

# Characteristics Associated with Fluid Responsiveness & Fluid Toxicity in Septic Patients Using Passive Leg Raise in a Mozambican Emergency Department



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## Background

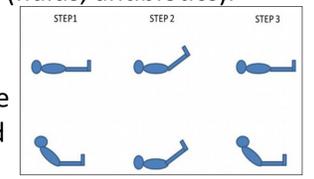
- Sepsis is a major cause of mortality worldwide. Early initiation of fluid resuscitation and appropriate antibiotics have been shown to improve survival, but studies conducted in resource-limited settings suggest that over-hydration is perilous in these circumstances.
- An observational study in Maputo Central Hospital found that patients with fever have a mortality rate.
- Passive leg raise (PLR) is one tool available in resource-limited circumstances to guide fluid responsiveness in this setting.

## Objectives

- In this study we piloted the use of PLR as a tool to gauge adequacy of resuscitation (fluid responsiveness) and risk of respiratory distress with further fluid administration (fluid toxicity).

## Methods

- Convenience sample of adults presenting or transferred to the Emergency Department (ED) at Maputo Central Hospital (MCH) in Mozambique on weekday afternoons from May 2014 – July 2015
- Sepsis defined as suspected infection AND at least two of the following criteria: fever or hypothermia, tachycardia, tachypnea, leukocytosis or leukopenia, or hypotension.
- Treatment information, including the working diagnosis and ER treatment (fluids, antibiotics).
- PLR was performed in non-intubated patients without ascites to assess for possible **fluid responsiveness** defined as increase in mean arterial pressure (MAP) >10mmHg or decrease in heart rate (HR) of >= 20.
- Fluid toxicity** assessment from PLR, defined as an oxygen saturation (O2sat) drop from ≥92% to <92% or a decrease of >2% in those with sitting



## Results

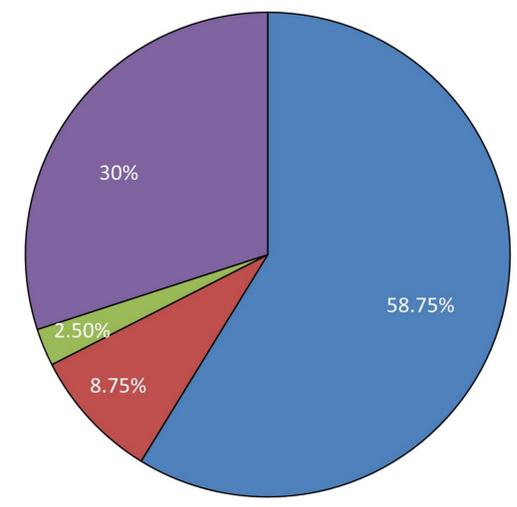
### Patient Characteristics

Enrollment Characteristics	n (%) Total = 93
<b>Male</b>	38 (40.9%)
<b>Age (median)</b>	35
<b>IQR</b>	(27-40)
<b>HIV Status at enrollment</b>	
HIV positive	56 (60.2%)
HIV negative	5 (5.4%)
Unknown	32 (36.4%)
<b>Received Fluid ≥1L prior to PLR</b>	42 (45.2%)
<b>Passive Leg Raise Attempted</b>	87 (93.6%)
<b>Passive Leg Raise Attempt Not Completed</b>	7 (7.5%)

### Passive Leg Raise Outcomes

Baseline Characteristic	Fluid Responsiveness		Fluid Toxicity	
	OR (95% CI)	p	OR (95% CI)	p
Age Increments (5 years)	0.96 (0.799, 1.156)	0.673	1.23 (0.974, 1.557)	0.0823
Male sex	0.49 (0.179, 1.378)	0.221	0.43 (0.085, 2.266)	0.471
HIV positive	0.33 (0.128, 0.886)	0.031	0.81 (0.201, 3.295)	1.000
Fever	0.94 (0.313, 2.857)	1.000	0.36 (0.043, 3.149)	0.678
MAP <65	0.88 (0.325, 2.433)	1.000	1.04 (0.239, 4.549)	1.000
HR > 100	2.31 (0.687, 7.805)	0.270	1.18 (0.226, 6.251)	1.000
O2 Sat <92%	1.25 (0.352, 4.440)	1.000	0.36 (0.080, 1.690)	0.188
RR>30	0.34 (0.113, 1.057)	0.078	0.97 (0.225, 4.261)	1.000
≥1L Fluid Administration	0.91 (0.356, 2.359)	1.000	2.89 (0.670, 12.528)	0.169

### Fluid Responsiveness & Toxicity



- No response, no toxicity
- No response, with toxicity
- Fluid responsive & toxicity
- Fluid responsive, no toxicity

## Discussion

- Recent studies have demonstrated the potential morbidity associated with excess fluid in patients with severe sepsis in developed and developing countries.
- PLR is well-tolerated in appropriately screened septic patients
- PLR is feasible in resource-limited settings to assess for fluid responsiveness.
- Known HIV seropositivity was associated with lower odds of fluid responsiveness, but there were no other baseline characteristics associated with fluid responsiveness or toxicity highlighting the utility of the PLR to help guide therapy.

## Conclusions

- Further study is warranted to evaluate the impact of PLR-guided fluid resuscitation on clinical outcomes in limited resource settings including mortality.
- As a feasibility study, we have demonstrated that PLR appears to be safe and may potentially identify those patients at highest risk of complications from standard fluid resuscitation in the setting of severe sepsis.
- While patients with severe sepsis and HIV/AIDS in resource heavy settings have recently been shown to have comparable mortality rates with their HIV negative counterparts, much work remains to define cost-effective interventions in resource limited settings.

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