An Interdisciplinary Approach to Bronchiolitis in Emergency Departments: The Impact of Medical, Nursing, and Physical Therapy Interventions on Clinical Outcomes – A Systematic Review

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Abstract

Neonatal bronchiolitis is one of the leading causes of visits to pediatric emergency departments, characterized by inflammation of the lower airways and the potential for progression to respiratory failure. This study aimed to evaluate the scientific evidence regarding the management of neonatal bronchiolitis, with an emphasis on therapeutic interventions and an interdisciplinary approach. This is a systematic review conducted in accordance with the PRISMA 2020 guidelines, with searches in the PubMed, Scopus, Web of Science, Cochrane Library, BVS, and SciELO databases. Clinical trials, observational studies, and systematic reviews were included. The results demonstrated that supportive measures, such as oxygen therapy, hydration, and clinical monitoring, form the basis of treatment and have the highest level of evidence. In contrast, pharmacological interventions, such as bronchodilators, corticosteroids, and antibiotics, did not demonstrate consistent clinical benefits. High-flow nasal cannula therapy showed promising results in reducing the need for invasive ventilation, especially in moderate to severe cases. The interdisciplinary approach proved fundamental to the quality of care, promoting integration among professionals and improving clinical outcomes. It is concluded that the management of neonatal bronchiolitis should be based on evidence-based practices, prioritizing supportive measures and avoiding unnecessary interventions, with an emphasis on individualized care.

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Introduction

Acute bronchiolitis is one of the leading causes of hospitalization in neonates and infants, accounting for significant demand on pediatric emergency services. It is a viral infection that affects the lower airways, leading to obstruction and respiratory compromise. Its high prevalence makes this condition a major public health problem (BARALDI *et al*., 2014) [6].

The pathophysiology of bronchiolitis involves inflammation, edema, and excessive mucus production, factors that impair pulmonary ventilation. In newborns, these changes are particularly critical due to pulmonary immaturity and the small caliber of the airways. These factors contribute to an increased risk of respiratory failure (KENNER; LOTT, 2007) [40].

Emergency department care is often necessary, as bronchiolitis can rapidly progress to severe conditions. Early clinical assessment and risk stratification ( ) are essential for guiding therapeutic management. Clinical protocols have been implemented to standardize care (MUDZINGWA *et al*., 2025) [47].

Medical management of neonatal bronchiolitis focuses on respiratory support and continuous clinical monitoring. Oxygen therapy is frequently used to correct hypoxia, while noninvasive ventilation may be indicated in more severe cases. Appropriate management reduces complications and improves prognosis (HASKELL *et al*., 2021) [36].

Nursing plays an essential role in the care of newborns with bronchiolitis, being responsible for monitoring vital signs and implementing care interventions. Continuous monitoring allows for the early identification of signs of clinical deterioration. This role is fundamental to patient safety (DA SILVA *et al*., 2025) [19]. Furthermore, decision-making by the nursing team, especially in emergency settings, directly influences clinical outcomes. The choice of interventions, such as high-flow oxygen therapy, depends on careful clinical assessment. Professional training is crucial in this process (ELKS; YOUNG; DOWNER, 2025) [24].

Respiratory physical therapy has been widely used in the management of bronchiolitis, with the aim of improving ventilation and facilitating the removal of secretions. Specific techniques may contribute to reducing respiratory effort. However, its efficacy is still debated in the literature (GAJDOS *et al*., 2010) [31]. Studies indicate that the application of physical therapy should be individualized, considering the severity of the clinical condition and the patient's characteristics. Some authors report benefits, while others do not observe significant differences in outcomes. This variability highlights the need for further research (POSTIAUX; ZWAENEPOEL; LOUIS, 2013) [52].

The interdisciplinary approach has gained prominence in neonatal care, especially in emergency situations. Integration among different professionals allows for more comprehensive and efficient care. This model contributes to better clinical outcomes (ALMAHMOUD *et al*., 2025) [2].

Collaboration among physicians, nurses, and physical therapists is essential for the proper management of neonatal bronchiolitis. Each professional acts in a complementary manner, contributing to the patient's clinical stabilization. This integration is considered a pillar of modern care (GUSMÃO *et al*., 2025) [34].

