

# Demographic Factors Associated With Bronchiolitis Readmission

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## KEY WORDS

bronchiolitis, readmission, quality

## ABBREVIATIONS

CMS: Centers for Medicare & Medicaid Services

ICD-9: *International Classification of Diseases, Ninth Revision*

LOS: length of stay

www.hospitalpediatrics.org

doi:10.1542/hpeds.2013-0078

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HOSPITAL PEDIATRICS (ISSN Numbers: Print, 2154 - 1663; Online, 2154 - 1671).

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**FINANCIAL DISCLOSURE:** Dr McCulloh receives support from the Thrasher Research Fund for bronchiolitis research; the other authors have indicated they have no financial relationships relevant to this article to disclose.

**FUNDING:** No external funding.

**POTENTIAL CONFLICT OF INTEREST:** The authors have indicated they have no potential conflicts of interest to disclose.

## abstract

**OBJECTIVES:** The goal of this study was to evaluate patient characteristics and medical management and their association with readmission in children with bronchiolitis.

**METHODS:** This retrospective chart review included children admitted with bronchiolitis to 2 children's hospitals. Reviewers selected charts based on *International Classification of Diseases, Ninth Revision*, diagnosis and collected information on demographic characteristics, treatment, diagnostic testing, length of stay, and adverse outcomes. Univariate analyses were used to identify risk factors associated with any-cause readmission in 4 weeks.

**RESULTS:** A total of 1229 patients met inclusion criteria. Younger children were more likely to be readmitted within 4 weeks of discharge compared with older children (mean age: 4.5 vs 5.7 months;  $P = .005$ ). Readmissions did not differ based on length of stay, and no medical intervention was associated with risk for readmission. Of patients readmitted from the large service area hospital, 57% lived  $\leq 20$  miles away, compared with 26.9% of those who were not readmitted ( $P = .03$ ). Patients from the lowest income zip codes within the catchment area of the small service area hospital were more likely to be readmitted compared with patients from the highest income zip codes (7.8% vs 0%;  $P = .025$ ).

**CONCLUSIONS:** Overall, 6.4% of hospitalized patients with bronchiolitis were readmitted. Our data did not identify any inpatient medical management or modifiable risk factor associated with readmission.

Hospital readmission rates, their financial implications, and potential as quality indicators have been under increasing scrutiny in both adult and pediatric literature.<sup>1,2</sup> For certain adult diagnoses, the Centers for Medicare & Medicaid Services (CMS) have started limiting reimbursement for readmissions deemed avoidable and unnecessary.<sup>3</sup> Bronchiolitis costs more than \$500 million in health care expenditure annually in the United States.<sup>4</sup> CMS may likely begin evaluating bronchiolitis because it is a leading cause of hospitalization of infants. Berry et al<sup>2</sup> demonstrated an all-cause, unplanned 30-day readmission rate of 6.5% in 72 pediatric hospitals from the National Association of Children's Hospitals and Related Institutions, but rates varied widely according to diagnosis and hospital. Patients with bronchiolitis represented 5.2% of admissions and 3.6% of readmissions. Diagnosis, longer length of stay (LOS), concomitant complex chronic medical conditions, higher number of previous admissions, and public insurance coverage have been suggested as causes of readmission.<sup>2,5,6</sup> There has been a strong call for research to understand

to what extent hospital readmissions are based on adherence to evidence-based best practices as opposed to patient characteristics and community resources.<sup>7</sup> Unfortunately, because of wide variability of readmission based on diagnosis, research on this topic will likely need to proceed in a stepwise fashion according to diagnosis.

Bronchiolitis is the second most common cause of readmission to the hospital after asthma.<sup>2</sup> The goal of the present study was to evaluate patient characteristics and medical management in a cohort of children with bronchiolitis and to assess the association of these factors with readmission.

## METHODS

### Study Sites

Hasbro Children's Hospital (a small service area hospital) is a 106-bed tertiary care center, with a catchment area of eastern Connecticut, Rhode Island, and southeastern Massachusetts. It is the only children's hospital in Rhode Island and admits ~450 patients for bronchiolitis annually. Hasbro Children's Hospital sees 95% of hospitalized patients from its catchment area. There are 15 dedicated pediatric beds in this area that are not serviced by Hasbro Children's Hospital. University of Missouri Children's Hospital in Columbia, Missouri (a large service area hospital), is a 56-bed tertiary care center that has a larger catchment area of a 70-mile radius and admits ~130 patients for bronchiolitis annually. It is the primary pediatric inpatient facility in central Missouri. There are 54 licensed pediatric beds in this area that are not serviced by the University of Missouri Children's Hospital. Both sites have full-time pediatric hospitalist services as well as

specialist and community pediatricians that admit children for general inpatient pediatric illnesses.

