Enhancing Decision-Making in the Intensive Care Unit
With a Graphical Monitoring Display

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A graphical monitoring display was designed to promote rapid assessment of a critically ill patient's physiologic state. In previous research, diagnostic accuracy for Intensive Care Unit nurses using the graphical display (n=15) was on average 5% lower than for nurses using a traditional display (n=15). One limitation was that the computerized training program for the new display was inadequate. The objective of this study was to evaluate the effects of an enhanced training protocol conducted in a patient simulator laboratory so that nurses could practice using the graphical display in a realistic patient care setting. Hour-long training sessions were conducted with groups of 2-4 Intensive Care Unit nurses to facilitate interactive learning. Each training session involved simulated scenarios during which the nurses assessed the patient, intervened by administering intravenous fluids or medications, and monitored the patient's response to treatment. Nurse performance using the graphical display was determined by administering a 20-question scenario-based test 2-7 days following the training sessions. Display testing results from this study were compared to the previous research findings. Nurses who received simulator training on the graphical display (n=12) showed significantly improved diagnostic accuracy over nurses who had received the original computer-based training (84.6% versus 74.4%, p = 0.04). The simulator training brought diagnostic accuracy for nurses using the graphical display up to the level demonstrated by nurses using a traditional monitoring display (84.6% versus 81.0%, p = 0.04). Nurses who completed the simulator training rated the usefulness of the graphical display significantly higher than nurses who had completed the computer-based training. These findings demonstrate that effective training is a vital component of monitoring display research. Interactive training on the patient simulator provided nurses with an opportunity to use the new technology in a realistic setting and develop the ability to recognize visual patterns in the physiologic data. Additional data collected during the training sessions will be used to adapt the graphical display in an attempt to further improve diagnostic accuracy and pattern recognition.

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