NAPCRG 52nd Annual Meeting — Abstracts of Completed Research 2024.

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## Title

Risk Factors for ICU Admission for Respiratory Syncytial Virus in Young Children in the COVID Era: A Meta-Analysis

# **Priority 1 (Research Category)**

Systematic review, meta-analysis, or scoping review

#### Presenters

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# Abstract

Context: Respiratory syncytial virus (RSV) is associated with substantial morbidity and mortality in young children. Established risk factors for ICU admission include congenital heart disease, prematurity, age <3 months, and chronic lung disease. With the emergence of the novel virus, SARS-COV-2 (COVID-19), and vaccines to prevent RSV, risk factors for ICU admission may be evolving.

Objective: To assess risk factors for RSV ICU admission during and after the emergence of COVID-19.

Study Design and Analysis: Systematic review and meta-analysis (Prospero registration CRD573007) that explored multiple databases for observational and randomized controlled studies assessing comorbidities as risk factors for ICU admission or proxies (mortality or the need for mechanical ventilation) before July 2024. Case reports, reviews and expert opinions were excluded. Data were analyzed using random-effects models.

Setting or Dataset: Hospital setting

Population Studied: Children younger than18 years old hospitalized with RSV

Intervention/Instrument: Not applicable

Outcome Measures: ICU admission or proxies (mortality or the need for mechanical ventilation).

Results: Among the 42 studies meeting inclusion/exclusion criteria, Down syndrome was the strongest risk factor for ICU admission in patients hospitalized for RSV (RR: 8.50, 95% CI: 3.32-21.76), followed by bronchopulmonary dysplasia/ chronic lung disease (RR: 5.05, 95% CI: 1.10-23.05), HIV (RR: 3.3, 95% CI: 1.2-4.8), congenital heart disease (RR: 3.67, 95% CI: 2.10-6.42), age <3 months (RR: 3.10, 95% CI: 1.38-

6.93), prematurity (RR: 3.07, 95%CI 2.01-4.59), and malnutrition or underweight (RR: 1.51, 95%CI: 1.25-1.85). SARS-CoV-2 co-infection and tobacco smoke exposure were not associated with ICU admissions. Conversely, currently breastfeeding was associated with an 87% reduction in the risk of ICU admission from RSV (RR: 0.13, 95%CI 0.04-0.39).

Conclusions: SARS-CoV-2 co-infection did not influence RSV outcomes. Down syndrome and bronchopulmonary dysplasia/ chronic lung disease were the strongest predictors of admission to an ICU while current breast feeding was associated with an 87% reduction in ICU admission from RSV.

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