
Emergency Department**

**Use of Levetiracetam for Seizures  
in the Emergency Department**

**Can You Identify High Risk Pulmonary Embolism  
Patients Based on EKG and Echocardiogram Results?**

**Pyuria and Urine Cultures in the Acute  
Renal Colic Patient: Do You Treat?**

**Implementation of Geriatric Emergency Track  
Improves Care and Patient Satisfaction**

**Identifying Low Risk Chest Pain Patients and  
Outcomes of Continuous Cardiac Monitoring**

**Digitally-Assisted Bougie Intubation:  
A Novel Technique for Difficult Airway Management?**

**Initial Experience in the Emergency Setting  
with a New, Rapid-Acting Inhaled  
Antipsychotic Medication**

**An Alternative for Rapid Administration  
of Medication and Fluids in the Emergency  
Setting Using a Novel Device**

**Creation and Implementation of an Online  
Teaching Resource: The Northwestern Emergency  
Medicine Model in Orthopedics Education**

**Comparing Nursing Perception of Physician  
Efficiency and Interpersonal Skills to  
Actual Physician Productivity**

**Determining the Adaptability of Emergency  
Medicine Residency Milestones to the  
Emergency Medicine Student  
Clerkship Evaluation Process**

**Idarucizumab, a Specific Reversal Agent for  
Dabigatran: Immediate, Complete and Sustained  
Reversal of Dabigatran Induced Anticoagulation  
Shown in Elderly and Renally Impaired Subjects**

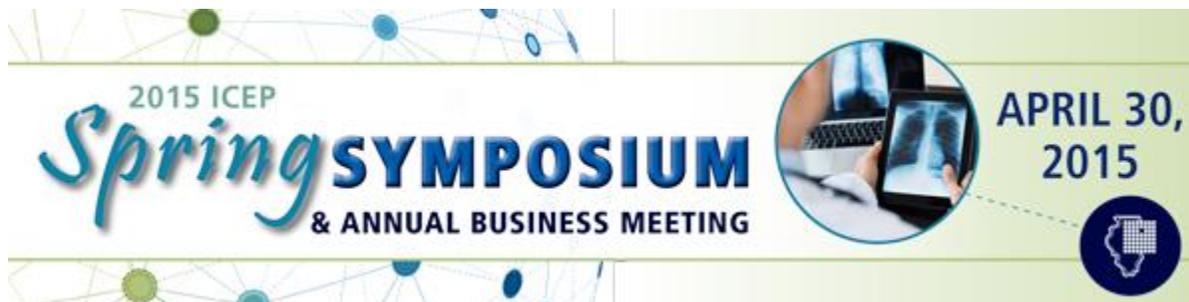
**Retrospective Review of Symptoms and Signs of  
Intussusception Present on Initial Evaluation**

**So Your Program is on Twitter, Now What?  
A Needs Assessment on the Use of Twitter and  
Free Open Access Medical Education in an  
Emergency Medicine Residency Program**

**Training Model for Out-of-Hospital  
Cardiac Arrest Bystander Response:  
Pay It Forward Latino Parent Cohort**

**An Assessment of Ethnic Diversity in US Medical  
Toxicology Fellowship Training Programs**

**An Examination of Provider Attitudes toward  
HIV Screening in the Emergency Department**



## Training the Trainers: Needs Assessment for Procedural Skill Maintenance Training Among Academic Emergency Medicine Faculty

Samreen Vora, MD, Matt Lineberry, MD, Daniel Robinson, MD, Valerie Dobiesz, MD, FACEP, David Snow, MD; University of Illinois at Chicago, Chicago, IL

### **Background:**

Physicians at academic centers often primarily act in a supervisory role, allowing trainees to perform procedures, potentially limiting their own opportunities to refresh and retain skills.

### **Objective:**

The goal of this research was to derive initial lists and prioritizations of procedures which EM faculty believe may require refresher training, perceived facilitators, and perceived barriers to such training.

### **Design/Methods:**

The study was a cross-sectional survey of EM faculty at four teaching hospitals in a large metropolitan city. Participants completed a survey on their perceived needs for refresher training, the procedures they deemed highest priorities, and perceived barriers and facilitators to such training. A focus group was then facilitated at each site in which participants shared key group insights. Qualitative content analysis was used, by two independent investigators, to derive codes for semantically-equivalent responses.

### **Results:**

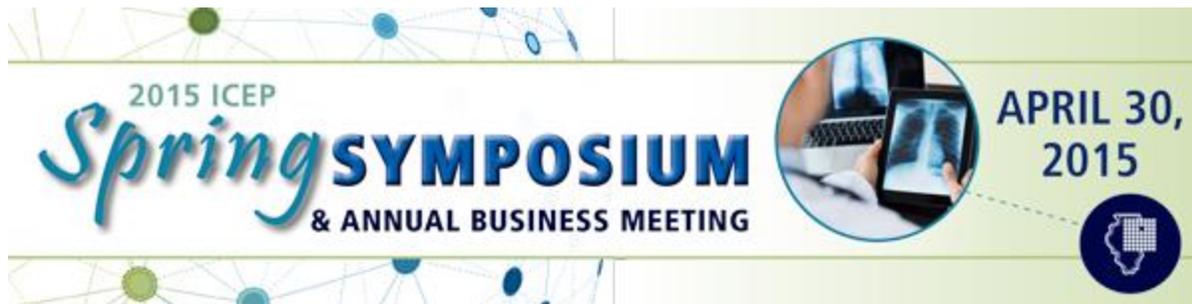
Of 49 participants, 86% strongly agreed or agreed refresher courses would be beneficial. 35 procedures were identified, of which most often mentioned were central venous catheter insertion (28 responses), surgical airway (28), advanced airway (24), and thoracostomy (21). A weighted average of the top-ranked procedures showed high priority for surgical airway (40 points), central venous catheter insertion (38), and advanced airway (30). The most frequently identified facilitator of training was availability of deliberate practice (27 instances), whereas low-quality didactics (19) was most often noted as a detractor. Focus groups revealed issues with current training workshops, with themes including need for a safe learning environment and physical fidelity issues.

### **Conclusion:**

A need was expressed for refresher training across a broad range of procedures, with a majority expressing a need for common procedures.

### **Impact:**

Although faculty's self-reported needs may differ from needs assessed via objective testing, participants indicated considerable need for refresher training.



## Impact of a Chronic Pain Protocol on Emergency Department Utilization

Jon Carl Olsen, MD, FACEP, Joseph Ogarek, MD, FACEP, Eric Goldenberg, MD, Suelo Sulo, MSc;  
Advocate Lutheran General Hospital, Park Ridge, IL

### Background:

Patients suffering chronic pain commonly present to the ED.

### Objective:

The objective was to determine if individualized ED care plans for these patients would reduce the frequency of their ED visits and reduce their controlled substance use.

### Design/Methods:

Frequent visitors (>3visits/6 months or those exhibiting drug seeking behavior) were included. We retrospectively reviewed their ED visit history for the past 6 months, and after enrollment in the protocol prospectively monitored their ED visits for 6 months. We also monitored their controlled substance prescriptions filled in Illinois for the 6 months before and after enrollment in the protocol via the Illinois Prescription Monitoring System. The protocol involved contact with a primary care physician and an agreed upon individualized medication protocol to treat their pain when they returned to the ED. This usually, but not always, restricted the use of controlled substances. The patient was informed of this plan and that their chronic painful condition is best managed by a primary care physician and not in the ED.

### Results:

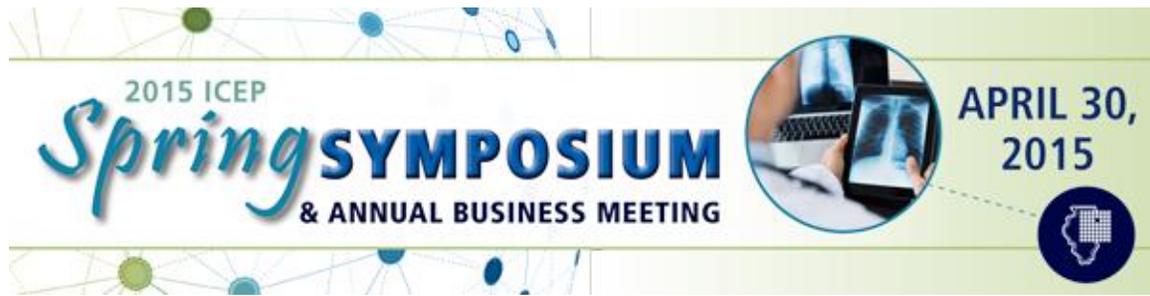
A total of 46 patients (32 females, 14 males) with an average age of 39.9 years were investigated over a period of 14.8 months. Paired-sample t-tests were used for analysis. ED visits significantly decreased from an average of 6.2 visits/6 months before to 2.2 visits/6 months after enrollment ( $p<.001$ ). The number of controlled substance pills prescribed by all providers significantly decreased with an average of 951 pills prescribed in the six months before enrollment to 769 pills in the six month period after enrollment ( $p<.01$ ).

### Conclusion:

Implementation of a chronic pain protocol designed to treat ED patients with chronic pain significantly reduced their ED visits and controlled substance prescriptions.

### Impact:

Protocol implementation may reduce ED crowding and utilization, decrease costs and improve the care of patients with chronic painful conditions.



## A Comparison of Emergency Department Throughput in Geographical vs Rotational Patient Assignment Models

Lindsay Purnell, MD, Jennifer Cash, MD, Erik Kulstad, MD, MS, FACEP,  
Karis Tekwani, MD, FACEP, Chintan Mistry, MD, FACEP;  
Advocate Christ Medical Center, Department of Emergency Medicine, Oak Lawn, IL

### **Background:**

Various methods exist to assign patients to providers in the emergency department (ED), with uncertainty remaining as to which methods may best optimize patient flow. Two of these methods include geographical based (where patients within a specific geographical space in the ED are assigned to specific providers) and rotational based (where patients are assigned to providers based on arrival time, irrespective of geographical placement in the ED).

### **Objective:**

We sought to compare time to treatment measurements in a geographical based patient assignment model to a rotational patient assignment model in a large metropolitan hospital, hypothesizing reduced times to each metric in the rotational patient assignment model.

### **Design/Methods:**

We reviewed data from visits of patients aged 19 years and older seen at our hospital during 2 separate 4 week periods with two different patient assignment models. From May 1, 2012 to May 30, 2012 patients were assigned to physicians via a geographical/acuity model. This was compared with patients seen from June 16, 2012 through July 15, 2012, who were assigned to physicians via a rotational model. We compared length of stay (LOS), time to first provider (TTFP), time to bed (TTB), time to nurse (TTN) and time to disposition (TTD) utilizing nonparametric statistical analysis with correction for multiple statistical tests.

### **Results:**

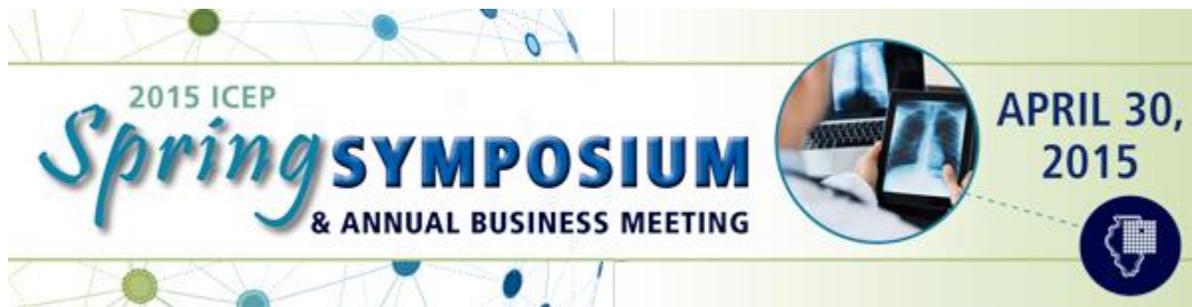
A total of 11,537 visits were analyzed. TTFP for the geographical model was 32 minutes compared with 38 minutes for the rotational model ( $p < 0.001$ ). TTD was also shorter in the geographical model at 182 minutes compared to 193 minutes ( $p < 0.001$ ). Changes in overall LOS, TTN, and TTB were not statistically significant.

### **Conclusion:**

A rotational patient assignment model did not improve emergency department timing metrics when compared to a geographical based assignment model in our hospital.

### **Impact:**

A geographical patient assignment model may optimize ED throughput compared with a rotational model



## Mitochondrial Dysfunction Mediated Myocardial Stunning Following Asystolic Cardiac Arrest

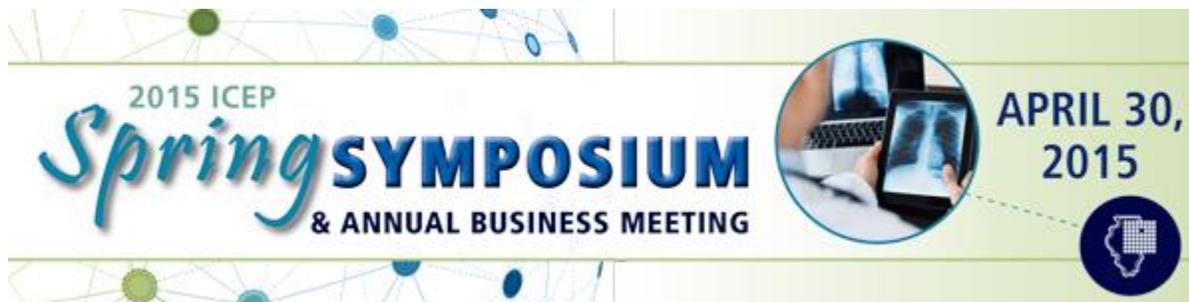
Willard W. Sharp MD, Ph.D<sup>1</sup>, Lin Piao, Ph.D<sup>1</sup>, Yong Hu Fang, MD<sup>1</sup>, David G. Beiser, MD<sup>1</sup>, James Liao, MD<sup>1</sup>, Stephen L. Archer, MD<sup>2</sup>; University of Chicago, Chicago, IL, Queens University Kingston, Ontario, Canada

**Background:** Despite improvements in cardiovascular pulmonary resuscitation (CPR) and post-cardiac arrest care, sudden unexpected cardiac arrest is a leading cause of death worldwide. The pathophysiological mechanisms determining post-cardiac arrest resuscitation success are not understood

**Objective:** To determine the nature and severity of myocardial injury and dysfunction following asystolic cardiac arrest (CA). We also sought to determine the effects of Mdivi-1 (an inhibitor of mitochondrial fission) on post CA outcomes

**Design/Methods/Results:** Asystolic cardiac arrest (CA) was induced in anesthetized, ventilated mice by IV injection of KCL. CPR begun at 4, 8, 12, and 16 minutes post-cardiac arrest had corresponding rates of successful return of spontaneous circulation of 100%, 93%, 71%, and 44% and 2-hour survival of 100%, 67%, 50%, and 11%. Transthoracic echocardiography 15 min post-resuscitation demonstrated percent fractional shortening of 35±3% (Sham), 33±2% (4 minCA), 24±3% (8minCA), 16±1% (12minCA). Myocardial dysfunction persisted for 2 hours post-resuscitation, but slowly recovered to baseline by 72 hours in surviving animals. Despite severe myocardial dysfunction, no evidence of myocardial necrosis, inflammation, apoptosis, or mitochondrial permeability transition pore (MPTP) opening were noted following resuscitation. Increased mitochondrial superoxide post CA assessed by MitoSOX fluorescence was observed in post arrest tissue and in isolated mitochondria. Mitochondria isolated from 12 min CA hearts demonstrated decreased ADP and FCCP stimulated respiration. Mdivi-1, a mitochondrial inhibitor of division improved survival and neurological scores in mice following an 8 min cardiac arrest compared to controls

**Conclusions/Impact:** Severe, time dependent myocardial stunning (contractile dysfunction in the absence of irreversible injury) was observed following asystolic cardiac arrest. This myocardial dysfunction was associated with mitochondrial injury and improved by an inhibitor of mitochondrial fission. Strategies targeting ischemia/reperfusion-induced changes in mitochondrial dynamics hold promise for improving outcomes following asystolic cardiac arrest.



## Idarucizumab, a Specific Reversal Agent for Dabigatran: Immediate, Complete and Sustained Reversal of Dabigatran Induced Anticoagulation Shown in Healthy Male Volunteers

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Marina De Smet, BSc<sup>3</sup>, Dietmar Gansser, PhD<sup>2</sup>, Benjamin Lang, Dipl Math oec<sup>4</sup>,  
Viktoria Moschetti, MD<sup>5</sup>, Steven Ramael, MD<sup>6</sup>, Paul A Reilly, PhD<sup>7</sup>

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<sup>2</sup>Drug Metabolism and Pharmacokinetics, Boehringer Ingelheim Pharma GmbH & Co. KG, Biberach an der Riss, Germany; <sup>3</sup>Clinical Operations, SCS Boehringer Ingelheim Comm. V., Brussels, Belgium;

<sup>4</sup>Clinical Biostatistics, Boehringer Ingelheim Pharma GmbH & Co. KG, Biberach an der Riss, Germany;

<sup>5</sup>Translational Medicine, Boehringer Ingelheim Pharma GmbH & Co. KG, Ingelheim, Germany;

<sup>6</sup>Clinical Pharmacology Unit, SGS Life Science Services, Antwerpen, Belgium;

<sup>7</sup>Clinical Development & Med Affairs, Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, CT

### **Background:**

The new oral anticoagulants are effective alternatives for warfarin, but specific reversal agents are not yet available for these agents to manage life-threatening bleeding or when emergency surgery is necessary. Idarucizumab, a specific reversal agent for dabigatran, is being developed.

