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Clinical Evidence Series

Implementation of an automated early warning scoring system in a surgical ward: practical use and effects on patient outcomes

What's different

Automated MEWS replaces manual calculation and documentation with device-supported vital sigh capture, automated scoring, and on-screen clinical guidance, standardizing assessment and protocol adherence at the bedside.

Interpretation

Automated EWS was associated with improved completeness and adherence to monitoring protocols, suggesting that automated EWS may strengthen the reliability of clinical surveillance.

Key takeaways

Complete MEWS assessments increased from 2.5% to 45.5% and protocol adherence improved from 1.1% to 25.4%.

Background

- Early warning scores (EWS) are used to detect clinical deterioration, but their impact on outcomes remains inconsistent, particularly in high-risk surgical populations
- Effective EWS use depends on complete and timely documentation of vital signs, which may be suboptimal with manual workflows

Objectives

Evaluate the impact of automated early warning scoring on workflow adherence and clinical outcomes.

Study design and methods

- Retrospective, before-and-after study conducted in an 8-bed high-dependency unit in a tertiary hospital
- Included 592 postsurgical patients (320 control, 274 intervention) requiring step-down care from the ICU
- Intervention: implementation of an automated MEWS system (IntelliVue Guardian*) to support vital sign acquisition, scoring, and clinical decision support

*Product no longer in active support.

Results

Workflow adherence: Complete MEWS assessments **increased from 2.5% to 45.5%** (p<0.001), and MEWS protocol adherence **increased from 1.1% to 25.4%**

Documentation quality: Missing vital sign elements were **reduced**, particularly for respiratory rate and level of consciousness

Clinical outcomes: No significant differences were observed in mortality, length of stay, or ICU readmissions

Mestrom E, De Bie A, van de Steeg M, Driessen M, Atallah L, Bezemer R, Bouwman RA, Korsten E. Implementation of an automated early warning scoring system in a surgical ward: practical use and effects on patient outcomes. PLoS One. 2019;14(5):e0213402. doi:10.1371/journal.pone.0213402

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