

A study on strategy to improve endotracheal suction learning among medical students

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ABSTRACT

The assessment, planning, and series of medical procedures necessary to preserve or restore a person's ventilation, or breathing, are referred to as airway management. This paper focus on a method for teaching medical students more about endotracheal suction.

Key words: endotracheal suction, medical students, airway management

INTRODUCTION

For the study of airway management, an understanding of anatomy is necessary. Not only the structures that are visible, but also their spatial relationship to the nearby structures, must be understood. Respiration, filtration, humidification, and storage of secretions from the nasolacrimal ducts and paranasal sinuses are just a few of the crucial jobs performed by the nose. The Airway, Breathing, And Circulation (ABC) are the focus of all emergency Basic Life Support (BLS), Advanced Cardiac Life Support (ACLS), and advanced Trauma Life Support (ATLS) techniques are important Endotracheal Suction. All medical professionals should become proficient in basic airway management because many avoidable deaths. Therefore, timing is crucial; clinicians, as well as the general population, must be ready. In order to maintain gaseous exchange, increase alveolar ventilation, and provide adequate oxygenation, intensive care nurses perform Endotracheal Suction with proper knowledge.

Importance of Endotracheal Suction (ETS)

An Endotracheal Suction Tube (ETT) that the doctor inserts through the patient's mouth and into the trachea can be used for endotracheal suctioning. Endotracheal tubes come in a variety of special varieties, including those that are articulating, armored, wire-reinforced, double-lumen endobronchial, polar, and uncuffed. Based on the choice of catheter, there are two techniques for suctioning an endotracheal tube: open and closed. Closed suctioning involves attaching a sterile, closed, inline suction catheter to the ventilator circuit, which allows passage of a suction catheter in the endotracheal tube without disconnecting the patient from the ventilator, as opposed to open endotracheal suctioning (OES), which requires disconnecting the patient from the mechanical ventilator and inserting a single use sterile suction catheter into the endotracheal tube.

Mechanical ventilation and bronchial hygiene therapy both include endotracheal tube suctioning. It entails the mechanical aspiration of the patient's pulmonary secretions while an artificial airway is in place. A suction catheter is inserted through the artificial airway as part of the suction event, and negative pressure is applied as the catheter is being withdrawn. A suctioning event is defined as the passage of the suction catheter into the artificial airway. Several clinical signs and symptoms, such as coughing and increased inspiratory pressure on the ventilator, indicate the need for ETT suctioning. Suctioning must be decided upon based on a thorough patient evaluation rather than at predetermined

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intervals. Reviewing respiratory characteristics, palpating, and auscultating should all be part of this evaluation.

The need to maintain the patency and integrity of the artificial airway is also indicated when there are coarse breathing sounds, an inability to produce an effective spontaneous cough, visible secretions in the airway, changes in monitored flow and pressure graphics, and a suspicion of aspirating gastric or upper airway secretions. Suctioning through an endotracheal tube is a necessary procedure for patients who have an artificial airway. The majority of contraindications relate to the patient's potential for experiencing negative side effects or having their clinical condition deteriorate as a result of the procedure.

Causes of poor endotracheal suction

Even though it happens frequently, endotracheal tube suctioning poses a serious risk to the patient. Suctioning is recommended for the removal of secretions that can be seen or heard with or without the use of a stethoscope; for subsequent chest physiotherapy; for bronchodilator treatments; and for a sudden rise or popping of the peak airway pressure in mechanically ventilated patients that is not caused by the patient's coughing or struggling against the ventilator or by a pneumothorax [1]. The majority of contraindications are caused by the patient's potential for experiencing negative side effects or for their clinical condition to worsen as a result of the procedure.

Suctioning can increase the risk of nosocomial pneumonia by causing hypoxemia, decreasing lung volume, causing dysrhythmias, affecting cerebral blood flow, and introducing pathogens to the lower airway [2]. The procedure is also thought to put patients under stress and has the potential to change their hemodynamic status. The second most common complication is trauma. By using "a traumatic" catheters with multiple suction openings, the risk of direct tracheobronchial trauma may be reduced. Suction vacuum pressure ought to be kept between 80 and 150 mmHg as well. One of the additional risks of suctioning is infection. Suction catheters ought to be sterile and should only be used once [3]. Suction can also result in hemodynamic instability linked to hypoxia and vagal stimulation, among other problems.

Endotracheal suction issues have been linked to patients with serious complications, according to studies. Lack of proficiency with airway suction techniques, including conceptual understanding and practical expertise lack of experience, lack of confidence, and lack of practice poor endotracheal suction may be caused by poor judgment and a lack of crisis management abilities [4]. The American Association of Respiratory Care (2010) recommended four factors to avoid complications related to ETT suctioning: evaluation of patients' needs or indications for suctioning, suction catheter size, delivery of hyper oxygenation and hyperinflation, and normal saline instillation [5].

