

**Table 199**  
Moseley: Proportion of patients with high-risk co-morbidities among continuous vs episodic heavy users

Group	Substance Abuse (95%CI)	Chronic Pain (95%CI)	Mental Illness (95%CI)	Heart Disease (95%CI)	Lung Disease (95%CI)	Kidney Disease (95%CI)	Liver Disease (95%CI)	Cancer (95%CI)	Stroke (95%CI)
Continuous Heavy Users	N=54	N=46	N=69	N=45	N=54	N=31	N=18	N=12	N=16
N=160	33.8% (27-41)	28.8% (22-36)	43.1% (36-51)	28.1% (22-36)	33.8% (27-41)	19.4% (14-26)	11.3% (7-17)	7.5% (4-13)	10.0% (6-16)
Drop-outs	N=101	N=105	N=179	N=112	N=118	N=66	N=48	N=30	N=46
N=388	26.0% (22-31)	27.1% (23-32)	46.0% (41-51)	28.9% (25-34)	30.4% (26-35)	17.0% (14-21)	12.4% (9-16)	7.7% (5-11)	11.9% (9-15)
Drop-ins	N=88	N=137	N=165	N=96	N=116	N=52	N=48	N=32	N=37
N=414	21.3% (18-25)	33.1% (29-38)	40.0% (35-45)	23.2% (19-27)	28.0% (24-33)	12.6% (10-16)	11.6% (9-15)	7.7% (6-11)	8.9% (7-12)
Combined Drop-outs and Drop-ins	N=189	N=242	N=344	N=208	N=234	N=118	N=96	N=62	N=83
N=802	23.6% (21-27)	30.2% (27-33)	42.9% (40-46)	25.9% (23-29)	29.2% (26-32)	14.7% (12-17)	12.0% (10-14)	7.7% (6-10)	10.4% (8-13)

There is little information about what might distinguish episodic heavy users of emergency services from more continual heavy users.

**Objectives:** Determine if certain clinical characteristics distinguish between episodic and continuous heavy users of emergency services.

**Methods:** Multi-year retrospective chart review of ED records for 2009-2012. ED use for all unique patients seen in the Barnes-Jewish Hospital ED during the time period specified was determined for two non-overlapping 365 day periods. The first period was measured from the subject's last ED visit in 2010, going back 365 days; and the second was measured from their first ED visit in 2011, going forward 365 days. We compared all surviving subjects with  $\geq 10$  visits in only one of the two periods (episodic heavy users) with subjects who had  $\geq 10$  visits in both periods (continuous heavy users). We then reviewed ED records across the entire metropolitan BJC hospital system for each period to determine if subjects remained in their usage category. Next, we performed a chart review adhering to the strategies proposed by Gilbert et al. to determine the proportion of nine high-risk co-morbidities in each group. Co-morbidities included substance abuse, mental illness, chronic pain, heart disease, lung disease, kidney disease, liver disease, cancer, and stroke. We compared the proportion of subjects with these co-morbidities in the episodic vs continuous heavy user groups using 95% confidence interval (CI).

**Results:** 160 subjects had  $\geq 10$  visits in both periods. 388 had  $\geq 10$  visits in the first period, but not the second period (drop-outs), and 414 had  $\geq 10$  visits in the second period, but not the first (drop-ins). The proportion of subjects with each of the nine common high-risk co-morbidities for each group (with 95% CI) can be seen in Table 199.

**Conclusion:** Of nine common high risk co-morbidities, only substance abuse demonstrated a significant difference between episodic and more continuous heavy ED users (33.8% v 23.6%;  $p=0.007$ ). There are likely other factors besides co-morbidities that might explain variation in ED utilization from year to year among moderate and heavy ED users.

faculty and residents to be assured that this evaluation instrument is reliable, fair, and appropriate for the specialty.

**Objectives:** The investigators sought to determine the relationship between the ITE and the Milestones, with a focus on the Medical Knowledge subcompetency.

