1107. The MAAGE Study: Health Care Utilization for the Treatment of Medically Attended Acute Gastroenteritis
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Background. Acute gastroenteritis (AGE) affects a substantial disease burden across the age spectrum, although healthcare utilization for AGE is not well characterized. Through active surveillance of medically attended acute gastroenteritis (MAAGE) encounters at a large, integrated health care delivery system, we analyzed demographic patterns of healthcare utilization among AGE patients.

Methods. From April 1, 2014 to September 30, 2016, we collected information on all MAAGE encounters in Kaiser Permanente Northwest (KPNW) patients through daily abstraction from electronic health records using ICD-9/10 codes. For each patient, a MAAGE episode was defined as all MAAGE encounters <30 days apart.

Results. There were 109,493 MAAGE encounters among 39,451 patients. Patients were 60.4% female and 39.6% male; 10.3% were <5 years old, 9.7% were 5–17, 31.1% were 18–44, 25.4% were 45–64, and 23.5% were ≥65. Most MAAGE episodes comprised of one encounter (median: 1.0, mean: 2.1). The number of encounters per episode was lowest in those <5 years old (median: 1.0, mean: 1.5) and highest in those ≥65 (median: 2.0, mean: 2.5). Most deaths within 30 days from the start of an episode (131/161) were in those ≥65; there were none in those <5, in those 5–17, 5 in those 18–44, and 24 in those 45–64.

Conclusion. We found that the number of encounters per MAAGE episode increased with age and that outpatient and remote encounters are important settings for the initial clinical management of MAAGE in all ages. These data can help to better quantify the economic burden of AGE and guide appropriate delivery of healthcare services.

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1108. Diagnostic Yield of the BioFire FilmArray Gastrointestinal Panel in Hospitalized Children at an Academic Children’s Center
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Background. The BioFire FilmArray Gastrointestinal Panel (BioFire Diagnostics) (GIP) is a multiplex stool PCR test that detects 22 organisms. Studies in adults suggest that the diagnostic yield of the GIP in hospitalized patients is low. The utility of the GIP among hospitalized pediatric patients and indications for diagnostic stewardship of this test are not well described.

Methods. We conducted a retrospective chart review of hospitalized pediatric patients that had a GIP ordered between October 2015 and October 2017. Demographic, clinical, and laboratory information was extracted from the medical record. Statistical analysis was completed using JMP Pro 13.0.0 (SAS Institute Inc.).

Results. Over the 2-year study period, 193 GIPs were obtained on 155 individual pediatric patients. The mean patient age was 8 years and 59% were male. Forty-four percent of patients were immunocompromised and 21% had inflammatory bowel disease. The pediatric infectious disease (PID) team was consulted in 15% of patients at the time the test was ordered. The overall positivity rate of the GIP for one or more pathogens was 42% (Figure 1), with 76% of GIPs positive for one, 23% for two, and 1% for three pathogens. No parasitic infections were diagnosed. The GIP was more likely to be positive if GI symptom onset was prior to admission (48% vs. 24%, \( P = 0.004 \)), if GI symptoms had been present for <2 weeks vs. ≥2 weeks (52% vs. ≥20%, \( P = 0.0001 \)), and if GI symptoms were the primary reason for the hospital admission (50% vs. 32%, \( P = 0.012 \)). Only <2 weeks of emesis or viral pathogens were detected in patients whose symptoms began in the hospital (Figure 2). Among patients with a positive test, 40% received treatment targeted at one or more of the detected pathogens (Figure 1). Enteropathogenic E.coli (EPEC) and Enteragggregative E.coli (EAEC) were never treated (Figure 3).

Conclusion. The GIP was positive for one or more pathogens in 42% of hospitalized children for whom the test was ordered, and led to specific therapy in 40% of those with a positive test. EPEC and EAEC were not treated. The diagnostic yield of the GIP was lower if GI symptoms were present for ≥2 weeks, began before hospitalization, and were the primary reason for admission. The GIP was frequently obtained without guidance from the PID team.

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1109. Factors Impacting the Decision to Order Stool Diagnostic Testing in Patients With Acute Gastroenteritis Among Primary Care Providers
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Background. Diagnostic options for stool pathogens are evolving and expanding rapidly. The majority of acute gastroenteritis (AGE) patients seeking medical care are seen by primary care providers (PCPs), and stool testing may not be performed as AGE is generally self-limited. Little is known about how PCPs decide for which patients to order testing. Our objective was to describe among PCPs factors affecting the decision of whether to order stool diagnostic testing for pathogen detection in patients with AGE symptoms in the outpatient setting.

Methods. A national survey was conducted from January to March 2018 among primary care pediatricians (Peds), family physicians (FP), and internists (GIM).

Results. The response rate was 50% (689/1,383; Peds 59% [275/466], FP 49% [226/461], GIM 41% [188/456]). Factors most often reported as greatly increasing
the likelihood of testing that did not differ significantly between specialties included patient history of travel to a high-risk area (75% Peds, 71% FP, 72% GIM), immunocompromised patient (Peds 67%, FP 60%, GIM 69%), and clinical suspicion of a pathogen that can be treated with antibiotics or antiparasitics (Peds 63%, FP 56%, GIM 65%). Factors with significant differences between specialties that were most often reported as greatly increasing likelihood of testing included presence of blood in stool (Peds 76%, FP 58%, GIM 48%, P < 0.0001), history of recent antibiotic use (Peds 31%, FP 66%, GIM 72%, P < 0.0001), history of recent hospitalization (Peds 29%, FP 61%, GIM 64%, P < 0.0001), consideration of inpatient admission (Peds 36%, FP 57%, GIM 56%, P < 0.0001), and fever ≥38.5 °C (Peds 13%, FP 27%, GIM 40%, P < 0.0001). Factors most often reported as greatly decreasing the likelihood of testing included presence of vomiting without diarrhea (Peds 49%, FP 43%, GIM 50%) and presence of vomiting and diarrhea together (Peds 12%, FP 7%, GIM 9%).

