

Clinical Characteristics and Pathogen Detection in Children with Symptoms of Acute Respiratory Illness and Acute Gastroenteritis



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1. BACKGROUND

Children can present with overlapping symptoms of acute respiratory illness (ARI) and acute gastroenteritis (AGE). In these cases, it is unclear if the etiologic agent is a respiratory pathogen, gastrointestinal pathogen, or both.


2. METHODS


Design: Prospective ARI/AGE surveillance part of the New Vaccine Surveillance Network (NVSN)

Setting: Emergency department (ED) and inpatient ward at Vanderbilt University Medical Center, Nashville, TN.


Population: Children <18 years old who presented to the ED or were admitted from 12/01/2016–2/28/2020


Inclusion criteria:

 Fever and/or respiratory Sx <14 days

 ≥1 episode of vomiting and/or ≥3 episodes of diarrhea within 24 hours

Specimen:

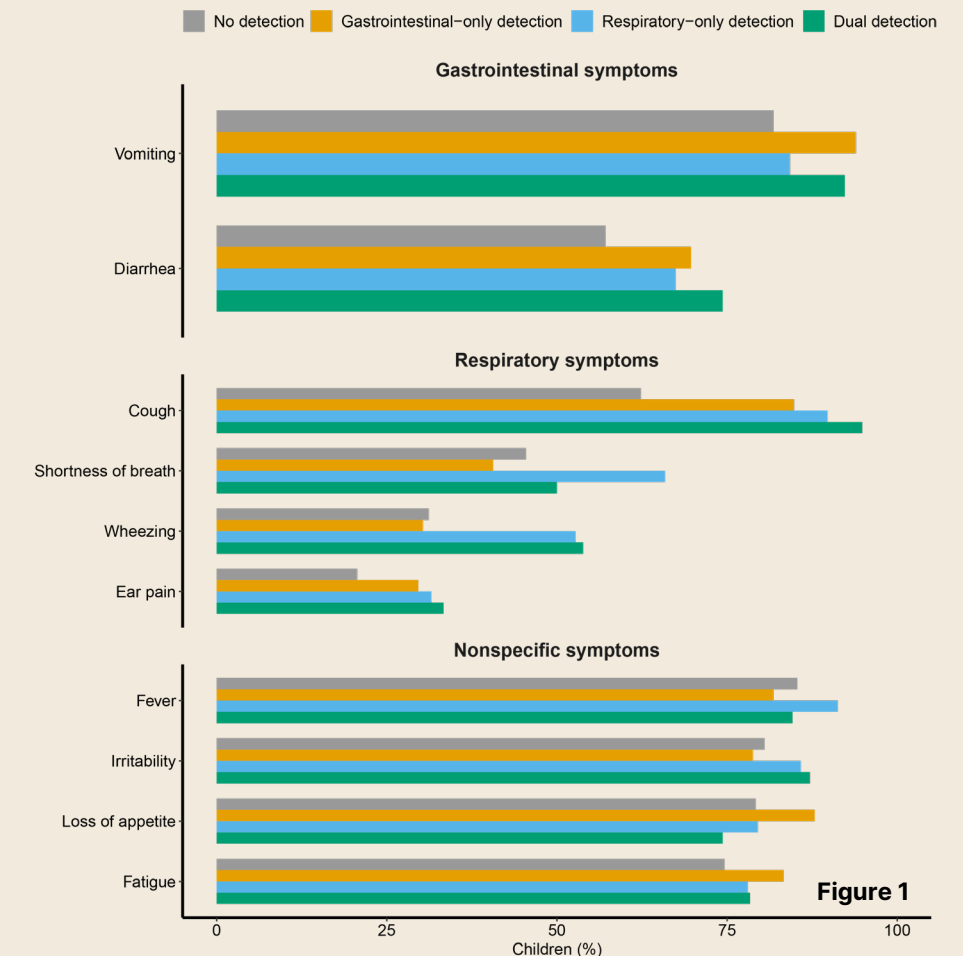
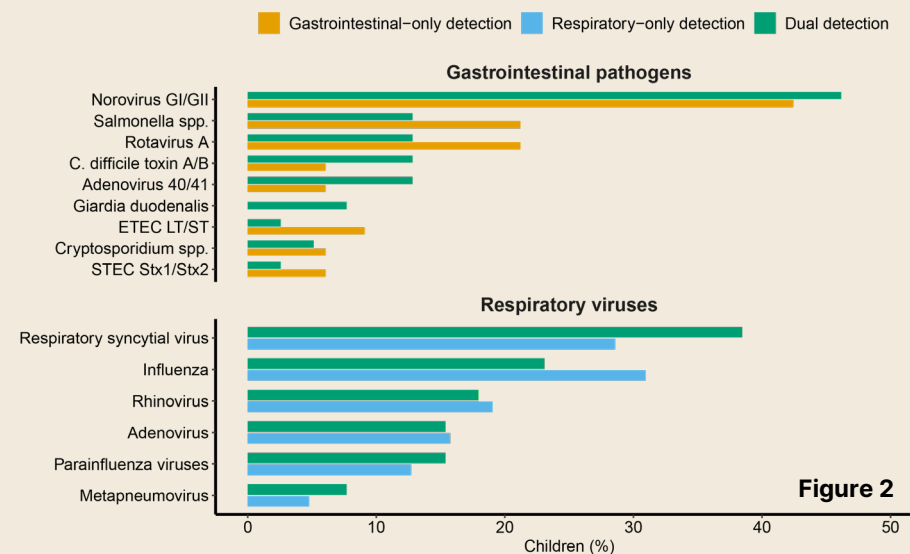
 **ARI:** Mid-turbinate nasal ± throat swabs
Testing: Molecular testing

 **AGE:** Stool sample
Testing: Luminex GI Pathogen Panel

Analysis: We compared detection groups using Pearson's χ^2 test.

3. RESULTS

- We identified 501 dual enrollees, among whom 279 (55.7%) had both a respiratory and stool specimen tested.
- 127 (45.5%) had only a respiratory virus detected, 33 (11.8%) had only a GI pathogen detected, 39 (14.0%) had both, and 77 (27.6%) had no detection.
- Vomiting and diarrhea were frequently reported (>50%) in all dual enrollees whether or not a pathogen was detected.
- Cough was detected in high frequency in all groups with pathogen detection.
- Children with respiratory-only or dual detection had a higher frequency of wheezing and shortness of breath than those with GI-only or no detection (**Figure 1**).
- The distribution of pathogens did not significantly differ between single and co-detected cases (**Figure 2**).



4. CONCLUSION

Children presenting with overlapping symptoms of ARI and AGE were more likely to have an ARI-associated virus. Lower respiratory symptoms (namely, wheezing and shortness of breath) were more specific for ARI-associated viral detection compared with other signs and symptoms.