

Doo Ri Kim<sup>1</sup>, Kyung-Ran Kim<sup>2</sup>, Hwanhee Park<sup>3</sup>, Joongbum Cho<sup>4</sup>, Hee Jae Huh<sup>5</sup>, Nam Yong Lee<sup>5</sup>, Yae-Jean Kim<sup>1</sup>

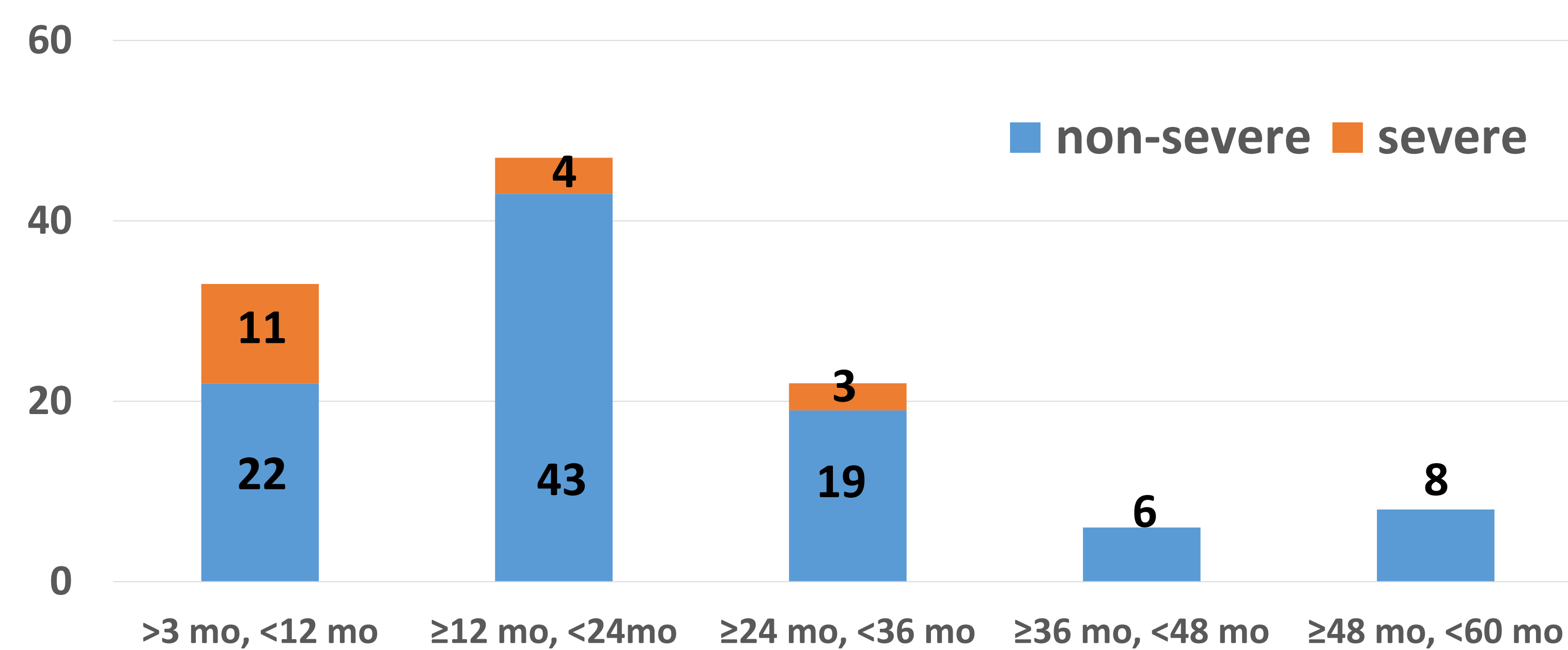
<sup>1</sup>Department of Pediatrics, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea <sup>2</sup>Department of Pediatrics, Gyeongsang National University Changwon hospital, Gyeongsang National University College of Medicine, Changwon, Korea <sup>3</sup>Department of Pediatrics, Soonchunhyang University Bucheon Hospital, Soonchunhyang University College of Medicine, Bucheon, Korea <sup>4</sup>Department of Critical Care, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea <sup>5</sup>Department of Laboratory Medicine and Genetics, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

## Background

- Human rhinovirus (HRV) infection can also cause lower respiratory tract infections (LRTIs).
- To investigate the proportion and characteristics of severe HRV LRTI among children under 5 years

