Preventing Unplanned Extubations in the Pediatric Intensive Care Unit

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Abstract

Objective: This quality improvement project sought to identify and increase nurse's knowledge and perception of risk factors of unplanned extubations, develop an unplanned extubation bundle, and incorporate the use of telemedicine and increased observation to decrease the number of unplanned extubations in a pediatric intensive care unit within an academic research hospital.

Methods: This project utilized a mixed methods design involving three phases. A convenience sample pretest design identified bedside nurses perceived knowledge on causative factors of unplanned extubations, then retrospective data from two years of previously intubated patients was compared to rates of unplanned extubations during the intervention phase. The intervention was development of an education bundle, intubation checklist, and telemedicine utilization customized to the specific pediatric population in the intensive care unit.

Results: A total of 51 nurses (18% less than one year experience, 46% 1-3 year experience, 24% 4-10 year experience, and 12% more than 10 year experience) with a 26% day shift, 16% night shift, and 54% rotating shift reported inadequate sedation (84%), improper movement (69%), poor observation/lack of ability to watch the patient (59%), lack of communication (49%), improper taping (45%), and bad paring assignments (29%) as risk of unplanned extubations. After implementation of the bundle, bedside education, and daily check-ins a total of 10 rooms for 36 days were analyzed. More than 89% of the time nurses had active SBS orders, but failed to have WAT scores orders, and 29% of the time did not have active PRN orders. Nurses reported lack of sedation and unsafe movement as the main issues with causes of unplanned extubations, however were not able to actively have these orders from providers.. The Fisher exact test

was used to identify differences in the number of unplanned extubations per 100

intubated days. There is a ventilation day rate average of 271 and unplanned extubation

rate of 0.36, with an average of 1.14 unplanned extubations per month. From the start of

the unplanned bundle there was an ventilation day rate average of 238 and unplanned

extubation rate of 0.44, with an average of 1.12 unplanned extubations per month. This

equates to a 1.75% decrease in the average number of extubations per month.

Conclusions: Project results were reproducible to similar studies, suggesting that bedside

education, bedside toolkits, increasing nursing knowledge of risk factors, and addition of

increased observation and check in from the telemedicine base nurse were effective in

reducing rates of unplanned extubations. This study highlights the importance of practice

policy change and a need for continued interdisciplinary team approach and care for

intubated children in an ICU setting. Similar studies should focus on the benefit of a

telemedicine entity in an ICU for increased observations for other purposes and the

ability to translate this project into different settings around the hospital.