Bronchiolitis also has a significant impact on healthcare systems due to the high number of hospitalizations and the need for intensive care in severe cases. This scenario underscores the importance of effective management strategies. Resource optimization is a constant challenge (LEÔNCIO *et al*., 2020) [42].

The use of evidence-based clinical guidelines has been recommended to standardize the management of bronchiolitis. These guidelines aid in decision-making and reduce variability in clinical practice. Adherence to protocols improves the quality of care (LOVEYS *et al*., 2026) [43].

Pediatric nursing plays a fundamental role in educating family members, providing guidance on home care and warning signs. This support is essential for reducing readmissions and complications. A family-centered approach is widely recommended (ASSEM, 2015) [5]. Respiratory physical therapy also contributes to pulmonary rehabilitation, especially in more severe or prolonged cases. The physical therapist's role can influence the patient's recovery time. Integration with other therapies enhances outcomes (BRISOLA, 2025) [12].

In neonatal intensive care units, the management of bronchiolitis requires specialized care and continuous monitoring. The complexity of these cases demands integrated multidisciplinary care. The team's experience is critical to therapeutic success (RIMMER, 2025) [54].

The use of non-invasive ventilation has proven to be an effective strategy in reducing the need for intubation. This approach minimizes complications associated with invasive ventilation. Studies reinforce its benefits in pediatric patients (WESTPHAL *et al*., 2025) [66].

Maintaining airway patency is one of the main goals in the management of bronchiolitis. Techniques such as nasal suctioning and bronchial hygiene are frequently used. These interventions help improve ventilation (NORRIS *et al*., 2018) [48].

Interdisciplinary practice also involves effective communication among healthcare professionals. The exchange of information enables more assertive decisions and improves the quality of care. Team coordination is essential in this process (COOK; LANGTON, 2009) [16].

Patient- and family-centered care is one of the fundamental principles of neonatal care. This model values the active participation of family members in the care process. The humanization of care is an important aspect (SIMÕES, 2023) [58].

Bronchiolitis may be associated with other clinical conditions, which increases the complexity of management. Patients with comorbidities are at higher risk of complications. Individualized assessment is essential (FINKEL *et al*., 2018) [28].

Hospital discharge of newborns requires careful planning, especially in cases of severe bronchiolitis. Continuity of care is essential to prevent readmissions. Follow-up strategies are recommended (CONNORS; HAVRANEK; CAMPBELL, 2021) [15].

Health education is an important tool in preventing complications related to bronchiolitis. Appropriate guidance can reduce the severity of clinical presentations. The participation of the multidisciplinary team is essential (JAMES; NELSON; ASHWILL, 2012) [39].

The role of rehabilitation nursing also contributes to the management of bronchiolitis, especially in supporting the family. A comprehensive approach to the patient is essential for better outcomes. Care must be continuous and individualized (RUSSO, 2019) [55].

The use of clinical protocols in emergency departments has been associated with improved clinical outcomes. These protocols help standardize care. Proper implementation is essential (BHARU, n.d.) [9].

Physical therapy also plays a significant role in ventilated patients, helping to maintain lung function. Early intervention can reduce complications. Clinical practice should be evidence-based (SHKURKA *et al*., 2023) [57].

The interdisciplinary approach is widely recognized as an effective strategy in the care of complex patients. Integration among professionals promotes better outcomes. This model is increasingly being adopted (SWORDS *et al*., 2021) [60].

Bronchiolitis remains a clinical challenge, especially in neonates. Variability in clinical presentation requires constant attention. Appropriate management depends on the team's experience (ZENTZ, 2011) [68].

The role of nursing in pediatric care involves both technical and emotional aspects, being essential to the patient's well-being. The humanization of care is an important distinguishing factor. Care must be comprehensive (HOCKENBERRY; WILSON; RODGERS, 2021) [38].

Integration among different healthcare disciplines contributes to improved clinical outcomes. Interdisciplinary collaboration is fundamental in complex settings. Teamwork should be encouraged (YAYEHRAD *et al*., 2021) [67].