## Method

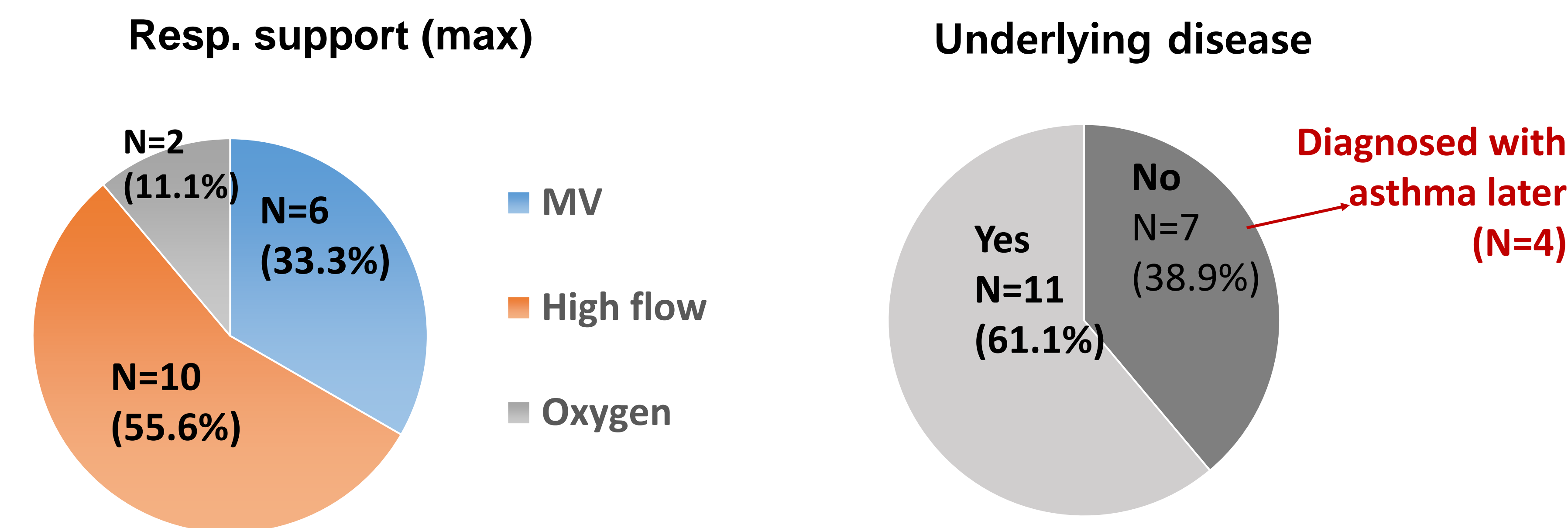
- From January 1, 2016 to December 31, 2020, at Samsung Medical Center, Seoul, Korea
- Children > 90 days and < 5 years old, hospitalized due to HRV LRTI
- Retrospectively, review of medical records
- Exclusion:
  - Co-infection of other respiratory virus or bacteria
  - Patients with malignancy
- Definition of severe HRV LRTI:
  - Need for high flow oxygenation, mechanical ventilation (MV), or intensive care unit (ICU) admission



**Figure 1. Age distribution of hospitalized children with HRV LRTI** Two thirds of hospitalized patients was under 24 months, with increased rate of severe course in younger age.

## Result

- 116 HRV LRTI hospitalized cases with median age of 17 months (range 3-56), hospital day of 4 days (range 2-31)
- 18 cases (15.5%): severe HRV LRTI**
- Younger in patients with severe group** (vs. non-severe group, p=0.001)
- Among 18 patients with severe HRV LRTI,**
  - 11 (11/18, 61%) had underlying diseases**
    - Bronchopulmonary dysplasia and bronchiolitis obliterans accounted for the largest proportion of underlying diseases (7/11, 63.6%).
    - Six patients (6/18, 33.3%) required mechanical ventilation.
    - Seven patients with severe group (7/18, 38.9%) were previously healthy children, four of them were diagnosed with asthma later.
- No fatal case

