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Clinical Evidence Series

Using an animated patient avatar to improve perception of vital sign information by anaesthesia professionals

What's different

Instead of presenting vital signs as numbers and waveforms, Visual Patient Avatar integrates data from multiple sensors into a single, intuitive anatomical visualization, designed to support rapid perception of overall patient status at a glance.

Interpretation

Presenting physiologic information through a visual avatar was associated with improved situation awareness, including better perception, higher confidence, and lower cognitive workload, suggesting that information display design can meaningfully influence how clinicians process patient data.

Key takeaways

Participants using Visual Patient Avatar correctly recalled nearly twice as many vital signs compared with conventional monitoring (9 vs. 5; p<0.001), with higher perceived confidence and lower perceived workload.

Background

- Situation awareness is critical for timely and accurate interpretation of vital signs
- Conventional monitors require clinicians to integrate multiple numbers and waveforms
- Visual Patient Avatar utilizes a user-centered, multiple sensor, multiple indicator approach

Objectives

Compare vital sign recall, confidence and perceived workload between the Visual Patient Avatar and conventional monitoring in a simulated setting.

Study design and methods

- Multicenter laboratory simulation at two university hospitals
- Participants were anesthesiologists and nurse anesthetists
- Each participant was exposed to brief (3 or 10 second) monitoring scenarios
- Scenarios displayed either the Visual Patient Avatar alone or a conventional monitor interface
- Outcomes: vital sign recall, confidence, and perceived workload

Results

Avatar leads to significantly better vital sign recognition with increased confidence and lower workload

Median correctly recalled vital signs: 9 vs. 5 (p<0.001)

Higher perceived confidence: 2 (certain) vs. 1 (uncertain), p<0.001

Lower perceived workload: NASA Task Load Index 60 vs. 76 (p<0.001)

Tscholl DW, Handschin L, Neubauer P, Weiss M, Seifert B, Spahn DR, Nöthiger CB. Using an animated patient avatar to improve perception of vital sign information by anaesthesia professionals. Br J Anaesth. 2018;121(3):662-671. doi:10.1016/j.bja.2018.04.024

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