Bronchiolitis can also lead to long-term complications, especially in severely ill patients. Clinical follow-up is important to monitor progression.

Prevention of sequelae should be considered (WALL *et al*., 2020) [65]. The healthcare team's practice should be based on up-to-date scientific evidence. Research is essential for improving clinical practices. The incorporation of new evidence is essential (FLODGREN *et al*., 2011) [29]. The use of technologies in neonatal care has contributed to improved clinical outcomes. Modern equipment allows for more precise monitoring. Innovation is an important ally (DOUGLAS *et al*., 2023) [23].

Bronchiolitis in newborns requires special attention due to its potential severity. Early identification of warning signs is critical. Rapid intervention can save lives (KORMAN; HATABAH; MORRIS, 2025) [41].

The role of the physical therapist in pediatric emergencies has been increasingly recognized. Their contribution is essential in respiratory management. Integration with the multidisciplinary team is fundamental (GUSMÃO *et al*., 2025) [34]. 2025).

Nursing also plays a strategic role in organizing care in emergency departments. The coordination of care activities is essential. Efficient management improves outcomes (VILLANOVA *et al*., 2025) [62].

Bronchiolitis remains a relevant topic in pediatrics, especially in emergency settings. The complexity of its management requires an integrated approach. Multidisciplinary collaboration is indispensable (DA SILVA RIBEIRO *et al*., 2025) [20].

Given this, the need to understand the impact of the interdisciplinary approach on the management of neonatal bronchiolitis becomes evident. Analysis of the available evidence can contribute to the improvement of clinical practice. Review studies are fundamental in this context.

Objectives

General Objective

To evaluate, through a systematic review of the literature, the efficacy of therapeutic interventions and the interdisciplinary approach in the management of neonatal bronchiolitis in emergency departments, with a focus on clinical outcomes.

Specific Objectives

- To analyze the impact of supportive measures (oxygen therapy, hydration, and clinical monitoring) on clinical outcomes;
- To evaluate the efficacy of respiratory therapies,

including high-flow nasal cannula and noninvasive ventilation;
- Investigate the role of pharmacological interventions in the management of neonatal bronchiolitis;
- Examine the contribution of the multidisciplinary team (physicians, nurses, and physical therapists) to patient care;
- Compare clinical outcomes, such as length of hospital stay, need for ventilatory support, and complications.

Methodology

This is a systematic review conducted in accordance with the PRISMA 2020 guidelines. The search strategy was conducted in the PubMed/MEDLINE, Scopus, Web of Science, Cochrane Library, BVS, and SciELO databases, using controlled descriptors and free-text terms related to bronchiolitis, neonates, emergency care, nursing, physical therapy, and interdisciplinary approach, combined using Boolean operators.

Studies published in English, Portuguese, and Spanish were included, encompassing randomized clinical trials, observational studies, and systematic reviews. Studies with non-neonatal populations, case reports, narrative reviews, and articles without access to the full text were excluded.

Study selection was conducted in three stages (screening by title, abstract, and full-text review). Data extraction included author, year, study design, interventions, and primary clinical outcomes.

Methodological quality was assessed using specific tools, including the Cochrane Risk of Bias tool for clinical trials and the Newcastle-Ottawa scale for observational studies. The results were synthesized narratively, organized into tables and accompanied by a critical analysis of the evidence.

Results And Discussion

Evidence-Based Recommended Therapies

Supplemental oxygen therapy is one of the main pillars of hospital management for acute bronchiolitis and is indicated in cases where peripheral oxygen saturation is below 90%, with the aim of maintaining adequate levels of tissue oxygenation. International guidelines recommend its use via devices such as nasal cannulas, face masks, or ambient oxygen systems, prioritizing strategies that minimize patient handling (AMERICAN ACADEMY OF PEDIATRICS, 2006; RALSTON *et al*., 2014; WAINWRIGHT, 2010) [3, 53, 63].