Difficulties of teaching in endotracheal suction

According to research, nursing professionals are not sufficiently knowledgeable about the most recent recommendations. The training material of the current school lacks systematization and integrity and is dispersed across many existing professional courses. Students are unable to independently integrate knowledge points. In order to ensure effectiveness and the patient's safety, it is crucial that this procedure be carried out with professional competence,

which requires not only having the necessary skills but also knowledge based on current scientific evidence. Choosing the right catheter, inserting it deeply, applying negative pressure, extending the procedure, and performing a sufficient number of suction passes are all aspects of nursing management during suctioning. Following suctioning, the patient must be evaluated, the oxygen saturation must be tracked, and the patient must be reassured. to raise the level of care standards [6].

A pilot small sample survey for the study Problems in the Operation of Airway Aspiration in Medical Students revealed that 50 medical students, including 12 men and 38 women, had completed their internship tasks and had received internal airway suction study.

The study's findings demonstrated that there were issues in every stage of the process, from material preparation prior to the operation to every stage of the operation itself, including finishing and recording after the operation: 40% of suction pressure errors, 25% of suction technique errors, 10% of timing suction errors, and 25% of medical students would not even connect suction pipes. There are knowledge and skill gaps between observed practices and best practices, according to an exploratory study on knowledge and skill related to endotracheal suctioning. This study shows that, even though medical students' knowledge scores were acceptable, there were some areas (the actual suctioning event and the aftermath) where they fell short. It might be because medical students learn from others or because of insufficient training [7]. To lessen complications, it is essential that medical students are aware of suggested guidelines and recent developments in critical care (such as endotracheal suctioning). This problem can be resolved by holding training sessions and workshops in this area, repeating the sessions until the desired level of skill is attained, and improving the level of nursing care in high-need areas. Hospital stays, unnecessary medical procedures, and mortality rates decrease as practical skill quality rises [8].

Knowledge practice on endotracheal suction among medical student

The best strategy for preventing VAP and other complications is staff education. The study emphasized the importance of continuing these educational sessions over time to keep staff members informed about the most recent evidence-based practices. In the long run, this will ease the burden of complications and aid in the early weaning of patients from mechanical ventilation. It has shown promise in lowering procedure-related complications to educate the nurses on evidence-based recommendations [9]. It is demonstrated by the dramatic 38% decrease in Ventilator Associated Pneumonia incidence that followed educational intervention in the pediatric ICU. The endotracheal suctioning protocol is a systematic and organized written guide to performing endotracheal suctioning. It includes goals and indications for performing endotracheal suctioning, necessary tools and stages for performing endotracheal suctioning, nursing care and particular considerations while performing endotracheal suctioning, and was developed and approved by experts in the fields of nursing and medical science. It is a novel approach to team teaching that fosters teamwork among students and emphasizes the interaction of human flexibility, creativity, and practice. Compared to other forms of instruction. The majority of traditional instruction focuses on teacher theory, bedside physical simulation instruction, and

practical exercises. Lack of appropriate grouping, fragmentation of knowledge learning, and the absence of perfect evaluation indicators are all drawbacks of problem-based learning (PBL). Team-Based Learning (TBL) enables these. The fundamental idea that imparts modern knowledge and practices to nurses is continued nursing education. It enables the nurses to become familiar with evidence-based recommendations for treating patients to provide efficient care for a speedy recovery with few complications. The study suggests that attending training sessions that can incorporate research findings into their daily work routines can improve ICU nurses' knowledge and performance regarding ETT suctioning. By providing high-quality, economical care, the financial burden on hospitals will be reduced as well. The nursing department's education team leader, who is in charge of overseeing the entire intervention implementation process, is responsible for the primary duties of the team-based learning. Under the direction of the nursing department's education team leader, an investigator organizes the precise implementation of the

intervention training material, oversees the entire intervention implementation process, improves the details, and then recovers the study's data. The group's lead nurse, who can aid in the development of intervention research and oversee the execution of the entire intervention [10]. The charge nurse oversees the execution of the intervention and assists in the development of intervention research, Graduate students are primarily in charge of distributing and collecting questionnaires and materials, entering the outcomes of data processing and recycling, etc.

CONCLUSION

According to the study's findings, only a small percentage of medical students had good ETS knowledge, and nearly half had inadequate knowledge. The important influencing factors for knowledge level on the ETS were ethnicity and professional background. As a result, it's essential to update students' knowledge of ETS through programs for in-service education that emphasize team-based learning.

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