

Clinical Evidence Series

A wearable patch based remote early warning score (REWS) in major abdominal cancer surgery patients



What's different

Instead of generating early warning scores from intermittent spotcheck measurements, the Healthdot wearable patch continuously measures heart rate and respiratory rate to automatically generate a Remote Early Warning Score (REWS), allowing continuous assessment of patient deterioration risk.



Interpretation

A wearable patch-based REWS demonstrated comparable performance as the spotcheck MEWS when determining the likelihood of patient deterioration within 24 hours.



Key takeaways

REWS derived from continuous wearable monitoring detected the same number of clinically significant deteriorations as MEWS without requiring manual spot checks.



Background

- Postoperative deterioration frequently occurs on surgical wards and is often preceded by abnormalities in vital signs
- Early warning scoring systems are widely used but depend on manually collected intermittent measurements and nursing workflow
- Wearable monitoring technologies allow continuous collection of physiologic data and may support automated detection of patient deterioration



Objectives

Develop a wearable patch-based Remote Early Warning Score (REWS) and compare its performance for detecting deterioration with the conventional Modified Early Warning Score (MEWS).



Study design and methods

- Prospective single-center study conducted at Catharina Hospital, Eindhoven, the Netherlands
- 103 adults undergoing major abdominal cancer surgery were included in the final analysis
- Heart rate and respiratory rate were continuously measured using the Philips Healthdot wearable patch
- REWS performance was compared with routine MEWS assessments for prediction of clinically relevant deterioration (Clavien-Dindo grade ≥ 2) within 24 hours



Results



Deterioration detection: Both systems demonstrated identical sensitivity (0.20) and specificity (0.96) for deterioration detection.



Performance: REWS achieved an area under the receiver operating characteristic curve of 0.71 compared with 0.62 for MEWS.