In recent years, therapy with heated and humidified high-flow nasal cannula has emerged as a promising therapeutic alternative, especially in moderate to severe cases. Evidence suggests that this modality may reduce the need for invasive mechanical ventilation and continuous positive airway pressure, in addition to providing greater patient comfort. However, systematic reviews indicate that there is still no consensus regarding its routine use, and greater methodological robustness is needed in the available studies (KEPREOTES *et al*., 2017; FRANKLIN *et al*., 2015; BEGGS *et al*., 2014) [30, 7].

Adequate maintenance of hydration status is another essential component in the treatment of bronchiolitis, considering that a significant proportion of hospitalized patients experience feeding difficulties due to respiratory distress. The route of fluid administration should be individualized, as studies demonstrate equivalence between the nasogastric and intravenous routes in terms of efficacy and length of hospital stay (OAKLEY *et al*., 2013; HOCKENBERRY; WILSON; RODGERS, 2021) [49, 38].

Additionally, the use of isotonic solutions for intravenous maintenance is recommended, with rigorous electrolyte monitoring, especially of serum sodium, due to the risk of hydroelectrolytic disturbances, such as hyponatremia. This precaution is particularly relevant in infants, given their greater physiological vulnerability (FRIEDMAN, 2013; WANG; XU; XIAO, 2014) [68, 50].

Therapies with inconclusive evidence

The use of nebulized epinephrine in the treatment of bronchiolitis remains controversial in the scientific literature. Although some studies indicate a reduction in hospitalization rates, systematic reviews and meta-analyses do not demonstrate consistent benefits in relevant clinical outcomes, such as length of hospital stay or disease progression (HARTLING *et al*., 2011) [68].

Similarly, the combination of epinephrine and corticosteroids, such as dexamethasone, has been investigated in randomized clinical trials, which suggest a possible synergistic effect in reducing hospitalizations. However, subsequent analyses indicate a loss of statistical significance after methodological adjustments, limiting its clinical applicability (PLINT *et al*., 2009) [17].

Nasal aspiration, frequently used in clinical practice, lacks robust evidence to support its systematic use. Recent studies indicate that more invasive interventions, such as deep aspiration, may be associated with prolonged hospital stays, suggesting that its use should be judicious and preferably superficial (MUSSMAN *et al*., 2013) [48].

Therapies not recommended based on evidence

The use of bronchodilators, such as salbutamol, is not recommended in the routine treatment of bronchiolitis, since the pathophysiology of the disease does not involve predominant bronchoconstriction, but rather airway obstruction due to edema and secretions. Clinical trials demonstrate a lack of significant impact on relevant clinical outcomes (ZORC; HALL, 2010; GADOMSKI; SCRIBANI, 2014) [69, 69, 32, 32].

Similarly, systemic or inhaled corticosteroids do not provide consistent clinical benefit and are not effective in reducing hospitalization rates, length of hospital stay, or disease severity. Furthermore, their use may be associated with adverse effects, which contraindicate their routine use (FERNANDES *et al*., 2013; CORNELI *et al*., 2007; RALSTON *et al*., 2014) [68, 17, 53].

Antibiotic therapy is also not indicated in most cases, since bronchiolitis has a predominantly viral etiology and the incidence of secondary bacterial infection in previously healthy children is low. The indiscriminate use of antibiotics contributes to bacterial resistance and does not improve clinical outcomes (PURCELL; FERGIE, 2007; FARLEY *et al*., 2014) [68, 68, 27].

The use of antivirals, such as ribavirin, is limited to specific cases of high severity or patients with risk factors, due to high cost, difficulty in administration, and limited clinical benefits (TURNER *et al*., 2014) [61].

Nebulization with hypertonic saline also lacks consistent evidence of significant clinical benefit, and its routine use is not recommended based on recent meta-analyses (ZHANG *et al*., 2013; BROOKS *et al*., 2016) [68, 13]. Furthermore,

conventional chest physiotherapy has not demonstrated efficacy in reducing length of hospital stay or improving clinical symptoms, which is why it is not recommended as a routine intervention (ROQUÉ I FIGULS *et al*., 2016) [31].

