1117. Avascular Necrosis of the Femoral Head as a Sequela of Shiga Toxin-producing *Escherichia coli* (STEC) Infection

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Background. Shiga toxin-producing *Escherichia coli* (STEC) infection may be complicated by the hemolytic-uremic syndrome (HUS). Long-term sequelae of HUS are most often related to renovascular disease. Osteoarticular complications are rare. Avascular necrosis (AVN) has not been previously reported as a complication of STEC infection.

Methods. We report two cases of United States Marine Corps (USMC) recruits who developed AVN of the femoral head following STEC infection during a large outbreak.

Results. Between October and November 2017, an STEC outbreak occurred at Marine Corps Recruit Depot San Diego (MCRD-SD) affecting over 250 USMC recruits. Case 1: A 19-year-old recruit developed nine days of non-bloody diarrhea. Stool culture, Shiga toxin enzyme immunoassay (EIA), and polymerase chain reaction (PCR) demonstrated *E. coli* O157. Complete blood count (CBC) was normal 5 days after symptom resolution. One month after resolution of his infection, he developed right hip pain. Magnetic resonance imaging (MRI) revealed right femoral head AVN (Image 1). He was treated conservatively with nonsteroidal anti-inflammatory drug (NSAID) and physical therapy. Case 2: A 19-year-old recruit developed seven days of dysentery. Stool culture, Shiga toxin EIA and PCR demonstrated *E. coli* O157. He had a hemoglobin nadir of 8.0 g/dL and platelet nadir of 109×10^3/microL. Renal function was normal except for mild proteinuria and microscopic hematuria. One month after resolution of his infection, he developed non-traumatic left hip pain. MRI revealed left femoral head AVN with subchondral collapse (Image 2). He completed three months of bisphosphonate therapy prior to his left hip core decompression and sub-chondroplasty.

Conclusion. AVN of the hip is rare among healthy young adults and is not commonly observed in military recruits. We hypothesize that STEC-associated subclinical intravascular coagulopathy may cause microscopic occlusive disease. AVN should be considered in patients with new non-traumatic hip pain after known or suspected STEC infection.

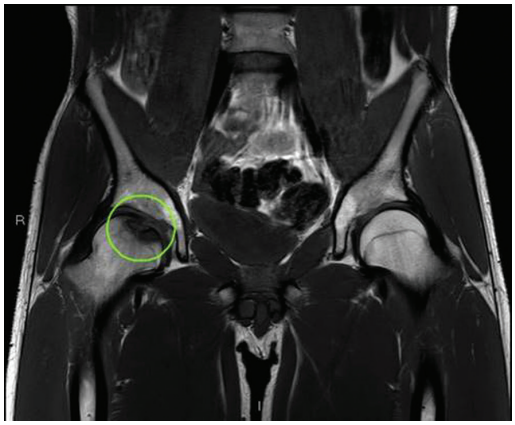

Image 1: Hypointense T1 signal sclerosis and collapse of the bone fragment with a peripheral rim of hypointense signal on MRI.

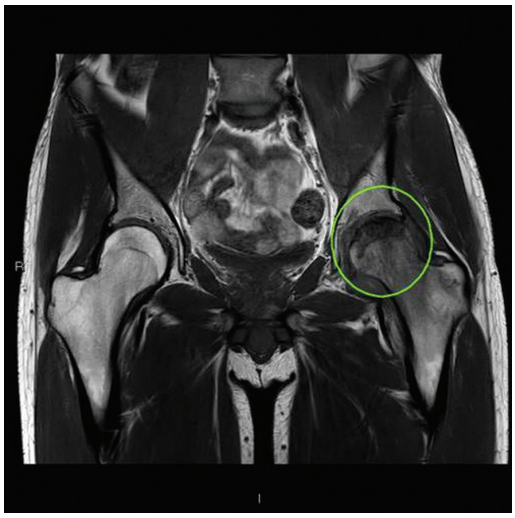

Image 2: Hypointense T1 signal in superior left femoral head with subtle subchondral collapse on MRI.

