

Figure 1. Gross Annual Volume for Top 20 Countries.

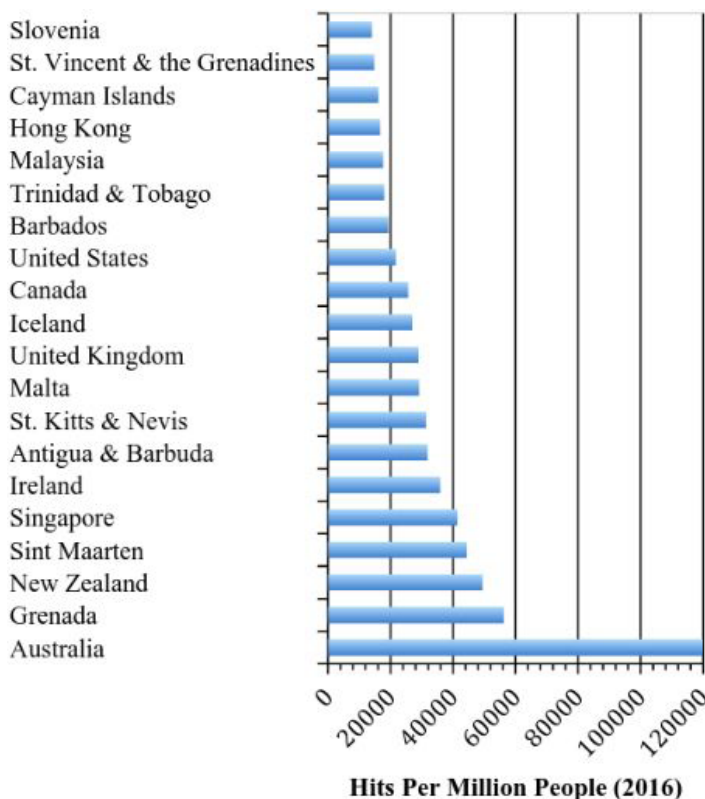


Figure 2. Population-Adjusted Annual Volume from Top 20 Countries.

Table 1. Distribution of FOAM Users by Country Income-Level.

Income Level	Total Hits	% of Total Hits	Hits Per Million People	% of Hits per Million People
High-income	14067663	75.30%	806043	73.72%
Upper-middle income	1604520	8.59%	190835	17.45%
Lower-middle income	2933755	15.70%	93350	8.54%
Low-income	77229	0.41%	3219	0.29%

## 11 Recovering Capacity – The Impact of Overnight Shifts on Resident Physician Productivity

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**Objective:** Overnight shifts are a necessary aspect of emergency medicine. While prior research has examined the effect of sleep deprivation on individuals' health and cognitive performance, its ultimate effect on emergency department workflow and individual productivity is unclear. Furthermore, little is known about how much time physicians need to recover from the transition from night to day schedules. We sought to determine the effect of overnight shifts on individual physician trainees' productivity on subsequent daytime shifts.

**Design and Method:** We conducted a retrospective cohort study of resident patient assignments in a U.S. urban academic emergency department (ED) from 7/1/2010 to 7/1/2016. Timestamps were collected via the ED information dashboard, through which residents assign themselves patients ad libitum throughout shifts. We constructed a generalized estimation equation using an autoregressive correlation structure to predict productivity in terms of patients per shift, with the amount of time since an overnight shift (characterized as greater than 36 hours, less than 36 hours, and 24 hours or less) and the resident's year of training as covariates.

**Results:** We evaluated 18,296 shifts: 8,351 (45.6%) by first-year residents, and 9,932 (54.4%) by second-year residents. First-year residents saw 9.8 patients per shift (95% CI 9.5-10.2) while second-year residents saw 13.4 patients per shift (95% CI 12.3 – 14.1). First-year residents saw 0.79 fewer patients per shift (95% CI -1.1 – -0.5) on shifts starting 24 hours after an overnight shift, but did not have a significant decrease in productivity when they had more time to recover. Second-year residents did not show a decrease in productivity after overnight shifts, even at 24 hours.

**Conclusion:** Daytime shifts that closely follow overnight shifts are associated with a small but significant decrease in productivity for resident physicians early in their training, suggesting that trainees need more than 24 hours to transition

from an overnight schedule. While senior residents may be more adept at dealing with fatigue, more work is needed to determine if they suffer more subtle deficits from sleep deprivation.

