

# CASE STUDY OF IMPLEMENTATION OF RIGHT LATERAL POSITIONING (RLP) ON OXYGENATION DISORDERS WITH PNEUMONIA CASE OF BB.M AGE 2 MONTHS



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## ABSTRACT

**Introduction:** Impaired oxygenation is common in children with airway diseases, such as pneumonia, and can worsen if not treated promptly. One of the non-pharmacological interventions that can help is right lateral positioning to improve oxygen saturation. Purpose: This case study aims to determine the effect of right lateral positioning (RLP) on improving oxygen saturation in infants with pneumonia. **Methods:** This research is a case study that applies Evidence Based Nursing (EBN) using the single subject study method, which focuses on observing and analyzing changes before and after the intervention. The intervention was provided through education and direct demonstration for 3 days to infants with pneumonia. Observations were made every two hours and carried out in one shift (8 hours). SpO<sub>2</sub> reliability was maintained by measuring at consistent time intervals (every 2 hours during an 8-hour shift) with the baby in a stable condition using a 1 lpm nasal cannula, using a validated pulse oximeter. **Results:** The results showed an increase in oxygen saturation from 97% to 100% after the right lateral positioning intervention. **Conclusion:** Giving the right lateral positioning intervention can increase oxygen saturation in infants with pneumonia.

**Keywords:** baby, breastfeeding, education, pneumonia, right lateral positioning

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## INTRODUCTION

Pneumonia is a respiratory infection that is the largest cause of child mortality in the world. The death rate from pneumonia occurs every 43 seconds, indicating that around 700,000 children die each year from pneumonia. Data from the World Health Organization (WHO) in 2021, recorded that around 740,000 infants worldwide died from this disease. This figure is equivalent to 14% of total infant deaths globally. In Indonesia alone, according to the WHO in 2020, Indonesia ranked second with a percentage of 12.3% out of 15 countries that had infant and child mortality due to pneumonia. The data shows that pneumonia is a serious health problem and requires more intensive attention and treatment, especially in countries with limited health facilities (Ministry of Health, 2024).

Pneumonia is a condition in which the body experiences an infection characterized by inflammation of one or both lungs, caused by viral, fungal, or bacterial factors, resulting in a decrease in the ability of the alveolus to absorb oxygen which causes shortness of breath to decrease oxygen saturation (Sabriaksa et al, 2024).

Nursing care for pneumonia patients with ineffective airway clearance disorders can include pharmacological and non-pharmacological interventions. Pharmacological interventions include medical procedures, drug administration, and oxygen therapy. Meanwhile, non-pharmacological therapy can be given in the form of Right Lateral Positioning (RLP), where positioning patients with RLP can reduce respiratory rate and increase oxygen saturation (Wenas and Laoh, 2022).

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Right lateral positioning is an action taken by positioning the patient lying on his side with the right side of his body as the lower side while the left side is above where this position is useful for increasing lung expansion (Danal, 2021). Research conducted by Agustina et al (2021) showed that providing lateral position interventions in infants with pneumonia had a positive effect on increasing oxygen saturation and decreasing respiratory frequency by 4.62%. This proves that providing intervention in the form of RLP to pneumonia patients who have decreased oxygen saturation can increase oxygen saturation after the intervention.

Based on the description above, the author is interested in carrying out nursing interventions in the form of right lateral positioning in infants who experience pneumonia in the Aster Room of Prof. Dr. Margono Soekarjo Hospital.

## METHOD

This case study was conducted in the Aster Room of Prof. Dr. Margono Soekarjo Hospital in November 2024. The population in this study was infants with impaired oxygenation who have decreased oxygen saturation in in the Aster Room of Prof. Dr. Margono Soekarjo Hospital in November 2024. The sampling technique used in this study was purposive sampling. The inclusion criteria in this study were patients with impaired oxygenation, decreased oxygen saturation, aged 1-12 months. Exclusion criteria in this study are patients who have bone fractures. The sample in this study were patients with oxygenation disorders total of 1 patient.

The patient in this case study was a male infant (Bb.M), aged 3 months, admitted to the Aster Room of Prof. Dr. Margono Soekarjo Hospital on October 28, 2024, with a primary diagnosis of pneumonia. On initial assessment (October 30, 2024), the patient presented with SpO<sub>2</sub> 91% on room air, SpO<sub>2</sub> 94% without nasal cannula, SpO<sub>2</sub> 97% with 1 lpm nasal cannula, chest retraction, and ronkhi breath sounds. The nursing problem identified was ineffective airway clearance (D.0001).

The author conducted an assessment on October 30, 2024 to the patient. The results of the assessment showed that the patient's SPO<sub>2</sub> when he arrived in the Aster Room was 91%, there was chest retraction, and the breath sounds sounded ronkhi. at the time of the SPO<sub>2</sub> assessment 94% without using nasal cannul and SPO<sub>2</sub> 97% using

nasal cannul. Researchers get nursing problems based on the assessment, namely ineffective airway clearance (D.0001) (PPNI, 2016). The nursing action plan that will be carried out to overcome the problem of ineffective airway clearance is airway management (I.01011) by conducting education and demonstration of right lateral positioning for 3 days to improve airway clearance (L.01001) with indicators of dyspnea, breathing frequency, increased breathing patterns and increased oxygen saturation. Giving right lateral positioning is done for 3 consecutive days every 2 hours in 8 hours for 30 minutes.

## Nursing Process

**Subjective Data:** The patient's family reported that the baby had been experiencing difficulty breathing, coughing, and fever for 3 days before admission. The baby appeared restless and had reduced oral intake.

