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RESPIRATORY SYNCYTIAL VIRUS (RSV) BURDEN AMONG HOSPITALIZED CHILDREN <5 YEARS AND ASSESSMENT OF VACCINE INTRODUCTION IN PALESTINE: A 5-YEAR RETROSPECTIVE COHORT STUDY

Ihab K. Hemieid¹, Yousef Sajdieh¹, Philip Abu Mohor¹, Yousef Alhroub¹, Mohammad Khalawi¹, Aws Horoub¹
Supervisor: Dr. Musa Y Hindiyeh², Dr. Balqees Mohamad²

¹ Faculty of Medicine, Al-Quds University, Jerusalem, Palestine

² Department of Clinical Research, Faculty of Medicine, Al-Quds University, Jerusalem, Palestine

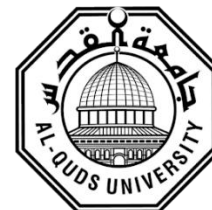
Abstract:

Background: Respiratory Syncytial Virus (RSV) is the leading cause of acute lower respiratory tract infection in infants and young children — a pathogen that disproportionately affects low- and middle-income countries (LMICs), where 97% of attributable deaths occur. In the West Bank, Palestine, data on the local clinical and economic impact of RSV remain scarce. Study Purpose/

Objectives: To quantify the clinical and financial burden of RSV infection among hospitalized children aged 0–60 months at a tertiary pediatric referral center in the West Bank; to characterize seasonal patterns, clinical features, and treatment practices; and to identify independent predictors of severe clinical course.

Methods: This study is a single-center retrospective cohort study conducted at Caritas Baby Hospital. We included 2292 consecutively sampled, laboratory-confirmed RSV admissions (via direct fluorescent antibody) from June 30, 2021, until July 31, 2025. Fifty-nine variables were categorized into sociodemographic characteristics, clinical features, risk factors, and hospital resource utilization. For clinical severity modeling, a severe course was defined as a composite of intensive care unit admission, mechanical ventilation, in-hospital mortality, or prolonged hospitalization exceeding the 75th percentile of the burden subset (> 6 days). Descriptive analyses, chi-square/Fisher exact tests, Mann-Whitney U/Kruskal-Wallis tests, and multivariable logistic regression were used.

Results: The cohort was predominantly composed of children younger than 12 months, who accounted for 86.9% of admissions: ages 0-<1 month [9.5%], 1-<3 months [37.2 %], 3-<6 months [21.2%], 6-<12 months [18.8%], and 12-60 months [13.1%]. Admissions displayed marked seasonality, with 85.2% occurring between October and February. The clinical and financial burden was substantial: ICU admission occurred in 7.8%, median LOS was 4.0 days (IQR 3.0-6.0), and median direct cost was 2,000 NIS (IQR 1,500-3,000), with Severe-course admissions carrying a markedly higher median of 4,500 NIS (p<0.001). In multivariable analysis, severe course was independently associated with younger age, particularly age 0-<1 month and



age 1-<3 months (aOR 10.28, 95% CI 6.00–17.62) and (aOR 4.41, 95% CI 2.77–7.04), respectively, prematurity (aOR 2.01, 95% CI 1.51-2.67), prior respiratory disease (aOR 1.67, 95% CI 1.25-2.22), and admission during or after October 2023 (coinciding with the onset of the Gaza war) (aOR 1.28, 95% CI 1.02-1.61). Antibiotics were administered in 46.3% of admissions. Antibiotic use remained associated with the youngest age bracket (aOR 1.82, 95% CI 1.29-2.58), co-infection (aOR 2.51, 95% CI 1.86-3.40), pneumonia (aOR 21.23, 95% CI 9.20-49.02), and higher CRP (aOR 1.02 per mg/L, 95% CI 1.02-1.03).

Conclusions: Hospitalized RSV burden was notably concentrated in early infancy and accompanied by substantial critical care use, and direct hospital spending. These findings support prioritization of infant-focused RSV immunization strategies and stronger antibiotic stewardship programs in the West Bank.

Key Words: Burden of Disease, Respiratory Syncytial Virus, Children, Hospitalization