### **Objective:**

Safety, tolerability, pharmacokinetics (PK) and pharmacodynamics (PD) of idarucizumab were investigated in a randomized, double-blind, placebo controlled study in 145 healthy male volunteers.

### **Design/Methods:**

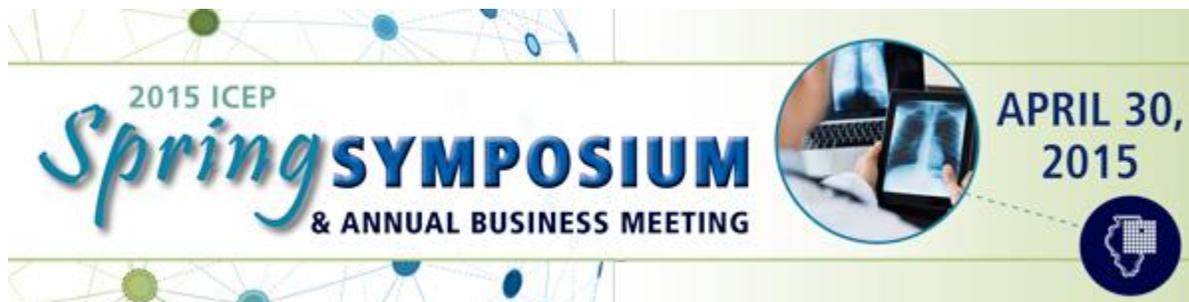
In part I of the study, subjects received single rising i.v. doses of up to 8 g idarucizumab. In part II, idarucizumab doses of 1 g, 2 g and 4 g were administered as 5 min i.v. infusions in the presence of dabigatran (220 mg bid for 4 days).

### **Results:**

All administered doses of idarucizumab were well tolerated. PK measurements of unbound dabigatran indicated idarucizumab binding and thus reversal of the anticoagulant effects of dabigatran occurred directly after infusion. Prolongation of clotting times induced by dabigatran in all clotting assays was reversed to baseline at the end of the 5-minute infusion of the reversal agent. Complete reversal lasted for ~30 minutes after administration of 1 g idarucizumab. Reversal was complete and sustained in 7 of 9 subjects administered 2 g and in all subjects administered 4 g.

### **Conclusion:**

Idarucizumab was well tolerated and led to immediate, complete and sustained reversal of dabigatran induced anticoagulation in healthy male volunteers.



## Effectiveness of Resident Physicians as Triage Liaison Providers in an Academic Emergency Department

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Sushil Jain, MD, MBA<sup>1</sup>, Michael Schmidt, MD, FACEP<sup>1</sup>, Sanjeev Malik, MD<sup>1</sup>;

<sup>1</sup>Northwestern University, Department of Emergency Medicine, Chicago, IL,

<sup>2</sup>Presence St. Joseph Medical Center, Emergency Medicine Physicians, Ltd., Joliet, IL

### Background:

ED overcrowding affects patient satisfaction, door-to-physician time (DTP), length of stay (LOS), and left without being seen (LWBS) rates. Studies show benefit with mid-level and attending triage liaison providers (TLPs), but minimal research exists on resident TLP.

### Objective:

To compare operational performance metrics (DTP, LOS, LWBS), and patient satisfaction between resident and attending TLPs.

### Design/Methods:

This retrospective, observational cohort study was conducted at an urban, academic ED with 88,000 annual visits, 50 residents, and 28 attendings. Eligible TLPs were PGY3/4 residents or attendings. TLP days (11:30-19:30 on 10/2013-1/2014) were compared to baseline (pre-TLP data from 10/2011-1/2012). Primary outcomes were median ED LOS (admitted and discharged patients), median DTP, percentage of LWBS, and proportion of "very good" patient satisfaction scores. Proportions are described with 95% confidence intervals, medians with interquartile ranges, and differences with the t-test and Mann-Whitney U test.

### Results:

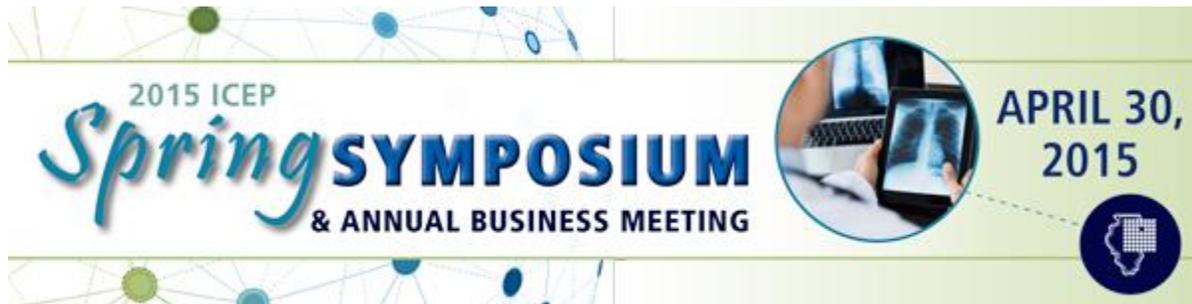
6,683 (resident), 10,814 (attending), and 19,298 (baseline) visits were analyzed. Attending TLP had lower median LOS for admitted patients compared to residents (6.63hrs vs. 6.97hrs,  $p=0.004$ ) or baseline (6.63hrs vs. 7.03hrs,  $p<0.0001$ ). Resident LWBS rate was 3.12% (95%CI 2.73 to 3.55) and attending was 3.08% (95%CI 2.77 to 3.41), both significantly better than baseline (4.71%, 95%CI 4.43 to 5.01). Resident median DTP was 35 min (IQR 17-81), significantly lower ( $p<0.0001$ ) than attending (39 min, IQR 19-87) or baseline (51 min, IQR 21-117). Resident proportion of very good patient satisfaction scores was 55% (95%CI 53 to 56) and attending was 56% (95%CI 55 to 57), compared to baseline (53%, 95%CI 52 to 54).

### Conclusion:

At an academic ED, resident TLP improved DTP times and LWBS more than attendings or historical control. Attending TLP improved patient satisfaction and median LOS of admitted patients more than residents.

### Impact:

These findings may significantly affect ED operations nationwide, especially related to resident usage and implementation of TLPs.



## Analysis of Emergency Department Consultation Times

Peter A. Samuel, MD, MBA, Amer Z. Aldeen, MD, FACEP, Stephanie Gravenor, BS, Sanjeev Malik, MD;  
Northwestern University, Department of Emergency Medicine, Chicago, IL

### Background:

The Emergency Department (ED) team's evaluation is often supplemented by specialist consultation. Consultant evaluation of the patient and their communication regarding plan of care to the ED team can increase throughput time. Reduction in this time may improve ED patient flow metrics as well as reduce costs.

### Objectives:

The goal of this project was to measure consultant times in a busy, urban, academic ED.

### Design/Methods:

Using an innovative time-stamp tool on RedCap, a secure HIPPA-compliant online survey system, emergency medicine (EM) physicians logged the times of specialist consultation request, response, evaluation of the patient, and communication of final plan to the EM team. A total of 56 consults were logged over a six-week period in a convenience sample. Primary outcomes were response time (time from initial page to first response), total consultation time (time from initial page to final plan) and decision-making interval (time from first response to final plan).

### Results:

Mean response time was 15 minutes (95%CI 11 to 19). Mean total consultation time was 134 minutes (95%CI 111 to 156). Mean decision-making interval was 119 minutes (95%CI 96 to 141).

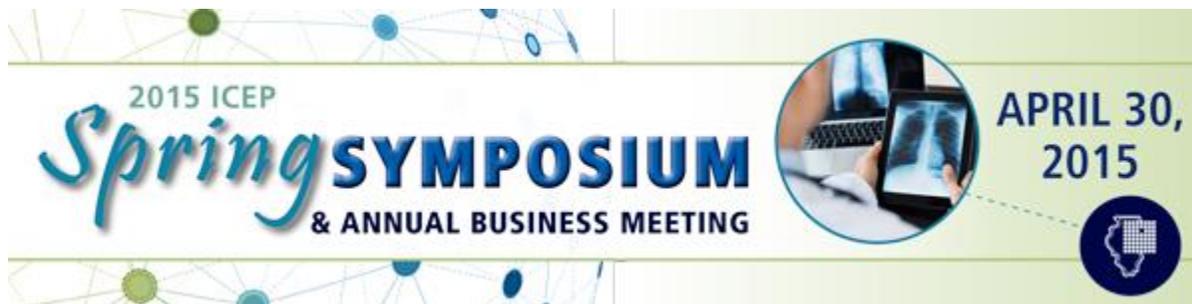
We also compared surgical consults (General Surgery, Neurosurgery, Obstetrics and Gynecology, Ophthalmology, Orthopedics, Transplant Surgery, Trauma Surgery, Urology and Vascular Surgery) versus non-surgical consultants (Cardiac Intensive Care, Gastroenterology, Medical Intensive Care and Neurology). No statistically significant difference was observed between surgical and nonsurgical consults in response time ( $p=0.98$ ), total consultation time ( $p=0.11$ ), or decision-making interval ( $p=.10$ ). However, the data showed trend toward a difference in total consultation time (mean 147 minutes vs. 109 minutes) and decision-making interval (mean 132 minutes vs. 94 minutes).

### Conclusions:

Mean total consultation time for all specialists was greater than 2 hours. Surgical consults showed a trend toward longer total consultation time and decision-making interval.

### Impact:

Specialist consultation adds a significant amount of time to ED evaluation, and further research is needed to develop ways to help mitigate its effect on throughput.



## Trends in Demographics and Outcome of Patients Presenting with Traumatic Brain Injury

Rachel Kadar, MD, Ellen Omi, MD, Yalaunda Thomas, MD, Erik B. Kulstad, MD, MS, FACEP;  
Advocate Christ Medical Center, Department of Emergency Medicine, Oak Lawn, IL

**Background:** Traumatic brain injury (TBI) is a major cause of death and disability, with over 290k hospital admissions, 51k deaths, and 80k permanent neurologic disabilities occurring annually in the US alone. With substantial data on TBI coming from large public datasets that have recently been shown to have limitations in data reliability, analysis of trends and outcomes in reliable databases would be helpful to better understand areas in need of further study.

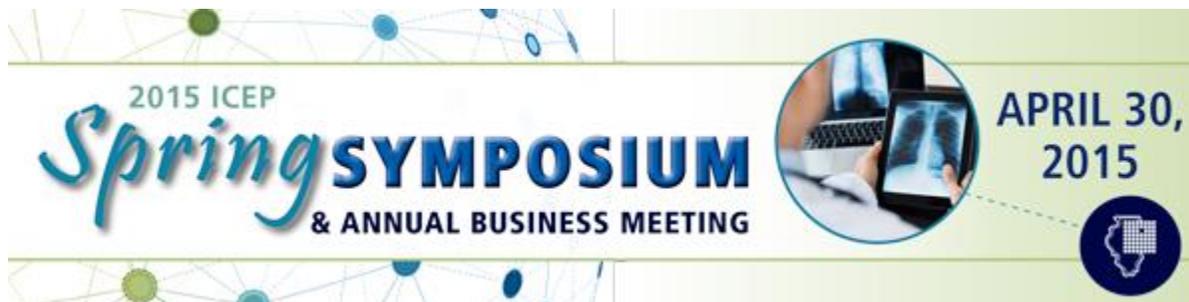
**Objective:** We examined a large, high-quality trauma registry to determine changes in demographics and outcome of patients presenting with TBI over a 9 year timeframe.

**Design/Methods:** We analyzed data from the Illinois Department of Public Health (IDPH) Trauma Registry (a large database maintained by professionals with experience in medical chart abstraction and data entry), retrieving data on patients treated for TBI at our large, tertiary care hospital during the years 2004 to 2012, inclusive. Basic demographics, such as age and gender, and clinical outcome, were analyzed and compared over the years with logistic regression models.

**Results:** A total of 3039 patients with TBI were treated over the study period, with a mean age of 43 years (SD 24) and a median age of 41 (IQR 23 to 60). Age increased steadily throughout the study period, from 32 years in the earliest to almost 49 in the latest. On average, 25% of the patients were female but the percentage of female TBI patients increased throughout the study period, from 16.4% initially, to 27.5% over the last 4 years. Overall mortality was greater for males than females (22.1% versus 17.3%, OR 1.36, 95% CI 1.10 to 1.68). Patient mortality decreased over the entire period (OR 0.88, 95% CI 0.85 to 0.91) overall, with a greater decrease seen in females (OR 0.84, 95% CI 0.78 to 0.90) than in males (OR 0.90, 95% CI 0.86 to 0.94).

**Conclusion:** Although the age of patients presenting with TBI is increasing substantially, these data suggest that overall mortality appears to be decreasing, and this decrease appears greater in females than in males.

**Impact:** Efforts to improve outcomes from TBI appear to be having a positive effect, although the relative contributions from public health measures, pre-hospital care, resuscitation science, intensive care, and rehabilitation, are less clear. The influence of gender, especially in light of recently negative studies of progesterone administered to TBI patients, likewise requires additional analysis.



## Bedside Rounding on Select High-Risk Patients During Emergency Department Handoffs Adds Potential Benefit and Little Time to the Handoff Process

Kristen Grabow, MD, MEd, Samia Farooqi, MD, Peter Samuel, MD, MBA, Scott M. Dresden, MD, MS, FACEP, Danielle McCarthy, MD, MS, Christopher Beach, MD, FACEP; Northwestern University, Chicago, IL

### **Background:**

Patient handoffs in the emergency department (ED) are high-risk and may threaten patient safety. Several standardized handoff formats have been suggested, yet no studies have shown how much added time they contribute to the sign out process, or the impact they have on patient care plans.

### **Objective:**

This study evaluates the effect of adding bedside rounds on select high-risk patients to the existing computer-based handoff system on handoff time and changes in care plan at handoff.

### **Design/Methods:**

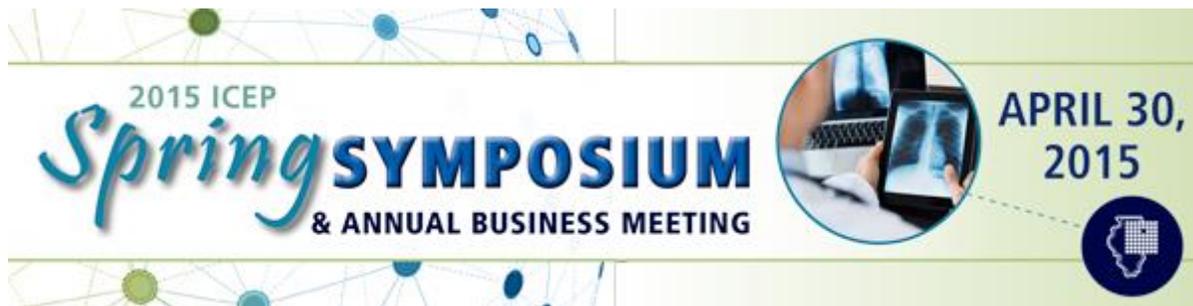
This was a prospective observational study at an urban academic ED (annual volume >88,000) performed over 10 weeks (Aug 2014 – Nov 2014) following the implementation of a standardized sign-out, “Safer Sign Out” (SSO). During SSO, routine computer rounds on all ED patients were followed by bedside rounds on select “high-risk” patients (critical illness, unclear diagnosis/disposition, prolonged ED stay). Data were collected via paper survey completed by physicians at shift change. Descriptive statistics are reported.

### **Results:**

Over the study period, there were 498 shift changes. 224 surveys were completed providing data on 2,168 patient handoffs, 483 of which were identified as high-risk requiring bedside rounds. Among the high-risk patients, 11% (n=51) were identified as having a change to their care plan. The median number of patients signed out was 11 (IQR: 9-13) with a median of 15 minutes (IQR:10-20) spent during computer rounds. The median number of SSO patients receiving bedside rounds was 2 (IQR: 1-3) with a median of 5 minutes (IQR: 3-7) spent at bedside rounds.

### **Conclusion/Impact:**

The addition of select bedside rounding to the computer-based handoff adds a small amount of time but leads to changes in the care plan in >10% of high-risk patients. Further study is necessary to identify the types of changes made, impact on patient safety and satisfaction, and optimal patients for this intervention.



## Examining Insurance Status and Utilization in the Emergency Department Pre- and Post-Affordable Care Act Implementation

Anand Gopalsami, MD, MBA, Matthew Pirotte, MD, Seth Trueger MD, MPH;  
The University of Chicago, Loyola Health System, Chicago, IL

### **Background:**

The three major health insurance coverage expansion elements of the Affordable Care Act (ACA) became effective on January 1, 2014: the individual mandate, insurance exchanges, and Medicaid expansion. The impact on the payer mix in the emergency department (ED) is unclear.

### **Objective:**

Provide initial assessment of ACA coverage expansion by examining changes from calendar year 2013-2014 in insurance status and through a sampling of hospitals in the greater Chicagoland area.

### **Design/Methods:**

Obtained patient level data for calendar year 2013 and 2014 from two hospitals (AMC and community) one year pre- and post- reform measures. Controlled for age, sex, and ethnicity, we compared insurance status and visits/patient by each payer source for CY2013-14.

