

## Clinical Evidence Series

### Avatar-Based Patient Monitoring With Peripheral Vision: A Multicenter Comparative Eye-Tracking Study



#### What's different

Avatar-based monitoring transforms numerical vital sign data into an animated patient model, enabling clinicians to perceive multiple physiological changes simultaneously, including through peripheral vision.



#### Interpretation

In a controlled eye-tracking setting, avatar-based monitoring was associated with substantially improved recognition of patient status changes and higher diagnostic confidence compared with conventional numeric displays.



#### Key takeaways

Vital sign change recognition increased using peripheral vision with higher diagnostic confidence.



#### Background

- Conventional patient monitoring requires sequential interpretation of multiple data points and can increase cognitive load and delay situational awareness
- Clinicians visually attend to patient monitors for only ~5% of case time and even less during high workload
- Avatar-based visualization may enable faster recognition of physiological changes, including through peripheral vision



#### Study design and methods

- Multicenter, computer-based eye-tracking study conducted at two Swiss university hospitals
- Within-participant comparison of avatar-based vs. conventional monitoring
- Anesthesia professionals viewed monitoring displays in peripheral vision only using controlled eye-tracking setup
- Included 36 simulated vital sign deviations across two scenarios in which participants were asked if they recognized if the vital sign had changed, if yes, in what direction the change occurred, and confidence in their response



#### Objectives

Compare avatar-based and conventional monitoring for detection of patient status changes using peripheral vision and assess diagnostic confidence.



#### Results

Detection of changes increased substantially with avatar monitoring:

- o Scenario 1: median 12 vs. 3 changes detected ( $p < 0.001$ )
- o Scenario 2: median 8 vs. 3 changes detected ( $p < 0.001$ )

Diagnostic confidence improved from unconfident/very unconfident to confident with avatar monitoring.