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Re: “Discharge Criteria for Bronchiolitis: Does Age Matter?”

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To the Editors:

We read with interest the comments from Korppi in relation to our recently published study describing the utility of established discharge criteria for infants and young children with bronchiolitis.¹ Bronchiolitis remains the number one cause of hospitalization in infants and is associated with significant morbidity,² yet, despite being one of the most common diseases of childhood, we lack a standard definition, with some countries including in their guidelines infants only and others children up to 2 years of age.^{3–5} Nonetheless, as mentioned by Korppi, the major impact of respiratory syncytial virus bronchiolitis occurs during the first year of life, and the peak of severe respiratory syncytial virus (RSV) disease in the first 6 months of life.⁶

In our study, the majority of children [85% (946/1118) in Infectious Diseases (ID), where the discharge protocol was used, and 73% (509/695) in non-ID units] were younger than 12 months of age, while the cohort of infants younger than 6 months of age represented 61% (687/1118) of ID patients and 47% (330/695) of children with bronchiolitis discharged from non-ID units.¹ If we were to limit the analyses to this very young population, we would have left out of the study half of the children hospitalized with this disease. The discharge protocol that we used included different parameters that were age-specific. Nevertheless, as

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suggested by Korppi, we conducted further sensitivity analyses in infants younger than 6 months of age, which confirmed that the use of standardized discharge criteria for bronchiolitis reduced the duration of hospitalization without increasing readmission rates (Table 1).

Until we have better tools to objectively differentiate a first versus a subsequent episode of bronchiolitis, understand better the pathogenesis of the disease or standardize its management, we believe that the definition of bronchiolitis, and therefore the clinical guidelines, should include at least children younger than 12 months of age, which should be further stratified by age, as included in our proposed discharge protocol. Establishing standard definitions worldwide, which include among others similar age cutoffs for the diagnosis of bronchiolitis, or thresholds for oxygen discontinuation, would be ideal both from the clinical perspective and from the research point of view. The implementation of such standardized protocols across countries would facilitate to compare different studies, which in turn should help to improve the care of these children.

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TABLE 1.

Variables Associated With Longer Duration of Hospitalization Stratified by Age

Variable	Children <24 mo		Children <12 mo		Children <6 mo	
	Risk Ratio		Risk Ratio		Risk Ratio	
	(Upper-Lower CL)	P Value	(Upper-Lower CL)	P Value	(Upper-Lower CL)	P Value
Total LOS (PICU + ward)						
Age (mo)	0.98 (0.92–1.05)	0.54	0.99 (0.98–1.00)	0.1926	1.0 (0.98–1.03)	0.898
Gender	1.03 (0.97–1.09)	0.4	1.05 (0.98–1.12)	0.1735	1.0 (0.92–1.08)	0.976
Race/ethnicity						
Black	1.20 (1.04–1.38)	0.02	1.23 (1.05–1.44)	0.012	1.25 (1.02–1.58)	0.03
White	1.23 (1.07–1.40)	0.004	1.20 (1.03–1.40)	0.02	1.23 (1.01–1.49)	0.036
Others	1.15 (0.98–1.35)	0.08	1.16 (0.98–1.39)	0.089	1.22 (0.98–1.52)	0.069
Comorbidities	1.37 (1.27–1.46)	<0.001	1.37 (1.27–1.48)	<0.0001	1.39 (1.26–1.53)	<0.001
RSV positive	1.11 (1.03–1.20)	0.005	1.08 (0.99–1.17)	0.074	1.05 (0.94–1.16)	0.374
PICU admission	3.13 (2.93–3.35)	<0.001	3.48 (3.23–3.74)	<0.001	3.77 (3.46–4.11)	<0.001
Non-ID units*	1.35 (1.27–1.44)	<0.001	1.33 (1.24–1.43)	<0.001	1.34 (1.22–1.46)	<0.001
Ward LOS						
Age (mo)	1.00 (0.99–1.00)	0.4	0.98 (0.97–1.00)	0.009	0.97 (0.85–1.0)	0.071
Gender	1.05 (0.99–1.13)	0.11	1.09 (1.01–1.17)	0.022	1.03 (0.94–1.12)	0.507
Race/ethnicity						
Black	1.12 (0.96–1.31)	0.16	1.14 (0.95–1.36)	0.148	1.23 (0.98–0.53)	0.072
White	1.16 (1.00–1.35)	0.04	1.12 (0.95–1.33)	0.177	1.21 (0.98–1.49)	0.078
Others	1.15 (0.97–1.37)	0.11	1.14 (0.95–1.38)	0.171	1.26 (1.0–1.60)	0.054
Comorbidities	1.40 (1.30–1.52)	<0.001	1.43 (1.32–1.56)	<0.001	1.48 (1.33–1.64)	<0.001
RSV positive	1.13 (1.05–1.23)	0.001	1.08 (0.99–1.18)	0.09	1.06 (0.95–1.19)	0.2766
Non-ID units*	1.42 (1.32–1.53)	<0.001	1.41 (1.30–1.53)	<0.001	1.42 (1.29–1.56)	<0.001

CL indicates confidence limit; LOS, length of stay; PICU, pediatric intensive care unit.

Reference parameters for gender was male, for race/ethnicity: Hispanic, for RSV+ status: patients who underwent viral testing and were negative for RSV and for non-ID:

* The reference comparator for Non-ID units is ID-units.