

Comparison of Clinical Characteristics and Demographics of GII.4 Versus Other GII Noroviruses Associated with Sporadic Acute Gastroenteritis in Children in Nashville, TN, 2012-2015

1. BACKGROUND

- Norovirus is a leading cause of acute gastroenteritis (AGE) in all age groups.
- Although at least 28 different genotypes infecting humans have been reported, most outbreaks over the last 15 years have been caused by genogroup II (GII) viruses, of which GII.4 viruses have caused more than 50%.
- Since clinical differences between different genotypes are poorly understood, we sought to compare clinical characteristics in with GII.4 and non-GII.4 viruses detection.

2. OBJECTIVE

- To compare clinical characteristics in children with GII.4 and non-GII.4 viruses detection.

3. METHODS

- Prospective viral surveillance in children between 15 days and 17 years who presented with AGE.
- AGE defined as diarrhea (≥ 3 loose stools in a 24 hour period) or vomiting (≥ 1 episodes in a 24 hour period) within 10 days duration.
- Surveillance was performed in outpatient, emergency, and inpatient settings in Nashville, TN, during 2012-2015.
- Clinical and demographic data were collected using a standardized case report form and chart reviews.
- Stool specimens were tested by RT-qPCR for GI and GII norovirus.
- Norovirus-positive specimens were genotyped by sequencing of a partial region of the capsid gene.
- Children with GI, mixed GI/GII and non-typeable GII viruses detected were excluded.

4. RESULTS

- Of the 567 GII viruses, 461 (81%) were able to be genotyped.
- Of those, 239/461(51.6%) were typed as GII.4 and 223/461(48.3%) were typed as other GII genotypes (non-GII.4, primarily GII.3 [65/ 461, 14.1%], GII.6 [48/461, 10.4%] and GII.7 [36/461, 7.8%].

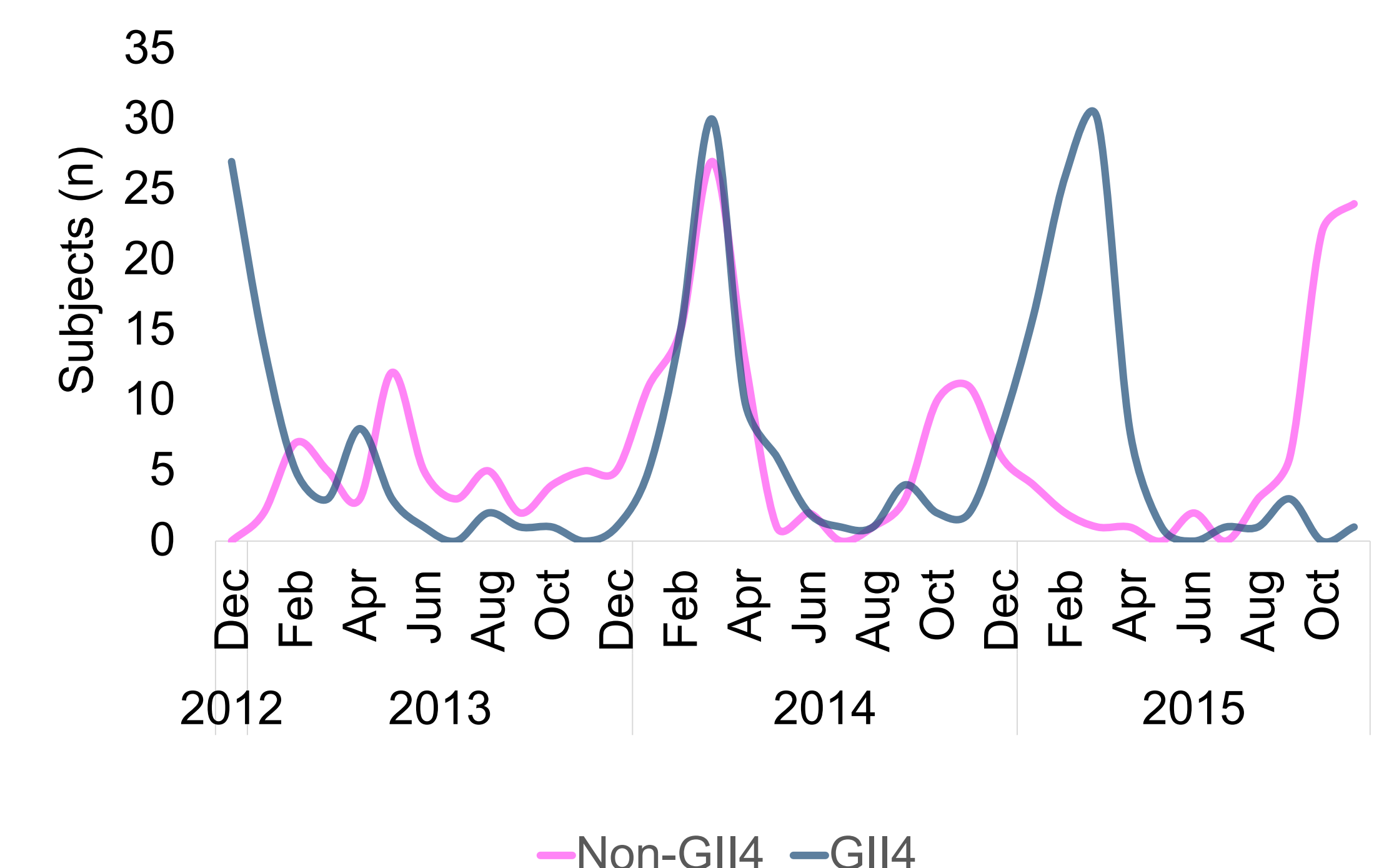
Table1.
Comparison of Children with GII.4 vs. non-GII.4, GII noroviruses.

	Non-GII.4 (n=223)	GII.4 (n=239)	P-value†
Median Age (IQR) in Years	1.8 (0.87-4.37)	1.3 (0.87-2.17)	0.003
White	140 (62.8)	160 (67.0)	0.10
Black	71 (31.8)	58 (24.3)	
Other	12 (5.4)	21 (8.8)	
Hispanic/Latino	102 (45.7)	113 (47.3)	0.74
Child Currently Wears Diapers	151 (67.7)	202 (84.5)	<0.001
Daycare	86 (38.6)	54 (22.6)	<0.001
Median Days of Illness (IQR)	2 (1-3)	2 (1-4)	0.044
Diarrhea	126 (56.5)	178 (74.8)	<0.001
Vomiting	209 (93.7)	232 (97.1)	0.08
Fever	110 (49.3)	104 (43.5)	0.21
Highest Temperature	101.9 (100.8-103.0)	101.1 (100.4-102.1)	0.02
Oral Rehydration Fluids Before Visit	99 (44.4)	143 (59.8)	0.001

Numbers are in n(%) or *Median (IQR)

†Calculated using Pearson's χ^2 for test for categorical and Wilcoxon Rank-Sum test for continuous variables

Figure1.
Seasonality of GII.4 vs. non-GII.4, GII noroviruses.



5. CONCLUSIONS

- Children with GII.4 viruses detection were younger, less likely to attend child care, more likely to present with diarrhea, and had a more severe illness compared to those with non-GII.4 viruses detection .
- Even in a non-outbreak setting, GII.4 strains were consistently the most common genotype over a three-year time period.
- These data provide important information on the genotype distribution of norovirus in children with AGE in Tennessee and highlight GII.4 as the most prevalent strain.