**Methods:** This was a prospective study comparing 2014 ITE performance with the two Milestone reports from 2013-2014. De-identified, matched, aggregated performance records were used. Analysis included all EM residents who took the 2014 ABEM ITE and for whom Milestones scores were submitted. Pearson correlation coefficients were determined for the Milestones in aggregate and for each subcompetency for both Milestone data sets and for every EM level of training.

**Results:** There were 5,805 Milestones evaluations submitted for 5,805 (100%) residents from 162 residencies. There were weak positive correlations between the aggregate Milestones scores and the ITE that trended more positively with more experience in the residency. The highest correlation ( $r = +.47$  to  $+.59$ ; strongly positive) was noted for the subcompetency medical Knowledge. Correlations varied tremendously for other subcompetencies ranging from  $r = 0.00$  to  $r = +0.26$ , demonstrating weak to negligible relationships. This trend was seen at every training level. Except for the Medical Knowledge subcompetency, which demonstrated substantial increases, the other subcompetency increases tended to be modest. The first EM Milestones reports for EM-1 residents had the weakest correlations to the ITE (range:  $r = 0.00$  to  $+0.11$ ).

**Conclusion:** The various Milestone subcompetencies demonstrated variable correlation with the ABEM ITE. There was a strong positive correlation between the Medical Knowledge Milestones and the ABEM ITE. Many of the EM Milestone subcompetencies appear to measure unique competencies beyond medical knowledge and judgment.

## 200 The Correlation between the Emergency Medicine Milestones and the American Board of Emergency Medicine In-training Examination

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**Background:** The EM Milestones track the progressive acquisition of a diverse set of competencies during residency. The Milestones, consisting of 227 discrete measures within 23 subcompetencies, have been previously validated. The ABEM in-training examination (ITE) has also been validated. Because the Milestones are a required method by which resident competency acquisition is measured, it is important for

## 201 The Characteristics and Outcomes of ED Patients with Acute Pulmonary Embolism Discharged Home within 24 Hours

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**Background:** Carefully selected patients with acute pulmonary embolism (PE) can be safely discharged home after a short length of stay (<24 hours). Descriptive data on the effect of this practice from community hospitals are lacking.

**Objectives:** To describe the characteristics and outcomes of short-versus longer-stay PE patients.

**Methods:** This retrospective cohort study included non-gravid adults treated for objectively-confirmed acute PE in 19 community EDs in the U.S. from Jan 1 to Jul 15, 2013. Patients were excluded if designated comfort care, transferred from the ED to another facility, or left against medical advice. No PE-specific clinical care pathways or formalized clinical decision supports were in place at the time. We combined electronic database extraction with manual chart abstraction of the comprehensive electronic health record to calculate the PE Severity Index, determine ED disposition, and measure rates of 5-day return visits for venous thromboembolic (VTE)-related complaints and standard 30-day outcomes, including major bleed, recurrent VTE, and all-cause mortality. Major bleeds were defined as bleeds at anatomically high-risk locations, and those associated with a transfusion of at least 2 units of red blood cells or a hemoglobin drop of 2 or more gm/dL. All time periods were measured from the index ED registration. Comparison between categorical variables was performed using chi-square analysis and between continuous variables using t-tests.

**Results:** Of 804 total cases of acute PE, 22 (3%) were excluded. Of the remaining 782 patients, 171 were short-stay (22%) and 611 were longer-stay patients (78%). The short-stay cases were discharged home from the ED (n=60; 8%), an observation unit (n=52; 7%), or the inpatient ward (n=59; 8%). Short-stay patients were more commonly younger, male, and lower-risk than their longer-stay counterparts (see Table 201). Though they had more frequent 5-day returns, there was no significant difference in 30-day adverse outcomes and significantly lower 30-day mortality rates. Of the 17 short-stay patients who returned to the ED within 5 days, 15 were discharged home from the ED.

Table 201 - Vinson.

