

Optimization Strategies to Reduce Alarm Fatigue in Patient Monitors

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BACKGROUND: In order to ameliorate alarm fatigue, three optimization strategies were proposed to reduce false alarms and repetitive non-actionable true alarms.

METHODS: The four-lead arrhythmia analysis, multi-parameter fusion and intelligent threshold reminder were applied and evaluated in multi-center clinic study. The four-lead arrhythmia analysis algorithm includes lead optimization, beat matching, detection and classification combinations. The multi-parameter fusion algorithm involves the information calculated from ECG, SpO₂ and IBP wave signals. The intelligent threshold reminder can help medical staff to adjust and recover alarm limits appropriately.

RESULTS: The results show that more than 50% of false alarms were reduced by the four-lead analysis and the multi-parameter fusion analysis. In some specific occasions, the intelligent threshold reminder could reduce repetitive non-actionable true alarms significantly.

CONCLUSION: It is concluded that to increase the dimensionality of parametric analysis and control the alarm limits are conducive to reduce alarm fatigue in intensive care units.