### **Results:**

Self-pay patients accounted for 14.7% of ED visits in 2013 and 10.8% in 2014. Private was 36.5% in 2013 and 34.3% in 2014. Medicare remained level at 30.8% in 2013 and 30.7% in 2014; Medicaid increased substantially, from 18.0% in 2013 to 24.2% in 2014.

Overall utilization rate, or ED visits per patient, stayed the same from 2013 to 2014 at 1.4 visits per patient, but Medicaid population had a slight rise from 1.5 to 1.6. Uninsured utilization decreased from 1.3 to 1.2 and those with commercial insurance had the lowest 1.2 visits per patient.

### **Conclusion:**

Since the major coverage expansions of the ACA, the share of ED visits from self-pay patients has decreased, with a similar rise in Medicaid visits. Encounters per patient remained constant but Medicaid utilization went up.

### **Impact:**

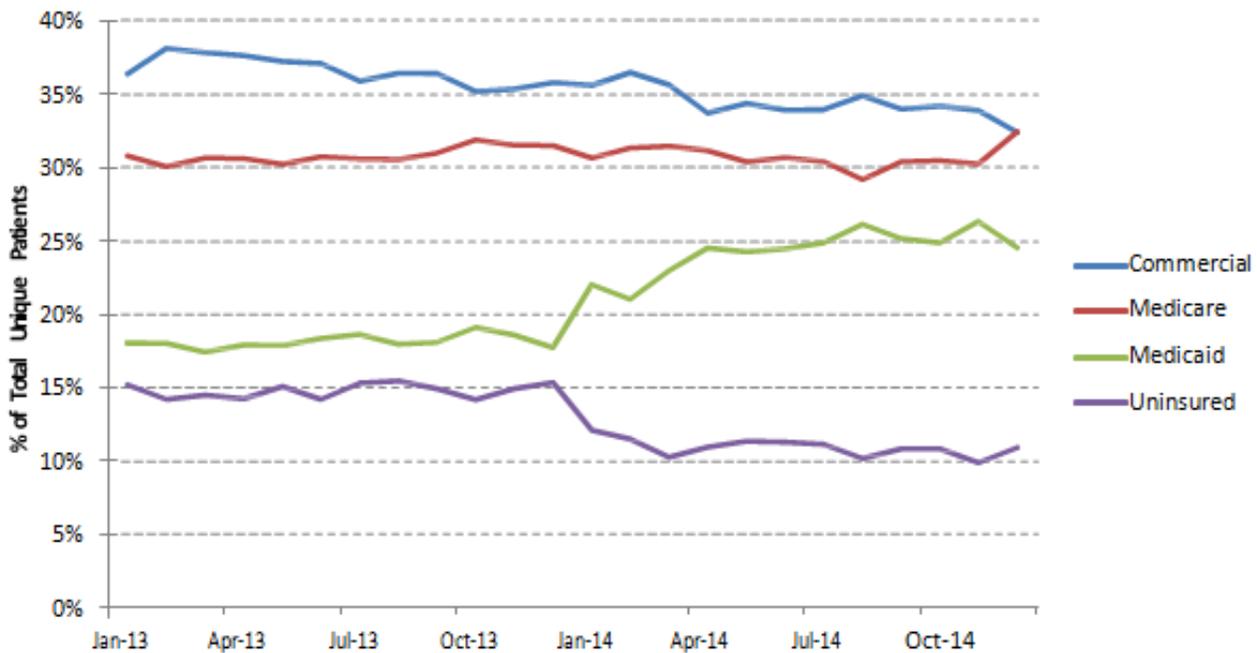
In the hospitals in our sample, the ACA's overall decrease in the fraction of Americans without health insurance was reflected in the payer mix in the ED after ACA implementation. While this is a small sample,

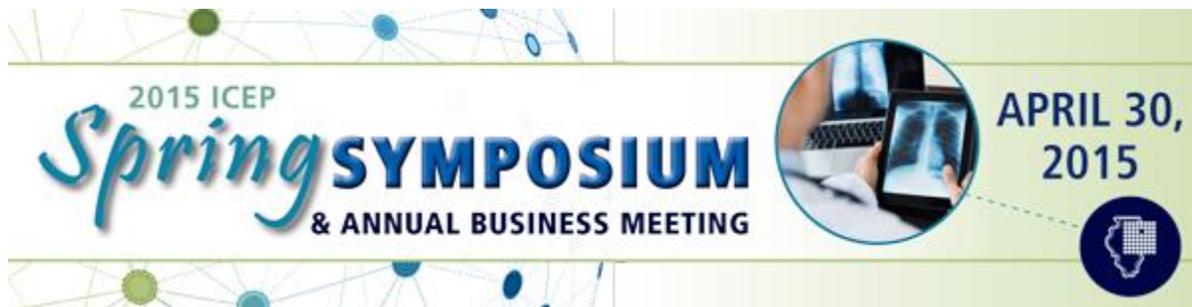


we start to see potential impacts of coverage expansion. Future studies from regional and national datasets will further describe the impact of the ACA's coverage expansion on ED payer mix and utilization of emergency services.

Table:

### Patient Insurance Breakdown in EDs





## Optimization of Physician Scheduling Based on Prior Patient Presentations

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Presence Resurrection Medical Center Emergency Medicine Residency Program, Chicago, IL

**Background:** Prediction of patient arrival patterns over time is critical in establishing scheduling parameters to ensure appropriate staffing in the emergency department.

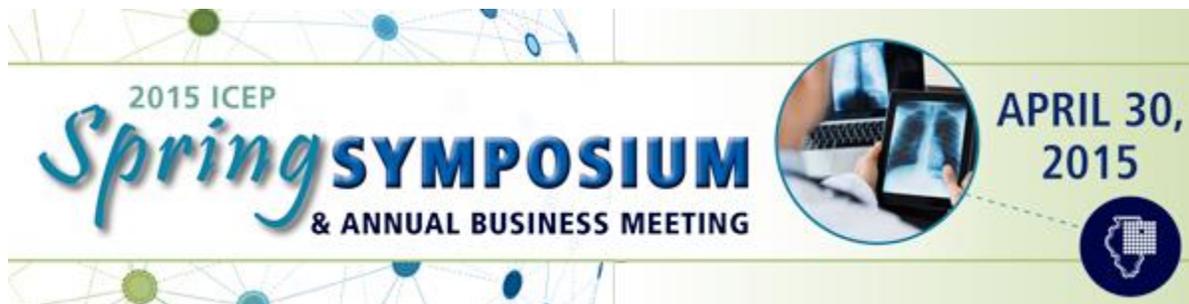
**Objective:** The study objective is to determine if weekly census data in the Emergency Department (ED) follow any patterns or trends allowing computer optimization and better utilization of attending physicians caring for emergency department patients.

**Design/Methods:** This is a feasibility study involving the use of weekly ED census data of three urban/suburban community hospital to determine if optimal physician staffing in an emergency department can be achieved using computer based optimization techniques. ED census of patients seen by the week was calculated for each of three ED site and plotted on time series graphs. Auto correlations were calculated to determine any seasonal or other repetitive influences on the weekly ED census. Auto correlations were considered significant at the 5% level. An optimal ARIMA (auto-regressive integrated moving average) model was fitted for each ED and used to determine if further optimization would be feasible with computer simulation. All calculation performed with Minitab 16 (2010, State College, Pennsylvania)

**Results:** Reviewed were 104 consecutive weeks at site one, 66 weeks at site two and 30 weeks at site three. The mean census per week was 693 (SD:45) at site one, 739 (SD:44) at site two, and 893 (SD:35) at site three. Simple time series plots of each site showed moderate variability but did not show any noticeable pattern. There was no significant auto correlation noted at any of the three sites. An ARIMA model with linear regression and no auto correlation was successfully fitted to each site ( $p < .001$  for all three models) but the linear nature of the model would not allow for further optimization or computer simulation.

**Conclusion:** In this feasibility study of using weekly ED census data to optimize for physician staffing, there were no autocorrelation suggesting patterns useful for predicting future ED volume and thus allowing for improved optimization.

**Impact:** Emergency Physician should proceed with caution when using past ED census data to predict future staffing needs.



## Predicted Mortality As An Additional Measure Of Critical Care Delivery In A Public Hospital Emergency Department

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Erik K. Nordquist, MD, Errick Christian, MS, Steven H. Bowman, MD <sup>7</sup> #-h;  
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### Background:

The RRC currently utilizes ICU admission rate as a surrogate for ED critical care delivery. However, critically ill patients who satisfy ICU admission criteria on arrival often are aggressively managed, stabilized, and downgraded to lower acuity patient care settings. Since the patient ultimately is not admitted to the ICU, they are not counted as critically ill by current methodology.

### Objective:

Evaluate an additional measure to identify critically ill patients in the ED rather than admission destination alone.

### Design/Methods:

The study was conducted at a large public hospital. A cohort of patients who presented to the ED during a two-month period and had a MICU evaluation were identified retrospectively. Predicted mortality scores were calculated for these patients using SAPSII using data contained in the EMR. Predicted mortality rates were compared between groups who were admitted to the MICU versus those who were not. Those patients not admitted to the MICU were also compared to a control group of patients admitted to non-critical care settings.

### Results:

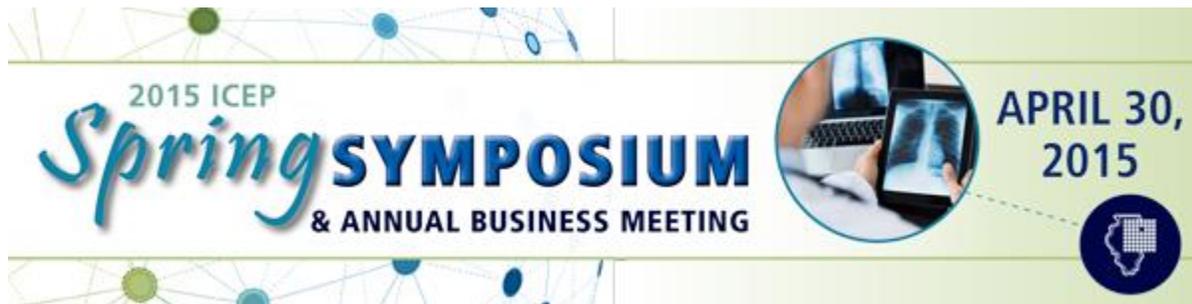
SAPSII scores were calculated for 121 patients. 62 patients- MICU evaluation and accepted: 31 patients- MICU evaluation and not accepted; 28 patients- no MICU evaluation, admitted to a non-critical care setting. The mean estimated mortality was 17.2% (95% CI 12.0%-22.3%), 10.6% (6.9%-14.3%), 4.3% (2.6%-6.0%), respectively. The difference in mean predicted mortality between MICU admissions and those that were not accepted was statistically significant ( $t=2.0$ ,  $p=0.044$ ). The difference in mean predicted mortality between those that were not admitted to the MICU and the control group was also statistically significant ( $t=3.0$ ,  $p=0.004$ ).

### Conclusion:

This study identified a cohort of patients with a significantly higher predicted mortality that was not admitted to a critical care setting.

### Impact:

ICU admission rate may not accurately reflect ED patient acuity, critical care delivery, or critical care education. Alternative metrics may need to be considered.



## Abnormal Vital Signs Fail as a Predictor of Patients Returning to the Emergency Department

**Tomasz Przednowek, Medical Student, John W. Graneto, DO, FACOEP, FACEP;  
Midwestern University, Downers Grove, IL, Swedish Covenant Hospital, Chicago, IL**

### **Background**

One quality measure in Emergency Medicine is to review records of patients returning for possible missed pathology.

### **Objective**

Can abnormal vital signs serve as a predictor of patients returning to the Emergency Department within 48 hours?

### **Design/Methods**

This study was a retrospective review of patient records of those patients who returned to the Emergency Department within 48-hours at Swedish Covenant Hospital (Chicago, IL) between January 1, 2014 and June 17, 2014, looking at vital signs at initial visit discharge. 100 adult patients who were not 48-hour return patients served as controls, and  $X^2$  tests were conducted for statistical significance.

### **Results**

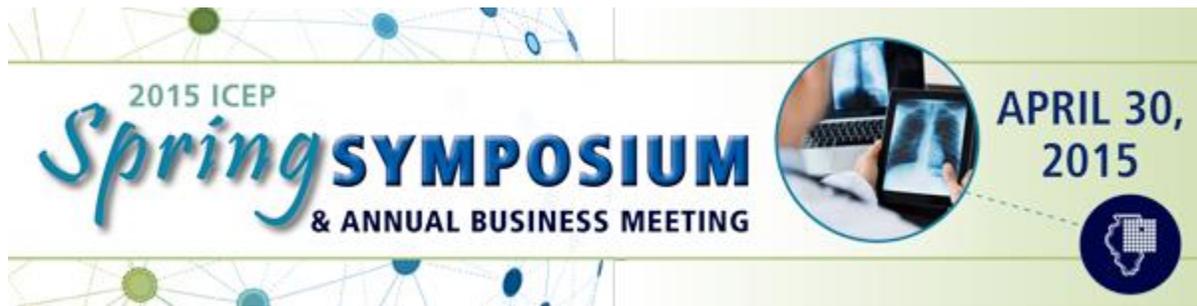
46 patients (14% of 48-hour return patients) had at least one abnormal vital sign in the general 48-hour return population, while in the control population, 21 individuals (21% of control patients) had at least 1 abnormal vital sign at discharge. The control population contained 1 abnormal temperature (1%), the general 48-hour return population contained 2 abnormal temperatures (0.6%). The control population contained 13 abnormal heart rates (13%), 29 were recorded in the 48-hour return group (9%). No abnormal respiratory rates were found in either population. The control group contained 7 abnormal systolic blood pressure readings (7%), 10 were found in the 48-hour return population (3.1%). 1 abnormal diastolic blood pressure was found in the control group (1%), 6 were found in the regular 48-hour return group (2%). One abnormal pulse oximetry reading was recorded in the 48-hour return population (0.3%), no abnormal recordings were found in the control group.

### **Conclusion**

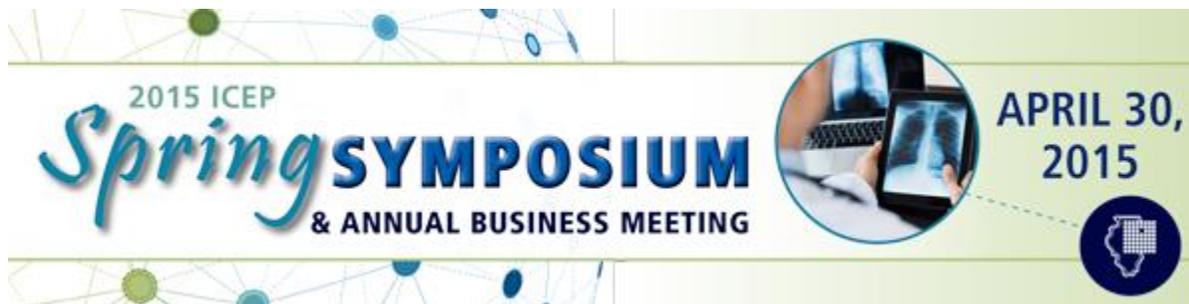
When compared to the control group, there was no significant association between abnormal vital signs at discharge and the likelihood of the patient being a 48-hour return patient.

### **Impact**

In contrast to previous studies, these data do not support vital signs as predictors of 48 hour patient returns.



Vital Sign	Number of normal values in General 48-hour Return group	Number of <u>abnormal</u> values in General 48-hour Return group	Number of normal values in Control group	Number of <u>abnormal</u> values in Control group	X <sup>2</sup> test for statistical significance between the two groups
Temperature	322 (99.4%)	2 (0.6%)	99 (99%)	1 (1%)	No statistically significant difference
Heart rate	295 (91%)	29 (9%)	87 (87%)	13 (13%)	No statistically significant difference
Respiratory rate	324 (100%)	0 (0%)	100 (100%)	0 (0%)	N/A (No abnormal values present)
Systolic blood pressure	314 (96.9%)	10 (3.1%)	93 (93%)	7 (7%)	No statistically significant difference
Diastolic blood pressure	318 (98%)	6 (2%)	99 (99%)	1 (1%)	No statistically significant difference
Pulse oximetry	323 (99.7%)	1 (0.3%)	100 (100%)	0 (0%)	No statistically significant difference



## In-Flight Medical Emergencies (IFMEs): A Survey of Physicians' Knowledge Base

Joshua Timpe, MD, Marc Squillante, DO, FACEP, Courtney Cook, MD, Eric Chatfield, MD, Paulo Alves, MD, Claude Thibeault, MD, John Vozenilek, MD, Raymond Bertino, MD; University of Illinois College of Medicine, OSF Saint Francis Medical Center, Peoria, IL

**Background:** The exact number of IFMEs is unknown. However, ground based medical support systems receive approximately 1 call every 600 flights. In many events volunteer physicians are called upon for assistance. IFMEs provide unique challenges to anyone responding. Physician's knowledge of IFMEs is unknown.

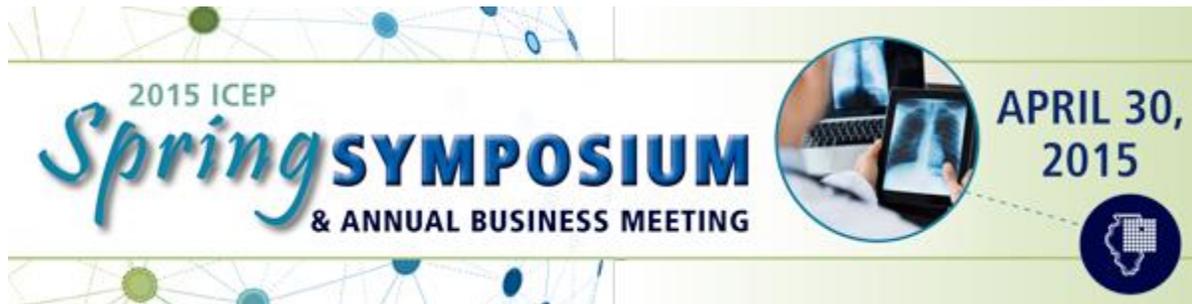
**Objective:** Assess physicians' knowledge with regards to IFMEs including available medications and equipment, legal ramifications, and protocols.

