

Teaching Mechanical Ventilation for Residents in Intensive Care

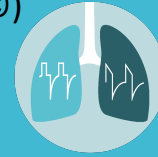
A randomized Trial Using Traditional Lectures VS Computer-Based Simulation (SimVA©)

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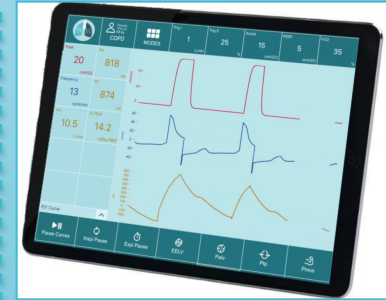


Introduction

During educational process, trainees apply their knowledge to treat patient in intensive care before achieving full clinical competency. Moreover, advances in knowledge regarding mechanical ventilation in particular lung protective ventilation and asynchronies have been shown to be associated with mortality. For these reasons we developed a simulator of controlled and spontaneous artificial ventilation (SimVA) and virtual breathing patients. Mathematical model resolved differential equations of chest and lung movements according to inspiratory effort or not in order to match with a clinical database. The aim of this study was to compare two teaching modalities on mechanical ventilation: traditional lectures versus virtual simulation.

Method

This randomized controlled study involved 54 residents. One group of 23 participants attended the same didactic lecture on mechanical ventilation (3 hours) whereas the other 28 were in the simulator group (3 hours). Performance was measured using a pre and post-test evaluation of knowledge on respiratory settings and pressure flow time curves monitoring. A retention test was done at 3 months (The same questioner was used for pre, post and retention test). Comparison was individual in each group (ANOVA, multiple comparison) and between groups (Mann-Whitney), $p < 0,05$ was considered significant.



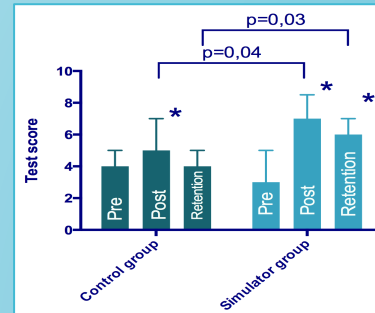
Simulator Course

54 residents
randomisation



Results

Baseline knowledge was not different between groups; post-test was significantly improved in both groups (figure) but was significantly higher in the simulator group. Retention test was only significantly different from the pre-test in the simulator group.



Discussion

A computer-based simulation with a modelisation of controlled and spontaneous mechanical ventilation has the potential to improve knowledge and skills in ventilator settings in comparison to traditional didactic lectures.



Simulator course

VS

Traditional lecture
PowerPoint