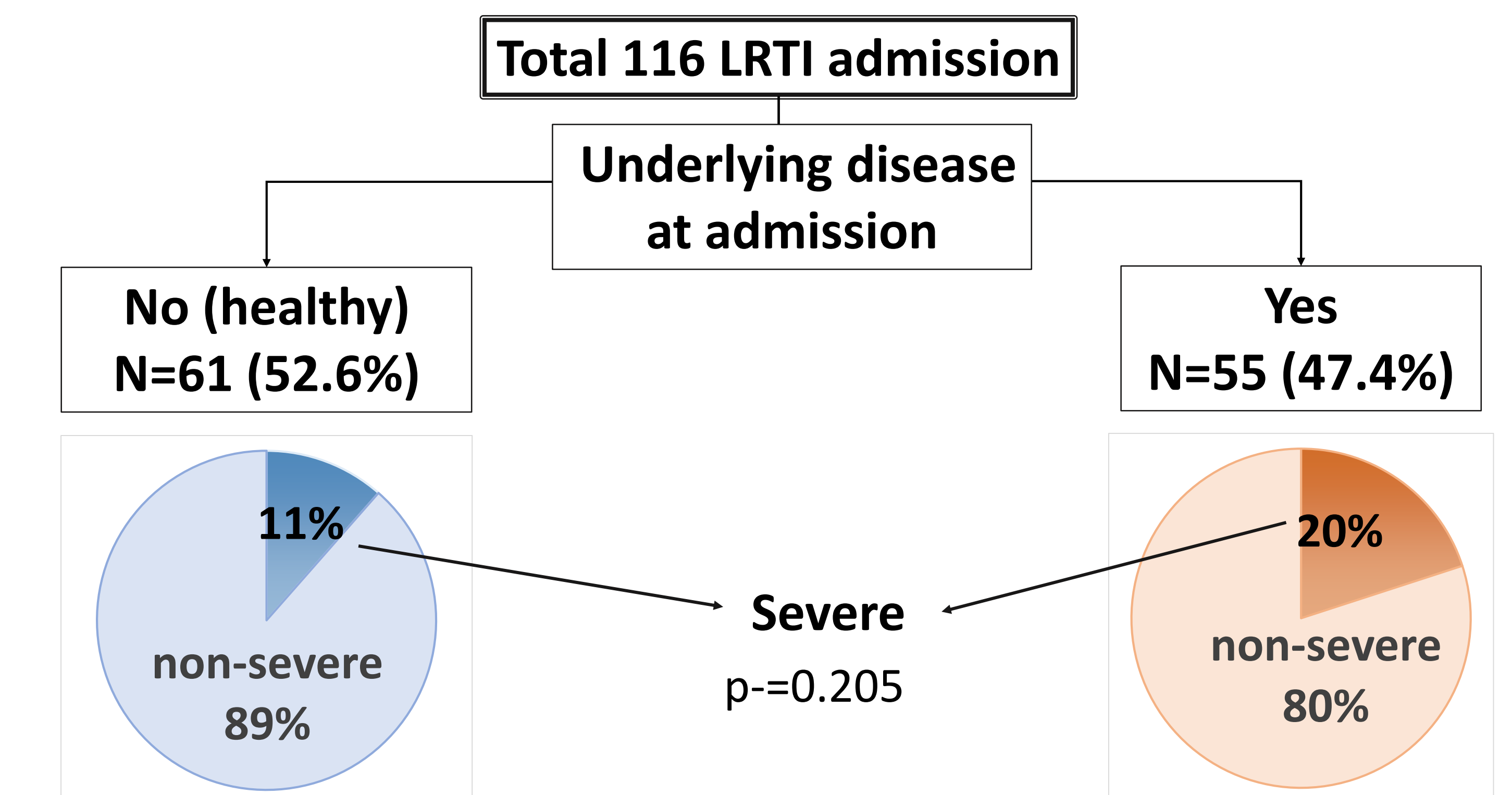


**Figure 2. Characteristics of 18 patients with severe group** Abbreviations: max, maximum; MV, mechanical ventilator

**Table 1. Characteristics of patients with severe or non-severe course**

	Total	Non-severe	Severe	P-value*
Admission, N (%)	116 (100)	98 (84.5)	18 (15.5)	
Age (mo)	17 (range 3-56)	19.5 (range 3-56)	9.5 (range 4-32)	0.001
Male sex (%)	67.2 (78/116)	65.3 (64/98)	77.8 (14/18)	0.300
Hospital day	4 (range 2-31)	4 (range 2-31)	8.5 (range 4-20)	<0.001
Underlying disease**	47.4% (55/116)	44.9% (44/98)	61.1% (11/18)	0.205

Mo, months; \*P-value: between non-severe group and severe group; \*\*Underlying disease: Chronic lung disease (BPD, BO), Asthma, Tracheolaryngomalacia, Cardiac anomaly, CNS disease, Syndromic disease or anomaly



**Figure 3. Clinical course of HRV LRTI in patients with or without underlying disease** More than 10% of HRV LRTI hospitalization leads severe course, even in healthy children.

## Summary and Conclusion

- One out of ten hospitalized children even without previously diagnosed underlying diseases, showed severe course of HRV LRTI.
- HRV can cause severe LRTI in certain pediatric patient, especially with underlying diseases and young-aged children.