**Design/Methods:** A 20 question survey was distributed to all physicians at 3 hospitals in a moderately sized metropolitan area (population 373,600). 418 responses were collected (32% response rate). Responses were analyzed by percentages and cross-tabulated with years of practice experience, number of flights per year, and number of in-flight emergencies.

**Results:** Specialty demographics were 70% medical, 20% surgical and 10% other. Forty percent had been in practice 20 years or greater and 25% were residents in training. Ninety-two percent of respondents fly on average 1 or more times yearly. Forty-five percent either "rarely" or "infrequently if ever" encounter high acuity situations in general practice. Knowledge questions demonstrated only 34% of respondents correctly identified the most common medical complaint. Fifty percent had no understanding of which medical supplies were available and 1% expressed they were very familiar with medications and equipment provided. Only 18% were sure the US has a Good Samaritan law applied to IFMEs.

**Conclusion:** There is a general lack of knowledge amongst physicians in our survey regarding in-flight medical emergencies.

**Impact:** Understanding the knowledge base of physicians in regards to medical emergencies can lay the groundwork for future educational efforts.



## Assessment of a Therapeutic Hypothermia Protocol for Out-of-Hospital Cardiac Arrest at a Community Teaching Hospital

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### **Background:**

The American Heart Association (AHA) guidelines for therapeutic hypothermia (TH) after cardiac arrest cite a goal core temperature of 32° to 34°C to be maintained for 12 to 24 hours. No standard treatment protocol has been described to achieve these goals.

Patients in our ED with return of spontaneous circulation after out-of-hospital cardiac arrest are considered for TH. Patients are cooled with one or more of the following: an iced 2000 ml rapid IV infusion of 0.9% NaCl, gastric lavage with iced 0.9% NaCl, or external cooling pads. The core temperature is measured hourly using an esophageal probe. Patients receive sedation with fentanyl combined with either midazolam or propofol. Paralysis with cisatracurium is initiated if shivering occurs.

### **Objective:**

Report our compliance with the AHA's guidelines using the described protocol.

### **Design/Methods:**

Retrospective chart review.

### **Results:**

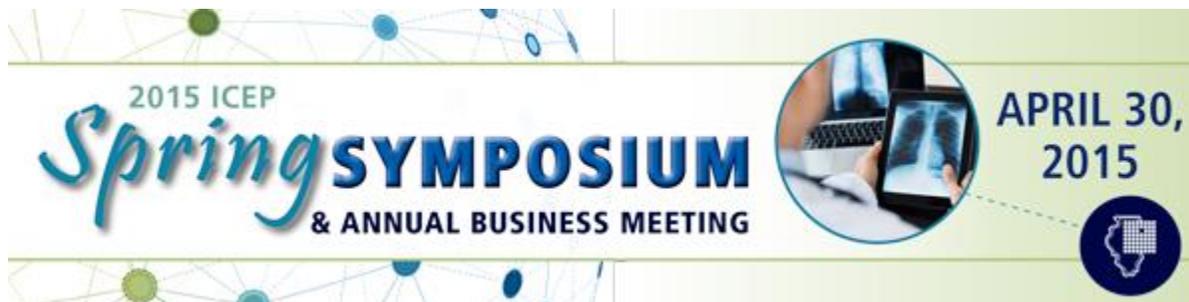
23 charts were reviewed. The median time from cooling initiation to core temperature of 34°C was 120 minutes. The average duration of TH was 21 hours and 53 minutes. Seven of 23 (30%) patients experienced a drift of their core temperature outside of the target range of 32°-34°C. None of these patients' core temperatures deviated more than 1°C outside of the target range for more than two hours. Protocol violations involving inappropriate duration of therapy were identified in five (21%) of cases, with two patients cooled for less than 12 hours and three patients cooled for more than 24 hours.

### **Conclusion:**

This described TH protocol achieved the goal core temperature in an average of two hours. Approximately one-third of patients experienced some deviation of core temperature outside of the goal range. Inappropriate cooling duration was the only protocol violation found.

### **Impact:**

The described ED protocol may be used to successfully implement TH after out-of-hospital cardiac arrest.



## Identification and Follow-up for Incidental Findings at Emergency Department Discharge - A Coordinated Quality and Safety Improvement Initiative

Theodore F. Elsaesser, MD, Christopher A. Frantz, MD, Matthew J. Kuhns, MD, Juliet E. Seery, MD, Ashley E. Amick, MD, Christopher B. Beach, MD, FACEP; Northwestern University, Chicago, IL

### **Background:**

Incidental findings, or unexpected test results, are frequently encountered in the ED. Literature suggests that communication of these findings is inadequate, and follow-up is inconsistently provided. Failure to address incidental findings results in medico-legal exposure, patient dissatisfaction and places patients at risk.

### **Objective:**

To create a process which clearly documents incidental findings occurring in the ED, reliably communicates these to the patient and improves follow-up care.

### **Design/Methods:**

Analysis of the current process for incidental findings at our institution revealed that management was contingent upon provider identification, manually entering recommendations into the discharge paperwork, and coordinating follow-up. To improve this process, educational sessions for providers were developed and an incidental findings section was added to the EMR discharge process. If selected, this section prompts questions regarding the finding, follow-up, and the timeframe for surveillance. This information is uploaded into customized discharge paperwork. Patients are automatically linked to a referral service to coordinate follow-up. Periodic educational reminders were provided to staff through emails and announcements.

### **Results:**

Data regarding this process was gathered between September 2013 and August 2014. During this period of time, there were 1,229 incidental findings identified, documented and flagged for follow-up (Table). There were an average of 5 findings per day, 34 per week and 137 per month. This represents an incidence of 1.5% among the 84,527 ED visits during the study period. There exists no national data for comparison.

### **Conclusion:**

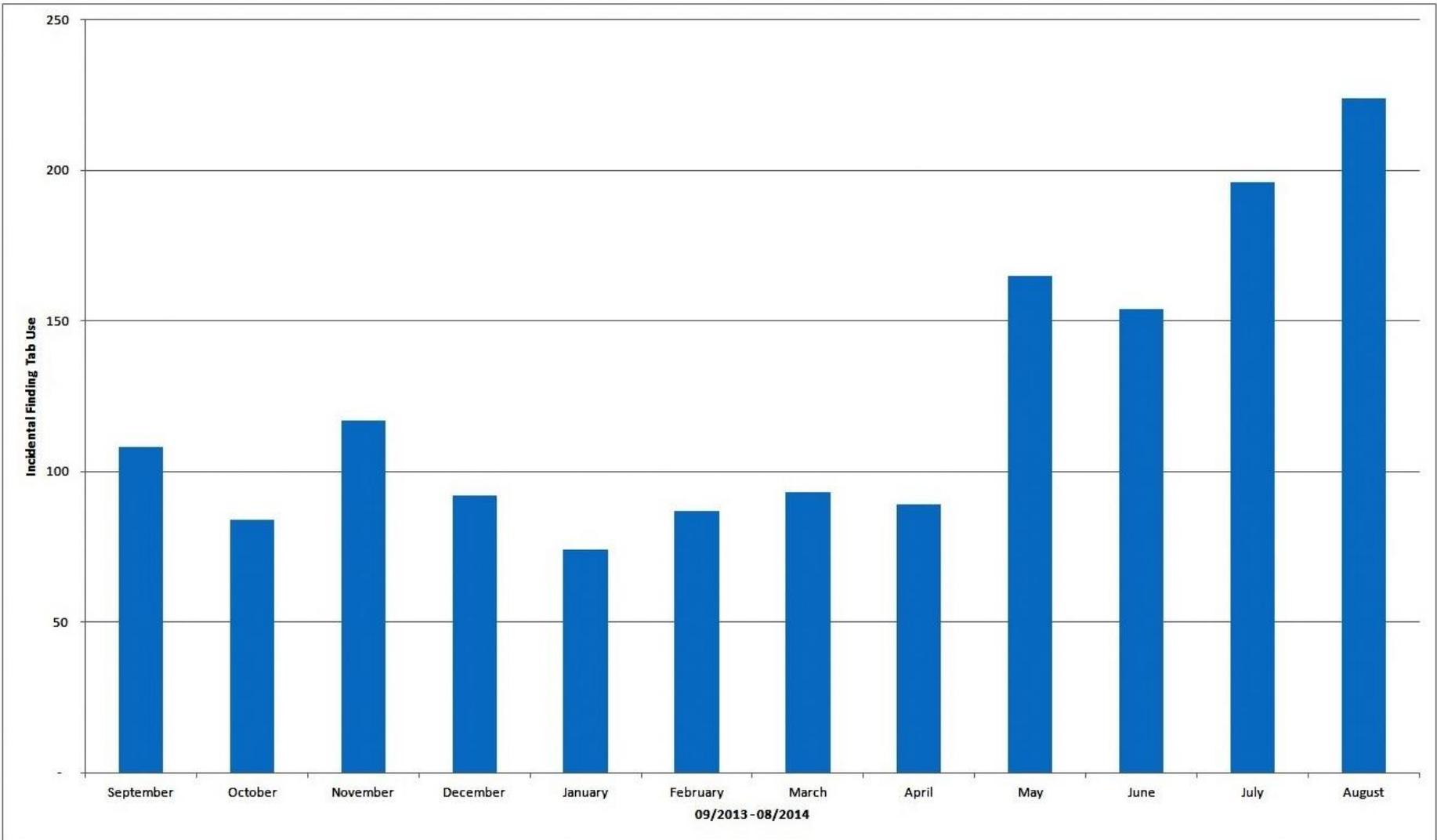
We describe a process improvement and patient safety solution to reliably document and communicate results, as well as coordinate follow-up for patients with incidental findings in the ED. We reveal the rate of these findings for discharged patients from one large, academic, urban ED.

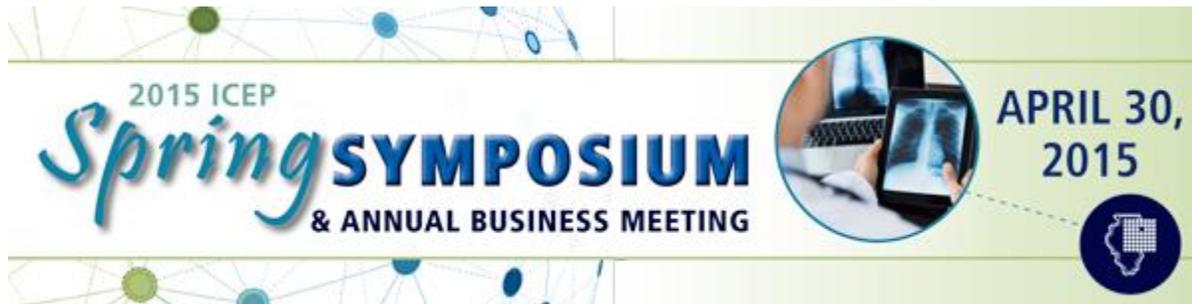
### **Impact:**

Although validation is still necessary, we believe this process addresses an important area of risk and patient safety, which can be adopted at other institutions.

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## An Emergency Medicine Orthopedics Rotation at a Large Urban Teaching Hospital: The Resident Experience

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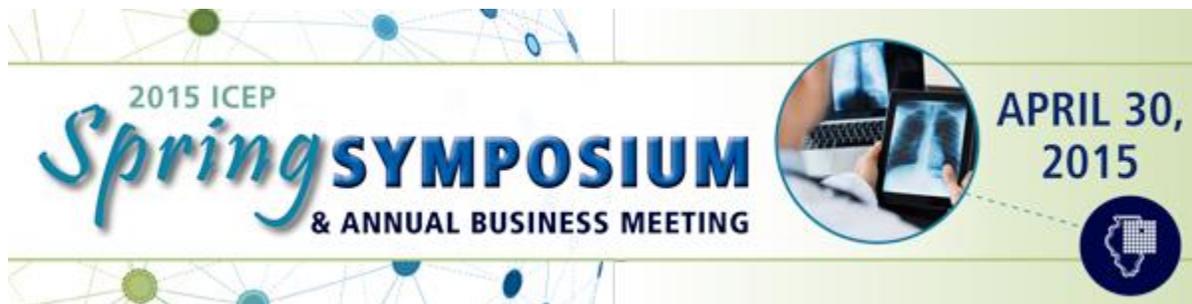
**Background:** Orthopedic injury management is a crucial aspect of an emergency medicine (EM) resident's training. In our program, EM residents complete an Emergency Department (ED) based orthopedic rotation during the EM-2 year. During the 4 week rotation, they work approximately 100 clinical hours in our "Fast Track" primarily assessing patients with musculoskeletal injuries. Residents maintain logs documenting the number of fractures and dislocations treated, and the number of reductions performed. The log serves as documentation of the Residency Review Committee's (RRC) procedural requirement of the performance of 10 joint reduction during residency.

**Objective:** The purpose of this study was to determine the distribution of injuries residents most commonly encountered during the rotation and the extent to which program requirements are met.

**Design/Methods:** Data from five years of patient logs were tallied and categorized into anatomic groupings by the study authors. IRB approval was granted.

**Results:** 84 resident logs from a 5 year period were analyzed. A total of 1798 fractures and 155 joint dislocations were logged. The most common fractures were metacarpal (345), distal radius (255), and ankle (187) fractures. The most common joint dislocation was the shoulder (67). 24% (423) of fractures required reduction, which were performed by the EM resident. On average, residents treated 21 fractures; and reduced 5 fractures and 2 dislocations during the rotation. The range of fracture reductions performed by each EM resident was 0-24 with a median of 5. Dislocation reductions ranged from 0-6 with a median of 1.

**Conclusion/Impact:** Residents achieved excellent exposure to a broad range of musculoskeletal injuries during a 4 week EM based rotation. The experience gained during the rotation, provides a foundation in the management of common orthopedic injuries that will be useful in emergency medicine practice.



## Patient-Identified Correlates of Emergency Department Use: A Qualitative Analysis of the Illinois Medical Home Network

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Rush University Medical Center, Chicago, IL

**Background:** Frequent and non-urgent emergency department (ED) visits continue to plague healthcare in terms of disease management and wellness as well as costs. In 2012, the State of Illinois implemented the Medical Home Network (MHN) where Medicaid-eligible individuals were assigned to a primary care provider to, in part, reduce overreliance on EDs. However, some MHN patients continue to visit the ED. While previous research focuses on data gleaned from patient medical records and other quantitative or survey measures, scarce knowledge exists regarding the patient perspective on ED use.

**Objective:** The purpose of this qualitative study is to identify the barriers to primary care use, facilitators of ED use, and psychosocial correlates of ED use from the patient's perspective within the context of the MHN. The study is innovative as it examines the patient perspective within an active emergency setting.

**Design/Methods:** Sixty patients who present themselves to an ED at a large, urban medical center will take part in one-time, individual interviews.

**Results:** Of 88 patients approached for participation, 43 accepted the invitation. To date, data for 22 participants have been analyzed using the grounded theory approach. We have identified preliminary themes and subthemes. See Table 1.

**Conclusion:** Findings may inform subsequent interventions such as the use of community health workers as liaisons between the ED, clinics, and patients. Ultimately, addressing barriers to primary care and psychosocial factor such as stress management can lead to decreasing ED use and increasing continuous primary care use for vulnerable patients.

**Impact:** Community health workers may work with ED staff to identify vulnerable patients and link them to primary care. Community health workers may also provide appointment follow-up assistance by addressing barriers to and related psychosocial factors affecting consistent primary care use.

