Title

Doctor, Interrupted: Preemptive Workflow and Accuracy of Rapid Electrocardiogram Screening for ST-Elevation Myocardial Infarction by Emergency Medicine Providers

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Table 1. Applicant Ranking of Program Factyors in CHoosing an Emergency Medicine Residency.

Program Factor	Percentage of Applicants Ranking as Important (n = 261)
Hospital type - University vs. County vs. Community vs. Mix	78.2% (204)
Hours worked per shift (8 vs. 10 vs. 12)	66.7% (174)
Number of shifts per month	63.2% (165)
USMLE scores required for consideration	59.8% (156)
Hospital ED visits per year	56.7% (148)
Program size by total number of current residents	49.4% (129)
Culture description of the ED program provided by the program	48.3% (126)
Is moonlighting allowed	43.3% (113)
% DO & % IMG currently in program	42.1% (110)
Compensation & meals paid/ credit by the hospital	37.9% (99)
Number of weeks spent in the ED during intern year (R1)	37.5% (98)
(Non)-accredited fellowships	34.9% (91)
Percentage of graduates entering fellowship/academic jobs	31.8% (83)
Dedicated children's ED at the main training hospital	30.7% (80)
Research requirement vs. scholarly activity only	21.1% (55)
Total alumni from the program	6.9% (18)

19 Doctor, Interrupted: Preemptive Workflow and Accuracy of Rapid Electrocardiogram Screening for ST-Elevation Myocardial Infarction by Emergency Medicine Providers

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Background: Interruptions are thought to contribute to medical errors. However, interruptions are also important to patient care in the emergency department. Prior research has failed to reliably demonstrate a relationship between interruptions and medical errors.

Objectives: Explore associations of interrupted, preemptive workflow on accuracy of interpreting interrupting clinical stimuli. We hypothesized accuracy would decrease during preemptive workflow compared to sequential workflow.

Methods: A 2x2 factorial crossover simulation trial was created. Resident and attending physicians from a single academic emergency department were invited to participate. Participants first completed a preemptive module, viewing patient presentations interrupted by clinical stimuli requiring interpretation every minute. Participants then completed a sequential module where presentations and clinical stimuli were completed sequentially without interruption. The primary outcome was accuracy of interpreting clinical stimuli, specifically electrocardiograms (ECG's) for ST elevation myocardial infarction (STEMI), during preemptive and sequential modules. Generalized estimating equation logistic regression evaluated factors, defined a priori, that influenced odds of correct ECG interpretation.
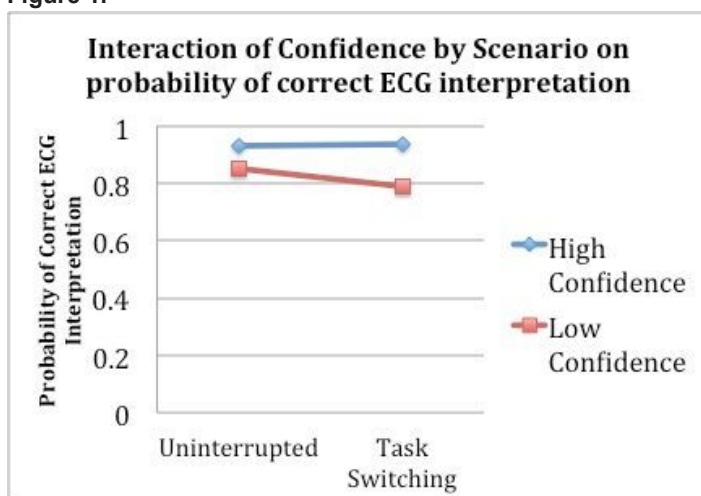
Results: 35 participants completed the study. Overall, there was no significant difference in accuracy of ECG interpretation for STEMI in the preemptive compared with the sequential module (Mean 0.89, 0.91, Paired T test p=0.21). Attending physician status (OR 2.56, CI 1.66-3.94, p<0.01) and inferior STEMI (OR 0.08, CI 0.04-0.14, p<0.01) were associated with increased and decreased odds of correct interpretation, respectively. Self reported confidence was associated with increased odds of correct interpretation in the preemptive module, but not in the sequential module. (Interaction p=0.02)

Conclusions: Preemptive interrupted workflow was not associated with accuracy of ECG interpretation for STEMI. However odds of correct interpretation during preemptive simulations were significantly decreased in ECG's participants reported low confidence in interpretation. Providers may be able to self identify "high risk" tasks prone to error in an interrupted environment.