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1118. Viral Species Richness and Composition in Young Children With Loose or Watery Stool in Ethiopia

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Background. Stool consistency is an important diagnostic criterion in both research and clinical medicine and is often used to define diarrheal disease.

Methods. We examine the pediatric enteric virome across stool consistency to evaluate differences in richness and community composition using fecal samples collected from children participating in a clinical trial in the Amhara region of Ethiopia. The consistency of each sample was graded according to the modified Bristol Stool Form Scale for children (mBSFS-C) before a portion of stool was preserved for viral metagenomic analysis. Stool samples were grouped into 29 pools according to stool consistency type. Differential abundance was determined using negative-binomial modeling.

Results. Of 446 censused children who were eligible to participate, 317 presented for the study visit examination and 269 provided stool samples. The mean age of children with stool samples was 2.7 years old. Species richness was highest in watery-consistency stool and decreased as stool consistency became firmer (Spearman's $r = -0.45$, $P = 0.013$).The greatest differential abundance comparing loose or watery to formed stool was for norovirus GII (7.64, 95% CI 5.8, 9.5) followed by aichivirus A (5.93, 95% CI 4.0, 7.89) and adeno-associated virus 2 (5.81, 95% CI 3.9, 7.7).

Conclusion. We documented a difference in pediatric enteric viromes according to mBSFS-C stool consistency category, both in species richness and composition. Our results suggest that loose or watery stool, as measured by the mBSFS-C, may signal enteric viral infection in young children. Additional studies are warranted to confirm these findings.

Disclosures. **All authors:** No reported disclosures.

1119. Risk Factors for *Clostridium difficile* Acquisition and Persistence among Guatemalan Children

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Background. Little is known about the epidemiology and risk factors for *Clostridium difficile* infection (CDI) among children in low and middle-income countries (LMICs). We sought to characterize the clinical, demographic, and environmental factors associated with *C.difficile* acquisition and persistence over time, and assess the relationship between CDI and additional diarrheal pathogens among rural and urban Guatemalan children.

Methods. Children 6–35 months old with acute nonbloody diarrhea (<72 hours) were enrolled in an acute diarrhea clinical trial between March 2015 and January 2016 at two sites (one rural and one urban) in Guatemala. Stool samples collected at baseline and 30 days later were analyzed by multiplex PCR (FilmArray™ GI-Panel, BioFire, USA) that identifies 22 viral, parasitic and bacterial diarrheal pathogens including *C. difficile*. Subjects were characterized by combination of baseline and 30-day *C.difficile* sample results: −/+ (new acquisition), +/− (clearance), and +/+ (persistence). Associations between these categorizations and demographic, epidemiologic, and co-infecting pathogenic organisms were assessed using multivariable generalized linear models.

Results. CDI was present in 26 of 298 subjects at baseline; 13 (50%) had persistence at 30 days and 13 (50%) cleared. New acquisition at day 30 occurred in 23 subjects. In multivariable analysis adjusted for age, recent hospitalization was marginally significantly associated with *C. difficile* presence in stool at baseline (prevalence ratio [PR] 2.65, $P = 0.07$). In subjects with either new *C. difficile* acquisition or persistence between baseline and day 30, residence in the rural site (PR 0.33, $P = 0.003$)) and presence of *E. coli* pathotypes: enteropathogenic (EPEC), enteroaggregative (EAEC), and enterotoxigenic (ETEC) (PR 0.43, $P = 0.01$)) were associated with reduced risk of CDI.

Conclusion. In an LMIC pediatric population, the presence of *E. coli* pathotypes appeared protective against *C. difficile* persistence/new acquisition. These findings add to our current understanding that CDI occurs in part as a result of competition within the intestinal microbiota, which may be independent of the potential pathogenicity of competing microbes. We hypothesize that this phenomenon could be suppressing the *C. difficile* burden among children in LMICs.

Disclosures. **All authors:** No reported disclosures.

