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| **Table S1**  a. Distribution of participants who did/did not fill out memory aid and had/did not have stool collected for enteric infection detection | | | |
|  | Stool collected | Stool not collected | Total |
| Filled out memory aid | 2384 | 0 | 2384 |
| Did not fill out memory aid | 150 | 0 | 150 |
| Total | 2534 | 0 | 2534 |
|  |  |  |  |
| b. Distribution of participants with and without MSD enteric pathogen1 detected/diarrhea | | | |
|  | Diarrhea reported | No diarrhea reported | Total |
| MSD enteric pathogen detected | 198 | 262 | 460 |
| No enteric pathogen detected | 721 | 1203 | 1,924 |
| Total | 919 | 1465 | 2384 |

1Any pathogens detected in a child’s stool specimen at enrollment that were significantly associated with moderate-to-severe diarrhea (MSD) at the GEMS Kenya site [5].

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| Table S2: Prevalence of enteric pathogens in stool collected from controls with/without any diarrhea in 14-day memory aid form, Global Enteric Multicenter Study, Kenya site1 | | | | |
| Pathogen detection | Controls with any diarrhea  n=919 | Controls without any diarrhea  n=1465 | OR (95% CI) | p-value |
| No pathogen detected (MSD2) | 721 (78.5%) | 1203 (82.1%) |  |  |
| No pathogen detected (any3) | 284 (30.9%) | 471 (32.2%) |  |  |
| Only 1 pathogen detected (MSD2) | 182 (19.8%) | 245 (16.7%) |  |  |
| Only 1 pathogen detected (any3) | 380 (41.3%) | 605 (41.3%) |  |  |
| 2+ pathogens detected (MSD2) | 16 (1.7%) | 17 (1.2%) |  |  |
| 2+ pathogens detected (any3) | 255 (27.8%) | 389 (26.5%) |  |  |
| Bacteria |  |  |  |  |
| \*ST-ETEC | 42 (4.6%) | 58 (4.0%) | 1.12 (0.74, 1.69) | 0.576 |
| LT-ETEC | 57 (6.2%) | 80 (5.5%) |  |  |
| Females |  |  | 0.71 (0.40, 1.25) | 0.237 |
| Males |  |  | 1.48 (0.93, 2.34) | 0.099 |
| EAEC | 161 (17.5%) | 229 (15.6%) | 1.08 (0.86, 1.35) | 0.521 |
| \*tEPEC | 56 (6.1%) | 59 (4.0%) | 1.45 (0.99, 2.12) | 0.054 |
| aEPEC | 56 (6.1%) | 94 (6.4%) | 0.96 (0.68, 1.35) | 0.810 |
| EHEC | 0 | 0 | - | - |
| *\*Shigella* spp. | 20 (2.2%) | 32 (2.2%) |  |  |
| Females |  |  | 0.41 (0.14, 1.23) | 0.113 |
| Males |  |  | 1.73 (0.83, 3.59) | 0.140 |
| *Aeromonas* | 1 (0.1%) | 3 (0.2%) | 0.52 (0.03, 4.14) | 0.576 |
| *V. cholerae O1* | 0 | 0 | - | - |
| *S.* Typhi | 0 | 0 | - | - |
| \*Non-typhoidal *Salmonella* | 37 (4.0%) | 43 (2.9%) | 1.31 (0.83, 2.06) | 0.236 |
| *C. jejuni* | 82 (8.9%) | 105 (7.2%) | 1.24 (0.91, 1.67) | 0.171 |
| *C. coli* | 45 (4.9%) | 91 (6.2%) | 0.74 (0.51, 1.07) | 0.111 |
|  |  |  |  |  |
| Viruses |  |  |  |  |
| \*Rotavirus | 23 (2.5%) | 26 (1.8%) | 1.33 (0.75, 2.36) | 0.322 |
| GI Norovirus | 36 (3.9%) | 59 (4.0%) | 1.00 (0.65, 1.52) | 0.999 |
| GII Norovirus | 36 (3.9%) | 60 (4.1%) | 0.89 (0.58, 1.35) | 0.591 |
| Adenovirus 40/41 | 12 (1.3%) | 8 (0.5%) | 2.12 (0.87, 5.44) | 0.102 |
| Adenovirus non-40/41 | 21 (2.3%) | 36 (2.5%) | 0.88 (0.50, 1.51) | 0.649 |
| Astrovirus | 11 (1.2%) | 26 (1.8%) | 0.72 (0.34, 1.44) | 0.372 |
| Sapovirus | 26 (2.8%) | 45 (3.1%) | 0.90 (0.54, 1.47) | 0.688 |
|  |  |  |  |  |
| Protozoa |  |  |  |  |
| *Giardia* | 200 (21.8%) | 364 (24.8%) | 0.90 (0.73, 1.10) | 0.311 |
| *\*Cryptosporidium* | 36 (3.9%) | 62 (4.2%) | 0.86 (0.56, 1.30) | 0.477 |
| *E. histolytica* | 2 (0.2%) | 5 (0.3%) | 0.59 (0.08, 2.76) | 0.530 |