Hospital Management

Hospital management of bronchiolitis should occur in an environment with adequate infrastructure for respiratory support and infection control, including contact and droplet precautions, with the aim of reducing nosocomial transmission (AMERICAN ACADEMY OF PEDIATRICS, 2006; MADGE *et al*., 1992) [3, 3].

Serial clinical assessment constitutes the primary method of monitoring and should include parameters such as respiratory rate, respiratory effort, oxygen saturation, and the patient's general condition. Although standardized clinical scales exist, their practical applicability still has limitations (DESTINO *et al*., 2012) [21].

The continuous use of electronic monitoring should be interpreted with caution, as it may lead to unnecessary interventions and prolonged hospital stays. In addition, pulse oximetry has limitations in certain saturation ranges, requiring close correlation with clinical assessment (SCHROEDER; MANSBACH, 2014; ROSS; NEWTH; KHEMANI, 2014) [56, 56, 56].

Continuous cardiorespiratory monitoring is particularly relevant for detecting episodes of apnea, especially in neonates and young infants, who are considered high-risk groups for severe respiratory complications (WILLWERTH; HARPER; GREENES, 2006) [68].

The occurrence of apnea episodes in infants with bronchiolitis, especially in newborns and preterm infants, represents a significant clinical concern, although its incidence is relatively low in the general population. Studies show that apnea is more commonly associated with patients having specific risk factors, such as age under one month or prematurity, which justifies more rigorous monitoring in these groups (WILLWERTH; HARPER; GREENES, 2006; MANSBACH *et al*., 2008) [68, 44].

In this context, continuous cardiorespiratory monitoring may be useful during the acute phase of the disease in higher-risk patients, allowing for the early detection of adverse events.

However, for most infants with uncomplicated bronchiolitis, this strategy is not necessary and may lead to excessive interventions and prolonged hospitalization (SCHROEDER; MANSBACH, 2014) [56].

Measuring peripheral oxygen saturation is an important tool for guiding clinical decisions regarding the initiation, adjustment, and weaning from oxygen therapy. However, the use of continuous monitoring compared to intermittent monitoring remains a topic of debate in the scientific literature, with no definitive consensus regarding the superiority of one strategy over the other (RALSTON *et al*., 2014) [53].

Continuous monitoring offers greater sensitivity for the early identification of clinical deterioration, enabling immediate intervention. However, it is important to consider that transient drops in oxygen saturation are common in healthy infants and may not reflect significant clinical impairment, which can lead to unnecessary interventions (HUNT *et al*., 1999; POETS; URSCHITZ; POETS, 2009) [68, 68].

Evidence indicates that the adoption of rigid and arbitrary saturation targets may contribute to prolonged hospital stays, especially when interventions are performed based on transient and clinically irrelevant variations (SCHROEDER *et al*., 2004) [56].

Given these considerations, it is recommended that the intensity of oxygen saturation monitoring be individualized, taking into account the severity of the clinical condition, the presence of risk factors, and the patient's progression. This approach allows for a more rational use of resources and avoids unnecessary interventions (RALSTON *et al*., 2014) [53].

Thus, continuous monitoring is more appropriate for high-risk patients during the initial phase of the disease, while intermittent monitoring should be prioritized in low-risk patients or those in the clinical recovery phase. This transition should occur as the patient shows improvement in respiratory effort, clinical stability, and adequate food intake (WAINWRIGHT, 2010) [63].

Table 1 presents a comprehensive summary of the scientific evidence related to the management of neonatal bronchiolitis in an emergency setting, systematically organizing the main therapeutic interventions, their levels of evidence, study types, and relevant clinical findings.

