

Evaluation of the Impacts of Emergency Physician Training on Care Delivery Among Emergency Department Patients at the University Teaching Hospital-Kigali in Kigali, Rwanda

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Background

- Emergency Medicine (EM) training has is emerging in Africa and has the potential to improve care by enhancing the performance of time-sensitive interventions.

- In Rwanda EM specialty training was initiated in September 2013 at University Teaching Hospital of Kigali (UTHK), Kigali, Rwanda.

- At the UTH-K ED care is partially provided by EM trainees who are oversees certified emergency physicians and by general practice physicians (GPP) without formal EM training or oversight.

- Assessment of the impacts of EM training in Rwanda has not been previously performed.

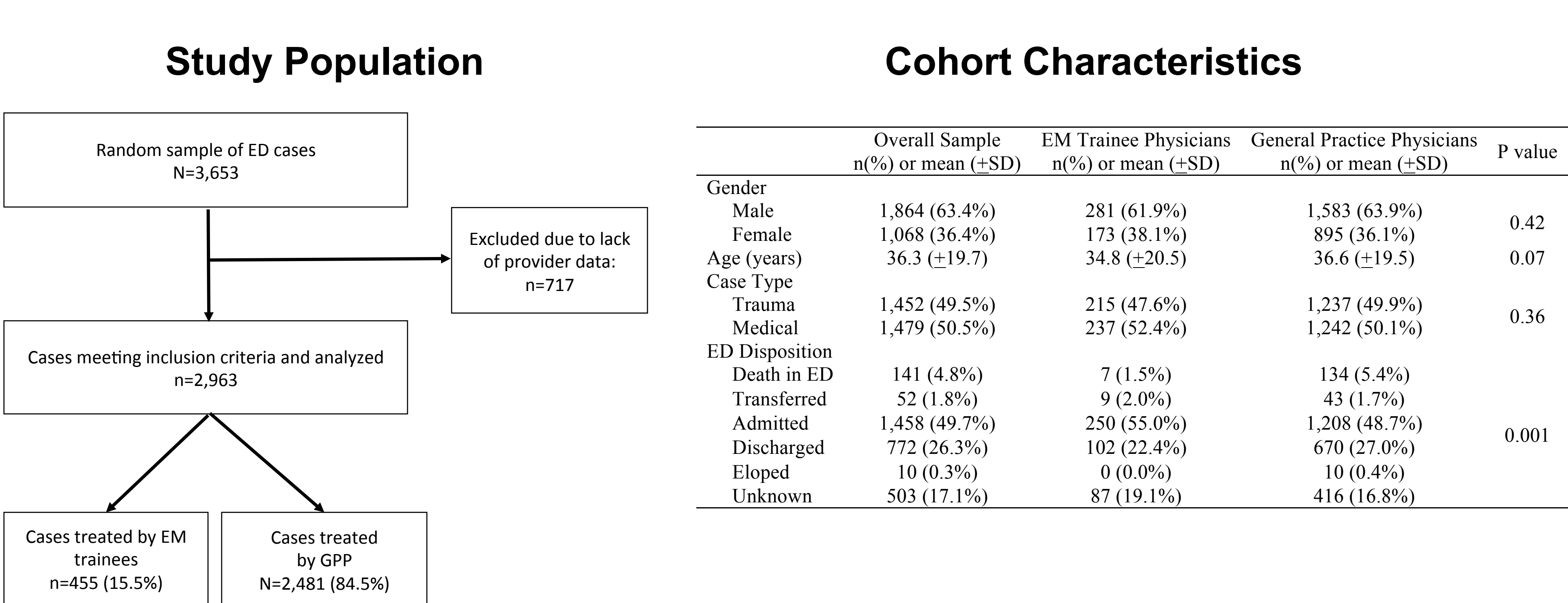
Objective

- To evaluate care provision for time-critical interventions and mortality among patients treated by GPP as compared to EM trainees in the UTH-K ED.