1All odds ratios (ORs) and 95% confidence intervals (95% CI) adjusted for age group and sex, with age- or sex-specific stratified estimates presented where effect modification was significant at 0.05. 2Any pathogens detected in a child’s stool specimen at enrollment that were significantly associated with moderate-to-severe diarrhea (MSD) at the GEMS Kenya site [5], also denoted by an asterisk (\*) in table. 3Any pathogens detected from the entire list of potential pathogens assessed in GEMS [22].

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| Table S3: Prevalence of enteric pathogens in stool collected from controls with/without any diarrhea within 7 days of enrollment in 14-day memory aid form, Global Enteric Multicenter Study, Kenya site1 | | | | |
| Pathogen detection | Controls with any diarrhea within 7d of enrollment  n=643 | Controls without any diarrhea within 7d of enrollment  n=1741 | OR (95% CI) | p-value |
| No MSD pathogen2 detected | 501 (77.9%) | 1,408 (81.7%) |  |  |
| Only 1 MSD pathogen2 detected | 131 (20.4%) | 294 (17.1%) |  |  |
| 2+ MSD pathogens2 detected | 11 (1.7%) | 22 (1.3%) |  |  |
| Bacteria |  |  |  |  |
| \*ST-ETEC | 34 (5.3%) | 66 (3.8%) | 1.40 (0.90, 2.12) | 0.123 |
| LT-ETEC | 41 (6.4%) | 96 (5.5%) |  |  |
| Females |  |  | 0.60 (0.30, 1.17) | 0.131 |
| Males |  |  | **1.67 (1.04, 2.69)** | **0.034** |
| EAEC | 114 (17.7%) | 276 (15.9%) | 1.07 (0.84, 1.36) | 0.582 |
| \*tEPEC | 36 (5.6%) | 79 (4.5%) | 1.19 (0.78, 1.77) | 0.406 |
| aEPEC | 38 (5.9%) | 112 (6.4%) | 0.93 (0.63, 1.35) | 0.703 |
| EHEC | 0 (0%) | 0 (0%) | - | - |
| *\*Shigella* spp. | 14 (2.2%) | 38 (2.2%) | 1.05 (0.54, 1.90) | 0.886 |
| *Aeromonas* | 1 (0.2%) | 3 (0.2%) | 0.92 (<0.01, 7.24) | 0.943 |
| *V. cholerae O1* | 0 (0%) | 0 (0%) | - | - |
| *S.* Typhi | 0 (0%) | 0 (0%) | - | - |
| \*Non-typhoidal *Salmonella* | 28 (4.4%) | 52 (3.0%) |  |  |
| 0-11 mo |  |  | 0.91 (0.46, 1.81) | 0.797 |
| 12-23 mo |  |  | 1.49 (0.62, 3.56) | 0.373 |
| 24-59 mo |  |  | **3.87 (1.38, 10.8)** | **0.010** |
| *C. jejuni* | 56 (8.7%) | 131 (7.5%) | 1.14 (0.81, 1.57) | 0.449 |
| *C. coli* | 31 (4.8%) | 105 (6.0%) | 0.78 (0.51, 1.16) | 0.237 |
|  |  |  |  |  |
| Viruses |  |  |  |  |
| \*Rotavirus | 18 (2.8%) | 31 (1.8%) | 1.55 (0.84, 2.77) | 0.146 |
| GI Norovirus | 27 (4.2%) | 68 (3.9%) | 1.09 (0.68, 1.71) | 0.702 |
| GII Norovirus | 26 (4.0%) | 70 (4.0%) | 0.96 (0.59, 1.50) | 0.849 |
| Adenovirus 40/41 | 9 (1.4%) | 11 (0.6%) | 2.06 (0.82, 5.01) | 0.111 |
| Adenovirus non-40/41 | 14 (2.2%) | 43 (2.5%) | 0.88 (0.46, 1.58) | 0.678 |
| Astrovirus | 11 (1.7%) | 26 (1.5%) | 1.24 (0.58, 2.47) | 0.557 |
| Sapovirus | 16 (2.5%) | 55 (3.2%) | 0.79 (0.44, 1.37) | 0.424 |
|  |  |  |  |  |
| Protozoa |  |  |  |  |
| *Giardia* | 135 (21.0%) | 429 (24.6%) |  |  |
| 0-11 mo |  |  | 1.17 (0.74, 1.84) | 0.497 |
| 12-23 mo |  |  | **0.63 (0.43, 0.92)** | **0.016** |
| 24-59 mo |  |  | 0.99 (0.69, 1.42) | 0.947 |
| *\*Cryptosporidium* | 23 (3.6%) | 75 (4.3%) | 0.78 (0.48, 1.24) | 0.316 |
| *E. histolytica* | 1 (0.2%) | 6 (0.3%) | 0.42 (0.02, 2.48) | 0.423 |

