

**NURSING CARE AND
PHYSIOTHERAPY IN
THE PREVENTION
OF PNEUMONIA
ASSOCIATED WITH
MECHANICAL
VENTILATION IN
CRITICAL PATIENTS**

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Abstract: **INTRODUCTION:** Mechanical ventilation is used in the Intensive Care Unit (ICU), when there is absence or impairment in the patient's spontaneous breathing, being a possible propagator of pneumonia, requiring preventive management by a multidisciplinary team. **OBJECTIVE:** To describe which multidisciplinary measures must be adopted in an intensive care unit to prevent ventilator-associated pneumonia. **METHODS:** A search was carried out for materials in the literature with publications between 2017 and 2022, in a database with the descriptors: "pneumonia", "mechanical ventilation", "nursing" and "physiotherapy". **RESULTS AND DISCUSSION:** Applications of measurements of nursing and physiotherapy professionals in their specific and common nuclei in professional health practice for VAP prevention. **FINAL CONSIDERATIONS:** The multiprofessional team is essential in preventing and reducing the incidences of VAP, reducing the length of stay and the financial cost of the patient's stay in the ICU. **Keywords:** Pneumonia; Mechanical ventilation; Nursing; Physiotherapy.

INTRODUCTION

Mechanical ventilation is a life support technology, widespread in Intensive Care Units (ICU), since it is capable of completely replacing spontaneous ventilation, which will be altered in critically ill patients. One of the common complications in the ICU is ventilator-associated pneumonia (VAP or VAPM), corresponding to 15% of healthcare-associated infections (HAIs). This pneumonia is caused by a pulmonary tract infection that develops between 48-72 hours after starting ventilation and up to 48 hours after extubation (DUTRA et al., 2021).

Its etiology is diverse and is related to the aspiration of contaminated substances from the oropharynx and/or gastrointestinal

tract. Thus, VAP causes increased mortality, prolonged ICU stay and increased hospital costs. Death rates can vary between 20 and 50% with a potential reach of 70% when multidrug-resistant microorganisms and inadequate antibiotic therapy are present (NÓBREGA et al., 2021).

In view of these risks, the multidisciplinary team is of fundamental importance in the prevention of nosocomial infections, making it necessary to apply standardized preventive measures, team training and continuing education in the care scope in order to avoid failures in the health recovery process (LIZ et al. al., 2020).

Standardized preventive measures can be adopted through VAP prevention protocols such as the prevention bundle, which makes up a small group of the main evidence-based multidisciplinary practices that can be used in the ICU (BRANCO et al., 2020).

GOAL

This expanded summary aims to describe which multidisciplinary measures must be adopted in an intensive care unit to prevent ventilator-associated pneumonia.

METHODS

This is an expanded summary of character descriptive and informative. For the search for information, scientific articles were selected, using the descriptors "pneumonia", "mechanical ventilation", "nursing" and "physiotherapy" related to the Boolean operator "AND", as follows: "mechanical ventilation" AND pneumonia AND nursing (117 results) and "mechanical ventilation" AND pneumonia AND physical therapy (45 results). Queries were made in the MEDLINE, LILACS and SciELO databases. The information collection period took place between August and September of the year 2022.

After prior selection of articles by reading the titles and abstracts to refine the research, 7 articles of interest were chosen, adopting the following inclusion criteria: articles published between 2017 and 2022, in Portuguese and English, available on in its entirety free of charge in the aforementioned databases that address the theme of this summary. An official document was also used of the Brazilian Association of Intensive Care Medicine about of the Brazilian Guidelines for Mechanical Ventilation.

RESULTS AND DISCUSSION

The use of mechanical ventilation (MV) by patients with pulmonary complications is a worrying factor for hospital centers, as use for a period longer than 48 hours can cause pneumonia, and is related to high rates of morbidity and mortality, in addition to cost of health. Ventilator-associated pneumonia (VAP) is a condition made possible by the colonization of bacteria facilitated by the aspiration of contaminated secretions. In addition, other paradoxes are presented by the use of the orotracheal tube that can cause laryngeal and tracheal injuries due to ulceration or friction due to premature exacerbation of insufflation and extubation, also generating the pathological condition (QUEIROZ et al., 2021).

VAP, in addition to being linked to the prolonged use of mechanical ventilation, also presents risk factors such as: preexisting diseases (chronic obstructive pulmonary disease), age and Glasgow score equal to or less than 9. Furthermore, the care provided to the patient interferes with the possible pneumonic contamination, for example, in emergency intubation, aspiration, reintubation, previous medication treatment and angles of the head of the bed, with multidisciplinary care being of paramount importance (LIANG, 2022).

This way, low-cost preventive measures

can be implemented in the form of a protocol, which is called a VAP prevention bundle. They are easy to use and must be performed by all professionals involved in the care of patients using MV (BRANCO et al., 2020).

Nursing actively participates in the administrative and care actions involving this type of care. Actions include changing the ventilator circuits when there is visible dirt, damage or ventilation for more than 30 days, as well as disinfecting or sterilizing the circuits. Nursing is also responsible for assessing the patient's vital signs and clinical condition before bed bathing and changing positions, and for taking care of enteral nutrition (gastric or intestinal). Within the multidisciplinary team, nursing and physiotherapy analyze and record ventilatory parameters, help maintain endotracheal tube cuff pressure between 25-30 cmH₂O (checking it at least 4 times a day and before oral hygiene) and centralized and fixed tube, monitor the head of the bed between 30° and 45°,

Early mobilization can also be performed in the ICU as prevention. Through physiotherapy, mobilization can be performed during prolonged MV, starting physical activities between 48 and 72 hours after intubation. Its objective is not only to reduce VAP, but also to reduce delirium, possible failures in ventilator weaning, AUCD, length of hospital stay and care costs. In addition, an improvement in the patient's level of independent functions and muscle strength can be observed, as well as its importance in the prevention of deep vein thrombosis and pressure injury (CAMACHO et al., 2022).

Studies show that 83% of ICU specialists use physiotherapy to prevent VAP. Respiratory physiotherapy is part of the strategies suggested for this prevention, working to promote alveolar ventilation and adequate oxygenation as an objective, expelling secretions from the airways and allowing the maintenance of the

chest wall in its range of mobility and mobile capacity for exercise (QUEIROZ et al. al., 2021).

FINAL CONSIDERATIONS

In this case, it is extremely important to adopt measures to prevent VAP, since once adhering to such measures, together with the functions of each member of the multidisciplinary team, we will have a considerable reduction in morbidity and mortality, as well as a reduction in costs in maintaining patients in the ICU,

where this problem has significant impacts on the individual, family and hospital institution. This measure makes it possible to reduce the length of hospital stay, providing not only a decrease in the occurrence of VAP in the ICU, but also complications from other diseases or injuries generated during this period. Another key aspect concerns multidisciplinary care, which aims to promote comprehensive and individualized care, mitigating the biopsychosocial implications of such a clinical condition.

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