Methods

- Retrospective chart review of a random samples of ED patients
- Inclusion criteria: patients treated during 2013 (January-December), 2015 (July-December) and 2016 (January-June) with data on provider type
- Primary outcomes were provision of:
 - Resuscitation fluids (crystalloid or blood products) for triage hypotension (systolic blood pressure (SBP) <90 mmHg)
 - supplemental oxygen for triage hypoxia (oxygen saturation (SpO₂) of <89%)
- Secondary outcome: all causes ED mortality
- Statistical comparisons based on provider type (EM trainees versus GPP); Fisher’s Exact or ranksum tests, adjusted odds ratios (aOR) and number need to treat (NNT)
- Analyses stratified by patient type (medical or trauma)

Results



- 2,936 cases met inclusion criteria [trauma: 1,452 (49.5%) / medical: 1,479 (50.5%)]
- Majority of patients were treated by GPP rather than EM trainees (84.5% vs. 15.5%).
- Population had a male predominance (63.4%) mean age of 36.3 years No differences in patient characteristics between those treated for by GPP and EM trainees
- The majority of patients were admitted (49.7%) & 4.8% suffered ED mortality.

Fluid Resuscitation for Patients with Triage SBP <90mmHg

Overall Population (n=132)			
	Resuscitation Fluid Not Given	Resuscitation Fluid Given	P Value
EM Resident Physician	6 (35.3%)	11 (64.7%)	0.22
General Practice Physician	19 (21.3%)	70 (78.7%)	
Trauma Population			
	Resuscitation Fluid Not Given	Resuscitation Fluid Given	
EM Resident Physician	4 (57.1%)	3 (42.9%)	0.08
General Practice Physician	5 (20.0%)	20 (80.0%)	
Medical Population			
	Resuscitation Fluid Not Given	Resuscitation Fluid Given	
EM Resident Physician	2 (20.0%)	8 (80.0%)	0.63
General Practice Physician	14 (21.9%)	50 (78.1%)	

O₂ Treatment for Patients with Triage SpO₂ <89%

Overall Population (n=176)			
	Oxygen Treatment Not Given	Oxygen Treatment Given	P Value
EM Resident Physician	3 (17.7%)	14 (82.4%)	0.27
General Practice Physician	38 (32.5%)	79 (67.5%)	
Trauma Population			
	Oxygen Treatment Not Given	Oxygen Treatment Given	
EM Resident Physician	2 (50.0%)	2 (50.0%)	0.62
General Practice Physician	9 (36.0%)	16 (64.0%)	
Medical Population			
	Oxygen Treatment Not Given	Oxygen Treatment Given	
EM Resident Physician	1 (7.7%)	12 (92.3%)	0.07
General Practice Physician	29 (31.5%)	63 (68.5%)	

- No significant differences in the performance of time-critical interventions were found based provider type in the overall population or when stratified
- Failure to perform interventions was common for both EM trainees and GPP (range: 7.7%-57.1%)

ED Mortality By Type of Provider		
	Population	P Value
Overall		
EM Resident Physician (n=368)	7 (1.9%)	<0.001
General Practice Physician (n=2,065)	134 (6.5%)	
Trauma		
EM Resident Physician (n=161)	0 (0.0%)	0.002
General Practice Physician (n=941)	40 (4.3%)	
Medical		
EM Resident Physician (n=2,04)	7 (3.4%)	0.014
General Practice Physician (n=1,124)	94 (8.36%)	

- ED mortality data available for n=2,433 cases
- All cause mortality greater among patients treated by GPP as compared to EM trainees
 - 6.5% versus 1.9% (p<0.001)
 - **NNT of 22 to prevent 1 death**
 - aOR=3.61 (95% CI 1.67, 7.89)
 - adjusted for case type

Discussion & Conclusion

- In the studied population delivery of time-critical interventions was variably performed and no significant differences in performance between provider types were found.
- A reduced likelihood of mortality was identified with EM trainee care suggesting that factors other than the accessed interventions may be impacting outcomes in the ED population.
- Given the potential for bias and confounding in the retrospective data along with secular trends in care potentially influencing the current data further comprehensive study of EM care delivery at UTH-K is needed to elucidate these factors and inform provider training and guide clinical practice.

Acknowledgments: Study participants, staff and contributors from the University Teaching Hospital Kigali. **Conflicts Of Interest:** The authors do not report any conflict of interest or commercial relationship.