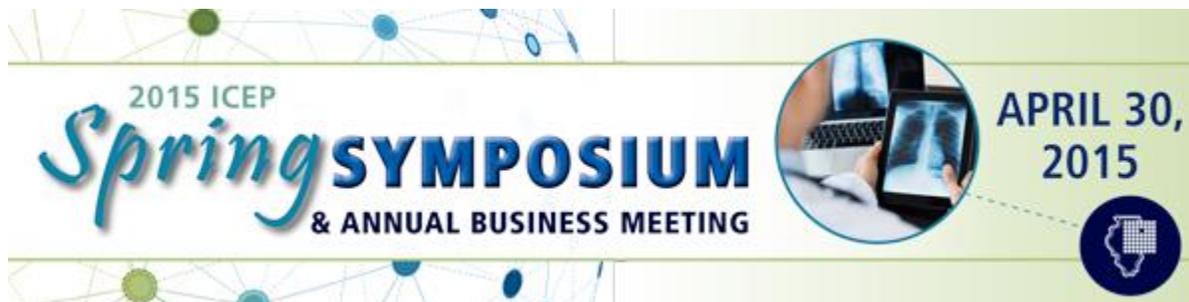
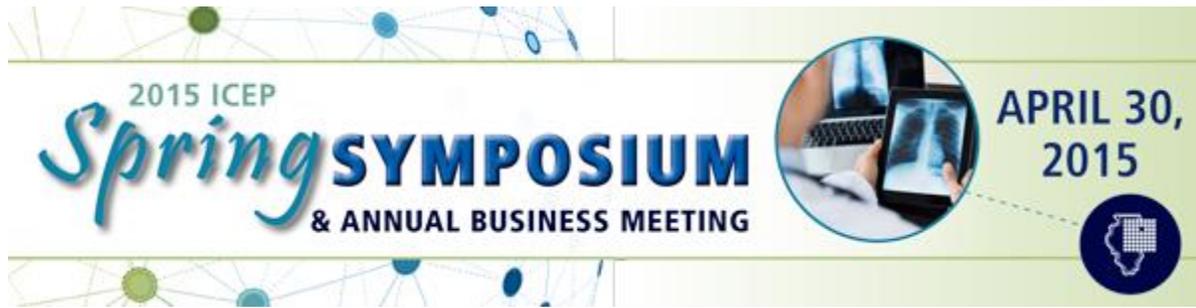


Table 1: Preliminary Themes and Subthemes Regarding Barriers, Facilitators, and Psychosocial Correlates of Emergency Department Use

Theme	Barriers to Visiting a Primary Care Provider	Elements of the Emergency Department Visit	Stress and Mental Health Concerns
<b>Definition or Conceptualization of Theme</b>	Participants articulated various reasons for not visiting a primary care provider prior to an emergency department visit.	Participants indicated various circumstances that led to their emergency department visit.	Participants stated the presence of multiple sources of stress in their daily lives. Additionally, they indicated mental health issues and diagnoses.
<b>Subthemes</b>	<ul style="list-style-type: none"> <li>• Appointment needed</li> <li>• Scheduling</li> <li>• Lack of convenience regarding work schedules</li> <li>• Provider availability</li> <li>• Lack of time</li> <li>• Crowded clinics</li> <li>• Lack of connection to a primary care provider</li> <li>• Hospital preferences</li> <li>• Reason for emergency department visit deemed as urgent and inappropriate for a primary care environment</li> </ul>	<ul style="list-style-type: none"> <li>• Pain</li> <li>• Numbness</li> <li>• Visited the emergency department 4 times or less during the previous 12 months</li> </ul>	<ul style="list-style-type: none"> <li>• Family</li> <li>• Work</li> <li>• School</li> <li>• Overall health rating of average or fair</li> </ul>
<b>Number of Participants Supporting Theme</b>	17/22	17/22	17/22



## Malignant Hyperthermia: How Prepared is the Emergency Department

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Rachel Kacmar, MD, Matthew Kuhns, MD, Dana Hirsch, MD;  
Northwestern University, Chicago, IL, University of Colorado School of Medicine, Aurora, CO

**Background:** Malignant hyperthermia (MH) is a rare but potentially life-threatening condition that can be triggered through the use of specific drugs. While this condition is more likely to occur in the operating room, it can occur in the ED secondary to the use of succinylcholine. Patients who suffer an MH crisis at an ambulatory surgery center may be transferred to a hospital ED. Recognition and dantrolene administration is life-saving in patients with a MH crisis.

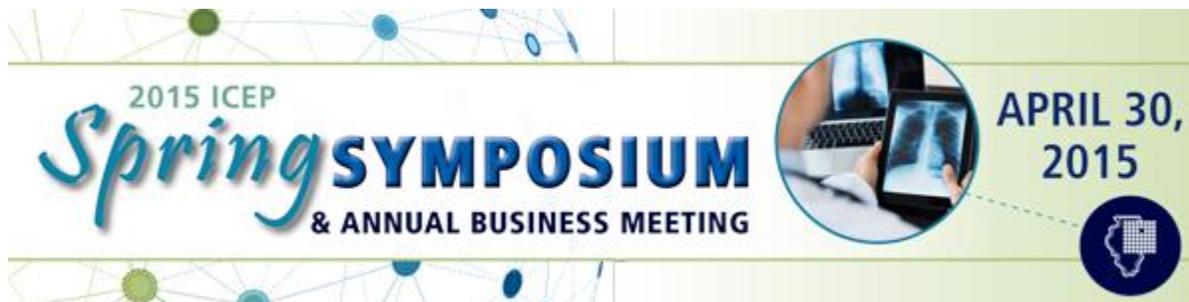
**Objectives:** Our goals were to evaluate the awareness of emergency physicians (EP's) of MH, its potential triggers, and its treatment.

**Methods:** Two surveys were developed by the investigators, one directed at residency program directors (PD's) and one directed at core faculty. After approval by the IRB, face validity was assessed by sending the survey to EP's at two Chicago institutions. An email containing the two surveys was sent to the PD's via listserv. The PD's were asked to complete the survey and forward the faculty survey on to their core faculty members.

**Results:** 107/160 PD's (67%) and 165 core faculty members completed the survey. 4.2% of faculty members noted seeing a suspected case of MH after rapid sequence intubation, and 17.0% reported seeing a suspected MH case transferred from an outpatient setting. 41.2 % indicated they knew where dantrolene was stored in their respective departments. Almost all providers were unaware of the MH hotline, but 77% agreed it was important for EP's to receive education on MH.

**Conclusion:** MH remains a rare diagnosis in the ED, but it may present as a transfer from an outpatient setting. EP's admittedly are unprepared for a MH diagnosis in their ED's but are willing to learn more.

**Impact:** It is our hope that our survey study will identify a gap in formal education regarding MH.



## There's an App for That? Difficulty in Finding Clinically Relevant Apps for Use in the Emergency Department

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University of Chicago Emergency Medicine Residency, Chicago, IL, University of California, Irvine, CA

### **Background:**

Use of personal mobile devices in the medical field has grown quickly; a large proportion of physicians use their mobile devices as an immediate resource for clinical decision-making, prescription information and other medical information. The iTunes App Store (Apple, Inc.) contains approximately 20,000 apps in its "Medical" category, providing a robust repository of resources for clinicians; however, this represents 2% of the entire App Store. The App Store does not have strict criteria for identifying content specific to practicing physicians, making identification of clinically relevant content difficult.

### **Objective:**

To quantify characteristics of existing medical applications in iTunes App Store that could be used by Emergency Physicians, residents, medical students.

### **Design/Methods:**

Applications related to emergency medicine were found by searching the iTunes App Store for twenty-one terms representing core content areas of Emergency Medicine, such as "emergency medicine," "critical care," "orthopedics," and "procedures." Two physicians independently reviewed descriptions of these applications in the App Store and categorized each as: Clinically Relevant, Book/Published Source, Non-English, Study Tools, or Not Relevant. A third physician reviewer resolved disagreements about categorization. Descriptive statistics were calculated.

### **Results:**

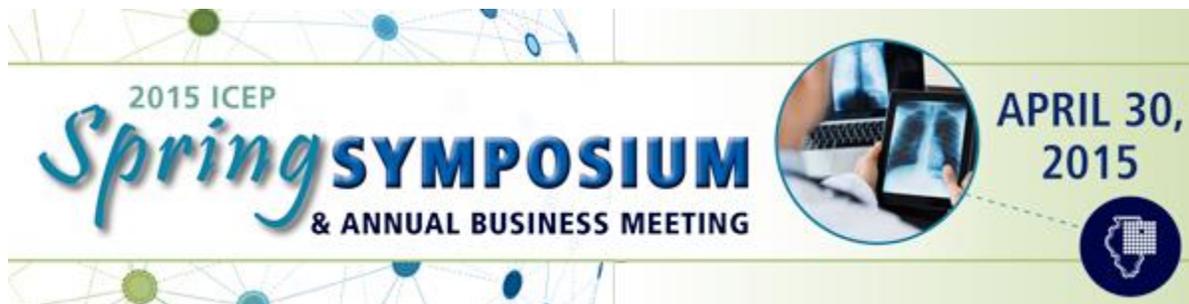
7699 apps were found from the twenty-one search terms, 1018 (13.22% were clinical, 631 (8.2%) were based on a book or published source, 158 (2.05%) were non-English and 514 (6.68%) were study tools. 5203 (67.6%) were considered not relevant to medical professionals. Clinically relevant apps make up approximately 5.01% of the App Store's "Medical" Category and 0.1% of the overall App Store.

### **Conclusion:**

Clinically relevant apps represent a small percentage (6.86%) of the total App volume within the Medical section of the App Store. Without a structured search and evaluation strategy, it may be difficult for the user to identify this potentially useful content.

### **Impact:**

Given the increasing adoption of devices in healthcare, national Emergency Medicine associations should consider curating these resources for members.



## Use of Levetiracetam for Seizures in the Emergency Department

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Presence Resurrection Medical Center Emergency Medicine Residency Program, Chicago, IL

**Background:** Patients presenting to the Emergency Department (ED) for seizures is a common occurrence. In recent years, single dose Levetiracetam therapy has gained popularity for its role in seizure prophylaxis with regards to patients suffering from head trauma. Its ED use for seizures in the non-trauma population has not been studied to date.

**Objective:** To describe the use of Levetiracetam for seizure in the community ED.

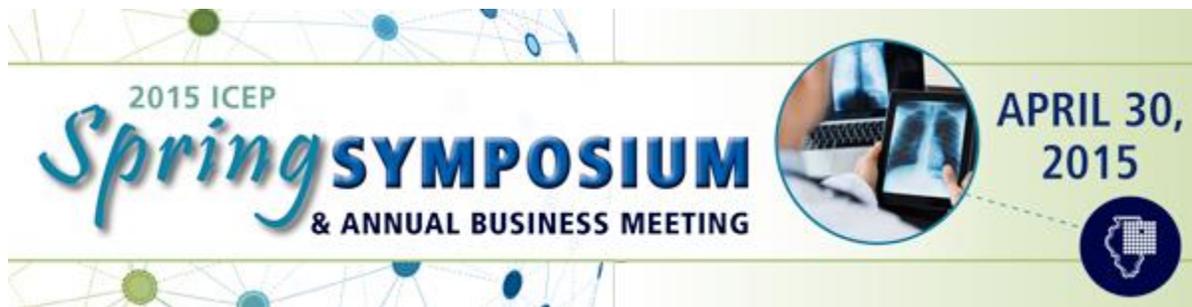
**Design/Methods:** Retrospective, six months electronic chart review of seizure patients from three community ED. Reviewed were patients  $\geq 18$  with chief complaint of seizure and discharged with a diagnosis of seizures. Excluded were patient with status epilepticus, major head trauma, alcohol abuse, or metabolic causes. Abstracted were age, gender, chief complaint, prior history of seizures, current AED (anti-epileptic drug), AED given in the ED, and prescriptions for AED upon discharge from the ED. Descriptive statistics were calculated and given as percentages with 95% confidence interval (CI).

**Results:** There were 212 patients with mean age of 41.0 years (SD 15.4) and 58.5% male. A past history of seizures was recorded on 92.5% of the patients but only 75.5% claimed to be taking AED. In the ED, an AED was given to 55.7% of patients (118/212).

Levetiracetam was the most common single AED given in the ED at 35.5% (95% CI 26.5, 45.6). As a single agent given in the ED, Levetiracetam was given to 66.7% (CI 45.2, 82.9) of patients not previously on a prior AED (14/21). Upon discharge from the ED, Levetiracetam was prescribed as a new AED in 69.0% (95% CI 50.6, 82.9) of the cases, including 55.2% (95% CI 37.5, 71.6) of patients on no previous AED.

**Conclusion:** In this study from three community hospitals, Levetiracetam was given in the ED to 66.7% of patients not previously on prior AED and upon discharge to 69.0% of patients given a prescription for a new AED.

**Impact:** For Emergency Physicians contemplating a new AED to be given in the ED or upon discharge, reviewing the recent trend for Levetiracetam may be useful.



## Can You Identify High Risk Pulmonary Embolism Patients Based on EKG and Echocardiogram Results?

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**Background:** Pulmonary embolism (PE) is a common disease entity occurring in approximately 1 in 1000 people each year. As a cause of death, massive/saddle PE is second only to sudden cardiac death. Some suspected PE patients in the ED may become unstable prior to a diagnostic CT study and a clinical decision regarding thrombolysis must be made. Bedside ED-based echocardiograms are becoming more prevalent.

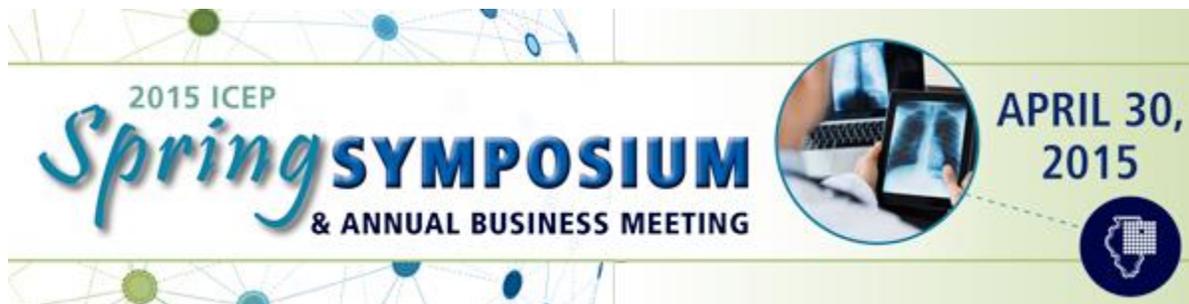
**Objective:** To determine if there were common EKG or echocardiography findings suggestive of massive pulmonary emboli, such as a saddle embolus.

**Design/Methods:** This is a 5-year retrospective medical record review from a community teaching hospital with its own Emergency Medicine residency program. Following IRB approval, all ED patients age >18 admitted to the hospital with a new PE were reviewed. Excluded were cardiac arrest patients and those without CT confirmation of PE. Data collection included demographics, location and type of PE, ECG findings, and echocardiogram results. Comparisons between groups were made using Chi-squared or ANOVA as appropriate. Significance was set at 0.05.

**Results:** There were 674 cases of PE reviewed over the five-year study period. 73 were not diagnosed by CT scan and thus excluded, leaving a study group of 601. The mean age was 68.6 years (SD:16.0) with 42.3% males. By location, 32.8% were unilateral sub-segmental, 37.8% bilateral sub-segmental, 15.3% unilateral mainstem, 9.1% bilateral mainstem, and 5.0% saddle. On EKG, the presence of S1Q3T3 increased from 4.1% for unilateral sub-segmental to 33.3% for saddle emboli ( $P<0.001$ ). RBBB increased from 5.1% to 13.3% ( $P=0.006$ ). 320 cases (53.2%) had an echocardiogram performed. RVH, diagnosed by echocardiogram, increased from 7.5% of unilateral sub-segmental to 41.7% for saddle emboli ( $P=0.001$ ).

**Conclusion:** Patients in our study group who were diagnosed with saddle pulmonary emboli were significantly associated with more S1Q3T3 and RBBB abnormalities on EKG and RVH on echocardiogram.

**Impact:** This study suggests that we may be able to suspect massive PE patients based on their EKG and echocardiogram findings while in the ED, which would assist in a clinical decision regarding emergency thrombolytic.



## Pyuria and Urine Cultures in the Acute Renal Colic Patient: Do You Treat?

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Presence Resurrection Medical Center Emergency Medicine Residency Program, Chicago, IL

**Background:** Renal colic secondary to stone(s) is a common diagnosis in the ED. Often, the urine analysis shows WBC, even in patients with no fever or other symptoms. It is not known how often the renal colic patients with pyuria actually have a urinary tract infection and how often the pyuria is sterile.

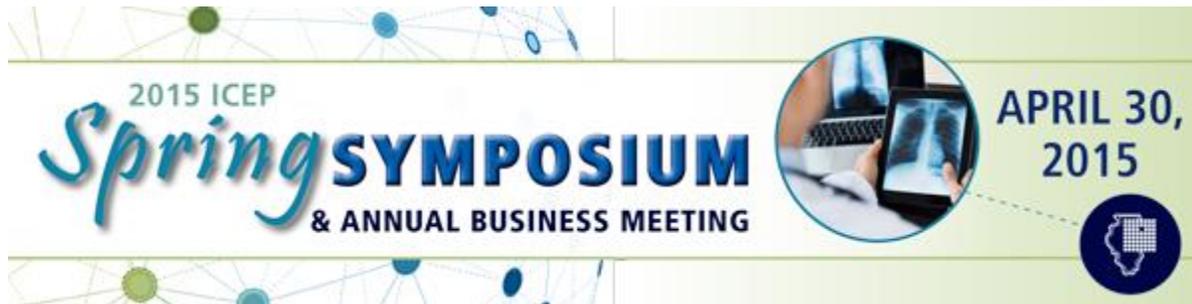
**Objective:** To determine the incidence of pyuria in renal colic patients and correlation with a positive urine culture.

**Design/Methods:** One year retrospective review of adult renal colic patients presenting to the ED of three community hospitals. Excluded are patients with no abdominal CT scan documentation of a renal stone or with no urine analysis recorded. We define pyuria as  $>10\text{WBC/HPF}$ . We define a positive urine culture as containing  $>100,000$  cfu/ml of a known urinary pathogen. The data was stratified by pyuria and tested using Student-t, Chi Square, or Fisher test as appropriate.

**Results:** Reviewed were 339 patients meeting inclusion and exclusion criteria. The average stone size was 4.06 mm (SD: 3.74) and 14.2% had associated pyuria. There were 153 (45.1%) urine cultures sent and 16 (10.5%) were positive. E. Coli was the prevalent pathogen with 50% (8/16) of all positive urine cultures. Patient with pyuria were significantly more likely to have a positive urine culture (36.4% vs. 3.3%;  $p<.001$ ). The risk of a positive urine culture significantly increases ( $p<.001$ ) with increased pyuria from 9.1% (10-20 WBC/HPF) to 60.0% ( $>50$  WBC/HPF). The risk also significantly increases ( $p<.001$ ) with increased leukocyte esterase seen in the macroscopic urine sample from 2.4% (negative leukocyte esterase) to 77.8% (large leukocyte esterase).

