Supplementary Appendix

Supplementary Table 1. Calculation of sensitivity, specificity, positive predictive value, and negative predictive value.

Supplementary Table 2. Test-positive on the rectal swab and negative on the stool specimen.

Supplementary Table 3. Test characteristics of rectal swabs with or without visible feces using stool specimens test results as reference standard.

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Supplementary Table 5. Comparisons of cycle threshold values between rectal swab groups among swab positive Gastroenteritis Virus Panel specimens.

Supplementary Table 1. Calculation of sensitivity, specificity, positive predictive value, and negative predictive value of enteropathogen detection by rectal swab, using stool specimen test result as reference standard.

		Stool test positive		Stool test negative	
		Rectal swab test		Rectal swab test	
		Positive	Negative	Positive	Negative
Feces visibility on swab	Yes	a1	b1	a2	b2
	No	c1	d1	c2	d2

Calculation of sensitivity of enteropathogen detection by rectal swabs with visible feces:

$a1/(a1+b1)$

Calculation of sensitivity of enteropathogen detection by rectal swabs without visible feces:

$c1/(c1+d1)$

Calculation of specificity of enteropathogen detection by rectal swabs with visible feces:

$b2/(a2+b2)$

Calculation of specificity of enteropathogen detection by rectal swabs without visible feces:

$d2/(c2+d2)$

Calculation of positive predicative value of enteropathogen detection by rectal swabs with visible feces: $a1/(a1+a2)$

Calculation of positive predicative value of enteropathogen detection by rectal swabs without visible feces: $c1/(c1+c2)$

Calculation of negative predicative value of enteropathogen detection by rectal swabs with visible feces: $b2/(b1+b2)$

Calculation of negative predicative value of enteropathogen detection by rectal swabs without visible feces: $d2/(d1+d2)$

Supplementary Table 2. Test-positive on the rectal swab and negative on the stool specimen; N=34.

	N (%)
Any Viral Enteropathogen	17 (50)
Adenovirus	3 (9)
Astrovirus_ _	1 (3)
Norovirus GI/GII	3 (9)
Rotavirus	6 (18)
Sapovirus	4 (12)
Any Bacterial Enteropathogen	17 (50)
Campylobacter spp.	0 (0)
C. difficile tcdA/B	13 (38)
E. coli O157:H7	0 (0)
E. coli O26:H11	0 (0)
Enterotoxigenic *E. coli* LT/ST	0 (0)
Salmonella	2 (6)
Shigella – does luminex technically call this Shigella/EIEC?	1 (3)
stx$_1$ and/or *stx$_2$*	1 (3)
Vibrio cholerae	0 (0)
Yersinia enterocolitica	0 (0)
Any Parasititic Enteropathogen	**0**
Cryptosporidium	0 (0)
Entamoeba	0 (0)
Giardia	0 (0)

Supplementary Table 3. Test characteristics of rectal swabs with or without visible feces using stool specimens test results as reference standard; analyses stratified by clinical features, and restricted to paired specimens obtained within 24 hours of each other.