1120. *Clostridium difficile* Infection Risk Factors, Severity, and Outcomes in Patients Infected with NAP1/027 Strain in a Non-Epidemic Setting

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Background. Evidence surrounding outcomes with the North American pulsed-field gel electrophoresis type 1 (NAP1) *Clostridium difficile* (CDI) strain remains conflicting. We compared risk factors, severity of illness, and mortality of patients infected with NAP1 strain compared with patients with non-NAP1 strains in our multihospital health system.

Methods. This is a retrospective case–control analysis of patients admitted to one of five hospitals (one academic and four community hospitals) and diagnosed with CDI from April 2014 through July 2017. CDI definition included three or more stools per day with positive stool sample polymerase chain reaction (PCR) testing for *C. difficile.*

Results. A total of 490 patients met inclusion, of which 155 had the NAP1 strain and 335 patients were infected with non-NAP1 strains. More patients with NAP1 were older, female, had CHF, and presented from a healthcare facility as opposed to from the community (all $P < 0.05$). No difference in 90-day antibiotic class use was found. NAP1 patients had increased ICU admission (12.3 vs. 6.0%, $P = 0.016$), a shorter length of stay (10.8 vs. 13.4 days, $P = 0.037$), abnormal CT findings ($P < 0.023$), and trend toward more ID consults ($P = 0.067$). Per IDSA classification, 61.9% in the NAP1 CDI group had severe CDI as opposed to 49.6% in the non-NAP1 study group. ($P \leq 0.038$). There was no observed difference in inpatient mortality (7.7 vs. 5.7%, $P = 0.381$).

Conclusion. CDI caused by NAP1 strain did result in increased severity but did not result in increased mortality compared with CDI caused by non-NAP1 strains. Evidence continues to mount that while the NAP1 strain may affect severity, its effect on mortality remains in question.

Disclosures. **All authors:** No reported disclosures.

1121. Epidemiology and Risks for Infection Following Cytoreductive Surgery and Hyperthermic Intra-Peritoneal Chemotherapy at an Australian Centre

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Background. Cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (CRS-HIPEC) is associated with improved cancer survival but increased risk of infection in patients with abdominal-pelvic malignancy. We evaluated risks and characteristics of infectious outcomes at an Australian cancer centre.

Methods. Patients undergoing CRS-HIPEC between January 2016 and November 2017 at Peter MacCallum Cancer Centre were retrospectively reviewed. Malignancy type, comorbidities, perioperative risk factors, and infectious complications were captured, using standardized definitions for surgical site infection. Association between risk factors and infection outcomes was evaluated by logistic regression modeling.

Results. Sixty-nine patients underwent CRS-HIPEC, predominantly for colorectal cancer and pseudomyxoma peritonei. Overall, 32 (46.3%) experienced an infectious complication, including infections at surgical site (16), respiratory tract (6), urinary tract (5), *Clostridium difficile* (2), and post-operative sepsis (10). In most, infection onset was within 7 days post-operatively. Median length of hospitalisation was 20 days for patients with infection, compared with 8 days for those without ($P = 0.000$). Of variables potentially associated with infection at surgical site, small bowel resection (OR 5.56, 95% confidence interval [CI] 1.09–28.19; $P = 0.039$) and number of resected viscera (OR 1.71, 95% CI 1.05–2.76; $P = 0.029$) were significantly associated with infection on univariate analysis.

Conclusion. We demonstrate a significant burden of early infective complications in patients undergoing CRS-HIPEC, including surgical and non-surgical site infections. Findings support the need for multimodal programs to reduce the risk of a broad range of infections in this population. Higher risk subgroups, including those with small bowel resection and increased number of resected viscera, may benefit from enhanced monitoring.

