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Hravnak M, DeVita MA, Edwards, L, Clontz A, Valenta C, Pinsky MR. Cardiorespiratory instability before and after implementing an integrated monitoring system. *Am J Respir Crit Care Med.* 2008; 177: A842.

Background

Patients on stepdown units (SDUs) are at risk to develop cardiorespiratory instability that can be undetected and under-treated. We hypothesized that an Integrated Monitoring System (IMS) that continuously integrates four minimally invasive monitored parameters (HR, RR, BP, SpO₂) into a single Visenzia™ Index value (VSI; 1-10) would reduce cardiorespiratory instability in a SDU.

Our metric was the presence of instability meeting Medical Emergency Team (MET) activation triggers.

Methods

Prospective, longitudinal study of monitored patients on a 24-bed trauma SDU in three 8-wk phases (P1, P2, P3). P1 VSI was not displayed but VSI and vital sign trends were recorded; patients received standard care. P2 VSI was displayed on bedside and central monitors; staff was educated on its meaning. P3 staff used a clinical algorithm response to VSI alarms ≥ 3.2 . We defined MET_{min} as a patient exceeding MET trigger values, and MET_{full} as MET_{min} that was persistent and of need of intervention.

Results

Admissions (333 vs 313 admits) and continuous monitoring (18,258 vs 18,314 hrs) were similar in P1 and P3 respectively.

Similar numbers of patients experienced MET_{min} in both P1 and P3 (25% vs 20%, p=.142), but the number of MET_{min} events decreased in P3 (236 vs 164 events; p=.008).

The number of patients who developed serious instability or MET_{full} was also less in P3 (17.4% vs 5.1%, p=.000) as was the number of MET_{full} events (111 vs 35 events, p=.000) for P1 and P3 respectively.

Conclusion

The use of an IMS and nursing education is associated with a decreased prevalence of serious cardiorespiratory instability in SDU patients. Further study will determine if using the IMS and resultant decrease in SDU instability alters patient outcomes and costs.

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