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A Quantitative Usability Analysis of the ALiEM Air Score

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given right before the intervention (pre-test), immediately post-intervention (initial post-test) and 3-6 months post-intervention (delayed post-test). Performance on the MCQ test was compared using a mixed effects repeated measures model and used a Bonferroni correction. Differences in the comfort questionnaire were obtained using the Kruskal-Wallis test.

**Results:** All 35 subjects completed the pre-test and initial post-test. MCQ test scores improved in the SIM group compared to the DBL group on the initial post-test (baseline adjusted difference = 2.83, p=0.009). 34 subjects completed the delayed post-test. There was no difference between MCQ test scores comparing SIM with the LEC or DBL groups (p > 0.05). There was no difference in comfort levels between groups on the immediate or delayed post-tests (p>0.05).

**Conclusions:** Simulation serves as a non-inferior didactic modality to teach EM residents the topic of sepsis. Our study demonstrated superior immediate knowledge gain when comparing SIM to DBL, but not to LEC. There no difference in long-term knowledge retention between the three modalities. Limitations include the variable 3-6 months time period to collect delayed post-test. The long lag-time for subjects responding at the 6 month time point might have eliminated a difference that might have been seen at the 3 month mark. Also, variable exposure to simulation may have affected subjects' comfort level in the simulation, potentially affecting how well one may learn from simulation. Finally, subjects from all years of training were included. More senior residents might have expert knowledge that would minimize an effect that any of the interventions might have had.

## 5 A Quantitative Usability Analysis of the ALiEM Air Score

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**Background:** Emergency medicine (EM) residents are increasingly utilizing online education resources (OERs), however, they receive little instruction in assessing their quality. Academic Life in Emergency Medicine (ALiEM), an online education website, created the Approved Instructional Resources (AIR) rubric to curate and assess the quality of these OERs. The rubric was found to be reliable within a group of 8-9 experts in EM education. Its acceptability and ease of use by general medical students (MS), EM attendings, and residents has yet to be studied.

**Objectives:** This study aimed to evaluate the AIR rubric's usability in a general population of MS, residents and attendings. We hypothesized that residents and MS would have difficulty assessing the impact and accuracy of OERs.

**Methods:** A convenience sample of MS, EM residents, and EM attendings were obtained as part of the METRIQ Study through in-person recruitment, social media promotion, and e-mails from prominent OER authors. After evaluating 5 OERs with the AIR rubric, each participant completed a usability assessment as well as which rubric items they found difficult to apply. Of the 330 participants, 21 did not complete the usability analysis.

**Results:** Table 1 shows the demographics of the raters. Overall, the AIR rubric was rated as very easy to use. Across all three levels, the BEEM score was most frequently reported as difficult. The next two items in terms of difficulty related to article accuracy and the incorporation of EBM. [Table 2]

**Conclusions:** The ALiEM AIR rubric was designed for a group of EM educators. This was the first attempt to evaluate its usability among a broad population of OER users. The BEEM score component of the ALiEM AIR score was the most difficult for all three populations to use. Medical students and residents reported difficulty analyzing the impact and accuracy of OERs. This data will inform the modification of the AIR score to better facilitate quality assessment of OERs by end users.

**Table 1.** Population of ALiEM AIR Usability Testing Raters.

Rank	Attending	33.0% (109/330)
	Resident	28.8% (95/330)
	Medical Student	38.2% (126/330)
Gender Split	Female	39.4% (130/330)
	Male	60.0% (198/330)
	Other	0.6% (2/330)
Age	Average (SD)	31.2 (+/- 7.3) years
Level of Training	Medical Students	39.1% (126/330)
	Resident	28.8% (95/330)
	Attending Physicians	33.0% (109/330)
Manage, Own or Operate own blog?	Yes	14.5% (48/330)
	No	84.5% (279/330)
Country of Origin	United States	37.9% (125/330)
	Canada	45.2% (149/330)
	Other	16.9% (56/330)

**Table 2.** Quantification of Difficult Components of the ALiEM AIR Rubric.

Component of ALiEM AIR Score	Item Instructions	Total % of Raters that found this item difficult
BEEM Rater Scale	Assuming that the results of this article are valid, how much does this article impact on EM clinical practice?	28.2% (87/309)
Accuracy	Do you have any concerns about the accuracy of the data presented or conclusions of this article?	13.3% (41/309)
EBM	Does this article reflect evidence based medicine (EBM) and thus lack bias?	13.3% (41/309)
Educational Utility	Are there useful educational pearls in this article for residents?	11.0% (34/309)
Referencing	Are the authors and literature clearly cited?	10.7% (33/309)