### Chart Selection

An existing database initially created to evaluate the impact of the American Academy of Pediatrics bronchiolitis guidelines was used for analysis.<sup>8</sup> We conducted a retrospective cohort study of all infants aged <24 months admitted with a diagnosis of bronchiolitis to Hasbro Children's Hospital from the calendar years 2005 and 2008. Due to the difference in annual patient census between the 2 participating hospitals, we included children from University of Missouri Children's Hospital from calendar years 2004–2005 and 2007–2008. This method allowed for a better balance of patient numbers from the 2 institutions. Reviewers included a primary researcher at each site and 1 research assistant, each of whom was unblinded to the nature of the study but were supervised directly by the primary researcher at each study site. All charts with *International Classification of Diseases, Ninth Revision* (ICD-9), codes of 466.19 (non-respiratory syncytial virus bronchiolitis), 466.11 (respiratory syncytial virus bronchiolitis), 786.03 (apnea), 465.9 (acute upper respiratory infection), 493.9 (asthma, unspecified), and V73.99 (unspecified viral illness) were screened for inclusion by reviewers. Charts were excluded if a primary or secondary discharge diagnosis of bronchiolitis (ICD-9 codes 466.11 or 466.19) was not present or if symptoms and clinical findings resulting in admission were not consistent with bronchiolitis upon detailed review of the chart. We excluded infants who were aged >24 months, to reduce inclusion of non-bronchiolitis acute respiratory infections; also excluded were infants

who were hospitalized for >21 days, to reduce inclusion of patients with a more complex course and who may have contracted nosocomial infections unrelated to the initial admission.

### Outcomes Assessed

Data were manually extracted from the charts. The primary outcome assessed was readmission within 4 weeks of initial discharge for any reason. Diagnostic and management measures were selected based on the 2006 American Academy of Pediatrics guidelines.<sup>9</sup> Specific guideline recommendations were chosen based on discussion and consensus of the primary research team at both study sites. The research team recorded age, gender, site location, LOS, and pertinent historical data as available, including: secondhand smoke exposure, day care exposure, history of wheeze, and gestational age. Prematurity was defined as gestational age <37 weeks. For hospital stay, comprehensive extraction of hospital data included presence of a hospitalist attending compared with a nonhospitalist, all inhaled therapy, all systemic steroids, antibiotic administration, duration of oxygen requirement, and radiologic and laboratory tests performed. Straight line distances were measured from the center of patients' zip codes to the hospital location, which has been demonstrated to be a reliable proxy for driving distances.<sup>10</sup> The median household income of each patient's zip code was calculated by using US Census data and grouped into income quartiles.<sup>11</sup> Patients from zip codes >200 miles from a hospital were excluded from the distance analysis because this distance is well outside the catchment area of Hasbro Children's Hospital. The number of competing pediatric beds within the catchment area of Hasbro Children's Hospital was determined

through telephone survey of hospitals known to have pediatric beds. The number of competing pediatric beds within the catchment area of University of Missouri Children’s Hospital was determined through access of the state’s department of health records.<sup>12</sup>

**Statistical Analysis**

Mann-Whitney *U* tests were used to analyze continuous variables and  $\chi^2$  analysis was used for categorical variables. Risk factors were considered significant if a 2-sided *P* value was <.05. Statistical analysis was performed by using Stata for Windows version 11.2 (StataCorp, College Station, TX). This study was approved by the institutional review boards at both study sites.

**RESULTS**

There were 1243 patients who met selection criteria based on billing diagnosis and age ( $\leq 24$  months); 3 were excluded for LOS >21 days. Seven Rhode Island patients and 4 Missouri patients were eliminated from the distance analysis because they lived >200 miles from the hospital, resulting in a study group of 1229 patients, comprising 79 patients (6.4%) who were readmitted within 4 weeks and 1150 (93.6%) who were not readmitted. There were no deaths among the cohorts (Fig 1).

**Patient Characteristics**

Younger children were more likely to be readmitted within 4 weeks of discharge compared with older children (mean age: 4.5 vs 5.7 months; *P* = .005). We found no other patient characteristics associated with increased risk of readmission (Table 1).

The mean  $\pm$  SD distance of patients’ home zip codes to the small service area hospital was 10.2  $\pm$  10.4 miles and the mean distance of patients’ home zip codes to the large service area hospital was 50.3  $\pm$  38.3 miles (*P* < .0001). Of patients readmitted from the larger service area hospital, 57% lived  $\leq 20$  miles away, compared with 26.9% of those who were not readmitted (*P* = .03). However, of patients readmitted from the smaller service area hospital, 93.8% lived within 20 miles versus 88.4% of those who were not readmitted (*P* = 0.22).

