

Validation of Salivary Immunoassays for Waterborne Infections

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Assessments of the health outcomes associated with exposure to fecally-contaminated water and inadequate sanitation and hygiene (WASH) currently rely upon self-reported symptoms and invasive collection of blood and stool samples. However, these methods are limited in their ability to accurately quantify disease prevalence in large populations. There is a need for simple, inexpensive, and convenient approaches to objectively assess the benefits of WASH-associated interventions.

Saliva is a promising diagnostic medium that is collected easily and non-invasively, requires minimal processing, and can withstand ambient conditions for several days. Salivary immunoassays have been developed to diagnose several infections, though few of these are WASH-associated. We are developing salivary immunoassays for three chronic WASH-associated infections: *Toxoplasma gondii*, *Helicobacter pylori*, and *Toxocara* spp. Global prevalence for each of these infections is greater than 40%, though most of these infections are subclinical. However, in rare cases, the clinical manifestations of these diseases can be severe and may include ocular or organ damage, mental illness, disorders of the central nervous system, or cancer. These infections have increased prevalence in impoverished areas with inadequate sanitation, with evidence that these infections can be transmitted in water. In this poster, we present preliminary results of studies designed to validate the salivary immunoassays for *T. gondii*, *H. pylori*, and *Toxocara* spp. with reference to "gold standard" serum-based diagnostic tests. Paired serum and saliva samples are collected from diseased and non-diseased individuals, and sensitivity and specificity of the salivary assays will be calculated with reference to the serum results. Additionally, subjects complete a brief questionnaire about exposures and symptoms, and questionnaire data will be related to results of the salivary and serum immunoassays. We have collected samples from 162 community-based volunteers with increased exposures to the pathogens of interest through frequent animal contacts. We intend to collect at least 600 paired serum and saliva samples for the validation tests. Following validation, these salivary immunoassays will be used to estimate the prevalence of waterborne transmission of *T. gondii*, *H. pylori*, and *Toxocara* spp.

This abstract does not reflect EPA policy.