Table 1: Summary of evidence on the management of neonatal bronchiolitis in an emergency setting

Topic	Description	Evidence	Study Type	Findings	References
Oxygen therapy	$SatO_2$ ≥90%	High	Guideline	Reduces hypoxia	AAP (2006); Ralston (2014)
HFNC	Heated high-flow	Moderate-High	RCT	↓ invasive ventilation	Kepreotes (2017); Franklin (2015)
CPAP	Non-invasive support	Moderate	Review	↓ respiratory failure	Essouri (2014)
Hydration	NG vs IV	High	RCT	No difference LOS	Oakley (2013)
Epinephrine	Nebulized	Low	Review	No consistent benefit	Hartling (2011)
Salbutamol	β2 agonist	High (against)	Review	No benefit	Gadomski (2014)
Corticosteroid	Anti-inflammatory	High (against)	RCT	No clinical improvement	Corneli (2007)
Antibiotic	Restricted use	High	Review	No benefit	Farley (2014)
Hypertonic saline	Nebulization	Moderate	Meta-analysis	No impact on LOS	Zhang (2013)
Physical therapy	Bronchial hygiene	High (against)	Cochrane	No benefit	Roqué (2016)
Monitoring	Clinical	High	Observational	Main tool	Destination (2012)
Interdisciplinary	Integrated team	Moderate	Review	Improved care	Gusmão (2025)

Source: Authors

Based on this framework, it is evident that supportive measures, such as oxygen therapy and hydration, have the strongest evidence, while various pharmacological interventions offer limited or inconsistent benefits, reinforcing the need for an evidence-based approach. Furthermore, the table highlights the importance of individualized clinical monitoring and interdisciplinary collaboration in patient care, pointing out gaps in the

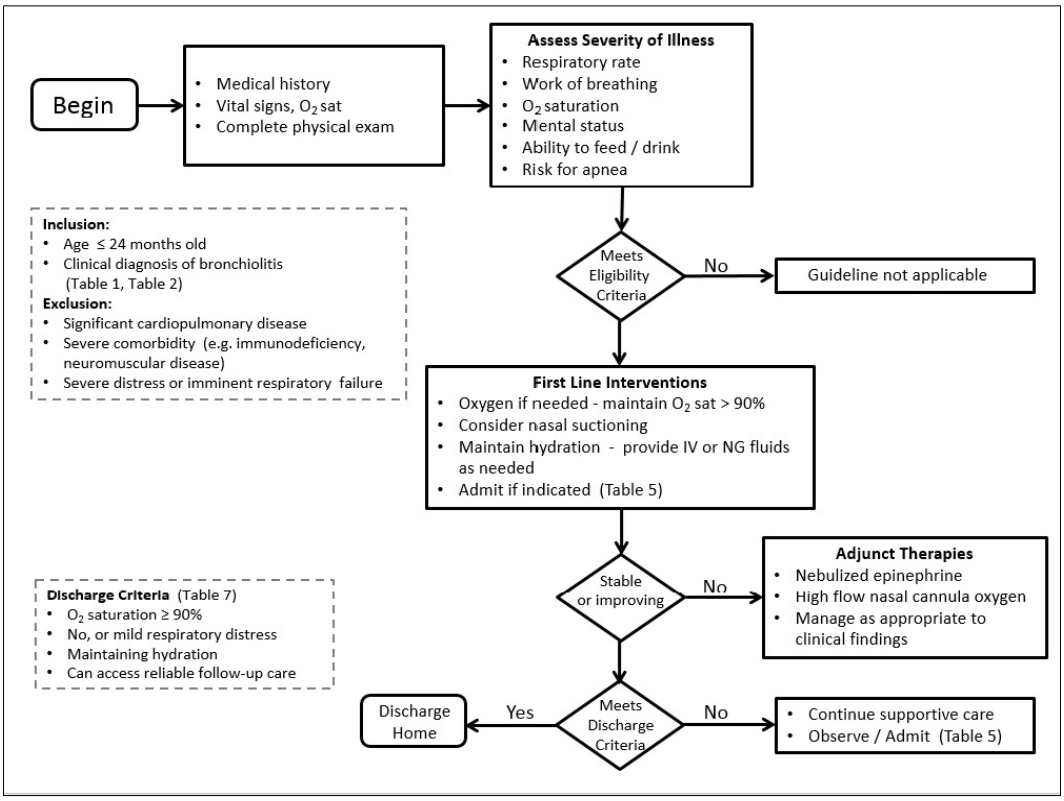
literature and guiding future scientific research (RALSTON *et al*., 2014; GADOMSKI; SCRIBANI, 2014; GUSMÃO *et al*., 2025) [53, 32, 34].

