

Protocol for Use of Respiratory Volume Monitoring in the PACU of a Tertiary Care Medical Center

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Introduction: The Joint Commission recognizes opioid-induced respiratory depression as a safety target and recommends additional monitoring for patients receiving opioids. Respiratory volume monitors (RVM) provide objective measurements of respiratory status and help detect respiratory compromise.

Identification of the problem: The most vulnerable time for patients is the first 24 hours post-operatively when the effects of general anesthesia, opioids, antiemetics, and sleep deprivation compound together. While the RVM accurately monitors patients' respiratory status, no PACU protocol for RVM use exists in our facility.

QI question/Purpose of the study: We describe previously reported results of our study that identified patients at risk for respiratory compromise in the PACU and on the general hospital floor (GHF). Our goal was to develop a nursing protocol for RVM use in the PACU to confirm clinical assessments and triage patients.

Methods: 119 patients were monitored using a RVM in both the PACU and GHF. The monitor reported minute ventilation, which was used to identify patients with low minute ventilation events (LMVe). Patients were separated into two groups: those with LMVe within 30 minutes of PACU discharge (Group B) and those without (Group A).

Outcomes/Results: Group B had a significantly higher rate of LMVe compared to Group A in the PACU ($1.3 \pm 1.44/\text{hr}$ vs $0.20 \pm 0.46/\text{hr}$) and on the GHF ($1.57 \pm 1.46/\text{hr}$ vs $0.24 \pm 0.49/\text{hr}$). There were no differences in opioid dosages between groups.

Discussion: Patients with LMVe in the PACU continued to experience it on the GHF. We therefore propose a PACU RVM use protocol that allows nurses to objectively monitor patients whom they identify as at risk of respiratory compromise. Patients with RVM alarms should be stimulated, repositioned and have their sedating agent dosage adjusted. Recurring alarms should trigger consultation with a physician. Patients with one or more LMVe within 30 minutes of anticipated PACU discharge should continue RVM monitoring on GHF.

Conclusion: Patients at risk for respiratory compromise on the GHF can be identified in the PACU using the RVM. Our protocol can help nurses identify and triage patients with respiratory compromise prior to PACU discharge.

Implications for perianesthesia nurses and future research: The implementation of RVM will allow nurses to objectively identify patients at risk for respiratory compromise. Proper protocols should be further developed and clinically tested.