Healthcare Utilization During Medically Attended Respiratory Syncytial Virus (RSV) Episodes Among Infants in the United States

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BACKGROUND

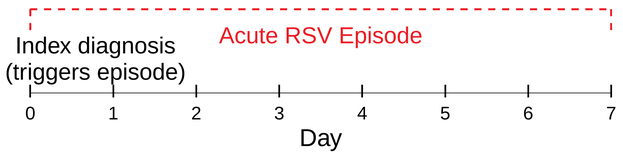
- RSV-associated lower respiratory tract infection (LRTI) is the leading cause of hospitalization among infants in the U.S.
- While infants with comorbidities (*e.g.*, chronic lung disease) are at higest risk of severe complications due to RSV, healthy term infants without major comorbidities account for up to 80% of all medically attended (MA) RSV cases.
- Healthcare utilization during acute MA RSV LRTI episodes remains poorly characterized, particularly among term infants without comorbidities.

OBJECTIVES

1. **Describe the healthcare utilization associated with acute MA RSV LRTI episodes** during infants' first RSV season, stratified by comorbidity group.
2. **Calculate the number of healthcare visits** that occur during these acute episodes.
3. **Calculate the proportion of infants who have at least one visit to a given place of service** during the acute episode.

ASSESSMENT OF MA RSV LRTI

- Used de-identified data from insurance claims datasets:
  - Merative MarketScan Commercial ® (MSC)
  - Multi-State MarketScan Medicaid ® (MSM)
  - Optum's Clinformatics ® Data Mart (CDM)
- Created birth cohorts of infants born from April 1, 2016 through February 29, 2020.
- Assigned infants to one of three mutually exclusive comorbidity groups:
  - ***A) Term, otherwise healthy*** - not identified as preterm births, no noteworthy comorbidities
  - ***B) Palivizumab eligible*** - eligible for pre-exposure prophylaxis based on select combinations of preterm birth, chronic lung disease, and hemodynamically significant congential heart disease
  - ***C) Other comorbidities*** - other conditions that may predispose infants to severe RSV outcomes
- Index MA RSV LRTI diagnosis definitions:
  - ***Specific:*** RSV specified in ICD-10 code
  - ***Sensitive:*** *specific* codes, plus unspecified bronchiolitis



RESULTS

Table 1. Mean number of visits per episode (all infants).

Under the *specific* definition:

- **Outpatient visits:** 1.11 (MSC), 0.90 (MSM), and 1.56 (CDM)
- **ED visits:** 0.35 (MSC), 0.51 (MSM), and 0.39 (CDM)
- **Inpatient stays:** 0.28 (MSC), 0.25 (MSM), and 0.24 (CDM)

Under the *sensitive* definition:

- **Outpatient visits:** 1.19 (MSC), 0.89 (MSM), and 1.39 (CDM)
- **ED visits:** 0.24 (MSC), 0.47 (MSM), and 0.23 (CDM)
- **Inpatient stays:** 0.14 (MSC), 0.14 (MSM), and 0.11 (CDM)

Table 2. Percentage of episodes involving a given setting (all infants)

Under the *specific* definition:

- **Outpatient visits:** 81% (MSC), 69% (MSM), and 94% (CDM)
- **ED visits:** 32% (MSC), 45% (MSM), and 35% (CDM)
- **Inpatient stays:** 21% (MSC), 19% (MSM), and 23% (CDM)

Under the *sensitive* definition:

- **Outpatient visits:** 89% (MSC), 70% (MSM), and 96% (CDM)
- **ED visits:** 21% (MSC), 42% (MSM), and 21% (CDM)
- **Inpatient stays:** 10% (MSC), 11% (MSM), and 11% (CDM)

Figure 1. Mean number of visits to a given place of service during infants' first RSV episode within their first RSV season, stratified by index diagnosis definition, dataset, and comorbidity group.

