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### Title

In-flight medical emergencies: creation of a novel simulation based medical student curriculum

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**In-flight Medical Emergencies: Creation of a Novel Simulation Based Medical Student Curriculum**

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Manuscripts

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3 **In-flight Medical Emergencies: Creation of a Novel Simulation Based Medical**  
4 **Student Curriculum**  
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7 **Running head**

8 Managing In-flight Medical Emergencies  
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5 Dear Sir  
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7 An estimated 20,000 in-flight medical emergencies occur in the United States  
8 annually (Silverman et al. 2008). Aircraft cabins are loud, confined spaces, without  
9 direct access to established medical care (Mattison et al. 2011). The reduced  
10 humidity and atmospheric pressure, and loss of personal mobility all present  
11 specific pathophysiologic considerations for physicians that respond to a fellow  
12 passenger in need (Silverman et al. 2008). There are no United States medical  
13 school curriculum requirements specific to this community need.  
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24 We hypothesize that medical students do not feel comfortable assisting  
25 during an in-flight medical emergency nor do they have an adequate fund of  
26 knowledge in this area. Additionally, we hypothesize that a focused curriculum,  
27 including a simulated medical emergency in a mock aircraft cabin, will improve both  
28 comfort and fund of knowledge.  
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36 Thirty-seven medical students completed a ninety-minute curriculum on in-  
37 flight medical emergencies. The curriculum consisted of a lecture attended by the  
38 entire group and a simulation case. All participants completed a baseline  
39 questionnaire prior to learning the curriculum. This document included  
40 demographic information, self-assessment questions addressing their perceived  
41 knowledge of several aspects of in-flight medical emergencies, and fund of  
42 knowledge questions. Participants then completed the simulation case. After  
43 completing the simulation scenario, twenty-two students also completed a post-  
44 session questionnaire. Descriptive statistics were performed on the baseline  
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3 questionnaire. Pre- and post-session questionnaire results, were compared with t-  
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5 tests.  
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8 Ten (27%) of the participants had been on an aircraft during a medical  
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10 emergency, but only one (3%) of the participants had assisted in management of the  
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12 emergency. One participant (3%) had prior training in flight physiology or in-flight  
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14 medical emergencies. Students expressed poor initial self-assessment of knowledge,  
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16 confidence, and competence, with a mean Likert-type question response less than 3  
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18 (1 representing strong disagreement, 7 representing strong agreement). Initial  
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20 mean score on fund of knowledge questions was 64% (95% CI: 59%-69%). Of the  
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22 paired responses, the mean fund of knowledge score increased from 61% to 91%  
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24 (p<0.0001) and all of the mean self-assessment responses increased (p ≤ 0.001).  
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30 The participants' responses to both subjective and objective questions  
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32 indicated that they were not optimally prepared to render aid during in-flight  
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34 medical emergencies. Our curriculum improved their scores on objective and  
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36 subjective questions, indicating they may be better prepared to respond to future in-  
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38 flight medical emergencies. If replicated on a larger scale, medical schools should  
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40 consider adding basic training for in-flight emergencies to emergency medicine  
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42 curricula.  
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#### 48 References

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