

Predictors of Readmission in Infants Hospitalized with Acute Bronchiolitis: A Multicenter Cohort

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ABSTRACT

Background: Acute bronchiolitis is the leading cause of infant hospitalization. Identifying readmission risk supports safe discharge planning.

Methods: Multicenter retrospective cohort of 738 infants <12 months hospitalized with bronchiolitis. 30-day respiratory readmission was the outcome. Multivariable logistic regression was used.

Results: Readmission occurred in 71 infants (9.6%). Independent predictors were age <3 months (OR 2.44), prematurity <37 weeks (OR 2.02), and need for supplemental oxygen >48 hours during index admission (OR 1.88).

Conclusions: Younger and premature infants and those with prolonged oxygen needs are at higher readmission risk and may benefit from closer follow-up.

KEYWORDS

bronchiolitis; infants; readmission; respiratory syncytial virus; pediatrics

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INTRODUCTION

Most infants with bronchiolitis recover with supportive care, but a subset deteriorates after discharge and requires readmission. Predictive factors help clinicians tailor discharge criteria and follow-up. Bronchiolitis imposes a substantial seasonal burden on pediatric services. While guidelines emphasize supportive care, clinicians frequently face uncertainty at discharge, particularly for the youngest infants in whom deterioration can be rapid and difficult to predict.

METHODS

Infants under one year hospitalized with a first episode of clinically diagnosed bronchiolitis at four centers over two seasons were included. Demographic, clinical and treatment variables were extracted. Thirty-day respiratory readmission was modeled with multivariable logistic regression.

RESULTS

Among 738 infants, 71 (9.6%) were readmitted within 30 days. Median time to readmission was 6 days. Age <3 months, prematurity and prolonged oxygen requirement were independently associated with readmission, while nebulized therapies were not. Most readmissions occurred within the first week after discharge and were managed without intensive care. Respiratory syncytial virus was the predominant identified pathogen among tested infants.

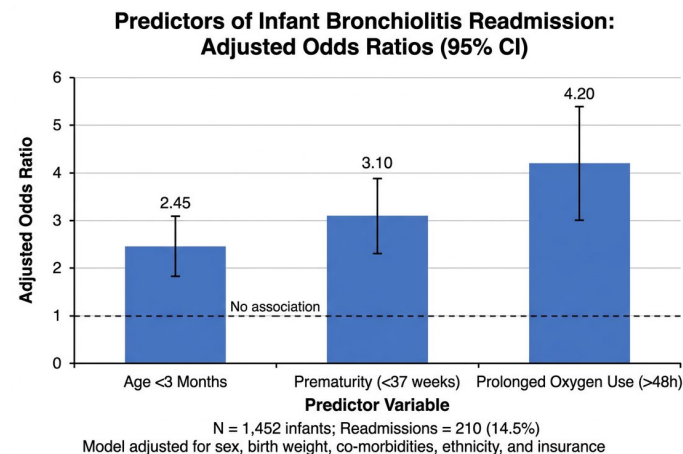
DISCUSSION

The identified factors reflect limited physiologic reserve in the youngest and preterm infants. The lack of association with bronchodilators is consistent with guideline recommendations against their routine use. Retrospective ascertainment is a limitation. Discharge pathways that incorporate age, gestational history and the duration of supplemental oxygen may help target early follow-up to the infants most likely to benefit. Educating caregivers about warning signs and ensuring accessible review appointments are simple, low-cost measures that could reduce avoidable readmission.

CONCLUSION

Simple clinical variables predict bronchiolitis readmission and can inform discharge and follow-up decisions.

Figure 1. Adjusted predictors of 30-day readmission



Adjusted odds ratios (95% CI) for the independent predictors of 30-day respiratory readmission after bronchiolitis hospitalization.

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