**Conclusion:** In this study from three community Emergency Departments, renal colic patients were found to have 14.2% pyuria. Patients with pyuria had 36.4% positive urine cultures while patients without pyuria had only 3.3%. In addition, the degree of pyuria or leukocyte esterase was significantly associated with increased risk of a positive urine culture.

**Impact:** We recommend that all renal colic patients with pyuria have urine cultures but the decision to start immediate antibiotics be made based on the clinical presentation including the degree of pyuria or leukocyte esterase found on the initial urine analysis.



## Implementation of Geriatric Emergency Track Improves Care and Patient Satisfaction

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Jamie Reynolds, RN, Cheryl Hickey, RN, Kristen DiBenedetto, RN;  
Advocate Christ Medical Center, Department of Emergency Medicine, Oak Lawn, IL

### **Background:**

Emergency medicine is experiencing a paradigm shift in patient demographics. In particular, geriatric patients represent an increasingly large portion of the patient population served by emergency departments (ED).

### **Objective:**

Developing a separate geriatric emergency track to improve delivery of care for the geriatric population.

### **Design/Methods:**

Design a geriatric track that incorporates best practice guidelines to improve delivery of care resulting in better patient satisfaction, better patient outcomes, and more cost effective care. The target population will be patients greater than 65 years of age with an Emergency Severity Index (ESI) 3,4,5. The geriatric track includes a geriatric needs assessment, improvement of the ED environment, involvement of pharmacy and care managers to improve care as well as specialized protocols to initiate work up. The outcomes will be evaluated using Press Ganey surveys for patient satisfaction, as well as metric data on left without being seen rates and door to provider time.

### **Results:**

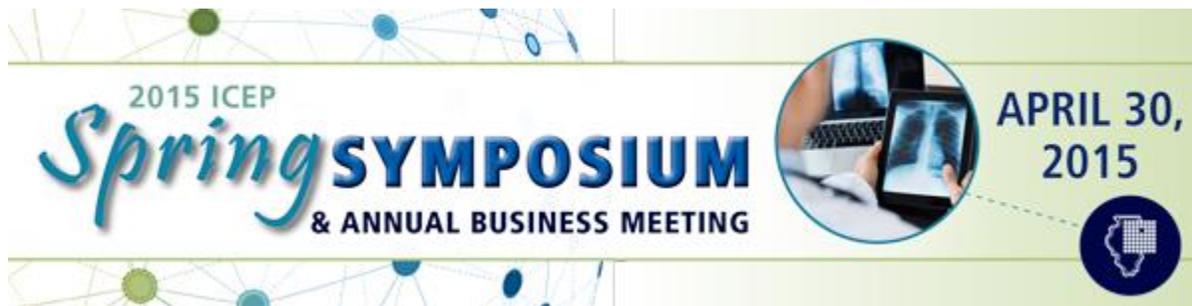
After implementation on 6/2/14 – 12/31/14 patient satisfaction scores rose from 62% to 85%, patient left without being seen (LWBS) decreased from 4% to 0.98%, and the door to provider time decreased from 95 minutes to 53 minutes.

### **Conclusion:**

Implementation of a geriatric ED track decreased door to provider time and LWBS rates and increased patient satisfaction.

### **Impact:**

Emergency departments that are proactive in specializing care for geriatric patients will be better prepared to provide safe, cost effective care for the geriatric population.



## Identifying Low Risk Chest Pain Patients and Outcomes of Continuous Cardiac Monitoring

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Franciscan St. James Health System, Olympia Fields, IL

**Background:** Most patients with chest pain are admitted to a telemetry unit despite the lack of evidence that continuous cardiac monitoring plays a role in identifying patients at risk for adverse events or clinical deterioration.

**Objective:** To identify low risk chest pain patients and determine if telemetry monitoring was useful during their inpatient management.

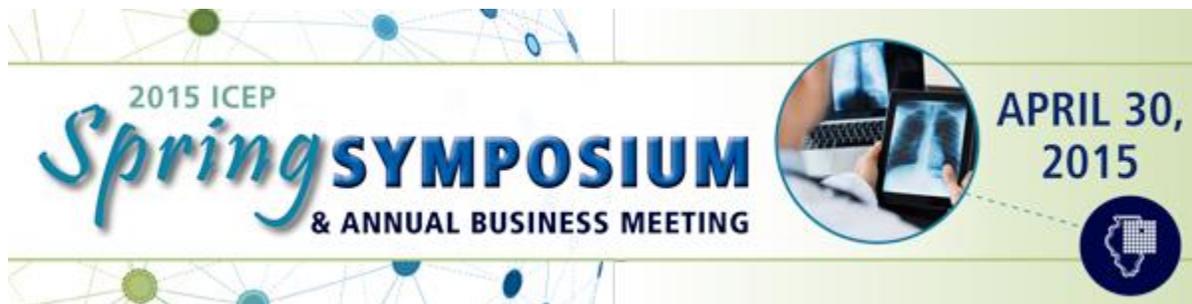
**Design/Methods:** A retrospective chart review was performed of patients admitted with the diagnosis of chest pain between 2012 and 2013. The study identified low risk chest pain patients as those with a Goldman risk score <1%, and an initial negative troponin, who were admitted to non-ICU monitored beds. These low risk patients were then analyzed for in-hospital complications and interventions based on their ICD9 discharge codes.

The study was a retrospective chart review using electronic medical records. Research had IRB approval.

**Results:** A total of 1124 patient's charts were reviewed and identified 290 meeting inclusion criteria. Of these 190 were women (65.6%) with mean age of 57 years (sd 13.78; range: 22.4-99.6). Upon reviewing discharge diagnosis there were no deaths, 18 patients had arrhythmias, 4 patients with EKG changes, 29 with ischemic heart disease and 8 diagnosed with heart failure. Patients with a positive discharge diagnosis had a statistically significantly ( $p = .016$ ) longer hospital stay with a mean of 3.26 days (SD 3.524) vs 1.94 days (SD 1.419). These patients were also on average older. Mean age 62 years (sd 15.6) vs 56 years (sd 13.2). This difference in age was statistically significant ( $p .008$ ).

**Conclusion:** The routine use of telemetry for low risk chest pain admissions has limited utility. There were no deaths and no ventricular dysrhythmias in this patient population. Only one patient who had a second positive troponin was upgraded to the ICU and started on a nitroglycerin drip and ultimately required a surgical intervention. Telemetry did not identify dysrhythmias requiring interventions. The study concluded that upon admittance, patients with chest pain can be risk stratified using the Goldman criteria and troponin level in order to appropriately identify their level of care. If patients are low risk, they can be safely admitted to a general medical floor without cardiac monitoring.

**Impact:** Low risk chest pain patients can be safely admitted to a non telemetry monitored bed which decreases boarding times in the emergency department and saves money for the hospital and the patient.



## Digitally-Assisted Bougie Intubation: A Novel Technique for Difficult Airway Management?

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### Background:

Management of the difficult airway remains a relatively common problem in emergency medicine. A popular technique is the use of a tracheal introducer (sometimes called a “bougie”), which can be useful in situations where visualization of the vocal cords is difficult or laryngoscopy is successful but ETT delivery is difficult.

Blind digital intubation is also described, whereby the intubating physician physically passes the endotracheal tube (ETT) using their fingers after blindly palpating the airway anatomy. There is no discussion in the literature about the use of digital assistance for ETT delivery following successful laryngoscopy.

### Design/Methods:

We report on two cases where a bougie was successfully placed by a direct laryngoscopy but digital manipulation of bougie-ETT apparatus was required to overcome difficulty in advancing tube past the vocal cords. This represents a potential novel method to troubleshoot failure of endotracheal delivery using the bougie technique.

### Results:

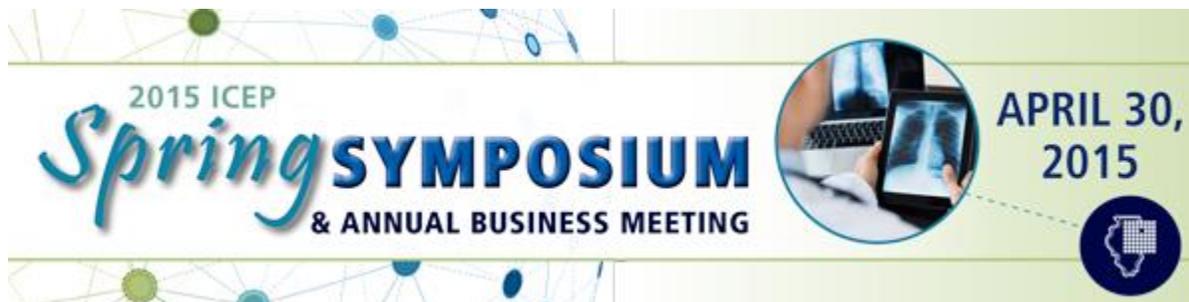
Case 1 involves an 83 year old female intubated for respiratory failure from influenza. Case 2 involved a 75 year old man intubated during cardiac arrest. In both cases a bougie was successfully placed into the trachea but the ETT could not be advanced until digital manipulation of the bougie-ETT apparatus was performed. To our knowledge these are the first reported cases of this novel technique.

### Conclusion:

We propose the following algorithm when the intubating physician encounters a scenario where the bougie is in the trachea but the ETT will not advance: 1) Verify that the laryngoscope is in proper position and/or replace it if it has been removed. 2) Pull the ETT back 2 cm, rotate counterclockwise, and attempt to readvance. 3) Consider removing the laryngoscope and introducing the index and middle fingers to guide the ETT into the trachea

### Impact:

We propose a novel algorithm for a difficult airway scenario.



## Initial Experience in the Emergency Setting with a New, Rapid-Acting Inhaled Antipsychotic Medication

**Daniel Nejak, MD, Robert Mokszycki, PharmD, Neal Lyons, PharmD, Adam Bonder, MD, MBA, Michael Stanek, MD, Nadine Lomotan, PharmD, Mary Hormese, PharmD, Erik B. Kulstad, MD, MS, FACEP; Advocate Christ Medical Center, Department of Emergency Medicine, Oak Lawn, IL**

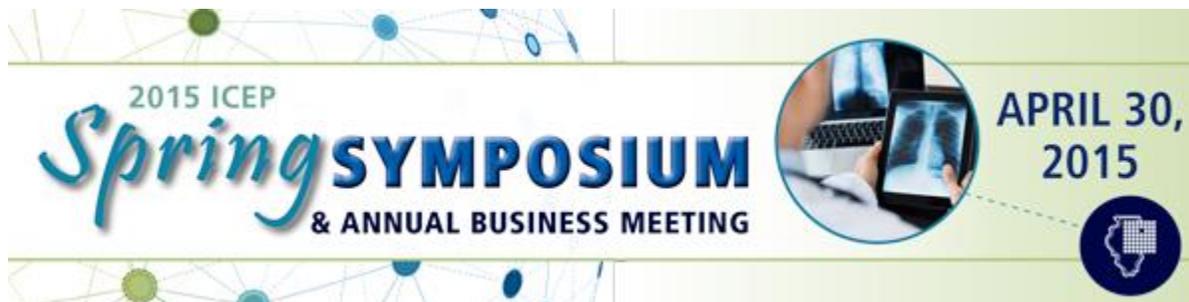
**Background:** Loxapine is a first-generation antipsychotic originally approved in the 1990’s that has received renewed interest because of its potential atypical properties. A new formulation, inhaled loxapine (Adasuve), has recently become available, offering a novel administration route via delivery of an aerosol. This delivery approach may provide more rapid effects, and greater patient satisfaction, than standard administration routes (intramuscular injection or oral administration) typically used in the emergency setting.

**Objective:** We report here our first experience with this new medication in a large, tertiary care emergency department.

**Design/Methods:** Our hospital is part of a multi-center Phase 4 evaluation of Adasuve, in which patients who receive the medication as part of usual care are subsequently asked for consent to participate in a survey investigating satisfaction with the medication using a 7-question survey. Each question is rated on either a 7-part or a 5-part Likert scale. We report here the results from the first 5 patients enrolled at our institution.

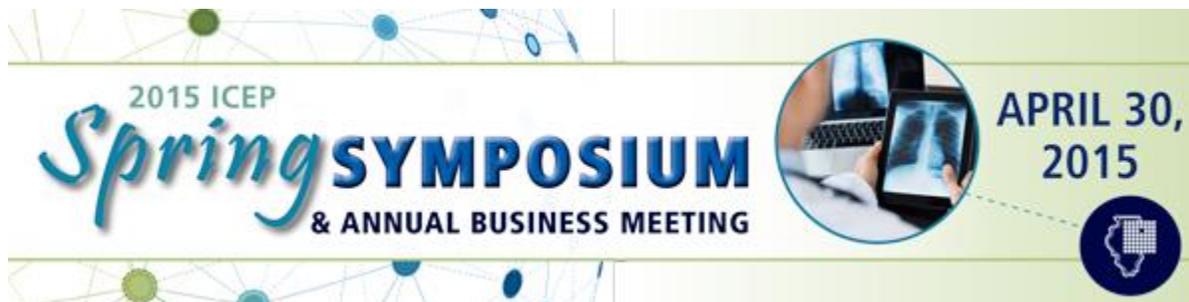
**Results:** Patients were approached within 5-15 minutes after receiving Adasuve for the acute treatment of agitation associated with schizophrenia or bipolar I disorder in our high-volume tertiary care emergency department. Responses to questions regarding satisfaction with the effects of the medication, ease of use of the medication, and rapidity of effects of the medication, showed generally high scores (one outlier skews the data). (Table).

	How satisfied or dissatisfied are you with the ability of the medication to prevent or treat your condition? (Scale 1-7)	How satisfied or dissatisfied are you with the way the medication relieves your symptoms? (Scale 1-7)	How satisfied or dissatisfied are you with the amount of time it takes the medication to start working? (Scale 1-7)	Overall, how confident are you that taking this medication is a good thing for you? (Scale 1-5)	How certain are you that the good things about your medication outweigh the bad things? (Scale 1-5)	Taking all things into account, how satisfied or dissatisfied are you with this medication? (Scale 1-7)	How easy or difficult is it to use the medication in its current form? (Scale 1-7)
Subject 1	5	5	6	3	4	5	6
Subject 2	6	6	6	4	4	7	7
Subject 3	6	7	7	5	5	7	7
Subject 4	3	4	3	1	1	3	3
Subject 5	6	6	7	4	4	5	5
<b>Average</b>	<b>5.2</b>	<b>5.6</b>	<b>5.8</b>	<b>3.4</b>	<b>3.6</b>	<b>5.4</b>	<b>5.6</b>
<b>Median</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>6</b>



**Conclusion:** A new form of loxapine, administered via inhalation, provides a rapid onset of action, and appears well-tolerated and generally liked by patients. This formulation appears to offer an appealing alternative to standard routes of administration of antipsychotics.

**Impact:** A new inhaled formulation of antipsychotic appears to provide an easy route to treating a potentially challenging patient population.



## An Alternative for Rapid Administration of Medication and Fluids in the Emergency Setting Using a Novel Device

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Advocate Christ Medical Center, Department of Emergency Medicine, Oak Lawn, IL

**Background:** Routes of administration for medications and fluids in the acute care setting have primarily focused on oral, intravenous, or intra-osseous routes, but in many patients, none of these routes are optimal. A novel device (Macy catheter, Hospi Corp.) that offers an easy route for administration of medications or fluids via rectal mucosal absorption (referred to also as proctoclysis) has recently become available in the palliative care market. Hypothesizing the potential benefits of this approach in a wider patient population, we aimed to evaluate this use in the emergency department and intensive care unit setting.

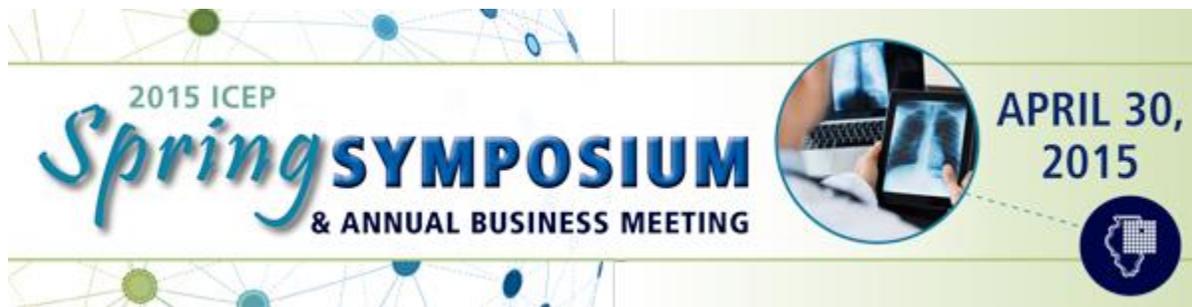
**Objective:** We describe the first known uses of this device in the acute care (ED and ICU) setting.

**Design/Methods:** The Macy catheter is a thin silicone tube 14 Fr in diameter with a 15 mL balloon at the tip (sized to allow secure retention yet also provide for ready elimination in the event of need for defecation), multiple exit ports for fluid and medication passage, and an internal one-way check valve to prevent backflow of fluids.

