

# Prone positioning on critically ill health and social care essay

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In my nursing experience, I have worked in both the neonatal intensive attention unit ( NICU ) and the paediatric intensive attention unit ( PICU ) . When I worked in the NICU, our babies were positioned prone ( face down ) for comfort grounds for the bulk of a 24 hr period. Our neonatologists seldom used sedation or trouble direction resources for our automatically ventilated patients. In the PICU I presently work in, all of our automatically ventilated patients are given uninterrupted medicines for both sedation and hurting, nevertheless prone placement is about ne'er used. When I have positioned patients prone in the past, most nurses look cross-eyed at me as though I have done something incorrect.

Past research has suggested that prone placement is a curative manoeuvre that improves oxygenation in both paediatric and big patient populations ( Curley et al. , 2006 ) . However, some clinical tests in both paediatric and big populations have demonstrated that there is no betterment in clinical results for the patient ( Curley et al. , 2006 ) . In other surveies, when a patient is placed in the prone place, it has been shown that there is an increased in terminal expiratory lung volume and improved ventilator-perfusion fitting taking to better oxygenation ( Gattinoni et al. , 2001 ) .

As you can see, there is assorted informations from many surveies proposing prone positioning leads to break clinical results for patients. Besides, as I was researching, I truly could n't happen a survey or literature that was new within the last 5 old ages. There is a current demand for updated research surveies and information. Hopefully I can carry through and add to the research with my proposed survey.

## Purpose, Aims, and Hypothesiss

The intent of this research survey would be to bring forth informations to assist infirmaries develop a policy, process and protocol for prone placement in critically sick, paediatric patients. The informations collected from this survey can add to the literature and hopefully convey current evidence-based pattern to PICUs across the state. Harmonizing to Polit & Beck ( 2008 ) , purposes can be defined as the particular accomplishments a research worker would trust to accomplish by carry oning a research survey.

My proposed survey has two specific research purposes.

### Aim 1

To prove the effectivity of prone placement in automatically ventilated, critically sick paediatric patients, related to betterments in oxygenation.

### Aim 2

To analyze techniques in airway direction of a automatically ventilated, critically sick paediatric patient, to find the safest nursing pattern in prone placement.

## Hypothesiss

For Aim 1, the hypothesis is that paediatric patients, who are critically sick and automatically ventilated, will hold better positive clinical results related to betterment in oxygenation in prone placement than in supine placement.

The void hypothesis is that there is no difference in prone or supine placement in patient clinical results.

For Aim 2, the hypothesis is that there will be safe techniques in airway direction in prone placement for the automatically ventilated, critically sick paediatric patient. The void hypothesis is that there is no safe technique in airway direction in the prone place based on continued, critical inauspicious events.

## Background

The reappraisal of literature on the effects of prone placement in automatically ventilated patients has mixed ideas. Surveies conducted by Dr. Martha Curley and her research squad from Boston Children 's Hospital have refuted and so accepted the usage of prone placement in automatically ventilated, critically sick paediatric patients.

Curley et Al. ( 2000 ) researched the physiologic alterations of automatically ventilated paediatric patients and evaluated the safety of prone placement who experienced acute lung hurt. The information was collected from a single-center prospective instance series from October 1997 to March 1999. The sample was 25 paediatric patients with bilateral paranchymal disease necessitating mechanical airing with a partial force per unit area of arterial oxygenation ( PaO<sub>2</sub> ) to the fraction of divine O ( FiO<sub>2</sub> ) ratio of less than or equal to 300 millimetres of quicksilver ( mm Hg ) ( Curley et al. , 2000 ) . The patient 's ages ranged from 2 months to 17 old ages. The participants were placed prone for 20 hours a twenty-four hours `` until clinical betterment or decease occurred " ( Curely et al. , 2000, p. 156 ) .