**Objective Data:** On assessment (October 30, 2024), SpO<sub>2</sub> was 91% on room air, 94% without nasal cannula, and 97% with 1 lpm nasal cannula. Chest retraction was observed and breath sounds showed ronkhi. Respiratory rate was elevated. Diagnosis of pneumonia was confirmed.

**Nursing Analysis:** Ineffective airway clearance (D.0001) related to excessive secretions and impaired mucociliary transport, as evidenced by ronkhi breath sounds, chest retraction, and decreased oxygen saturation.

**Nursing Implementation:** Airway management (I.01011) was implemented, including education and demonstration of right lateral positioning (RLP) for 3 consecutive days (November 1–3, 2024). RLP was performed every 2 hours during an 8-hour shift (4 times/shift) for 30 minutes per session, with SpO<sub>2</sub> monitored using a pulse oximeter at each interval. The patient was in a stable resting state during all measurements, using a 1 lpm nasal cannula.

**Nursing Evaluation:** After 3 days of intervention, SpO<sub>2</sub> improved progressively from 97% (T<sub>0</sub>) to 100% (T<sub>4</sub>). Chest retraction decreased and breath sounds improved. The nursing goal of improved airway clearance (L.01001) was achieved, with SpO<sub>2</sub> reaching the target of ≥95%.

## RESULT

Table 1 shows that there is an increase in oxygen saturation during right lateral positioning nursing actions. Intervention actions were carried out by

researchers during the shift by monitoring the baby's oxygen saturation using a pulse oximeter every 2 hours with a shift duration of 8 hours. Measurement of oxygen saturation is carried out in the state of the baby using a 1 lpm nasal cannula. The table shows that there was an increase in oxygen saturation from time 0 to time 4, SpO<sub>2</sub> 97% increased to 100%. T<sub>0</sub> in the table shows saturation when the patient was first admitted on October 28, 2024 and implementation was carried out on the 3rd day the patient was admitted, namely on November 1, 2024. To ensure measurement reliability, SpO<sub>2</sub> was assessed at consistent time intervals (every 2 hours during an 8-hour shift) using a calibrated pulse oximeter, while the baby was in a calm and stable condition, consistently using a 1 lpm nasal cannula throughout the intervention period.

**Table 1.** Intervention Results Data

Date	SpO <sub>2</sub> (%)				
	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
1 November 2024	97%				
2 November 2024		98%	99%	100%	100%
3 November 2024		98%	98%	100%	100%

## DISCUSSION

In this case study, the results of nursing actions taken on the patient, namely right lateral positioning, showed an increase in oxygen saturation. Where in table 4.1 on day 3 implementation shows an increase in SpO<sub>2</sub> from 98% to 100%. This is in line with research conducted by Danal et al (2021) showing that giving the right lateral position has a significant effect on increasing oxygen saturation where from an average of 97.1% to 97.78%;  $p = 0.007$ . In the study also explained that by providing intervention in the form of right lateral position, the majority of patient families said that the child looked calmer and the symptoms of shortness of breath appeared to be reduced.

Right lateral positioning is considered more effective in improving blood oxygen saturation compared to left lateral positioning. This is due to the greater gas exchange capacity of the right lung, considering the size of the right lung is larger

than the left lung. In addition, the left lateral position causes a shift in the mediastinum which can compress and reduce the volume of the left lung, thus reducing ventilation efficiency because some alveoli do not get enough air to carry out gas exchange. This happens because the left lung is naturally smaller than the right lung where the left lung only has two lobes and the space is limited due to the presence of the heart (Rahmawati et al., 2021).

Agustina et al (2021) argue that the right oblique position can provide benefits for heart function, where anatomically, the atrium is on the right side so that it helps the heart reduce the backflow of blood from the superior and inferior vena cava, and makes the heart workload lighter. In addition, this position also stimulates increased sympathetic nerve activity and prevents airway obstruction due to backward tongue thrust. The right tilt position can prevent airway obstruction due to backward tongue thrust, which can cause occlusion of the nasopharynx and oropharynx during sleep. Thus, patients will feel more comfortable if they are in the right lateral position (Yesni., 2019).

Another study conducted by Cheragi et al (2020) also stated that giving the right lateral position was shown to increase oxygen saturation. The right lateral position can reduce the workload of the respiratory system in patients, so that the frequency of breathing decreases and this contributes to increasing blood oxygen saturation levels. Wenas & Laoh (2022) said that in their research, before the right lateral position intervention, the average patient's oxygen saturation was below normal limits, and after giving the right lateral position for 30 minutes the patient experienced a significant increase in oxygen saturation. This proves that giving right lateral positioning can increase oxygen saturation in the blood.

## Limitations

This case study has several limitations. First, the sample size is limited to one patient (single subject study), so the results cannot be generalized to a broader population. Second, the study was conducted in a single room at one hospital, which may limit the transferability of findings to other settings. Third, confounding factors such as concurrent pharmacological

treatments were not controlled. Future studies should consider larger sample sizes and controlled designs to strengthen the evidence base for right lateral positioning as a nursing intervention.

### CONCLUSION

Giving right lateral positioning there is an increase in oxygenation (oxygen saturation) in Bb.M who uses nasal cannul. The increase is seen from the results of oxygen saturation measured using a pulse oximeter which initially 97% to 100%. This shows that right lateral positioning can increase oxygen saturation in infants with ineffective airway clearance. Based on these findings, it is recommended that nurses incorporate right lateral positioning as a standard non-pharmacological nursing intervention for infants with pneumonia and oxygenation impairment. Future research should employ randomized controlled trials with larger samples to further validate the effectiveness of this intervention and explore optimal duration and frequency of positioning.

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