For Rhode Island patients, the mean household income from the zip codes of the lowest quartile was \$38860  $\pm$  \$8790, whereas the mean of the highest quartile was \$86990  $\pm$  \$7700. Patients from lowest income zip codes were more likely to be readmitted than patients from the highest income zip codes (44 of 566 vs 0 of 54; *P* = .025).

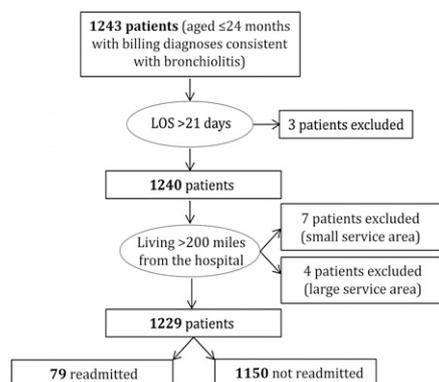
For Missouri patients, the mean household income of the lowest quartile was \$32360  $\pm$  \$3010, whereas the mean of the highest quartile was \$56590  $\pm$  \$6850. There was no difference in readmission rate between patients from the lowest and highest income zip codes (2 of 64 vs 7 of 107; *P* = .49) (Table 2).

**Medical Management**

Table 3 summarizes the diagnostic testing, therapeutic interventions, and clinical outcomes of the study patients. Testing had no impact on readmission rates. Children who received intravenous fluids, antibiotics, or oxygen had no statistically significant difference in rates of readmission. Of patients readmitted, 16.5% received any corticosteroid therapy, compared with 28.9% of those who were not readmitted (*P* = .018), but this association disappeared after excluding patients with a history of asthma or reactive airway disease (*P* = .066). ICU admission as a proxy for illness severity (whether the attending was a hospitalist or nonhospitalist provider) and LOS were also not associated with readmission rates.

**DISCUSSION**

Our data show that patient risk factors and characteristics, as well as



**FIGURE 1** Chart selection flow diagram.

**TABLE 1** Baseline Characteristics of Readmitted and Non-readmitted Patients With Bronchiolitis (N = 1229)

Characteristic	Readmitted (n = 79)	Not Readmitted (n = 1150)	<i>P</i>
Mean age, mo	4.45	5.72	.005
Male gender, (%)	45/79 (57.0)	657/1150 (57.1)	.98
Prematurity, (%)	13/79 (16.5)	217/1145 (19.0)	.58
Previous palivizumab use, (%)	6/8 (75)	48/83 (57.8)	.47
Secondhand smoke exposure, (%)	21/78 (26.9)	403/1115 (36.1)	.1
Day care exposure, (%)	11/67 (16.4)	193/856 (22.6)	.24
Previous wheeze/RAD, (%)	8/79 (10.1)	170/1150 (14.8)	.26
Small service area hospital, (%)	65/79 (82.3)	857/1150 (74.5)	.12
Distance $\leq 20$ miles from small service area hospital, (%)	61/65 (93.8)	758/857 (88.4)	.22
Distance $\leq 20$ miles from large service area hospital, (%)	8/14 (57.1)	79/293 (27.0)	.03

RAD, reactive airway disease.

**TABLE 2** Income Data and Their Relation to Readmission Rates

Variable	% Readmitted <sup>a</sup>
Small service area hospital	
Lowest income zip code, (%)	44/566 (7.8)
Highest income zip code, (%)	0/54 (0)
Large service area hospital	
Lowest income zip code, (%)	2/64 (3.1)
Highest income zip code, (%)	7/107 (6.5)

<sup>a</sup> A  $\chi^2$  test comparing readmissions from lowest and highest income zip codes of the small service area hospital yielded a *P* value = .025. The same income comparison for the large service area hospital was not significant.

medical management for hospital care of patients with bronchiolitis, were not correlated with readmission in these study patients. However, distance of a patient’s zip code from the large service area hospital and living in the lowest income zip codes within the catchment area of the small service area hospital were significantly associated with readmission. These data differ from the only other previous article assessing risk factors for readmissions for bronchiolitis, which found

that oxygen utilization was associated with readmission.<sup>13</sup>

To the best of our knowledge, this is the first article to assess patient travel distance considerations in the measurement of readmission for bronchiolitis. A previous study by Feudtner et al<sup>14</sup> found that the probability of readmission was influenced by hospital; interestingly, readmission rates increased as a state’s health system performance ranking improved. However, Feudtner et al did not assess the distance patients lived from the hospital. If readmission rates are related to fixed external factors such as geographic distance, which are outside the control of pediatric care, they should not be used as a criterion assessing quality of care for institutions or to establish reimbursement rates.