An integrated analysis of the evidence demonstrates that the management of neonatal bronchiolitis remains predominantly based on supportive measures, with oxygen therapy and adequate hydration serving as the therapeutic pillars. Pharmacological interventions, for the most part, have low clinical impact, reinforcing the importance of avoiding unnecessary treatments.

It is observed that recent technologies, such as the high-flow nasal cannula, show promising potential, although they still lack greater standardization in clinical guidelines. In contrast, therapies widely used in the past, such as bronchodilators, corticosteroids, and antibiotics, do not demonstrate consistent benefit and are currently discouraged.

The importance of individualized clinical monitoring (Figure 1) is emphasized, as opposed to excessive monitoring, as well as the growing role of the interdisciplinary approach, which contributes to better clinical outcomes and greater efficiency in care.

Fig 1: Algorithm for the clinical management of bronchiolitis.



Source: Adapted from the Section on Emergency Medicine of the American Academy of Pediatrics

An integrated analysis of the evidence demonstrates that the management of neonatal bronchiolitis is predominantly based on supportive measures, with an emphasis on oxygen therapy, hydration, and clinical monitoring, while pharmacological interventions offer limited benefits, as demonstrated by recent guidelines and studies (AMERICAN ACADEMY OF PEDIATRICS, 2006; RALSTON *et al*., 2014) [3, 53].

In this context, oxygen therapy stands out as the primary therapeutic intervention, being essential for correcting hypoxia and maintaining patients' clinical stability, especially in more severe cases (WAINWRIGHT, 2010) [63].

From this perspective, it is observed that new technologies, such as the high-flow nasal cannula, have been incorporated into clinical management, showing promising results in reducing the need for invasive ventilation (KEPREOTES *et al*., 2017; FRANKLIN *et al*., 2015) [30].

However, despite these advances, there remains controversy regarding the standardization of these technologies' use, and further studies are needed to consolidate robust evidence (BEGGS *et al*., 2014) [7].

At the same time, adequate hydration is another fundamental pillar in the treatment of bronchiolitis, especially in infants with feeding difficulties associated with respiratory effort (OAKLEY *et al*., 2013) [49].

The choice of hydration route, whether enteral or intravenous, should be individualized based on the patient's clinical condition, as both routes demonstrate similar efficacy in terms of clinical outcomes (OAKLEY *et al*., 2013; HOCKENBERRY; WILSON; RODGERS, 2021) [49, 38].

The use of isotonic solutions is recommended to prevent electrolyte disturbances, especially hyponatremia, a common condition in hospitalized pediatric patients (FRIEDMAN, 2013; WANG *et al*., 2014).

However, when analyzing pharmacological interventions, it is observed that most present inconsistent evidence or a lack of significant clinical benefit (RALSTON *et al*., 2014) [53].

Nebulized epinephrine, for example, has been extensively studied but does not demonstrate a consistent impact on reducing length of hospital stay (HARTLING *et al*., 2011).

Similarly, the combination of epinephrine and corticosteroids does not show sustained clinical benefit after more rigorous statistical analyses (PLINT *et al*., 2009).

Nasal suction, although frequently used in clinical practice,

lacks robust evidence to support its efficacy and may even be associated with prolonged hospitalization (MUSSMAN *et al*., 2013).

In this context, the importance of avoiding unnecessary interventions is highlighted, prioritizing approaches based on solid and well-established evidence (ZORC; HALL, 2010) [69].

Bronchodilators, such as salbutamol, exemplify this issue, as they do not provide a clinically relevant benefit in bronchiolitis (GADOMSKI; SCRIBANI, 2014) [32].

This finding can be explained by the pathophysiology of the disease, which involves airway obstruction due to secretions and edema, rather than bronchoconstriction (ZORC; HALL, 2010) [69].

Similarly, corticosteroids do not demonstrate a significant impact on clinical outcomes and are therefore not recommended (CORNELI *et al*., 2007) [17]; FERNANDES *et al*., 2013.