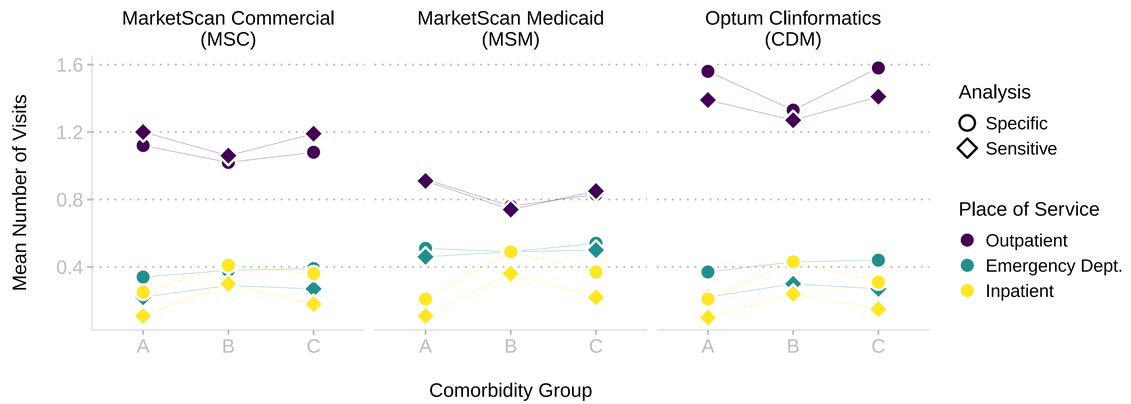


Figure 2. Proportion of RSV episodes involving a visit to a given place of service, stratified by index diagnosis definition, dataset, and comorbidity group.

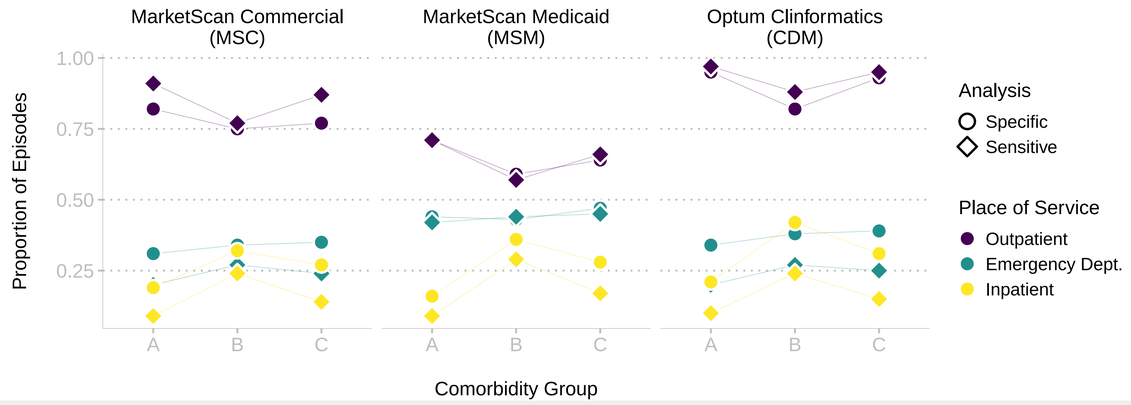


Table 3. Unique acute RSV episodes.

Comorbidity group	Specific (N)	Sensitive (N)
MarketScan Commercial (MSC)		
A. Term, otherwise healthy	21,112	59,084
B. Palivizumab eligible	1,081	3,190
C. Other comorbidities	5,368	14,495
MarketScan Medicaid (MSM)		
A. Term, otherwise healthy	56,828	146,325
B. Palivizumab eligible	2,921	8,563
C. Other comorbidities	13,402	34,185
Optum Clinformatics (CDM)		
A. Term, otherwise healthy	10,546	27,312
B. Palivizumab eligible	423	1,093
C. Other comorbidities	2,311	5,798

DISCUSSION

- Medicaid infants appeared to have a higher number of ED visits and higher probability of an RSV episode involving an ED visit compared to infants in commercial claims.
- Medicaid infants had a lower number and probability of outpatient visits during acute RSV episodes.
- In general, use of the *sensitive* index diagnosis definition resulted in lower estimated averages of the number of ED visits and inpatient stays as well as the proportions of acute RSV episodes involving these places of service.

CONCLUSIONS

- Up to **1 in 5** infants with a first-season MA RSV LRTI episode will have an inpatient stay during that episode.
- Term infants without comorbidities have between a 9% and 21% probability of visiting an inpatient setting.

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