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Abstract: New cardiopulmonary resuscitation (CPR) guidelines have been published in 2010 emphasizing the importance of minimizing interruptions during chest compression. The aim of our study was to compare the simulator-based CPR training performance of physicians not specialized in anaesthesia and intensive care nurses before and after implementation of new resuscitation guidelines. In autumn 2010, a total of 74 scenarios during six 1.5 day simulation-based CPR trainings were performed. Four of them were conducted after the implementation of the 2010 guidelines. During each simulated scenario a programmed script standardized the conditions of the simulator and its reactions on the trainees' actions. CPR relevant parameters were extracted on the basis of the simulator's log files and no-flow-time fraction and median cardiac output of the simulator were calculated. Results before and after the guideline implementation were compared using the Wilcoxon Two Sample Test. Thirty-four out of 74 scenarios were included into the analysis. During training according to the 2010 guidelines, the no-flow-time fraction was lower (median: 21.8% [IQR: 16.1-27.1%] vs. 29.1 % [IQR: 25.0-30.9 %]; P=0.04). The median cardiac output increased from 1.60 L/min-1 [IQR: 1.50-1.65 L/min-1] to 1.90 L/min-1 [IQR: 1.80-2.10 L/min-1];
P<0.001) when the CPR training was conducted according to the 2010 resuscitation guidelines. Non-anesthesiological physicians and intensive care nurses training demonstrated an improved CPR performance in a high-fidelity human patient simulator with respect to the median cardiac output and duration of no-flow-time when 2010 CPR guidelines were applied.