CHEST

Mechanical Ventilation

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UTILIZATION OF A FAILURE MODE EFFECTS ANALYSIS (FMEA) TO EVALUATE THE SAFETY OF VENTILATOR PATIENTS IN A NON-ICU SETTING

Maureen A. Seckel, MSN*, Billie Speakman, RRT, Diane Bradtke, RN and Gerald O'Brien, MD

Christiana Care Health Services, Newark, DE

PURPOSE: Ventilator alarms and response to those alarms are an integral part of ventilator patient management and safety. The Joint Commission on Accreditation of Healthcare Organizations (JCHAO) published standard LD 5.2 for acute care facilities to implement a FMEA. We examined the risks for ventilator patients outside of the intensive care unit.

METHODS: Using the FMEA process, the team met from 2002 –2004 and identified 2 primary failure modes; 1) failure to hear alarms and 2) failure to respond to alarms. A hazard score (severity rating multiplied by probability rating) was determined along with a project plan. Several solutions were immediately implemented including, cohorting all non-ICU ventilator patients to one intermediate care unit and mandating a temporary airway pressure monitor (disconnect alarm). KT analysis was done for permanent options for a reliable ventilator alarm system.

RESULTS: The total hazard score decreased from 100 to 36 (range 0-120) demonstrating a 64% reduction in risk along with lack of patient events. Staff satisfaction was measured by survey with an average score of 4.4 (range 1-5). Ventilator patients admitted to the unit included chronic, weaning and home ventilators with admissions ranging from 69 in 2001 to 106 in 2004, a 65% increase in census. Ventilator response time averaged 2.65 minutes prior to implementation of the changes and X minutes post.

CONCLUSION: A significant reduction in patient risk for ventilators outside of an ICU setting was obtained by utilizing the FMEA process and by implementing a ventilator alarm system. Additionally,

there was a cost benefit analysis by cohorting patients and focusing caregiver training to a designated unit.

CLINICAL IMPLICATIONS: Patient safety for ventilator patients was enhanced by using a reliable ventilator alarm system that replaced dependence on visual and audio alarms with an additional alarm, including a pager interface to respiratory therapy and nursing. Ventilator care can be provided outside of an ICU setting with staff satisfaction, cost savings, and timeliness of response to ventilator alarms with earlier patient intervention.

DISCLOSURE: Maureen Seckel, None.

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