1All odds ratios (ORs) and 95% confidence intervals (95% CI) adjusted for age group and sex, with age- or sex-specific stratified estimates presented where effect modification was significant at 0.05. 2Any pathogens detected in a child’s stool specimen at enrollment that were significantly associated with moderate-to-severe diarrhea (MSD) at the GEMS Kenya site [5], also denoted by an asterisk (\*) in table.

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| --- | --- | --- | --- | --- |
| Table S4: Analysis of controls with/without potential enteric pathogens detected in stool at enrollment, Global Enteric Multicenter Study, Kenya site | | | | |
| Parameter | 1+ potential enteric pathogens detected1  N = 1,629 | 0 potential enteric pathogens detected1  N = 755 | aOR2 | p-value2 |
| a) Health conditions at enrollment |  |  |  |  |
| Blood in stool collected | 3 (0.2%) | 1 (0.1%) | 1.43 (-) | 0.758 |
| Blood in stool (in last 7 days) | 6 (0.3%) | 1 (0.1%) | 2.29 (0.37, 44.0) | 0.451 |
| Fever (in last 7days) | 648 (37.3%) | 295 (37.1%) | 1.00 (0.83, 1.19) | 0.983 |
| Vomiting (in last 7days) | 49 (2.8%) | 22 (2.8%) | 1.00 (0.60, 1.70) | 0.985 |
|  |  |  |  |  |
| b) Water, sanitation, and hygiene conditions at enrollment |  |  |  |  |
| Any sanitation facility present | 1329 (76.4%) | 589 (74.1%) | 1.17 (0.96, 1.43) | 0.115 |
| Unimproved water source3 | 635 (36.5%) | 278 (35.0%) | 1.09 (0.91, 1.31) | 0.335 |
| Water treated | 972 (55.9%) | 452 (56.9%) | 0.98 (0.83, 1.17) | 0.849 |
| Water treated effectively4 | 916 (52.7%) | 429 (54.0%) | 0.96 (0.81, 1.15) | 0.685 |
| Water treated with chlorine | 782 (45.0%) | 362 (45.5%) | 0.99 (0.84, 1.18) | 0.952 |
|  |  |  |  |  |
| c) Health at 60d follow-up |  |  |  |  |
| Diarrhea | 698 (41.2%) | 333 (43.0%) | 0.89 (0.74, 1.06) | 0.189 |
| Visited health facility for diarrhea in last 60 day | 256 (14.7%) | 122 (15.3%) | 0.92 (0.72, 1.18) | 0.504 |
| Dysentery in last 60d | 18 (1.1%) | 7 (0.9%) | 1.15 (0.49, 3.00) | 0.751 |
| Visited health facility for dysentery in last 60 day | 9 (0.5%) | 4 (0.5%) | 0.93 (0.29, 3.50) | 0.904 |
| Fever in last 60 day | 974 (57.5%) | 445 (57.4%) |  |  |
| 0-11 mo |  |  | 1.26 (0.94, 1.70) | 0.123 |
| 12-23 mo |  |  | 0.95 (0.69, 1.29) | 0.730 |
| 24-59 mo |  |  | 0.80 (0.59, 1.09) | 0.157 |
| Visited health facility for fever in last 60day | 319 (18.3%) | 149 (18.7%) | 0.99 (0.79, 1.24) | 0.935 |
| Death of child | 12 (0.7%) | 3 (0.4%) | 2.37 (0.63, 15.4) | 0.262 |

