

## Global Research Highlights

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**Editor's note:** CJEM has partnered with a small group of selected journals of international emergency medicine societies to share from each a highlighted research study, as selected monthly by their editors. Our goals are to increase awareness of our readership to research developments in the international emergency medicine literature, promote collaboration among the selected international emergency medicine journals, and support the improvement of emergency medicine world-wide, as described in the WAME statement at <http://www.wame.org/about/policy-statements#Promoting%20Global%20Health>. Abstracts are reproduced as published in the respective participating journals and are not peer reviewed or edited by CJEM.

### Annals of Emergency Medicine

[www.acep.org/annals/](http://www.acep.org/annals/)

*Official journal of the American College of Emergency Physicians  
(The print version of this article has been scheduled for January 2021)*



### Improved Testing and Design of Intubation Boxes During the COVID-19 Pandemic

David M. Turer, Cameron H. Good, Benjamin K. Schilling, Robert W. Turer, Nicholas R. Karlowsky, Lucas A. Dvoracek, Heng Ban, Jason S. Chang, J. Peter Rubin  
<https://doi.org/10.1016/j.annemergmed.2020.08.033>

#### Study objective

Throughout the coronavirus disease 2019 pandemic, many emergency departments have been using passive protective enclosures (“intubation boxes”) during intubation. The effectiveness of these enclosures remains uncertain.

#### Methods

We tested a commercially available passive protective enclosure representing the most common design and compared this with a modified enclosure that incorporated a vacuum system for active air filtration during simulated intubations and negative-pressure isolation. We evaluated the enclosures by using the same 3 tests air filtration

experts use to certify class I biosafety cabinets: visual smoke pattern analysis using neutrally buoyant smoke, aerosol leak testing using a test aerosol that mimics the size of virus-containing particulates, and air velocity measurements.

#### Results

Qualitative evaluation revealed smoke escaping from all passive enclosure openings. Aerosol leak testing demonstrated elevated particle concentrations outside the enclosure during simulated intubations. In contrast, vacuum-

filter-equipped enclosures fully contained the visible smoke and test aerosol to standards consistent with class I biosafety cabinet certification.

reduced aerosol spread during simulated intubation and patient isolation.

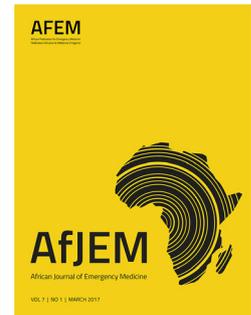
## Conclusion

Passive enclosures for intubation failed to contain aerosols, but the addition of a vacuum and active air filtration

## African Journal of Emergency Medicine

[afjem.com](http://afjem.com)

*The official journal of the African Federation for Emergency Medicine, the Emergency Medicine Association of Tanzania, the Emergency Medicine Society of South Africa, the Egyptian Society of Emergency Medicine, the Libyan Emergency Medicine Association, the Ethiopian Society of Emergency Medicine Professionals, the Sudanese Emergency Medicine Society, the Society of Emergency Medicine Practitioners of Nigeria and the Rwanda Emergency Care Association*



## The state of emergency medical technician education in Ghana

Flaherty KE, Zakariah AN, Vescio VA, Osei-Ampofo M, Mahama MN, Agongo V, Becker TK

*Afr J Emerg Med.* 2020;10(3):107–110

<https://doi.org/10.1016/j.afjem.2020.01.009>

## Objective

The National Ambulance Service (NAS) provides emergency medical services throughout Ghana and trains emergency medical technicians (EMTs) at the NAS Prehospital Emergency Care Training School (PECTS). Currently the majority of EMT training occurs primarily in a traditional didactic format. Students and faculty were interviewed to better understand their views of the current curriculum. Additionally, any barriers to integration of simulation-based learning were assessed. Following the interviews, the faculty was trained to conduct obstetric and neonatal simulations. The faculty was then observed introducing the simulations to the EMT students.

## Methods

A standardized list of questions developed in consultation with an education expert was used to elicit student

and faculty expression of opinion. Interviews were conducted in-person in small group settings. Training sessions were conducted in-person in large group settings.