Feces visibility on swab	Stool test positive		Stool test negative		Testing characteristics of rectal swab in enteropathogen detection*			
	Swab test positive (N)	Swab test negative (N)	Swab test positive (N)	Swab test negative (N)	Sensitivity (%) (95% CI)	Specificity (%) (95% CI)	PPV (%) (95% CI)	NPV (%) (95% CI)
Overall								
Yes	571	36	9	188	94.1 (91.8, 95.8)	95.4 (91.2, 97.8)	98.5 (97.0, 99.2)	83.9 (78.3, 88.4)
No	409	75	9	131	84.5 (80.9, 87.6)	93.6 (87.8, 96.8)	97.9 (95.8, 99.0)	63.6 (56.8, 70.1)
Difference (95%CI)					9.6 (5.8, 13.6)	1.9 (-3.5, 8.1)	0.6 (-1.2, 2.8)	20.3 (11.8, 28.6)
Diarrhea present at enrollment								
Yes	454	14	6	120	97.0 (94.9, 98.3)	95.2 (89.5, 98.1)	98.7 (97.0, 99.5)	89.6 (82.8, 94.0)
No	324	37	7	75	89.8 (86.4, 92.6)	91.5 (82.7, 96.2)	97.9 (95.5, 99.1)	67.0 (57.4, 75.4)
Difference (95%CI)					7.3 (3.7, 11.2)	3.8 (-3.7, 13.0)	0.8 (-1.2, 3.3)	22.6 (11.8, 33.2)
Isolated Vomiting at enrollment								
Yes	117	22	3	67	84.2 (76.8, 89.6)	95.7 (87.2, 98.9)	97.5 (92.3, 99.4)	75.3 (64.8, 83.5)
No	83	38	2	55	68.6 (59.4, 76.6)	96.5 (86.8, 99.4)	97.7 (91.0, 99.6)	59.1 (48.5, 69.1)
Difference (95%CI)					15.6 (4.7, 26.2)	-0.8 (-9.8, 9.4)	-0.2 (-5.7, 6.8)	16.1 (1.7, 29.7)
Swab collected in Emergency Department								
Yes	362	33	5	139	91.7 (88.3, 94.1)	96.5 (91.7, 98.7)	98.6 (96.7, 99.5)	80.8 (74.0, 86.3)
No	316	66	8	110	82.7 (78.5, 86.3)	93.2 (86.7, 96.8)	97.5 (95.0, 98.9)	62.5 (54.9, 69.6)
Difference (95%CI)					8.9 (4.1, 13.8)	3.3 (-2.7, 10.2)	1.1 (-1.3, 3.8)	18.3 (8.5, 27.7)
Swab collected at home								
Yes	209	3	4	49	98.6 (95.6, 99.6)	92.5 (80.9, 97.6)	98.1 (94.9, 99.4)	94.2 (83.1, 98.5)

No	93	9	1	21	91.2 (83.5, 95.6)	95.5 (75.1, 99.8)	98.9 (93.4, 99.9)	70.0 (50.4, 84.6)
Difference (95%CI)					7.4 (2.0, 15.2)	-3.0 (-15.3, 18.0)	-0.8 (-4.2, 4.9)	24.2 (5.9, 44.3)

PPV: positive predictive value; NPV: negative predictive value

*The calculation of sensitivity, specificity, PPV and NPV was using test results based on stool specimens as the gold standard

(Supplementary Table 1).

Supplementary Table 4. Multivariable logistic regression analyzing the association between rectal swab feces visibility and overall enteropathogen positivity.

	OR (95% CI)	P value
Rectal swab with feces		
Yes	reference	
No	0.85 (0.71, 1.01)	0.07
Presence of diarrhea		
Yes	reference	
No	0.34 (0.28, 0.40)	<0.001
Group		
Emergency Department	reference	
Home	1.79 (1.37, 2.35)	<0.001

Interaction between visibility of feces and presence of diarrhea: P=0.49.

Interaction between visibility of feces and location of rectal swab collection: P=0.43.

Supplementary Table 5. Comparisons of cycle threshold values between rectal swab groups among swab positive Gastroenteritis Virus Panel specimens.

	Rectal swab with visible feces		Rectal swab without visible feces		
	Number of positive swabs	Ct value median (IQR)	Number of positive swabs	Ct value median (IQR)	P value*
Adenovirus	151	23.5 (18.1, 31.6)	120	23.8 (20.6, 28.8)	0.22
Astrovirus	24	22.6 (19.8, 26.5)	28	26.1 (22.5, 28.5)	0.08
Norovirus GI	10	25.9 (21.8, 28.9)	2	31.3 (26.6, 31.3)#	0.35
Norovirus GII	217	20.5 (18.3, 25.5)	158	24.0 (21.4, 28.4)	<0.001
Rotavirus	185	19.4 (16.7, 22.5)	152	21.2 (19.2, 25.1)	<0.001
Sapovirus	92	22.5 (18.4, 28.9)	64	24.9 (20.7, 29.5)	0.09

Ct value: cycle threshold value

IQR: interquartile range

* Mann-Whitney U test

Median (minimum, maximum)