	Short stay (<24h) n=171 no (%)	Longer stay (>24h) n=611 no (%)	P value
Age yrs mean (SD)	60 (17)	66 (16)	<0.001
Sex male	94 (55)	271 (44)	<0.05
Low risk (Class I-II)	103 (60)	192 (31)	<0.001
Return visits for VTE-related complaints <120h	17 (10)	18 (3)	<0.001
Adverse outcomes	12 (7)	64 (10)	Non-significant (NS)
Major bleed	8 (5)	21 (3)	NS
Recurrent VTE	3 (2)	7 (1)	NS
Mortality	1 (1)	36 (6)	<0.01

**Conclusion:** Even in the absence of standardized care pathways, physician selection of PE patients for early discharge appears to be appropriate and short-term outcomes are reassuring. Expansion of the early discharge process merits exploration.

## 202 Timeliness of Inter-Facility Transfer for Emergency Department Patients with ST-Elevation Myocardial Infarction

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**Background:** Most U.S. hospitals lack primary percutaneous coronary intervention (PCI) capabilities to treat patients with ST-

elevation myocardial infarction (STEMI) necessitating transfer to PCI-capable centers. Transferred patients rarely meet the recommended 120 minute benchmark for timely reperfusion. Referring EDs have been identified as a major source of preventable delays in the transfer process. However, it is unclear why delays occur at referring EDs and we lack the needed data to better study the sources of delay.

**Objectives:** We sought to use more granular operational data at referring EDs to describe the variability in length of stay at referring EDs.

**Methods:** We retrospectively analyzed a secondary dataset used for quality improvement for patients with STEMI transferred to a single PCI center between 2008 and 2012. We analyzed the total time spent at each referring ED (door-in-door-out [DIDO] interval), time periods that comprised DIDO (door-to-EKG, EKG-to-PCI activation and PCI activation-to-exit), and the association of each period with overall time to reperfusion (medical contact-to-balloon [MCTB] interval). Histogram and box-plots were used to graphically compare the distribution of DIDO component intervals. We calculated rank-based Spearman correlation coefficients to assess the correlation between patient factors and time intervals.

**Results:** We identified 41 referring EDs that transferred 620 patients for primary PCI between 2008 and 2012. Median MCTB was 135 minutes (IQR 114,172). Median referring ED DIDO was 74 minutes (IQR 56,103) and was comprised of 5 minutes for door-to-EKG (IQR 2,11 minutes), 18 minutes for EKG-to-PCI activation (IQR 7,37), and 44 minutes for PCI activation-to-exit (IQR 34,56). Among the intervals that constituted MCTB, DIDO accounted for the largest proportion (60%) of MCTB and had the largest variability (coefficient of variability = 1.37). A box whisker plot of component time intervals can be seen in the Figure 202.

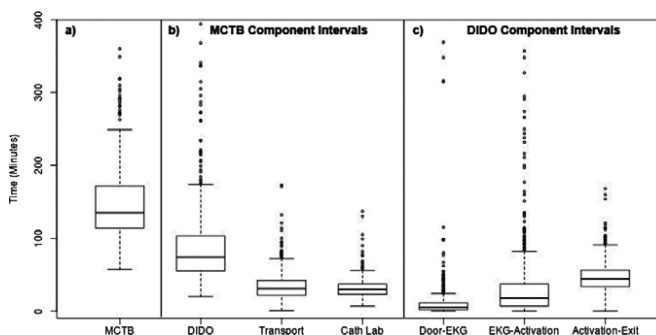


Figure 202 – Ward.

**Conclusion:** In this cohort of transferring EDs, we found high variability and substantial delays after EKG performance for patients with STEMI. Factors influencing ED decision-making and transportation coordination following PCI activation are a potential target for intervention to improve the timeliness of reperfusion in patients with STEMI.

## 203 A Randomized Trial Of Rapid Post-ED Follow-up For Patients 75 Years And Older

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**Background:** The poor health outcomes of elderly patients after discharge from an ED are considered to be due in large part to the systematic failure of health systems to provide timely access to post-acute care. Therefore, we conducted a randomized trial offering patients 75 years of age and older a rapid follow-up visit to a geriatrics clinic within 2-3 days after discharge from the University of North Carolina ED. The purpose was to further stabilize any acute medical