## Results

Students and faculty alike expressed pride in their work and 14/25 groups felt that teaching efforts were high. However, students verbalized concern involving their lack of rest (12/18) and the high volume of lectures per day (11/18). Both students and faculty felt limited by the lack of simulation tools (17/25), library resources (14/25), internet access (17/25), and infrastructure (20/25). All groups felt favorably towards the integration of simulation-based learning (25/25).

## Conclusion

The faculty and students of PECTS support the transition from a curriculum based on traditional didactic learning to one based on simulation learning.

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## Emergency Medicine Journal

[emj.bmj.com](http://emj.bmj.com)

*Official Journal of the Royal College of Emergency Medicine*

### Exploring the factors motivating continued Lay First Responder participation in Uganda: a mixed-methods, 3-year follow-up

Peter G Delaney, Zachary J Eisner, T Scott Blackwell, Ibrahim Ssekalo, Rauben Kazungu, Yang Jae Lee, John W Scott, Krishnan Raghavendran

<http://dx.doi.org/10.1136/emermed-2020-210076>

## Background

The WHO recommends training lay first responders (LFRs) as the first step towards establishing emergency medical services (EMS) in low-income and middle-income countries. Understanding social and financial benefits associated with responder involvement is essential for LFR programme continuity and may inform sustainable development.

## Methods

A mixed-methods follow-up study was conducted in July 2019 with 239 motorcycle taxi drivers, including 115 (75%) of 154 initial participants in a Ugandan LFR course from July 2016, to evaluate LFR training on participants. Semi-structured interviews and surveys were administered to samples of initial participants to assess social and economic implications of training, and non-trained motorcycle taxi drivers to gauge interest in LFR training. Themes were determined on a per-question basis and coded by extracting

Keywords from each response until thematic saturation was achieved.

## Results

Three years post-course, initial participants reported new knowledge and skills, the ability to help others, and

confidence gain as the main benefits motivating continued programme involvement. Participant outlook was unanimously positive and 96.5% (111/115) of initial participants surveyed used skills since training. Many reported sensing an identity change, now identifying as first responders in addition to motorcycle taxi drivers. Drivers reported they believe this led to greater respect from the Ugandan public and a prevailing belief that they are responsible transportation providers, increasing subsequent customer acquisition. Motorcycle taxi drivers who participated in the course reported a median weekly income value that is 24.39% higher than non-trained motorcycle taxi counterparts ( $p < 0.0001$ ).

## Conclusion

A simultaneous delivery of sustained social and perceived financial benefits to LFRs are likely to motivate continued voluntary participation. These benefits appear to be a potential mechanism that may be leveraged to contribute to the sustainability of future LFR programmes to deliver basic prehospital emergency care in resource-limited settings.



## Emergencias

[emergencias.portalsemes.org/English](http://emergencias.portalsemes.org/English)

Official Journal of the Spanish Society of Emergency Medicine

### Worsening renal function during an episode of acute heart failure and its relation to short- and long-term mortality: associated factors in the Epidemiology of Acute Heart Failure in Emergency Departments–Worsening Renal Function study

Lluís Llauger, Javier Jacob, Luis Arturo Moreno, Alfons Aguirre, Enrique Martín-Mojarro, Juan Carlos Romero-Carrete, Gemma Martínez-Nadal, Josep Tost, Gerard Corominas-Lasalle, Alex Roset, Carlos Cardozo, Guillem Suñén-Cuquerella, Brigitte Alarcón, Sergio Herrera-Mateo, José Carlos Ruibal, Aitor Alquézar-Arbé, Víctor Gil, Ruxandra Donea, Marta Berenguer, Pere Llorens<sup>9</sup>, Bernat Villanueva-Cutillas, Francisco Javier Martín-Sánchez, Pablo Herrero, Òscar Miró (en representación del grupo ICA-SEMES)

**Cited:** Llauger L, Jacob J, Moreno LA, Aguirre A, Martín-Mojarro E, Romero-Carrete JC, et al. Factores asociados con el empeoramiento de la función renal durante un episodio de insuficiencia cardiaca aguda y su relación con la mortalidad a corto y largo plazo: estudio EAHFE—EFRICA. *Emergencias*. 2020;32:332–9.