**Results:** Three patients presenting to the hospital with conditions limiting more typical routes of medication or fluid administration were treated with this new device; patients were administered water for hydration, lorazepam for treatment of alcohol withdrawal, ondansetron for nausea, acetaminophen for fever, aspirin for antiplatelet effect, and methimazole for hyperthyroidism. Placement of the device was straightforward, absorption of administered medications (judged by immediacy of effects where observable) was rapid, and use of the device was well tolerated by patients.

**Conclusion:** A novel rectal administration device offers a potentially useful alternative route to medication and fluid administration for a variety of indications in acute and critical care settings.

**Impact:** An alternative to standard routes (IV, IM, IO) for fluid and medication administration may improve options for patient care in a variety of conditions.



## Creation and Implementation of an Online Teaching Resource: The Northwestern Emergency Medicine Model in Orthopedics Education

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### **Background:**

Orthopedics, a core EM competency, has traditionally been taught through textbooks and clinical exposure which are limited by expense, poor portability, and inconsistent experiences. In response we created a free, mobile, and complete review of orthopedics topics for EM residents.

### **Objective:**

We describe the creation, dissemination, and sustainment of an asynchronous online teaching tool using globally available residency resources.

### **Design/Methods:**

Orthopedic cases with educational merit were sought from one ED. Important cases were identified and securely recorded. EM residents selected images from this list and added teaching material to compose didactic cases using a standardized template. Content was uploaded to a project website (<http://ortho-teaching.feinberg.northwestern.edu/>) for use as a portion of the orthopedics curriculum and made freely accessible for external use. Resident volunteers completed maintenance and update responsibilities. Data regarding the use of the website was gathered by Google Analytics.

### **Results:**

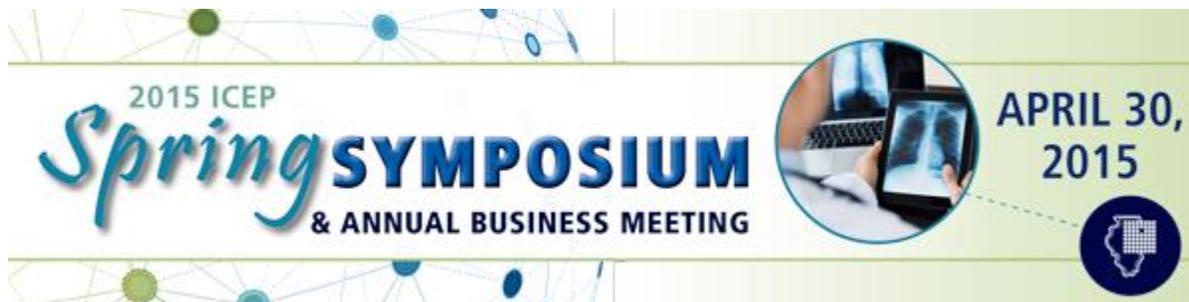
There are 104 cases, 8 PowerPoint lessons and 26 videos currently available that represent the core of our orthopedics curriculum. During the study period from June, 2014, through November 2014, there were 2,143 website sessions, 11 sessions daily, and 1,405 unique users. Cities with the highest use were Chicago, IL (14.3%), Providence, RI (10.0%), and St. Louis, MO (3.3%); countries: US (69.1%), UK (4.9%) and Australia (3.3%). Use extended across Europe, Middle East and Asia. It is also the first result when a search is performed for "orthopedics teaching", and many similar variations.

### **Conclusion:**

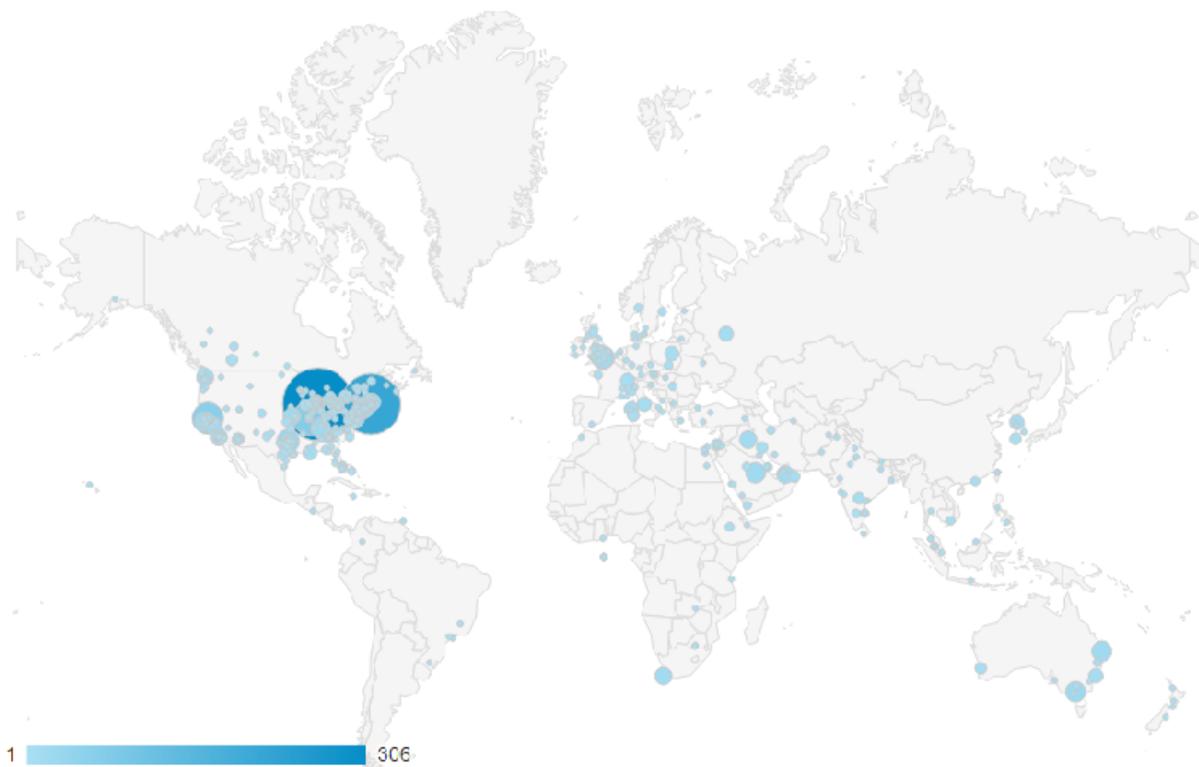
We created a free, open access, medical education resource using technology and human resources available at any academic medical residency program. It requires minimal cost, and has been self-sustaining.

### **Impact:**

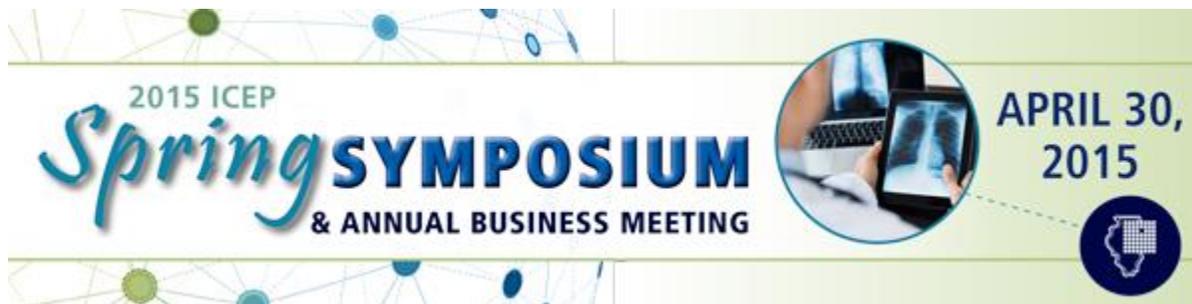
Given the wide availability of the resources utilized, this model could be used as a guide for creating other electronic medical education resources for use institutionally, nationally, and internationally.



Table



City ?	Acquisition		
	Sessions ? ↓	% New Sessions ?	New Users ?
	<b>2,143</b> <small>% of Total: 100.00% (2,143)</small>	<b>65.24%</b> <small>Site Avg: 65.19% (0.07%)</small>	<b>1,398</b> <small>% of Total: 100.07% (1,397)</small>
1. Chicago	306 (14.28%)	62.75%	192 (13.73%)
2. Providence	214 (9.99%)	59.81%	128 (9.16%)
3. St. Louis	70 (3.27%)	41.43%	29 (2.07%)
4. Sacramento	62 (2.89%)	27.42%	17 (1.22%)
5. London	53 (2.47%)	41.51%	22 (1.57%)
6. (not set)	48 (2.24%)	70.83%	34 (2.43%)
7. <a href="#">Farmers Branch</a>	30 (1.40%)	90.00%	27 (1.93%)
8. New York	28 (1.31%)	92.86%	26 (1.86%)
9. Milford	26 (1.21%)	3.85%	1 (0.07%)
10. Melbourne	24 (1.12%)	66.67%	16 (1.14%)



## Comparing Nursing Perception of Physician Efficiency and Interpersonal Skills to Actual Physician Productivity

Sara Krzyzaniak, MD, Tyler Dschaak, MD, Richard Frederick, MD,  
John Hafner, MD, MPH, FACEP, Huaping Wang, PhD;  
University of Illinois College of Medicine, OSF Saint Francis Medical Center, Peoria, IL,  
University of Illinois Chicago, Chicago, IL

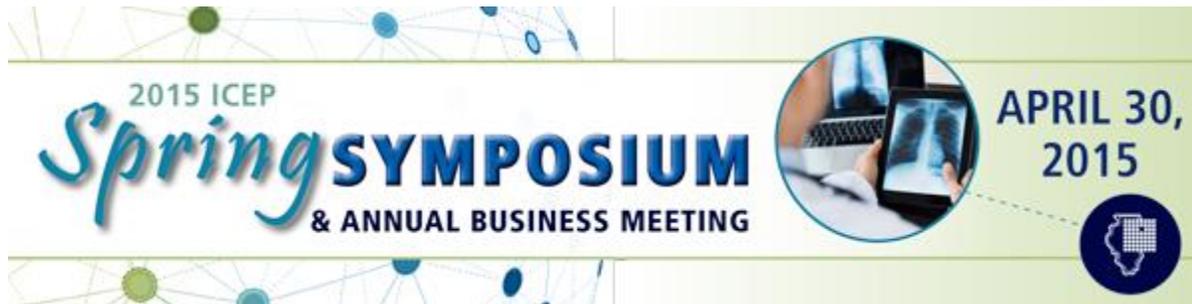
**Background:** The importance of teamwork in the busy and unpredictable environment of the emergency department (ED) setting has been described previously and various methods have been used to assess non-technical physician skills, such as communication and patient throughput.

**Objective:** The purpose of this study is to examine how reliably ED nurses perceive EP efficiency, and if there is a correlation between overall physician interpersonal skills and perceived/actual physician clinical productivity.

**Design/Methods:** Emergency nurses at an urban academic tertiary care ED (>85,000 annual visits) completed an anonymous survey of 34 EPs as part of a 360 feedback evaluation. Surveys utilized a 1-5 Likert scale (1 low, 5 high) to evaluate the perceived physician productivity as well as interpersonal skills (teamwork, attitude, approachability, and communication). The averaged perceived clinical productivity was correlated with the physician's averaged number of patients evaluated per total hours worked (i.e. actual EP clinical productivity), for the same period captured in the survey (2013). Perceived EP clinical productivity and interpersonal skill scores were compared to actual clinical productivity using Spearman's correlation.

**Results:** A total of 1576 responses were received for 34 EPs (28-65 responses per physician). No statistically significant correlation was noted between perceived clinical EP productivity and actual EP clinical productivity ( $r=0.27$ ;  $P > 0.12$ ). However, significant correlations occurred between perceived EP clinical productivity and interpersonal skills: communication ( $r=0.87$ ;  $p < 0.01$ ), teamwork skills ( $r = 0.85$ ;  $P < 0.01$ ), approachability ( $r = 0.77$ ;  $P < 0.01$ ), and overall attitude ( $r=0.80$ ;  $P < 0.01$ ). No changes in correlations between perceived and actual clinical EP productivity were noted when groups were stratified by age, gender and years of clinical experience.

**Conclusion:** Nursing opinion regarding EP clinical productivity does not correlate with actual EP clinical productivity. However, nurses' perception of EP productivity correlates with other EP interpersonal skill measures, and does not vary by gender, age or experience.



## Determining the Adaptability of Emergency Medicine Residency Milestones to the Emergency Medicine Student Clerkship Evaluation Process

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### Background:

The American Heart Association (AHA) guidelines for therapeutic hypothermia (TH) after cardiac arrest cite a goal core temperature of 32° to 34°C to be maintained for 12 to 24 hours. No standard treatment protocol has been described to achieve these goals.

Patients in our ED with return of spontaneous circulation after out-of-hospital cardiac arrest are considered for TH. Patients are cooled with one or more of the following: an iced 2000 ml rapid IV infusion of 0.9% NaCl, gastric lavage with iced 0.9% NaCl, or external cooling pads. The core temperature is measured hourly using an esophageal probe. Patients receive sedation with fentanyl combined with either midazolam or propofol. Paralysis with cisatracurium is initiated if shivering occurs.

### Objective:

Report our compliance with the AHA's guidelines using the described protocol.

### Design/Methods:

Retrospective chart review.

### Results:

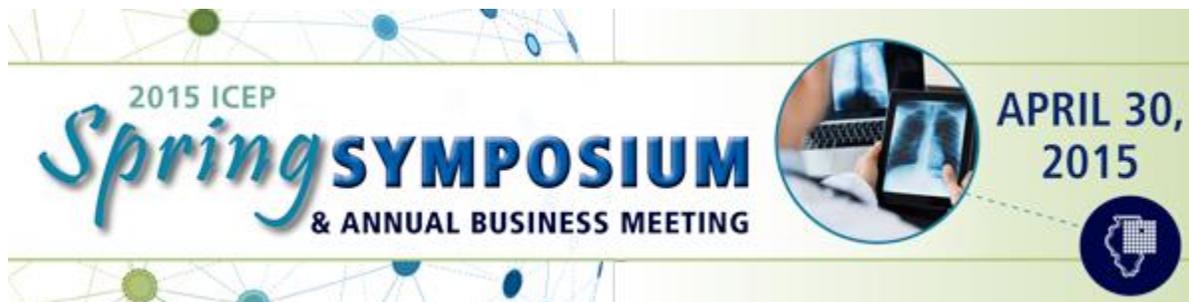
23 charts were reviewed. The median time from cooling initiation to core temperature of 34°C was 120 minutes. The average duration of TH was 21 hours and 53 minutes. Seven of 23 (30%) patients experienced a drift of their core temperature outside of the target range of 32°-34°C. None of these patients' core temperatures deviated more than 1°C outside of the target range for more than two hours. Protocol violations involving inappropriate duration of therapy were identified in five (21%) of cases, with two patients cooled for less than 12 hours and three patients cooled for more than 24 hours.

### Conclusion:

This described TH protocol achieved the goal core temperature in an average of two hours. Approximately one-third of patients experienced some deviation of core temperature outside of the goal range. Inappropriate cooling duration was the only protocol violation found.

### Impact:

The described ED protocol may be used to successfully implement TH after out-of-hospital cardiac arrest.



## Idarucizumab, a Specific Reversal Agent for Dabigatran: Immediate, Complete and Sustained Reversal of Dabigatran Induced Anticoagulation Shown in Elderly and Renally Impaired Subjects

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<sup>1</sup>Translational Medicine and Clinical Pharmacology, Boehringer Ingelheim Pharma GmbH & Co. KG, Biberach and Ingelheim, Germany; <sup>2</sup>Drug Metabolism and Pharmacokinetics, Boehringer Ingelheim Pharma GmbH & Co. KG, Biberach, Germany; <sup>3</sup>SCS Boehringer Ingelheim Comm. V., Clinical Operations, Brussels, Belgium; <sup>4</sup>Clinical Biostatistics, Boehringer Ingelheim Pharma GmbH & Co. KG, Biberach, Germany; <sup>5</sup>Drug Metabolism and Pharmacokinetics, Boehringer Ingelheim Pharmaceuticals Inc., Ridgefield, CT

### **Background:**

The dabigatran reversal agent, idarucizumab, has demonstrated immediate, complete and sustained reversal of dabigatran-induced anticoagulation in healthy male volunteers. The present study assessed doses of up to 5 g idarucizumab in male and female healthy middle-aged, elderly and renally impaired volunteers.

### **Objective:**

Safety, tolerability, pharmacokinetics and pharmacodynamics of idarucizumab were investigated in a randomized, double-blind, placebo controlled two-way cross-over study in 46 male and female volunteers.

### **Design/Methods:**

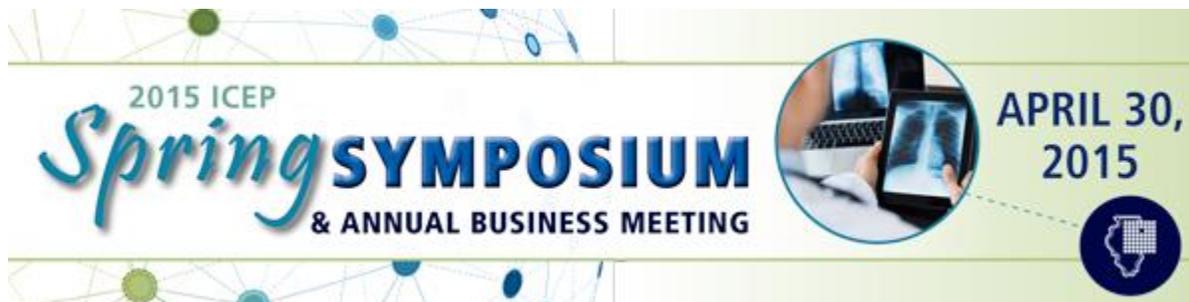
Dabigatran etexilate 220 mg bid in healthy subjects and 150 mg bid in subjects with mild or moderate renal impairment ( $CL_{CR}$  60 to <90 or 30 to <60 [mL/min], respectively) was given over 4 days. Idarucizumab doses of 1 g, 2.5 g, 5 g or 5 g given as 2x2.5 g one hour apart were administered as 5 min i.v. infusions 2 hours after the last dose of DE.

