



Management of Acute Bronchiolitis, Guidelines Vs Practice; An Inner-City Community Hospital Experience

PUBLISHED ABSTRACT

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ABSTRACT

Background: Bronchiolitis is the most common cause of hospitalization among infants, and inpatient management varies among pediatricians. In 2014, the American Academy of Pediatrics advised against routine use of chest X-rays (CXR), blood cultures (BC), and antibiotics in bronchiolitis management. Our objective was to assess the compliance with these recommendations in an inner-city community hospital.

Methods: A retrospective chart review of visits of children 2–24 months of age with a discharge diagnosis of bronchiolitis was performed. Multivariable adjusted logistic regression models were used to determine predictors of performing CXR and/or BC and the use of antibiotics. A linear regression model was used to assess the effect of performing BC, CXR, and antibiotic use on the length of hospitalization.

Results: 201 charts were analyzed. The mean age (SD) age was 11 (6) months with 66% (n = 132) being males. 15% tested positive for the respiratory syncytial virus (RSV). The proportion of patients who had BC, CXR, or were administered antibiotics were 55% (n = 111), 89% (n = 178), and 46% (n = 92) respectively. The identification of a viral causative agent did not reduce the odds of having BC or CXR, OR = 1.52 (95% CI: 0.33–7.00). Of the 107 BC performed, 4 were positive (3 of which were contaminants). Of 178 CXR, 160 (90%) were normal/consistent with a viral airway disease process **Figure 1**. The remaining CXR, though not reported as normal, did not lead to any change in management.

The mean (SD, range) duration of hospitalization was 3 (2, 1 to 13) days. In linear regression models adjusted for patients' age and gender, performing BC, CXR, and receiving antibiotics were associated with longer hospital stays with (95% confidence intervals) of 1.13 (0.67, 1.60), 0.81 (0.06, 1.57), and 1.36 (0.91, 1.81) respectively. However, after additionally adjusting for factors that may suggest the severity of disease (admission to ICU, RSV status, oxygen saturation, T-max, and WBC), only antibiotic use was associated with longer hospitalization [1.08 (0.56, 1.61)]. The performance of BC [0.11 (–0.52, 0.75)] or CXR [0.03 (–0.64, 0.71)] did not prolong hospitalization **Table 1**.

Conclusion: Extensive investigation of patients with bronchiolitis remains common despite published evidence-based guidelines to the contrary. Our findings show that even among an underserved population, the yield of these investigations remains very low, and the administration of antibiotics may lead to a prolonged hospital stay.

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KEYWORDS:

BC: blood culture; CI: Confidence interval; CXR: chest X-ray; ICU: intensive care unit; RSV: respiratory syncytial virus; SD: Standard deviation; T-max: maximum temperature; WBC: white blood cell

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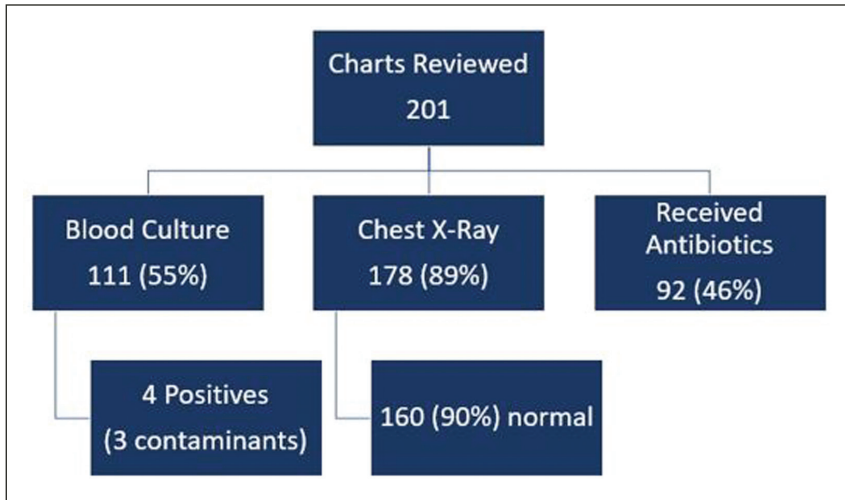


Figure 1 Outcome of investigations showing low yield.

Factors associated with investigations in hospitalized children with bronchiolitis.			
	CXR or BC*	CXR only*	BC only*
Age, months	1.08 (0.99-1.17)	1.07 (0.99-1.16)	1.06 (1.01-1.11)
RSV status, + vs -	1.52 (0.33-7.00)	1.19 (0.33-4.29)	1.31 (0.59-2.89)
Temperature			
<100.4	1 (reference)	1 (reference)	1 (reference)
100.4-102.1	3.93 (1.08-14.26)	3.13 (0.99-9.91)	2.51 (1.26-4.98)
>102.1	12.21 (1.57-95.28)	4.25 (1.18-15.34)	14.83 (5.97-36.86)
Length of hospitalization, days	1.78 (1.08-14.26)	1.51 (1.01-2.28)	1.63 (1.27-2.08)
Received antibiotics			
No	1 (reference)	1 (reference)	1 (reference)
Yes	***	6.67 (1.91-23.24)	38.76 (15.96-94.18)

*Unadjusted odds ratio (95% CI).
 *** Odds ratios could not be calculated as all exposed patients had the outcome

Table 1 Unadjusted odds ratio of factors associated with investigations in hospitalized children with bronchiolitis.

COMPETING INTERESTS

The authors have no competing interests to declare.

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