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**110. A multicenter Evaluation of Outcomes Associated With Oral Vancomycin Dose in Patients With Clostridium difficile Infection**

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**Background.** *Clostridium difficile* infection (CDI) is a significant cause of morbidity and mortality. IDSA guidelines recommend oral vancomycin (VAN) for the treatment of CDI, although doses used in practice vary substantially. The purpose of this study was to determine differences in outcomes between patients treated with high dose (HD; ≥250 mg four times daily [QID]) vs. standard dose (SD; 125 mg QID) VAN for CDI.

**Methods.** This multicenter study evaluated patients at two hospitals in Albany, NY diagnosed with CDI and treated with oral VAN between January 2013 and August 2017. Hospitalized patients were included if: age 218 years, positive *C. difficile* toxin polymerase chain reaction (PCR), symptomatic infection (e.g., new onset or increased frequency of loose stools), and received 24 hours of VAN QID. Patients were excluded if: received 24 hours of metronidazole prior to VAN initiation, VAN per rectum, required surgical intervention ≤48 hours from PCR, or died ≤48 hours from PCR. The primary outcome was 90-day CDI recurrence; secondary outcomes included 30-day all-cause mortality and 90-day readmission.

**Results.** Four hundred fifty-eight patients were included (site 1: 270; site 2: 188). Two hundred twenty-four patients received SD VAN (48.9%); 234 received HD VAN (250 mg QID: 199 (43.5%); 500 mg QID: 35 (7.6%). Baseline demographics were similar between groups. Patients treated with HD were more likely to present with colitis (19.2 vs. 29.5%, P = 0.01) and have higher infection severity based on IDSA (P < 0.01). Zar (P < 0.01), and American College of Gastroenterology (P < 0.02) criteria. Modified APACHE II scores were similar between SD and HD groups (median: 12.2 vs. 12.9, P = 0.17). MV analysis identified no difference in 90-day recurrence with HD (OR 1.65, P = 0.13) after controlling for solid tumor cancers, immunosuppression, and IDSA severity. Similarly, no significant differences between SD and HD were observed for 30-day mortality and 90-day readmission.

**Conclusion.** No differences in recurrence, mortality, or readmission were identified between SD and HD oral VAN for the treatment of CDI, though HD VAN patients primarily received 250 mg QID.

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**1112. Detection of Enteric Viruses in Children With Acute Gastroenteritis**

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**Background.** Acute gastroenteritis (AGE) is a major cause of morbidity in children. Viral pathogens are the most common infectious agents. Differences in illness characteristics of AGE with and without virus detection are poorly defined. We compared AGE illness characteristics between children with and without any-virus detected, and with single vs. multiple viruses detected.

**Methods.** Children between 15 days and 17 years with AGE defined as diarrhea (>3 loose stools/24 hours) or any vomiting within 10 days duration were enrolled in Vanderbilt Children’s Hospital inpatient, ED, and outpatient settings from December 2012 to November 2015. Stool specimens were tested by RT-qPCR for norovirus, sapovirus, and astrovirus and by ELISA (VP6 antigen [Rotacline ®] for rotavirus.

**Results.** Of 3,705 children enrolled, 2,892 (78%) specimens were collected. A single virus was detected in 1,109 (38%) stools [51% norovirus, 20% rotavirus, 21% sapovirus, and 8% astrovirus], viral co-detections were found in 115 (4%) stools, and 1,665 (58%) had no detected viruses. Table 1 compares children with and without any-virus detected. Children with a single-virus detected were older than those with >1 virus detected (1.8 vs. 1.5 years [P < 0.05]) with no other significant differences.

**Table 1.**

|                  | No-Virus Detected (n = 1665) | Any-Virus Detected (n = 1224) | P-value |
|------------------|-------------------------------|--------------------------------|---------|
| Age (years)      | 2.0 (0.79–5.65)*              | 1.8 (0.96–4.00)*               | 0.21    |
| Diarrhea         | 1102 (66.2%)                  | 891 (72.8%)                    | <0.01   |
| Max. no. of diarrhea stools/24 hours | 5 (3–7)*                        | 5 (3–7)*                        | 0.30    |
| Vomiting         | 1298 (78.1%)                  | 1101 (89.9%)                   | <0.01   |
| Max. no. of vomiting episodes/24 hours | 3 (2–5)*                        | 4 (3–7)*                        | <0.01   |
| Fever            | 1112 (66.8%)                  | 690 (56.4%)                    | <0.01   |
| Max. temperature | 102 (101–103)*               | 101 (100–103)*                 | <0.01   |
| Sick contact     | 447 (26.9%)                   | 429 (35.1%)                    | <0.01   |
| Modified Vesikari Score (MV5) | 6 (4–8)*                        | 7 (5–9)*                        | <0.01   |
| Days of illness  | 2 (2–4)*                      | 2 (1–4)*                       | 0.01    |

Data are in n (%).

*Median (IQR).

**Conclusion.** Children with any-virus detected had more severe symptoms, higher MV5, and more frequently reported sick contacts compared with no-virus detected. Children with no-virus detected were more likely to present with fever and higher

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