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SERIAL LUNG ULTRASONOGRAPHY IN MALAWIAN PATIENTS WITH SUSPECTED SEPSIS AND HAEMODYNAMIC COMPROMISE: FINDINGS CHANGE WITH INTRAVENOUS FLUID TREATMENT AND PREDICT HYPOXIA

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Aims/Objectives/Background Studies from sub-Saharan Africa have challenged conventional fluid-liberal strategies for patients with sepsis. Extravascular lung water, associated with increased mortality in sepsis, may be an important factor in these findings. The role of lung ultrasonography in guiding intravenous fluid treatment of sepsis is not yet clear, however sonographic B-lines have been shown to correlate with measures of extravascular lung water.

The aim of this study was to assess, in Malawian patients with clinically suspected sepsis and haemodynamic compromise, how intravenous fluid treatment influences lung ultrasonography findings. In addition, we examined whether these findings predict the onset of hypoxia or are associated with decreased survival.

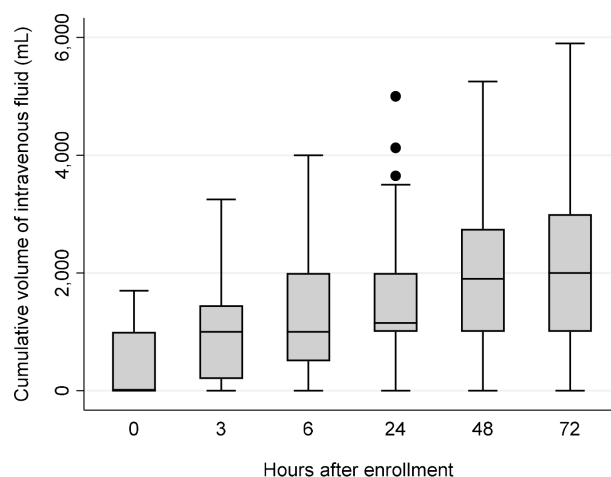
Methods/Design A prospective observational cohort study was carried out of 70 patients presenting with suspected sepsis to a Malawian hospital. Eight-zone lung ultrasonography was performed at enrolment and again at 3, 6, 24, 48 and 72 hours with a B-line score calculated at each timepoint.

Results/Conclusions Participants who received more intravenous fluid had more B-lines detected on lung ultrasonography. A mixed effects regression model estimated that there was approximately one additional B-line (1.01, 95% CI 0.59 – 1.43 $p < 0.001$) for every litre of intravenous fluid treatment. Moreover, in participants who were not hypoxic at presentation, a B-line score of greater than five was 86% sensitive and 74% specific for predicting impending hypoxia

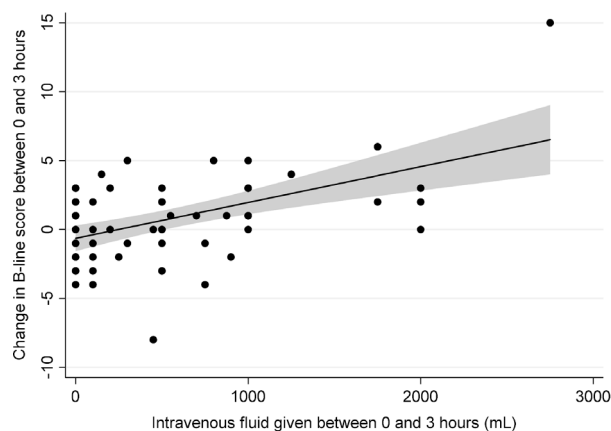
Abstract 100 Table 1 Participant characteristics

Variable	n = 70 n (%) or median [IQR]
Physiologic variables	
Female	43 (61.4)
Age	35 [26 – 47]
Heart rate (beats per minute)	130 [121 – 142]
Systolic blood pressure (mm Hg)	99 [86 – 115]
Systolic blood pressure ≤ 90 mm Hg	24 (34.3)
Mean arterial pressure ≤ 65 mm Hg	15 (21.4)
Respiratory rate (breaths per minute)	28 [22 – 36]
Oxygen saturation (%)	92 [86 – 96]
Oxygen saturation < 90%	30 (42.8)
Whole blood lactate (mmol/L)	3.9 [2.6 – 7.2]
HIV-related variables	
Unknown HIV serostatus at enrollment	2 (2.9)
Negative HIV serostatus tested within 6 months	20 (28.6)
Known positive HIV serostatus	48 (68.6)
Time since HIV diagnosis (days) (n = 20)	537 [22 – 1972]
On antiretroviral therapy at enrollment	41/48 (85.4)
Sepsis treatment variables	
Cumulative amount of intravenous fluid given (mL)	
Prior to enrollment	0 [0 – 1000]
By 3 hours after enrollment	1000 [200 – 1450]
By 6 hours after enrollment	1000 [500 – 2000]
By 24 hours after enrollment	1150 [1000 – 2000]
By 48 hours after enrollment	1900 [1000 – 2750]
By 72 hours after enrollment	2000 [1000 – 3000]
Cumulative number of participants who received empiric antibiotics (ceftriaxone, 2g intravenous)	
Prior to enrollment	21 (30.0)
By 3 hours after enrollment	47 (67.1)
By 6 hours after enrollment	60/66 (90.9)
By 24 hours after enrollment	65/66 (98.5)
Baseline sonographic B-line score *	5 [2 – 8]
In-hospital mortality	17 (24.3)