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1122. Evaluation of Fecal Microbiota Transplant (FMT) in Elderly Patients With recurrent *Clostridium difficile* Infection (CDI)

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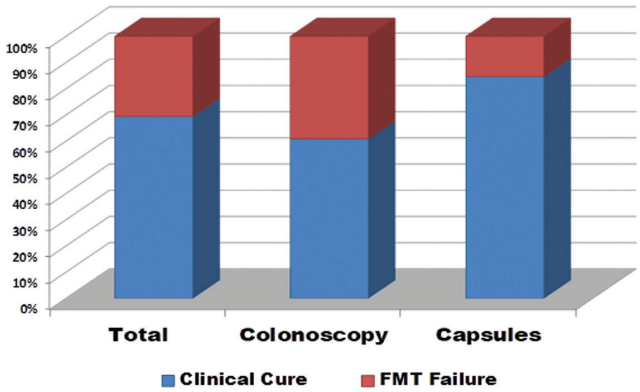
Background. CDI is a bacterial infection that typically occurs after the use of broad-spectrum antibiotics. Older adults are particularly susceptible to this potentially deadly disease and at higher risk of recurrence.

Methods. The study was approved by the hospital's IRB. Patients 65 years of age and older with refractory or recurrent CDI who received FMT administered via colonoscopy or oral capsules were included. Patients with severe-complicated infection were excluded and ineligible to receive FMT. Each patient was evaluated 8 weeks post-transplant to assess for sustained clinical response and adverse events. Data collection included patient demographics, number of recurrent CDI episodes, CDI severity, previous antibiotic treatment regimens, clinical cure, adverse events, and donor information.

Results. Thirty-five patients were enrolled (23 colonoscopy FMT vs. 13 oral capsule FMT). One patient received FMT via colonoscopy twice. Mean age was 77 years [65–93], female 60%, median recurrent episode was 3, and median CDI severity score was 2. Total success rate was 69.4% (25/36), 60.9% (14/23) via colonoscopy vs. 84.6% (11/13) via capsule. Total success rate for female 67% vs. 73% male and age group of 65–75 was 60% vs. 76% in age group 75+. For capsules only, cure rate was 80% in female vs. 100% in male and 75% in 65–75 age group vs. 89% in patients older than 75 while in colonoscopy only group, success rate was 55% in female vs. 67% in males and 46% in 65–75 age group vs. 67% in age group 75+. There did not seem to be a correlation between FMT donor and success rate. No serious adverse events were reported in the study population.

Conclusion. FMT may be considered a potentially useful therapy for the treatment of refractory or recurrent CDI cases in patients 65 years of age and older. Further studies are needed to confirm the above findings.



Older adults are particularly susceptible to this potentially deadly disease

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1123. Individual and Household Risk Factors for Symptomatic Cholera Infection: A Systematic Review and Meta-Analysis

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Background. Cholera has caused seven global pandemics, including the current one which has been ongoing since 1961. A systematic review of risk factors for symptomatic cholera infection has not been previously published.

Methods. In accordance with PRISMA guidelines, we performed a systematic review and meta-analysis of individual and household risk factors for symptomatic cholera infection.

Results. We identified 110 studies eligible for inclusion in qualitative synthesis. Factors associated with symptomatic cholera that were eligible for meta-analysis included education less than secondary level (summary OR 2.64, 95% CI 1.41–4.92, $I^2 = 8\%$), unimproved water source (summary OR 4.78, 95% CI 3.02–7.57, $I^2 = 49\%$), open container water storage (summary OR 2.51, 95% CI 1.57–4.01, $I^2 = 33\%$), consumption of food outside the home (summary OR 5.02, 95% CI 2.34–10.76, $I^2 = 61\%$), household contact with cholera (summary OR 3.99, 95% CI 2.03–7.87, $I^2 = 89\%$), water treatment (summary OR 0.22, 95% CI 0.13–0.36, $I^2 = 37\%$), and handwashing (summary OR 0.17, 95% CI 0.10–0.30, $I^2 = 37\%$). Other notable associations with symptomatic infection included income/wealth, blood group, gastric acidity, infant breastfeeding status, and HIV infection.

Conclusion. We identified potential risk factors for symptomatic cholera infection including environmental characteristics, socioeconomic factors, and intrinsic patient factors. Ultimately, a combination of interventional approaches targeting various groups with risk-adapted intensities may prove to be the optimal strategy for cholera control.

Disclosures. **All authors:** No reported disclosures.