**Bold** indicates significant at 0.05. Multivariable logistic regression used for all parameters. 1Based on stool specimen collected at enrollment, defined as any pathogens detected from the entire list of potential pathogens assessed in GEMS [22] 2Adjusted for age group and sex, stratified estimates by age group or sex presented where effect modification significant at 0.05 was observed; 3Water source that does not meet the criteria for “improved,” per the Joint Monitoring Program criteria [40] of a source that is safely protected from outside contamination (especially feces) via its construction or intervention 4Effective water treatment classified as solar disinfection, chlorine disinfection, boiling, or filtration through ceramic or other filter. Ineffective water treatment classified as filtration through a cloth, alum, or other chemical added;

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| --- | --- | --- | --- | --- | --- |
| Table S5: Health and WASH conditions among controls by enteric pathogen detection in stool and diarrhea, Global Enteric Multicenter Study, Kenya site | | | | | |
|  | Group 1 (G1) | Group 2 (G2) | Group 3 (G3) | Group 4 (G4) |
| Parameter | Diarrhea, ≥1 MSD pathogen1 detected  n=198 | No diarrhea, ≥1 MSD enteric pathogen1 detected  n=262 | Diarrhea, 0 MSD pathogens1 detected  n = 721 | No diarrhea, 0 MSD pathogens1 detected  n=1203 |
| Health conditions at enrollment |  |  |  |  |
| Median number of pathogens detected (range) | 1 (1-2) | 1 (1-3) | 0 | 0 |
| Blood in stool collected | 0 (0%) | 0 (0%) | 0 (0%) | 4 (0.3%) |
| Blood in stool (in last 7 days) | 0 | 1 (0.4%) | 2 (0.3%) | 3 (0.2%) |
| Fever (in last 7 days) | 85 (42.9%) | 94 (35.9%) | 316 (43.8%) | 386 (32.1%) |
| Vomiting (in last 7 days) | 5 (2.5%) | 11 (4.2%) | 28 (3.9%) | 25 (2.1%) |
|  |  |  |  |  |
| WASH conditions at enrollment |  |  |  |  |
| Any sanitation facility present | 150 (75.8%) | 209 (79.8%) | 547 (75.9%) | 897 (74.6%) |
| Unimproved water source2 | 79 (40.3%) | 101 (39.0%) | 277 (38.5%) | 444 (37.2%) |
| Water treated | 109 (55.6%) | 157 (60.6%) | 411 (57.1%) | 662 (55.5%) |
| Water treated effectively3 | 109 (55.1%) | 149 (56.9%) | 387 (53.7%) | 622 (51.7%) |
| Water treated with chlorine | 90 (45.5%) | 131 (50.0%) | 343 (47.6%) | 517 (43.0%) |
|  |  |  |  |  |
| Health conditions at 60-day follow-up |  |  |  |  |
| Visited health facility for diarrhea | 60 (30.3%) | 17 (6.5%) | 193 (26.8%) | 84 (7.0%) |
| Dysentery | 3 (1.5%) | 2 (0.8%) | 13 (1.8%) | 6 (0.5%) |
| Visited health facility for dysentery | 1 (0.5%) | 0 (0%) | 7 (1.0%) | 4 (0.3%) |
| Fever | 129 (65.8%) | 125 (48.3%) | 477 (66.3%) | 620 (52.0%) |
| Visited health facility for fever | 42 (21.2%) | 37 (14.1%) | 167 (23.2%) | 197 (16.4%) |
| Death of child | 5 (2.6%) | 1 (0.4%) | 3 (0.4%) | 4 (0.3%) |

1Any pathogens detected in a child’s stool specimen at enrollment that were significantly associated with moderate-to-severe diarrhea (MSD) at the GEMS Kenya site [5]. 2Water source that does not meet the criteria for “improved,” per the Joint Monitoring Program criteria [40] of a source that is safely protected from outside contamination (especially feces) via its construction or intervention 3Effective water treatment classified as solar disinfection, chlorine disinfection, boiling, or filtration through ceramic or other filter. Ineffective water treatment classified as filtration through a cloth, alum, or other chemical added