Although a patient’s zip code and its associated distance from the large service area hospital were significant, living in the lowest income zip codes within the catchment area of a small service area hospital was a risk factor for readmission. Although we found no

socioeconomic impact of readmission to the large service area hospital, the lack of significance may be related to the relatively small number of readmission events in this cohort.

The manual review by Hain et al<sup>15</sup> of 200 readmitted patients demonstrated that only a small percentage of readmissions were preventable based on expert opinion. Of the 12 patients with bronchiolitis who were readmitted, 2 were deemed preventable. Our study evaluated 79 readmissions of bronchiolitis and found no objective quality of care differences, but we did not assess whether those readmissions were preventable according to expert opinion.

The readmission rate did not differ for the small and large service area hospitals (7.0% and 4.6%, respectively; *P* = .12). These rates fall within 2 SDs of the mean for bronchiolitis readmissions among hospitals that are part of the National Association of Children’s Hospitals and Related Institutions.<sup>2</sup> Although our 2 hospitals had similar readmission rates, our larger service area hospital represents only 51% of available pediatric beds in its catchment area, and the smaller service area hospital represents 81% of available hospital beds. In some locations, hospital competition could affect an institution’s readmission rates; however, our data did not reflect differences between the 2 hospitals.

CMS has increasing interest in this topic and will begin calculating and comparing hospitals’ documented readmissions versus “expected” readmission rates and require hospitals to reimburse payments for readmissions deemed unnecessary.<sup>3</sup> If readmission rates are to be used as a quality measure, there has to be a definable intervention that

**TABLE 3** Diagnostic and Therapeutic Procedures and Clinical Outcomes of Readmitted and Non-readmitted Patients With Bronchiolitis (*N* = 1229)

Variable	Readmitted ( <i>n</i> = 79)	Not Readmitted ( <i>n</i> = 1150)	<i>P</i>
Diagnostic testing			
Blood culture, (%)	27/79 (34.2)	337/1150 (29.3)	.36
Rapid respiratory syncytial virus, (%)	71/79 (89.9)	999/1150 (86.9)	.44
Respiratory syncytial virus positive result, (%)	41/71 (57.8)	642/1001 (64.1)	.28
Complete blood cell count, (%)	34/79 (43.0)	487/1150 (42.4)	.9
Therapeutic interventions			
Antibiotics, (%)	23/79 (29.1%)	407/1150 (35.4)	.27
Steroids <sup>a</sup> , (%)	13/79 (16.5)	332/1150 (28.9)	.018
Steroids without prior RAD or asthma, (%)	9/71 (12.7)	215/980 (21.9)	.066
Oxygen, (%)	29/79 (36.7)	520/1150 (45.2)	.14
Intravenous fluids, (%)	48/79 (60.8)	679/1149 (59.1)	.77
Clinical outcomes/hospital course <sup>b</sup>			
Mean LOS, d (95% CI)	2.82 (2.23–3.42)	2.76 (2.62–2.90)	.72
Documented bacterial infection, including pneumonia, (%)	9/79 (11.4)	142/1150 (12.4)	.8
ICU admission, (%)	12/79 (15.2)	146/1150 (12.7)	.52

RAD, reactive airway disease, CI, confidence interval.

<sup>a</sup> Includes patients with documented history of RAD or asthma.

<sup>b</sup> No deaths occurred in either group.

affects the rate of readmission. We did not find modifiable risk factors associated with readmissions that could lead to such an intervention.

There are several potential concerns with our study. First, the geographic difference identified in the large service area cohort was based on analysis of a small subset of readmitted patients. Only 14 patients were readmitted from the large service area hospital, 8 (57%) of whom lived  $\leq 20$  miles from the hospital. However, this finding still represents the largest analysis of the role of patient travel distance in pediatric readmission. Additional studies are needed to determine the extent and variability of geographic considerations in hospital readmissions.

We did not collect data on race, insurance type, or primary care access, nor did we control for comorbid conditions. We were unable to measure quality of outpatient care and its relation to readmission rates. Zip code distance from the hospital and the associated differences in household incomes from 1 site did correlate with readmissions and may be confounding for these other factors. Because we did not collect specific income data, using the median household income of patient's zip codes may falsely categorize socioeconomic status.

The interrupted time series design may have incurred bias, but there was no difference in readmission rates when comparing the 2 time periods (2.8% vs 3.6%;  $P = .092$ ).