After run intoing eligible standards, informations collected consisted of arterial blood gases, critical marks ( temperature, bosom rate and arterial

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blood force per unit area, and cardinal venous force per unit area. Ventilator scenes and the figure of staff utilized and the clip it took to turn a patient were besides collected. The research workers besides collected informations on the medicine profile, particularly comfort medicines such as morphia and diazepam, and assessed force per unit area ulcers and presenting. ``

Features of the survey population are expressed as frequencies, mean ( +/- SEM ) , or average with interquartile scopes ( IRQs ; 25th and 75th percentile ) " ( Curley et al. , 2000, p. 158 ) .

The survey revealed that when prone place informations measurings were compared to the patient 's supine measurings, there were immediate and cumulative betterments in oxygenation ( Curley et al. , 2000, p. 161 ) . The research workers conclude that their survey suggests informations that prone placement is both safe and effectual in paediatric patients with ALI. Dr. Curley and her co-workers believe that this survey provides a foundation for a hereafter randomized survey to look into early and repeated prone placement for this paediatric population.

Dr. Curley and her co-workers took on a prospective, multi-center randomized survey from August 2001 to April 2004. The hypothesis of this survey was that kids with ague lung hurt treated with prone positioning would hold more ventilator-free yearss than those treated with supine placement. Patients were included if they were age 2 hebdomads to 18 old ages old, intubated and automatically ventilated with a ratio of a PaO<sub>2</sub> to FiO<sub>2</sub> of 300 or less, bilateral pneumonic infiltrates, and no clinical grounds of left atrial high blood pressure ( Curley et al. , 2005 ) . Exclusion standards

included patients less than 2 hebdomads of age, less than 42 hebdomads post conceptual age, had relentless hypotension or intellectual high blood pressure, cardiac related respiratoryfailure, and a figure of other medical conditions listed by the writers in their article. Of 8017 patients screened, merely a sum of 102 participants were included in the survey.

A information and safety supervising board stopped the test at the interim analysis based on the futility fillet regulation. Ninety-four patients had completes the 28-day survey period. Of these 94, 47 were in each of the groups. After statistical analysis had been done, it was determined that if the survey had reached the planned registration of 180 patients, the chance of showing a difference in ventilator-free yearss between intervention groups was less than one per centum ( Curley et al. , 2005, p. 232 ) .

The survey found that there was no statistically important difference of ventilator-free yearss between supine and prone placement in paediatric patients with acute lung hurt. Dr. Curley and her co-workers do non back up the continued usage of prone placement of paediatric patients as a curative intercession to better results in acute lung hurt ( Curley et al. , 2005, p. 236 ) . This province counters the research decisions drawn from Curley et Al. ( 2000 ) . Interestingly, Dr. Curley continued her research by executing a secondary analysis on this information collected in 2006.

The intent of this secondary analysis was to depict the effects of prone positioning on airway direction, mechanical airing, enteric nutrition, hurting and sedation direction and staff use in paediatric patients with acute lung hurt ( Curley et al. , 2006 ) . The research workers suggest that their

informations really shows that prone placement can be accomplished safely in critically sick paediatric patients. The research workers besides province that they believe patients can be safely assess and managed piece maintained in the prone place for drawn-out periods of clip, every bit long as 20 back-to-back hours ( Curley et al. , 2006, p. 417 ) .

In this article on secondary analysis performed by Dr. Curley and her co-workers ( 2006 ) , they province that prone placement should go on to be used in critically sick kids as a enlisting manoeuvre in acute lung hurt to better oxygenation, lessening force per unit area wounds, and decreased bronchopulmonary compaction. These research workers besides province that this is the first survey to clearly show that prone placement can be accomplished safely. After researching prone placement in critically sick, automatically ventilated paediatric patients, I wholeheartedly agree. I believethat this is why these surveies could be replicated to assist formalize the protocols developed by Dr. Curley and her co-workers.

## Significance

The significance of a research survey on prone placement in paediatric patients is overpowering. In my ainpersonal experience, there has ne'er been grounds presented to my nursing co-workers or myself on whether prone placement is really safe and effectual. As antecedently stated, in reexamining the literature, there are really few clinical surveies that would be considered good mentions as true province of the art, evidence-based nursing pattern. In fact, I can non believe that merely Dr. Martha Curley has taken this undertaking on for the paediatric population.