#### Objective

To identify factors associated with worsening renal function (WRF) and explore associations with higher mortality in patients with acute heart failure (AHF).

#### Methods

Seven emergency departments (EDs) in the EAHFE—EFRICA study (Spanish acronym for Epidemiology of AHF in EDs—WRF in AHF) consecutively included patients with AHF and creatinine levels determined in the ED and between 24 and 48 h later. Patients with WRF were identified by an increase in creatinine level of 0.3 mg/dL or more. Forty-seven clinical characteristics were explored to identify those associated with WRF. To analyze for 30-day all-cause mortality we calculated odds ratios (ORs). To analyze mortality at the end of follow-up and by trimester, adjusted for between-group differences, we calculated hazard ratios (HRs). The data were analyzed by subgroups

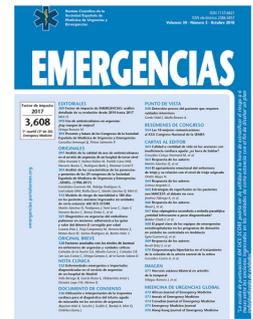
according to age, sex, baseline creatinine levels, AHF type, and risk group.

#### Results

A total of 1627 patients were included. The subgroup of 220 (13.5%) with WRF were older, had higher systolic blood pressure, were more often treated with morphine, and had chronic renal failure; there was also a higher rate of hypertensive crisis as the trigger for AHF in patients with WRF. However, only chronic renal failure was independently associated with WRF (adjusted OR, 1.695; 95% CI, 1.264–2.273). The rate of 30-day mortality was 13.1% overall but higher in patients with WRF (20.9% vs 11.8% in patients without WRF; adjusted OR, 1.793; 95% CI, 1.207–2.664). Accumulated mortality at 18 months (average follow-up time, 14 mo/patient) was 40.0% overall but higher in patients with WRF (adjusted HR, 1.275; 95% CI, 1.018–1.598). Increased risk was greater in the first trimester. Subgroup analyses revealed no differences.

#### Conclusion

AHF with WRF in the first 48 h after ED care is associated with higher mortality, especially in the first trimester after the emergency.



## Hong Kong Journal of Emergency Medicine

[hkjem.com](http://hkjem.com)

Official Journal of the Hong Kong College of Emergency Medicine  
(The print version of this article has been scheduled for January 2021)



### Impact of aerosol enclosure barrier to videolaryngoscopic oro-tracheal intubation: A pilot manikin study

Hui Chun Fai, Li Alex, Wong Chi Keung Gordon

<https://journals.sagepub.com/doi/10.1177/1024907920965309>

#### Background

Personal protective equipment used for protection of healthcare workers in the combat against Severe Acute Respiratory Syndrome Coronavirus 2 pandemic is in limited supply worldwide at present—2020. Use of barrier enclosure during endotracheal intubation can potentially act as a cost-effective adjunct to minimize risks of transmitting the infection to healthcare workers. However, there is concern that the enclosure itself will act as a barrier to the intubation procedure in the emergency settings.

#### Objective

To evaluate the negative effect of barrier enclosure (an aerosol box) on the performance of video-assisted intubation in a manikin.

#### Methods

A total of 41 Emergency Department doctors from a local hospital were recruited to perform intubation in a manikin simulating normal and more difficult airways (Cormack-Lehane grades I and IIb) with and without the box. The

primary outcome was time of successful intubation. The secondary outcomes were first-attempt success rate, number of successful attempts, need of adjuncts, dental injury and ease of intubation as perceived by the participants.

#### Results

The aerosol box had no significant negative effect on the time of successful intubation ( $p = 0.630$  (Grade I airway) and  $p = 0.436$  (Grade IIb airway)), first-attempt success rate, number of successful attempts, need of adjuncts or dental injury. Participants subjectively reported extra yet minor challenges during intubation in the presence of the box.

#### Conclusion

Within limits of the pilot study, the aerosol box had no statistical significant difference but an increasing trend of prolonged endotracheal intubation interval in the Grade IIb airway and negative impact on first-pass success, and could potentially be used to protect healthcare workers during the aerosol-generating intubation procedure.