Analyzing the prevalence and transmission of *Cyclospora cayetanensis* in the Southwestern United States and Mexico

Miely Suarez, Cesily Cirerol, Dominic Rodriguez, Khai Truong, Maria Acosta-Perez, Janell Kartoz, Elissa Arvisu, Dr. Gerardo U. Lopez

Introduction *Cyclospora cayetanensis* is a protozoan, coccidian parasite that causes cyclosporiasis, an intestinal disease in humans. Cyclosporiasis presents as severe, protracted diarrhea, and may be life-threatening for immunocompromised individuals if left untreated. Infection occurs in people of any age with a high prevalence in individuals who frequently travel to endemic areas.

Purpose While *C. cayetanesis* was first characterized in the early 1900s, it was not until a recent outbreak in the United States in 1995 that further investigation of *C. cayetanensis* was prompted. We hope to contribute information to the knowledge gap about the life cycle and prevalence of *C. cayetanensis.*

Methods Although transmission route is currently unknown, person-to-person transmission is highly unlikely as *C. cayetanensis* excreted oocysts must sporulate in 1-14 days before becoming infectious; most likely transmission is through human consumption of food and water contaminated with sporulated oocysts. A total of 301 environmental samples were collected from Mexico (203) and Arizona (98) and are in the process of being analyzed using the Bacteriological Analytical Manual (BAM) 19C for the presence of *C. cayetanesis*, with real-time polymerase chain reactions (PCR) to target the *C. cayetanensis* 18s rRNA gene.

Results We are currently in the process of analyzing the 301 samples collected from Mexico and the southeast coast region of the United States. Analysis will cover 8 markers identified by the Centers for Disease Control and Prevention (CDC) and an additional marker identified by the Food and Drug Administration (FDA). After having recently processed samples through flow cytometry, we expect to promptly draw results using genomic downstream sequencing.

Significance Through our research, we expect to discover more about the prevalence and transmission of this parasite to contribute to the knowledge of the life cycle of *Cyclospora cayetanensis*, adding to the field of microbial food safety and public health.