## 12 Providers at Triage Are Associated with a Reduction in the Left Without Being Seen Rate

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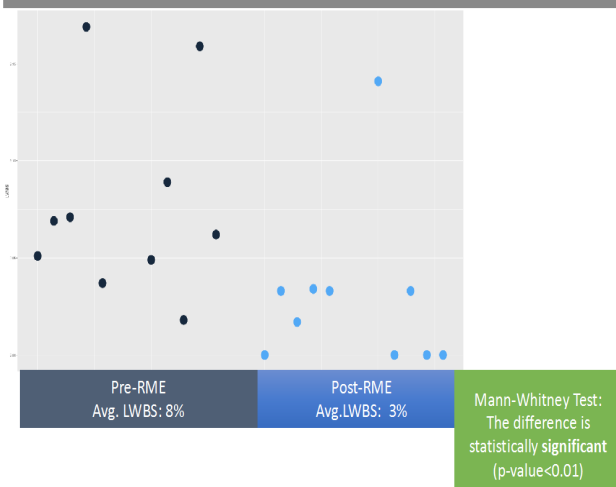
**Objective:** Patients who leave prior to being seen by a physician are at risk for poor outcome. While the reasons for this can be multifactorial, one solution we explored is the stationing of physicians at triage. We conducted this study to measure the impact of pilot faculty providers in triage during peak hours to see if they could decrease the number of patients leaving prior to being seen, improve overall throughput and increase patient experience scores.

**Design:** We conducted a pre/post quality improvement project at an academic emergency department. Faculty staffed a five-bed rapid medical evaluation unit Monday-Friday from 1pm-7pm for two weeks. Providers saw patients on arrival during the triage process and initiated care. The left-without-being-seen rate was measured during the hours that the rapid medical evaluation unit was staffed. We compared this intervention to a historical control of like days and times from the preceding period. We performed statistical analysis using the Mann-Whitney U-test.

**Results:** A total of 2,000 patients were treated during the study period. The left-without-being-seen rate decreased from 8% pre-pilot to 3% post-pilot ( $p < 0.01$ ).

**Conclusion:** Faculty physicians at triage are associated with a decrease in the percentage of patients who leave without being seen.

Left without being seen rate: Pre-RME vs. Post-RME



## 13 Persistent Adverse Mental and Physical Health Outcomes Are Common among Women after Sexual Assault

Riviello R, Sullivan J, Bhatt K, Maltez B, D'Anza T, Bell K, Lechner M, Reese R, Buchanan J, Ho J, Rossi C, Nouhan P, Platt M, Phillips C, Black J, Reed G, McLean SA

**Objective:** Emergency departments around the world provide care to women who present for evaluation in the immediate aftermath of sexual assault. However, to date no prospective longitudinal studies of such women have been performed, and adverse mental and physical health outcomes after emergency care remain poorly understood. We report interim results regarding such health outcomes, using data from The Women's Health Study, the first large-scale prospective longitudinal study of women sexual assault survivors receiving emergency care after sexual assault.

**Design and Method:** Women sexual assault survivors  $\geq 18$  years of age who presented for emergency care within 72 hours of assault to one of the 13 leading U.S. sexual assault centers in the Better Tomorrow Network were enrolled. Protocol evaluation included assessment at the time of presentation for emergency care and follow-up visits one week and six weeks post-assault. The one-week and six-week questionnaires included assessments of pain and somatic symptoms (0-10 NRS) during the week prior to and six weeks after the assault. The six-week evaluation included the validated Patient-Reported Outcomes Measurement Information System (PROMIS) 8b depression, PROMIS 8b anxiety, and PCL-S DSM-IV post-traumatic stress questionnaires.

**Results:** Data from 254 patients were available at the time of analysis. Among participants with data available at the time of these analyses [mean(SD) age = 28(10)], the majority were European American [155/201 (61%)]. Six weeks after assault, clinically significant adverse health outcomes were common among participants. Moderate/severe depressive symptoms were present in 109/201 (54%), moderate/severe anxiety symptoms in 122/201 (61%), post-traumatic stress symptoms in 164/201 (82%), and worsening pain in 87/201 (43%) of women. Worsening pain was defined as an increase in pain of  $\geq 2$  units on a 0-10 numeric rating scale.

**Conclusion:** These results suggest that adverse mental and physical health outcomes are common and morbid among sexual assault survivors. Future analyses will include the full participant sample and later follow-up time points.