### **Results:**

All administered doses of idarucizumab were well tolerated. Dabigatran-prolonged clotting times were reversed to baseline immediately after end of idarucizumab infusion. Sustained reversal over the entire observation period was observed for idarucizumab doses of 2.5 g, 5g and 2x2.5 g. For the 1g dose, there was partial return of dabigatran induced anticoagulation around 2-4 hours after i.v. infusion.

### **Conclusion:**

The dabigatran reversal agent, idarucizumab, was well tolerated under all conditions tested. The administration of 5g or 2x2.5 g led to sustained reversal of dabigatran induced anticoagulation in male and female subjects of different age and renal function.



## Retrospective Review of Symptoms and Signs of Intussusception Present on Initial Evaluation

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**Background:** Intussusception is the second leading cause of an acute pediatric abdominal emergency, after appendicitis. The classic triad of pain, vomiting, and bloody stools occurs variably (7% to 60%). We diagnosed a 7 month old male with intussusception, whose only symptom\sign was emesis. A literature search was unable to determine the frequency of isolated vomiting as the presentation of intussusception.

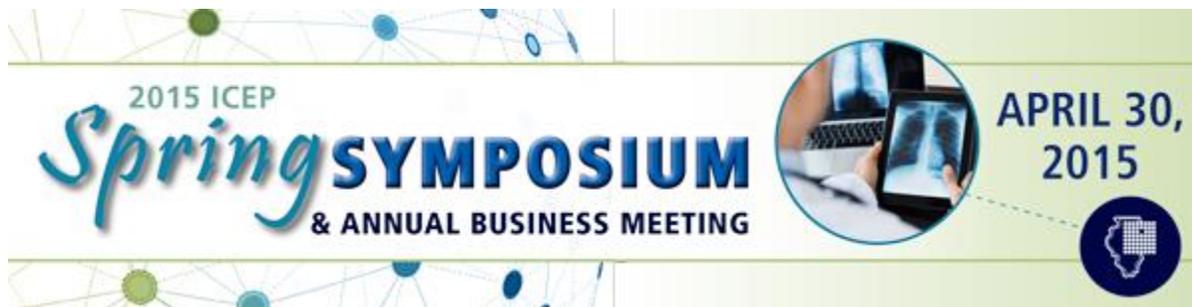
**Objective:** To determine the frequency and patterns of symptoms\signs of pediatric intussusception.

**Design/Methods:** A retrospective chart review of patients (< 18 years of age) with the discharge diagnosis of intussusception, from May 1, 2010 to November 30, 2014. A single investigator reviewed and abstracted the data (month of presentation, age, gender, time since onset, 9 specific symptoms\signs). The study was approved by the Institutional Review Board.

**Results:** 110 Patients were identified (56% male, median age 26 months, range 1 – 191 months). The 3 most common symptoms\signs were: pain (82%), emesis (72%), and irritable\fussy (33%). Only 8 (7%) had the “classic” triad. Eleven (10%) patients had only 1 symptom\sign: 9 (8%) pain and 2 (2%) emesis. Twenty-seven (25%) presented with 2 symptoms\signs: 10 (9%) pain and emesis, 12 (11%) pain and another, 3 (3%) emesis and lethargy, and 2 (2%) emesis and bloody stool. Seventy-two (65%) patients presented with  $\geq 3$  symptoms\signs. All patients had either pain or vomiting.

**Conclusion:** Emesis as the only symptom or sign of intussusception is rare and the majority of patients have  $\geq 2$  symptoms\signs. The absence of pain and vomiting makes the diagnosis of intussusception unlikely.

**Impact:** In the absence of both pain and vomiting, intussusception is unlikely to be the cause of the patient’s presentation and other etiologies should be considered. This may help guide the efficient use of laboratory testing and imaging. A prospective multicenter study would be of value.



## So Your Program is on Twitter, Now What? A Needs Assessment on the Use of Twitter and Free Open Access Medical Education in an Emergency Medicine Residency Program

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**Background:** Twitter has quickly become a widely used platform in the Free Open Access Medical Education (FOAM) movement. Barriers to integrating Twitter and other FOAM resources into residency curricula have not been fully described.

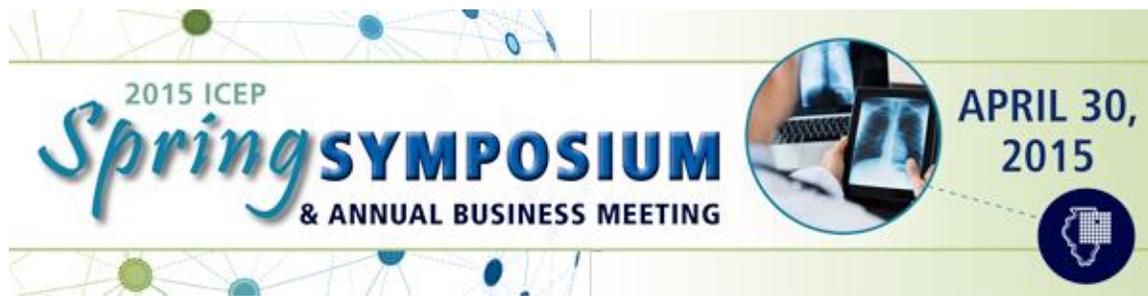
**Objective:** To identify the need and barriers for the use of Twitter and FOAM as part of an EM residency curriculum.

**Design/Methods:** A working group of experts developed a needs assessment survey using closed-format questions with multiple choice and binary responses. It was piloted for study performance, revised, and distributed in a single large EM program with responses being anonymous and voluntary. Descriptive analysis was done.

**Results:** Response rate was 75%: 55 residents, 1 fellow, and 20 faculty. Sixty-nine percent of respondents use FOAM monthly. Only 28% (21/76) use Twitter, of which 76% (16/21) for medical education. While 41% (31/76) do not believe a program Twitter account would be helpful, 93% (69/74) agree that FOAM resources should be included in the residency curriculum. Barriers to using Twitter for medical education are lack of peer review (39%) and lack of organization (38%). Among traditional educational modalities such as textbooks and peer-reviewed journals, FOAM is considered the second easiest to use, but the least authoritative.

**Conclusion:** The majority of respondents use FOAM, although a minority use Twitter. Almost all participants want FOAM resources incorporated into the curriculum, however far less believe a residency twitter account would be valuable. Therefore, Twitter may not be the ideal way to incorporate FOAM into a residency. Further studies should investigate how to best integrate FOAM into a residency curriculum

**Impact:** This study adds to the fund of knowledge on the use of FOAM, specifically Twitter, by those in an academic EM program and the challenges of its integration into a residency curriculum.



## Training Model for Out-of-Hospital Cardiac Arrest Bystander Response: Pay It Forward Latino Parent Cohort

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### Background

The importance of community efforts to increase rates of bystander response in out of hospital cardiac arrest (OHCA) has been highlighted by the American Heart Association (AHA) leading to changes in the paradigm of educational campaigns. Schools provide large-scale, centrally-organized settings accessible to children and adult family members. Therefore, a school-centered peer-mediated OHCA educational intervention for parents can reach large segments of the population frequently overlooked.

### Objective

To determine the knowledge acquisition of a 45-minute compression-only CPR and automatic external defibrillator (AED) educational curriculum and the feasibility of the pay it forward (PIF) model.

### Methods

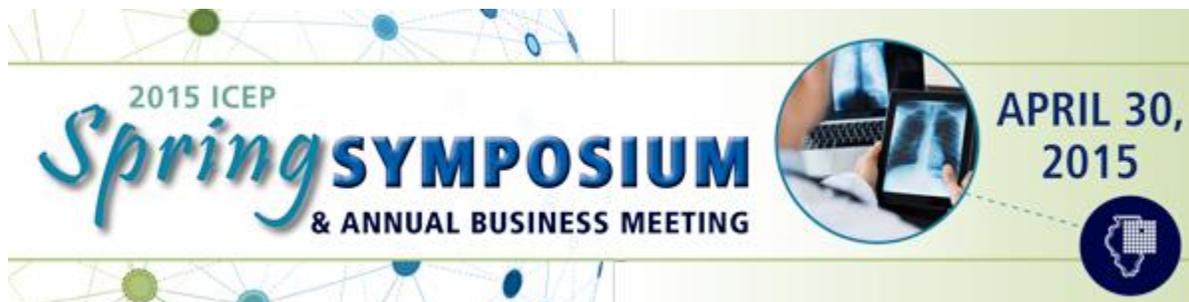
Subjects were Spanish-speaking parents of a Chicago public elementary school and their peers. Parents (Group A) received a 45-minute training on OHCA recognition, compression-only CPR, and AED use. Parents had the opportunity to take home an AHA CPR anytime kit to train peers (Group B). Knowledge acquisition of Group B trained by Group A was measured using post-assessment surveys.

### Results

Of the 24 Group A participants, 15 volunteered to train their peers resulting in an additional 22 trainees in Group B. 100% of both groups properly identified rate of compressions. Group A and B scores compared as follows: 88% versus 100% identified the proper compression depth, 96% versus 95% knew the function of an AED, 60% versus 70% correctly identified the AED, 100% versus 95% identified the AED as easy to use, and 92% versus 95% knew the correct sequence to follow in case of OHCA respectively.

### Conclusion

Results showed that the PIF model is a feasible way to disseminate knowledge and awareness of OHCA within the community. Further research with a large sample is necessary to measure long-term knowledge retention. Communities with high incidence of OHCA and low rates of bystander CPR can benefit from peer-mediated educational interventions.



## An Assessment of Ethnic Diversity in US Medical Toxicology Fellowship Training Programs

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### **Background:**

Racial and ethnic disparities exist in healthcare. A consistent recommendation to help reduce these disparities is to increase ethnic diversity in the practice of medicine. The benefits of diversity in graduate medical education have been well described.

Hispanics, African Americans, and Native Americans are considered underrepresented in medicine. While toxicologic health disparities exist and have been previously described, ethnic diversity within the field of Medical Toxicology (MT) has received little attention. MT is a medical subspecialty; the majority of medical toxicologists completed emergency medicine residency before training in MT.

### **Objective:**

The objective of this study is to evaluate the ethnic diversity within MT fellowship training programs.

### **Design/Methods:**

The ACGME publishes the *Data Resource Book* annually—an aggregate report of information obtained from each ACGME-accredited training. Using academic years 2011-2013, we compiled the ethnic constituency of MT fellowship programs and made comparisons to all residencies combined as well as to Emergency Medicine, Pediatrics, and Preventive Medicine—the specialties that co-sponsor the MT certifying examination. We also compared the results to the constituency of the general US population.

### **Results:**

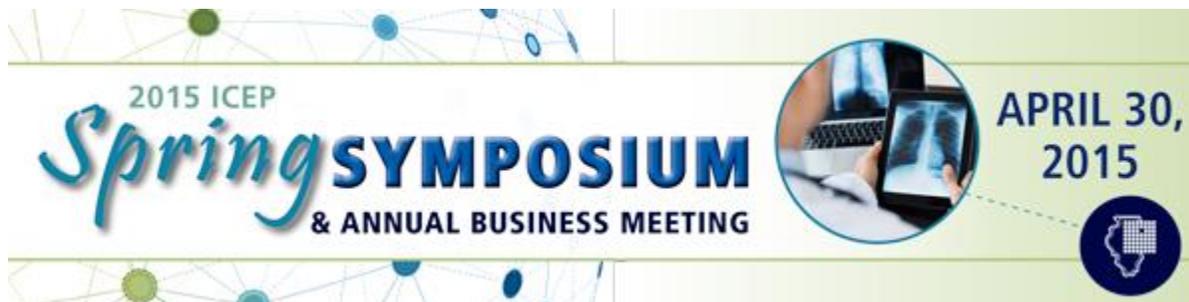
See Table. Based on the 2010 US Census, Hispanics comprise 16.3% of the population; African Americans, 12.3%; Native Americans, 0.7%. All three groups are underrepresented in all sectors of residency/fellowship training, especially MT.

### **Conclusion:**

All residency/fellowship training programs evaluated have less ethnic diversity than the US population. This is particularly true for MT training programs, which are less diverse than other specialties in addition to the US population.

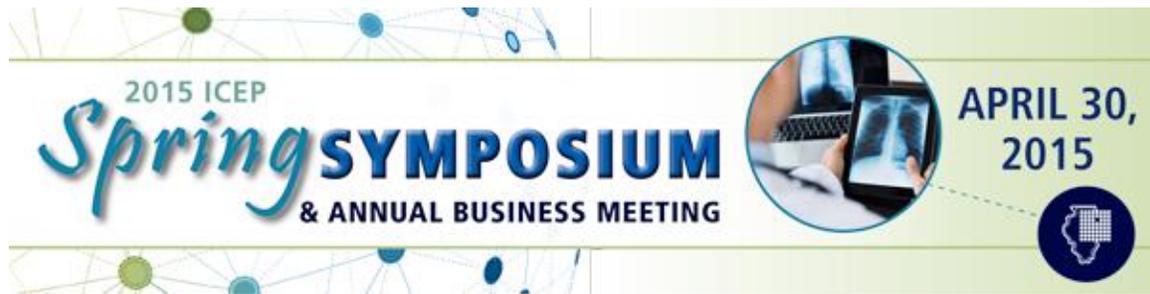
### **Impact:**

Ethnic diversity in medicine is necessary as a component of addressing health disparities. Similarly, ethnic diversity in MT is necessary as a component of addressing toxicologic health disparities. Efforts to increase diversity in Medical Toxicology are necessary.



**Table:**

	White (%)	Asian (%)	Hispanic (%)	Black (%)	Native American (%)	Other/unknown (%)**
<b>2011-2012</b>						
All Programs Combined*	42.6	17.3	4.8	4.6	0.2	30.5
Emergency Medicine	61.8	10.6	3.9	4.3	0.2	19.2
Pediatrics	38	14.5	5.1	4.7	0.2	37.4
Preventive Medicine	49.7	14.9	5.4	9.8	0	20.2
Medical Toxicology*	59.6	9.6	0	0	0	28.8
<b>2012-2013</b>						
All Programs Combined*	43.1	17.7	4.8	4.7	0.2	29.6
Emergency Medicine	60.8	11.2	4.3	4.8	0.3	18.6
Pediatrics	39.8	14.1	5.2	5.1	0.2	35.6
Preventive Medicine	47.7	15.1	6.3	10.8	0.3	19.8
Medical Toxicology*	56.9	13.8	3.4	0	0	25.9
<b>2013-2014</b>						
All Programs Combined*	43.4	18	4.8	4.7	0.2	28.9
Emergency Medicine	60.1	11.2	4.6	4.8	0.2	19.2
Pediatrics	39	13.7	5.2	5.1	0.2	36.8
Preventive Medicine	47	17.8	6.4	10.1	0.3	18.4
Medical Toxicology*	66.2	10.8	1.5	0	1.5	20
*All residencies/fellowships, all specialties combined						
**Other denotes an ethnicity other than those available for selection, unknown denotes either unknown ethnicity or no response						



## An Examination of Provider Attitudes toward HIV Screening in the Emergency Department

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### Background:

In 2006 the CDC recommended that HIV testing be offered in all healthcare settings in an effort to increase the number of HIV-infected persons who are aware of their serostatus<sup>1</sup>. Emergency Departments (ED) are explicitly emphasized in the initiative<sup>1</sup>. During a pilot study in our level 1 trauma center, 93% of 456 patients consented to HIV testing<sup>3</sup>. Following the study, the Loyola ED participated in a CDC Care and Prevention in the United States (CAPUS) grant to expand HIV testing in the Department. This study aims to examine the attitudes of ED providers before and after full implementation of the HIV testing program.

**Objectives:** This study aims to examine provider attitudes toward HIV screening at a level 1 Trauma Center's ED before and after the implementation of a formal opt-in HIV screening program.

**Methods:** An online survey was sent to emergency physicians and nurses during the 2 months preceding and following 1 full year of HIV. Providers were asked to select answers on a five-point Likert scale that best aligned with their personal opinions toward ED HIV testing.

**Results:** In the initial survey, 40% of participants expressed some level of agreement with the appropriateness of HIV testing in the ED, compared to 59% of providers after one year of testing. Prior to testing, 47% of provider's believed testing would interfere with their duties in the Department, compared to 31% after one year. 77% of providers felt uncomfortable disclosing positive test results with patients in the initial survey vs 59% after a year of testing.

**Conclusions:** It appears that providers' opinions toward HIV testing in the ED changed following 12 months of testing. Further evaluation of staff's perception of the testing process should be investigated to ensure maximal engagement.

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1. Rothman, et al. Infectious Disease/CDC Update 49(5): 2007
2. Bayer R, Oppenheimer G. New England Journal of Medicine 368; 10. 2013
3. Cirone M, Probst B. Annals of Emergency Medicine, Volume 62, Issue4, S64