Antibiotic therapy should also be used with caution, since the viral etiology of bronchiolitis makes its use unnecessary in most cases (FARLEY *et al*., 2014) [27]. Furthermore, the indiscriminate use of antibiotics contributes to the development of bacterial resistance, posing a public health problem (PURCELL; FERGIE, 2007).

Other therapies, such as antivirals, have limited application and should be reserved for specific, more severe cases (TURNER *et al*., 2014) [61].

Hypertonic saline, although initially promising, has not demonstrated a significant impact on clinical outcomes in recent meta-analyses (ZHANG *et al*., 2013; BROOKS *et al*., 2016) [13].

Similarly, conventional respiratory physical therapy does not provide relevant clinical benefits in most patients (ROQUÉ I FIGULS *et al*., 2016). Given this, the importance of clinical monitoring as the primary tool for assessing patient progression is reinforced (DESTINO *et al*., 2012) [21].

Serial assessment allows for the early identification of signs of clinical deterioration, guiding appropriate interventions (WALSH; HOOD; MERRITT, 2011). However, excessive use of electronic monitoring can lead to unnecessary interventions and prolonged hospitalization (SCHROEDER; MANSBACH, 2014) [56].

Pulse oximetry, although widely used, has limitations, especially at low saturation levels (ROSS; NEWTH; KHEMANI, 2014).

In this regard, data interpretation should always be correlated with clinical assessment (RALSTON *et al*., 2014) [53].

Continuous monitoring is most indicated for high-risk patients, such as neonates and preterm infants (WILLWERTH; HARPER; GREENES, 2006). These patients are at higher risk of adverse events, including episodes of apnea (MANSBACH *et al*., 2008). On the other hand, low-risk patients can be monitored intermittently, reducing unnecessary interventions (SCHROEDER *et al*., 2004).

The prevention of hospital-acquired infections is also a fundamental aspect of bronchiolitis management (MADGE *et al*., 1992). Isolation measures and infection control are essential to reduce nosocomial transmission (Krasinski *et al*., 1990). An interdisciplinary approach has proven essential for improving the quality of care (ALMAHMOUD *et al*., 2025) [2].

Integration among physicians, nurses, and physical therapists enables more comprehensive and efficient care (GUSMÃO *et al*., 2025) [34]. This model of care contributes to better clinical outcomes and greater patient safety (COOK; LANGTON, 2009) [16].

The role of nursing is essential in the continuous monitoring and support of the patient and family (DA SILVA *et al*., 2025) [19]. Similarly, physical therapy plays a significant role in respiratory care, although its application must be judicious (POSTIAUX *et al*., 2013) [52].

The complexity of bronchiolitis management requires constant updating of healthcare professionals (FLODGREN *et al*., 2011) [29]. In this context, the incorporation of scientific evidence into clinical practice is fundamental to ensuring quality of care (MUDZINGWA *et al*., 2025) [47].

Finally, it is observed that the management of neonatal bronchiolitis should be based on a rational, patient-centered, and evidence-based approach (ZENTZ, 2011) [68].

Thus, the integration of appropriate clinical support, individualized monitoring, and multidisciplinary care forms the basis for better clinical outcomes (YAYEHRAD *et al*., 2021) [67].

Conclusion

This systematic review demonstrates that the management of neonatal bronchiolitis in emergency settings should be primarily based on supportive measures, with an emphasis on oxygen therapy, adequate hydration, and continuous clinical monitoring. Pharmacological interventions, such as bronchodilators, corticosteroids, and antibiotics, do not provide consistent clinical benefit and should be avoided in most cases.

Emerging technologies, such as high-flow nasal cannulas, show promise, especially in moderate to severe cases, although they still require greater standardization in clinical guidelines. Furthermore, individualized monitoring and th e rationalization of technological resource use are essential to avoid unnecessary interventions.

Also noteworthy is the importance of an interdisciplinary approach, which integrates physicians, nurses, and physical therapists, contributing to better clinical outcomes and greater patient safety. Thus, the adoption of evidence-based practices is recommended, with a focus on individualized care and the optimization of care in neonatal emergency services.

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