This proposed survey will be able to place the effectivity of prone positioning on improved oxygenation in a automatically ventilated paediatric patient.

From survey informations aggregation, techniques in safe air passage direction could assist ease the usage of prone placement in paediatric patients of all ages and sizes and possibly advance more positive clinical results.

In my survey, I hope to retroflex Dr. Curley 's methods utilizing her protocols, with some minor tweaking. This proposed survey should add to the organic structure of literature. The significance of this survey could assist formalize Dr. Curley 's protocols from her past surveies and besides assist make a criterion of pattern for prone placement.

## Research Methods

### Sample, Setting and Recruitment

The mark population to be studied would be critically sick, paediatric patients runing from ages 2 hebdomads to 18 old ages of age. Inclusion standards will besides include patients with acute respiratory hurt necessitating cannulation and mechanical airing. Exclusion standards will be patients with respiratory hurt or failure of cardiac nature. Patients will besides be excluded if they have spinal instability or hold had abdominal surgery, as it would non be safe for these patients to be prone positioned. Patients with tracheotomies will be excluded. I would trust to include patients on conventional airing and high frequency hovering airing. Patients will be excluded if they weigh over 200 lbs, as the protocol will merely utilize

three staff members to turn the patient, and this may be insecure in a patient of this size.

The survey participants will be recruited from paediatric intensive attention units from infirmary centres willing to take part. In day-to-day unit of ammunitions, we would allow the paediatric critical attention doctors determine if the patient 's medical position was stable plenty to be eligible for survey standard. Randomization of patients will be done between prone placement and supine placement by utilizing a consecutive figure system. Centers will be provided envelopes with cards denominating between prone and supine placement and assign as each new participant is eligible.

A sample size that would mirror Dr. Curley 's would be ideal. I hope to obtain at least 100 participants, but purpose for 200 participants. With 200 participants, the hope is to duplicate the original sample size, duplicate the figure of prone-to-supine and supine-to-prone bends, and increase the cogency of the research.

## **Data Collection and Instrumentation**

For my research survey, I hope to develop a systematic extension reproduction of the old surveies done by Dr. Curley and her research squad ( Curley et al. , 2000 ; Curley et al. , 2005 ; Curley et al. , 2006 ) . Dr. Curley and her co-workers ( 2006 ) developed a prone placement protocol for bedside nurses to follow in respects to analyze participants. The protocol is attached in Appendix1, nevertheless a brief drumhead is provided to assist assistance in the shaping of informations aggregation and instrumentality. When a patient has been met standards and is designated as eligible for the

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survey, informations will be collected based on the Pediatric Risk for Mortality III ( PRISM III ) ( Pollack et al. , 1997 ) . Demographics such as age, race, and ethnicity will be categorized.

An anteroposterior thorax radiogram, in the supine place, should be obtained to document and guarantee that the endotracheal tubing ( ETT ) is positioned decently in the deep windpipe. The security of the ETT shall be assessed every bit good, based on the establishments current protocols. The size of the ETT, whether it is cuffed or uncuffed, and arrangement shall be paperss as Ten centimetres ( centimeter ) at the gum, as in `` the patient has a 4. 5 cuffed ETT, taped firmly at 12 centimeter at the gum '' . The turnup of an ETT should be inflated with the minimum leak technique: inflate turnup until an air leak is auscultated at end-inspiration while maintain turnup force per unit area &gt ; 25 millimeter Hg ( Curley et al. , 2006, p. 420 ) . Security of the ETT and arrangement at the gum will be documented after each bend from the supine-to-prone and prone-to-supine placement every bit good as every 4 hours while in the prone place. The nurse or respiratory healer will document whether or non the patient had a nonelective extubation during the bend.

In respects to soothe and clamber unity, the patient 's should hold separately sized caput, thorax, pelvic, and leg shock absorbers to place the patients while prone ( Curley et al. , 2006, p. 419 ) . The end is to hold the patient positioned prone, with their shoulders, hips and lower limbs supported while their venters has room to stick out ( towards the bed ) and custodies can be tucked under the venters. The existent shock absorber will be difficult to set

up, as every infirmary uses different positioning devices, nevertheless, I will offer the thoughts of slackly rolled covers or the Eggcrate stuff cut to the appropriate size. It will be documented if the patient has developed a force per unit area ulcer, and the ulcer will be staged harmonizing to National Pressure Ulcer Advisory Panel 's ( NPUAP ) description.

