Study: Intensive Care Quick Reference Checklist Manual

Medical errors occur often and potentially harm patients. For example, in intensive care units (ICUs), adverse events are common, often owing to failures to carry out intended treatment correctly. This study aimed to test the effectiveness of checklists for emergency procedures on medical staff performance in intensive care crises. Researchers found that the use of checklists helped care teams to complete more critical treatment steps during a crisis situation. The finding is published in the *Journal of Critical Care*.

For the study, the researchers developed an intensive care medicine abnormal and emergency checklist manual, called quick reference manual (QRM), and tested medical staff performance using high-fidelity simulation according to recently published quality markers. They hypothesised that using the QRM increases guideline adherence and the completion of specific treatment steps in crises scenarios.

"When the QRM is used in situations requiring a complex diagnosis and treatment, speed of initiation of treatment steps increases," according to Katja S. Just, MD, Department of Anesthesiology and Intensive Care Medicine, Medical Center Cologne–Merheim, and colleagues. "The importance of correct implementation and training of checklists to improve safety should not be underestimated. Introducing a QRM for crisis situations is a promising approach that may improve patient care."

Materials and Methods

This is a prospective single-centre randomised trial in a high-fidelity simulation centre modelling an ICU in a tertiary care hospital in Germany. Participants were uninformed concerning the aim of the study. Teams consisted of one ICU resident and two ICU nurses (in total, n = 48).

All teams completed four crisis scenarios — obstructed tracheostomy tube (OT), pulmonary embolism (PE), unstable bradycardia (UB), status epilepticus (SE) — in which they were randomised to use checklists or to perform without any aid. In two of the scenarios (OT and UB), checklists could be used immediately (type 1 scenarios); and for the remaining (PE and SE), some further steps, for example, confirming diagnosis, were required first (type 2 scenarios).

Checklist development was done according to previously established and recommended methodology, and based on recent guidelines of appropriate societies.

Outcome measurements were number of predefined items and time to completion of more than 50 percent and more than 75 percent of steps, respectively. The scenario was ended when either all predefined key items were completed or 15 minutes after onset of crisis, whatever occurred first. All sessions were recorded as multiscreen synchronised videos. Data on time to diagnosis and numbers of key items completed were recorded from the video streams independently by two examiners.

Furthermore, participants were asked to fill out a questionnaire after training concerning their assessment of the use and functionality of the QRM as well as authenticity and quality of the scenarios. Results were reported using 5-point Likert scales (1, strongly disagree; 5, strongly agree).

Results

A total of 16 intensive care medicine teams participated in 64 simulated scenarios. When using checklists, participants initiated items faster and more completely according to appropriate treatment guidelines (9 vs. 7 items with and without checklists, P < .05).

Benefit of checklists was better in type 2 scenarios than in type 1 scenarios (2 vs. 1 additional item, P < .05). In type 2 scenarios, time to complete 50 percent and 75 percent of items was faster with the use of checklists (P < .005).

Participants rated the scenarios as realistic for all scenarios (4 points on a 5-point Likert scale). The checklists were evaluated as neutral by the participants (3 points on a 5-point Likert scale).

Conclusions

The results demonstrate a decrease for time of completion for some scenarios and an increase of number of completed critical treatment steps with the use of a QRM. Even if there is evidence that performance is improved, this study was not designed to show improvement on patient outcome.

The implementation of checklists for intensive care crises is a promising approach that may improve patient care. However, owing to the complexity in the field of intensive care medicine, further research is needed on effective checklist design, acceptance, implementation, and, finally, patient outcome.

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