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Delivered oxygen fraction during simulated cardiopulmonary resuscitation depending on the kind of resuscitation bag and oxygen flow.

Ariño Irujo JJ¹, Velasco JM, Moral P, Carrillo B, López-Timoneda F.

Author information

Abstract

Emergency cases for resuscitation include built-in oxygen cylinders with limited oxygen supply. The use of a bag-valve mask device (BVMD) with a reservoir requires a high constant flow of oxygen to maintain a high concentration of delivered oxygen. The goal of the study was to analyze what fraction of inspired oxygen (FiO₂) can be reached and how long it takes using different BVMD with their reservoir device and different oxygen flows in order to allow a reduction in oxygen requirements during simulated cardiopulmonary resuscitation (CPR). Experimental analysis was carried out during simulated CPR on the effect in the final FiO₂ and the time required to reach it using two different models of BVMD with their reservoir device: Mark IV and Revivator-Plus and four different oxygen flows 5, 10, 15, and 10 l/min during 1 min, followed by 5 l/min (10-5). With both the BVMDs studied, the FiO₂ values reached at 10, 15, and 10-5 l/min were higher than 0.85 [Mark IV=0.87 (0.01); Revivator=0.93 (0.03)] in 60 s. At 5 l/min FiO₂ were lower in 60 s (P<0.001) and were higher than 0.85 [Mark IV=0.90 (0.005); Revivator=0.90 (0.005)] in 80 s. The mean FiO₂ was lower with the Mark IV (P<0.05) (Table 1). To allow a substantial reduction in oxygen requirements, a 10 l/min for 1 min, followed by 5 l/min of oxygen flow can be used during CPR with both BVMDs studied. Increasing supplemental oxygen flow did not appreciably increase the FiO₂.

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