The NPUAP ( 2007 ) established four phases of force per unit area ulcers. The first phase includes force per unit area sores that include non-blanchable inflammation, with integral tegument, normally over a cadaverous prominence. Phase two includes shoal, unfastened ulcers with a ruddy or pink pigmentation, without shedding of the tegument. Stage three ulcers include a full thickness tissue loss. Hypodermic fat is normally seeable at this phase and shedding may be present. In a phase four ulcer, the ulcer is stage three with seeable bone, musculus or sinew.

A patient will stay positioned prone for 20 hours of the twenty-four hours and supine for 4 hours a twenty-four hours. The length of clip a patient is prone and supine will be recorded. Ongoing measurement will be done on all organic structure systems, including pneumonic and circulatory. Arterial blood gases will be obtained 1 hr prior to a patient being positioned prone and 1 hr after the patient has been prone.

To maximise safety, staff will use bedside nurses and respiratory healers during chances for turning. The respiratory healer should be responsible for the unity of the tubing and turning the patients head, bedside nurse 1 shall be responsible for the turning of the shoulders, thorax and weaponries, and beside nurse 3 shall be responsible for the turning of the hips and legs. The

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prone positioning protocol that is attached as Appendix 1 which will be at the bedside of every patient for the nurses and respiratory healers to follow consequently.

## Datas Analysis

Harmonizing to Polit & A ; Beck ( 2008 ) , there are two wide categories of statistical trials, parametric and nonparametric. Parametric trials normally involve the appraisal of parametric quantities, require measurings on an interval graduated table, and presume that the variables for distributed usually for a population. These trials are frequently considered the most power and are normally preferred by research workers ( Polit & A ; Beck, 2008, p. 591 ) . Nonparametric trials do not gauge parametric quantities, normally used when the sample size is little or the information is considered non-normal.

Figure 22. 5 in Polit & A ; Beck ( 2008, p. 592 ) is a speedy mention for choosing bivariate statistical trials. Harmonizing to Polit & A ; Beck ( 2008 ) , the Fisher 's exact trial will be used to prove the significance of the differences in the two interventions ( Polit & A ; Beck, 2008, p. 601 ) . Fisher 's exact trial or  $\chi^2$  trial will be used to compare prone and supine groups in their baseline features and results that will be calculated on a single patient footing. Based on the categorical informations, such as the oxygenation of the patient, related to the arterial blood gases, I think a Fisher 's exact trial will be the best trial.

The accidental extubation rate during bends will be calculated utilizing an exact binomial trial for comparing the rates of two Poisson procedures. For <https://assignbuster.com/prone-positioning-on-critically-ill-health-and-social-care-essay/>

prone patients, Wald 's statistic, distributed as a chi square, will be calculated based on results evaluated after alterations in placement. The figure of staff utilized and the length of clip involved in the place turns will be analyzed utilizing signed rank trials such as a Wilcoxon rank trial. Once all information has been collected, synthesized and analyzed, the research will be drafted into a manuscript and submitted to the Pediatric Critical Care diary.

Before the survey begins, it will be reviewed, and hopefully approved, by the IRB. Before a patient becomes a participant of the survey, written informed consent will be obtained from a parent or legal defender. Both female and male patients will be utilized, and the exclusion standard is entirely based on patient safety.

The participants will be allocated to the prone and supine placement groups reasonably by utilizing random assignment. Complete decrease of prejudice can not be established because it will be impossible for the clinicians to not cognize whether or not their patient is positioned prone or supine. With the assorted placement protocols and adjustments with pressure-reducing stuffs, I hope to diminish the incidence of compromised tegument unity and uncomfortableness. This survey does not object, and encourages the usage of sedation and hurting medicines while the participants are automatically ventilated.