We were unable to determine the reason for readmission and instead looked at any cause for readmission within 4 weeks, consistent with current CMS standards in adult patients.<sup>3</sup> The overall sample size of readmissions

was relatively small secondary to the low frequency of the event. This small number demonstrates and highlights the potential challenges of using a low percentage readmission diagnosis as a quality measure. Comprehensive case finding may be necessary to obtain an accurate figure on readmission rates. Chart selection based on ICD-9 codes alone will miss cases,<sup>16</sup> but manual chart review will increase the analysis cost.

We only performed multiple univariate analyses. Due to lack of resources, we did not calculate multivariate odds ratios with logistic regression or create propensity scores.

Finally, because objective scoring criteria for respiratory distress were not used reliably at either hospital, we were unable to assess whether poor judgment of respiratory distress at discharge was driving readmission. However, given that readmission rates were similar, either both institutions similarly assessed respiratory distress or objective assessment of respiratory distress does not affect readmission.

## CONCLUSIONS

We found no modifiable risk factors associated with bronchiolitis readmission rates. We instead found that patients living at closer distances to a large service area hospital, as well as patients living in the lowest income zip codes within the catchment area of a small service area hospital, were more likely to be readmitted.

## REFERENCES

1. Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare fee-for-service program. *N Engl J Med*. 2009;360(14):1418–1428.
2. Berry JG, Toomey SL, Zaslavsky AM, et al. Pediatric readmission prevalence

and variability across hospitals [published correction in *JAMA*. 2013;309(10):986]. *JAMA*. 2013;309(4):372–380.

3. Centers for Medicare & Medicaid Services. Readmissions reduction program. Available from: [www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Readmissions-Reduction-Program.html](http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Readmissions-Reduction-Program.html). Accessed January 5, 2014.
4. Pelletier AJ, Mansbach JM, Camargo CA Jr. Direct medical costs of bronchiolitis hospitalizations in the United States. *Pediatrics*. 2006;118(6):2418–2423.
5. Berry JG, Hall DE, Kuo DZ, et al. Hospital utilization and characteristics of patients experiencing recurrent readmissions within children's hospitals. *JAMA*. 2011;305(7):682–690.
6. Feudtner C, Levin JE, Srivastava R, et al. How well can hospital readmission be predicted in a cohort of hospitalized children? A retrospective, multicenter study. *Pediatrics*. 2009;123(1):286–293.
7. Srivastava R, Keren R. Pediatric readmissions as a hospital quality measure. *JAMA*. 2013;309(4):396–398.
8. McCulloh RJ, Smitherman SE, Koehn KL, Alverson BK. Assessing the impact of national guidelines on the management of children hospitalized for acute bronchiolitis [published online ahead of print July 19, 2013]. *Pediatr Pulmonol*. doi: 10.1002/ppul.22835.
9. American Academy of Pediatrics Subcommittee on Diagnosis and Management of Bronchiolitis. Diagnosis and management of bronchiolitis. *Pediatrics*. 2006;118(4):1774–1793.
10. Bliss RL, Katz JN, Wright EA, Losina E. Estimating proximity to care: are straight line and zipcode centroid distances acceptable proxy measures? *Med Care*. 2012;50(1):99–106.
11. United States Census Bureau. US Census Bureau, 2007–2011 American community survey. Available at: <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>. Accessed December 20, 2013.
12. Missouri Department of Health and Senior Services. Inventory of hospital beds in Missouri. Available at: <http://health.mo.gov/information/boards/certificateofneed/pdf/hospinv.pdf>. Accessed January 29, 2014.

13. Kemper AR, Kennedy EJ, Dechert RE, Saint S. Hospital readmission for bronchiolitis. *Clin Pediatr (Phila)*. 2005;44(6):509–513.
14. Feudtner C, Pati S, Goodman DM, et al. State-level child health system performance and the likelihood of readmission to children's hospitals. *J Pediatr*. 2010;157(1):98–102.e1.
15. Hain PD, Gay JC, Berutti TW, Whitney GM, Wang W, Saville BR. Preventability of early readmissions at a children's hospital. *Pediatrics*. 2013;131(1). Available at: [www.pediatrics.org/cgi/content/full/131/1/e171](http://www.pediatrics.org/cgi/content/full/131/1/e171).
16. Aronsky D, Haug PJ, Lagor C, Dean NC. Accuracy of administrative data for identifying patients with pneumonia. *Am J Med Qual*. 2005;20(6):319–328.

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*Hospital Pediatrics* 2014;4;147  
DOI: 10.1542/hpeds.2013-0078

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