



WHAT FACTORS ARE ASSOCIATED WITH UNPLANNED EXTUBATIONS?

by *Herbert Patrick MD*

The original peer-reviewed research article selected this month to teach the Scientific Method is: Kim Curry, Ph.D., A.R.N.P., Sarah Cobb, R.N., M.S., Mary Kutash, M.S.N., A.R.N.P., and Crystal Diggs, R.N. Characteristics associated with unplanned extubations in a surgical intensive care unit. *American Journal of Critical Care*, January 2008; Volume 17(No. 1): pages 45-51. Dr. Kim Curry is an assistant professor of nursing at the University of Tampa, Tampa, Florida. Sarah Cobb is an assistant professor at the University of South Florida in Tampa. Mary Kutash is coordinator of nursing research at Tampa General Hospital in Tampa. Crystal Diggs is a staff nurse at Tampa General Hospital.

I will continue to teach readers the traditional Scientific Method for performing research as: Background/Introduction, Question, Hypothesis, Methods, Results, Discussion, Reflections, Future Research, Conclusions, Acknowledgements, Conflicts of Interest and Bibliography.

Unplanned extubations are considered an indicator of quality of care for ICU patients

The Background section or Introduction of the research project explains interest in the topic and why the topic is significant. The authors state that unplanned extubations are considered an indicator of quality

of care for ICU patients. The incidence of unplanned extubations is reported in the range of 3-14% in other studies. In several investigations, patients' agitation and anxiety positively correlated with self-extubation. Research on nurse staffing as a contributing cause has had mixed results. Reintubation, when necessary, may be associated with complications, including upper airway trauma, alterations in blood pressure, dysrhythmia and cardiac arrest. In addition, reintubation is a costly procedure. Therefore, the authors designed a study to examine the characteristics of both patients and nurses and the risk factors that affect unplanned extubations.

The Question being asked by the researchers was divided into five separate but interrelated parts; we will review two parts only: 1) Did the patients with unplanned extubations have a low level of sedation in the hour preceding the event; and, 2) Did the patients with unplanned extubations have restraints in place? Note: The Question asked in research projects may have the pos-

sible answers: "yes" and "no" as in this study, or may be a numerical result. The preconceived answer by researchers to the Question is called the Hypothesis. Although the researchers did not indicate their hypotheses in this article, those with ICU experience might propose: 1) yes since a low level of sedation was present in the hour preceding the event, and, 2) no since restraints were not in place.

The Methods for the research project describe the study design, setting and steps to answer the Question. Since this research project involved human subjects, the authors indicate approval was obtained by the Institutional Review Board (IRB). As the study design was retrospective chart review, IRB approval was an exempt status. The authors describe their location for the research as an adult, 18 bed Level III surgical ICU at a large tertiary hospital. Intubations were performed by attending physicians or their supervised senior anesthesia residents. Sedation and analgesia were administered by nurses as prescribed by physicians. Restraints were applied in accordance with the SICU protocol. Unintentional extubation was defined as either spontaneous self-extubation or accidental premature discontinuation of the endotracheal or tracheal tube. Reintubation was defined as a procedure to replace an airway after premature removal. Data was collected by review of the hospital quality improvement database spanning

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"As part of my New Year's resolution, I've decided to continue my old policies."

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September 2005 through April 2006, providing a sample size of 31 patients. The data collection sheet included spaces for: primary diagnosis, secondary diagnosis, service, day of SICU stay, gender, type of intubation (oral, nasal, tracheal), type of extubation (self, accidental), date/time of extubation, reintubation required, time of reintubation if applicable, use of sedation (amount), sedation scale (Ramsey), and use of restraint (type), location of nurse at time of extubation, years of experience as nurse, years of experience in ICU, and educational credentials. Data analysis was performed using computer software.

The Results section compiles the data to answer the Questions. The authors' review of the 31 patients disclosed all were self-extubations with no accidental extubations. Fifteen of the 31 patients (48%) were only lightly sedated, commonly using fentanyl and propofol, within one hour preceding the extubation. Several patients were sedated using lorazepam, a medium-acting benzodiazepine, and morphine, an opioid analgesic. Twenty-seven of the 31 patients (87%) were restrained and in 3 instances, patients had more than 1 type of restraint. The 27 patients with restraints versus the 4 patients without restraints was statistically significant using a chi-squared statistic for differences between groups (chi-squared = 17.06) with $p < 0.001$.

The Discussion/Reflections/Future Research starts with a summary Discussion of the research. The Reflections are a comparison with similar research projects and a critique by the authors of their own research project. Future Research describes modifications to the project or new projects that would contribute to this research topic. In this research project, the authors noted that a low level of sedation was associated with unplanned sedation, a finding consistent with results of other recent studies. The number of patients who were restrained was high, also consistent with results of other research studies. They noted that future research is needed to explore unplanned extubations in other settings, including non-surgical units and longer term care settings. Development of a sedation protocol to ensure adequate medication management of patients may also be useful.

The Conclusion is the final summary of the research project. This research project demonstrated that unplanned extubations are related to inadequate sedation, despite use of restraints. Therefore, in this research project, the Question was properly addressed. The first proposed hypothesis on sedation being inadequate was correct as inadequate sedation was frequently noted. The second proposed hypothesis on restraints being absent was not correct, i.e., restraints were present in the majority of patients.

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Conflicts of Interest are listed for all participating in authorship of the research project. Conflicts include advisory board membership, ownership of stock, and receipt of services, honoraria or gifts from companies related to the research project. The authors have disclosed no potential conflicts of interest.

The Bibliography section includes references to support the research as included in the manuscript by reference number. For this research project, there were 18 references.

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