Table 1.

Variable	GEE Univariate			GEE Full Model		
	OR	CI	p value	OR	CI	p value
Scenario						
Sequential (base)	1.00			1.00		
Preemptive	0.81	0.58-1.12	0.32	0.80	0.51-1.24	0.31
Position						
Intern (base)	1.00			1.00		
Senior Res	1.30	0.80-2.13	0.26	1.29	0.68-2.47	0.44
Attending	2.56	1.66-3.94	<0.01	2.40	1.42-4.05	<0.01
Type of ECG						
Normal (base)	1.00			1.00		
Anterior STEMI	1.17	0.44-3.13	0.67	0.78	0.30-2.03	0.61
Inferior STEMI	0.08	0.04-0.14	<0.01	0.06	0.03-0.11	<0.01
Mean Scenario Exam						
	1.01	0.96-1.05	0.83	1.01	0.96-1.06	0.62
Confidence						
Low (1-3) (base)	1.00			1.00		
High(4-5)	3.10	2.14-4.50	<0.01	3.68	2.26-6.01	<0.01

Figure 1.

Interaction of Confidence by Scenario on probability of correct ECG interpretation

20 EM-Bound Medical Student Exam Performance on the EM-Advanced Clinical Examination (EM-ACE) and Versions 1 and 2 of the National EM M4 Exams

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Background: Empathy is declining and burnout is increasing amongst medical providers despite empathy being an important core for the doctor-patient relationship.

Objectives: We hypothesized that an empathy curriculum would lead to decreased resident burnout and increased patient perception of resident empathy.

Methods: In this pilot study, consenting EM residents were randomized to control group or to an intervention group. The intervention was an educational curriculum which included a multi-modal approach to emphasize mindfulness, patient-centered communication, empathy, and reflection. In the pre-

and post-intervention period, enrolled residents completed the Interpersonal Reactivity Index (IRI) to assess self-reported empathy and the Maslach Burnout Inventory (MBI) to assess burnout. The IRI is a 28-item questionnaire composed of 4 separate subscales. The MBI is a 22-item questionnaire composed of 3 separate subscales. A convenience sample of consented patients treated by participating residents completed the Consultation and Relational Empathy (CARE) measure about their perception of empathy from their EM resident provider. The CARE is a 10-item questionnaire. Comparisons between groups pre- and post-intervention were analyzed with repeated-measures ANOVA.

Results: 21 residents (14 male, 7 female) out of 36 eligible were enrolled: 10 in the control group and 11 in the intervention group. 1236 patients in the pre-intervention period were screened, and 273 were enrolled. 1283 patients were screened post-intervention and 308 were enrolled. On the IRI and the MBI subscales, as well as on the CARE measure, there were no statistically significant differences between the responses in the pre-and post-intervention periods (p>0.106).

Conclusions: Although small and powered to detect only large differences in outcomes, the intervention had no statistically significant effect on any of the IRI or MBI subscales or the CARE measure. While trends toward change in some subscales were noticed in the results they cannot be attributed solely to the intervention.

21 Emergency Medicine Resident and Medical Student Technology Use during the care of Critical Patients: A High Fidelity Simulation Study

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Background: Widespread availability of electronic resources has increased the amount of information immediately available to physicians, but it is unclear what impact this has on patient care.

Objectives: To determine if the use of electronic resources improved learners' ability to quickly and accurately manage simulated neurologic emergencies.

Methods: Emergency medicine resident teams (n=14) and clerkship student teams (n=33) managed two high fidelity simulation cases. Data collection occurred over one year, June 2014 - May 2015. In this single-blinded experimental study, teams of 2-3 were randomized to manage one case with the use of electronic resources (internet and personal computing devices). In the other case, teams had access to print resources typically available in the emergency department or on their person. Times to successful completion of critical actions were recorded. The authors used mixed-method ANOVAs where the