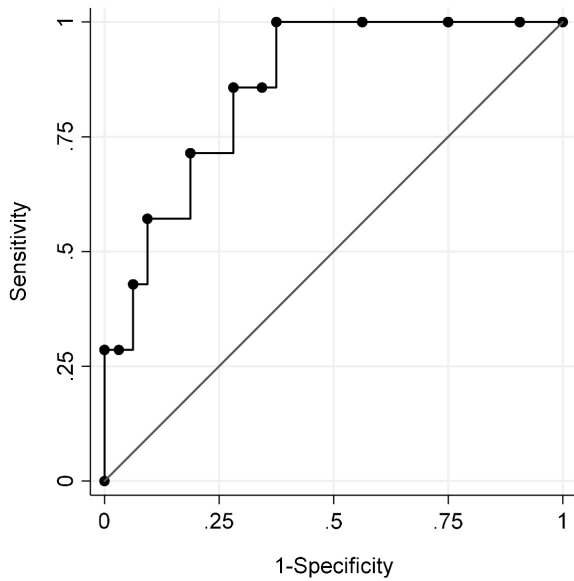
* The sum of the number of B-lines observed in each of eight thoracic zones.



Abstract 100 Figure 1 Box plots of cumulative intravenous fluid at each time point during the first 72 hours after enrollment



Abstract 100 Figure 2 Treatment with more IV fluid is associated with an increase in B-lines. A scatter plot of the change in B-line score by the amount of intravenous fluid given between enrollment and 3 hours after, with linear regression line and 95% confidence interval ($\beta = 2.6$, 95% CI 1.5 to 3.7, $p < 0.001$)



Abstract 100 Figure 3 The baseline B-line score predicts the development of hypoxemia during the first 72 hours of hospitalization. A receiver operator characteristic curve illustrating how the sonographic B-line score predicts future hypoxemia

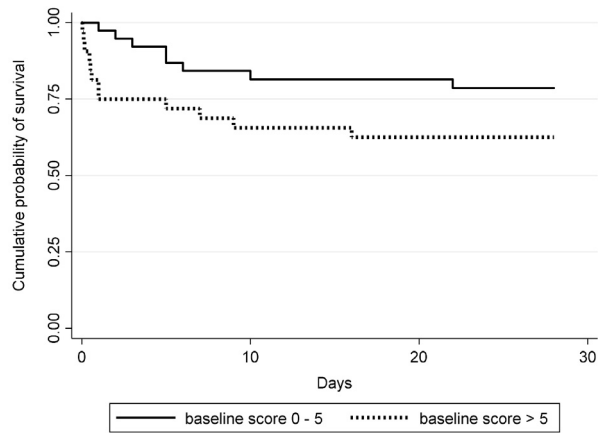
during the first 72 hours of admission. Analysis of mortality did not reach statistical significance ($p = 0.11$), but suggested a higher B-line score may be associated with increased risk of death.

In summary, this study establishes important relationships between intravenous fluid treatment and extravascular lung water as assessed by a novel use of lung ultrasonography in a resource-limited setting.

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REFERENCE

1. Wang RJ, Katha G, Phiri M, Delbridge P, Gordon SB, Calfee CS, Huang L, Rylance J. Sonographic B-lines, fluid resuscitation, and hypoxemia in malawian patients with suspected sepsis. *Am J Respir Crit Care Med* 2020 Apr. doi: 10.1164/rccm.202003-0640LE.



Abstract 100 Figure 4 A higher B-line score may be associated with decreased survival. Kaplan-Meier survival estimates for participants with a baseline sonographic B-line score from 0–5 compared to participants with scores > 5 (estimated hazard ratio 2.1, 95% CI 0.86 to 5.1, $p = 0.11$)

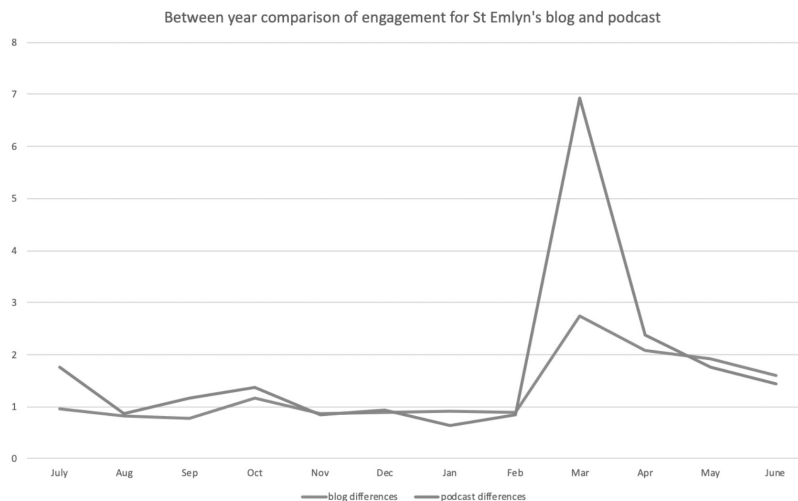
131 RAPID AND SUSTAINED INCREASE IN #FOAMED BASED EDUCATION DURING COVID-19 ON THE ST EMLYN'S BLOG AND PODCAST

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Aims/Objectives/Background COVID 19 has resulted in a rapid and unplanned change in the way that education is delivered and consumed. The St Emlyn's team published a range of webinars, blogs, podcasts and critical appraisal articles specifically focused on COVID-19 during the pandemic. Some webinar content was published in conjunction with the Royal College of Emergency Medicine and the University of Manchester.

We reviewed how engagement with the free and open access medical education (FOAMed) St Emlyn's blog and podcast changed as a result of the pandemic



Abstract 131 Figure 1