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COVID-19 Research Released at ASTMH Annual Meeting

New Studies Probe Puzzling COVID-19 Impacts in Africa: In Mali, 60 Percent Infection Rates But Low Disease Burden; In Uganda, Evidence of Protection from Malaria

Experts also find severe disease in Native Americans who are not high-risk; probe easy spread in U.S. military bases in Afghanistan; and use wastewater analysis in Nicaragua & Ghana to detect outbreaks

Arlington, Va. (November 19, 2021) — Below is a rundown of several COVID-19 research releases presented this week at the Annual Meeting of the American Society of Tropical Medicine and Hygiene (ASTMH).

In Mali, New Data Show High Rates of Infections, Low Burden of Disease
A new study found high rates of SARS-COV-2 infections in Mali but far less evidence of severe disease, hospitalization or deaths compared to populations in the United States that have experienced similar levels of infection. Scientists from the U.S. National Institute of Allergy and Infectious Diseases (NIAID) and their colleagues at the Malaria Research Training Center in Bamako, Mali, are measuring the burden of COVID-19 in Mali as health officials there seek to balance resources allotted to pandemic interventions with those needed to combat malaria, which is endemic to the region. They screened almost 2,700 people in urban and rural areas for evidence of SARS-COV-2 antibodies. They found about 60% had been previously infected, with rates higher in some areas.

Yet further screening found that there was no difference in respiratory or gastrointestinal symptoms reported by people who had been infected versus those who had not. Meanwhile, hospitalizations were the same—three in each group.

"This is just not the level of symptoms, complications, hospitalization and deaths you see in a population in the United States that has experienced such a high rate of exposure," said John

Woodford, MD, a malaria researcher at NIAID. “Like the rest of sub-Saharan Africa, the population of Mali is relatively young. But this comparatively low burden of COVID-19 disease remained unchanged even when we adjusted for age.”

Woodford said the researchers found no evidence to suggest infected people were protected by a pre-pandemic exposure to a different type of coronavirus. He said there is some speculation that routine exposure to malaria and other diseases common in Mali “trains” the immune system to refrain from overreacting to a SARS-COV-2 infection, as inflammatory reactions are a significant cause of COVID-19 complications and deaths.

In Uganda, High Exposure to Malaria Linked to Lower Risks from COVID-19

In a potentially related study, researchers working in Uganda found COVID-19 patients with high rates of exposure to malaria were less likely to suffer severe disease or death than patients with low exposures.

“We went into this project thinking we would see a higher rate of negative outcomes in people with a history of malaria infections because that’s what was seen in patients co-infected with malaria and Ebola,” said Jane Achan, PhD, Senior Research Advisor at the Malaria Consortium and a co-author of the study. “We were actually quite surprised to see the opposite—that malaria may have a protective effect.”

She said that an assessment of 597 hospitalized COVID-19 patients found only 5% of patients with high levels of previous malaria infections suffered severe or critical outcomes, compared with 30% for patients with relatively low levels of malaria exposure.

Severe and deadly COVID-19 infections are often associated with a surge of inflammatory proteins called cytokines—sometimes called a “cytokine storm.” In the Ugandan study, COVID-19 patients with a history of malaria infections maintained normal levels of cytokines. Achan said a “blunting of cytokine response” has been known to occur in older children and adults living in areas of Africa with high rates of malaria. She said a potential protective effect from malaria infections could help explain why the pandemic has thus far not produced the high levels of deaths many feared would occur in Africa.

Risk Factors Can’t Explain Worse COVID-19 Outcomes for Native Americans

At the other end of the spectrum, researchers in New Mexico found American Indian/Alaska Native patients hospitalized with COVID-19 suffered more severe disease outcomes even though they had either the same or fewer risk factors, like high body-mass index (BMI) or respiratory disease, than Hispanic and White patients. An analysis of some 332 COVID-19 patients by researchers at the Center for Global Health at the University of New Mexico School of Medicine found that deaths, admissions to the intensive care unit (ICU), oxygen requirements and hospitalization times—all were greater for the American Indian/Alaska Native patients.

A second study from the same team found evidence of elevated viral loads in these patients compared to those from other ethnic groups. Douglas Perkins, PhD, director of the Center for Global Health, said future work will focus on defining the basis of the higher viral loads in order to design more effective interventions for this long-underserved patient population.

In other COVID-19 pandemic related research presented at TropMed:

At U.S. Military Bases in Afghanistan, Virus Easily Evaded Containment: Researchers from the Walter Reed Army Institute of Research (WRAIR) presented new evidence showing that in the spring of 2021 there were 16 separate introductions of COVID-19 involving Alpha and Delta variants at four relatively isolated and "rigorously controlled" U.S. military bases—further demonstrating the difficulty of containing the SARS-COV-2 virus. Genomic analysis from 122 samples collected from military personnel found no evidence linking the outbreaks to strains known to be present in Afghanistan or neighboring countries.

Wastewater: A Low-Cost Option for COVID-19 Surveillance: Researchers working in Ghana and Nicaragua presented new evidence of the efficacy of regular wastewater testing as an inexpensive way to detect early signs of an impending surge of infections. Experts from Ghana's Water Research Institute and Atlanta's Emory University isolated SARS-COV-2 RNA from public toilet systems in the Accra region at levels that corresponded with the trend in reported COVID-19 cases around the study sites. In a related presentation, researchers from the National Autonomous University in Nicaragua discussed their work to deploy a testing method at sewage treatment plants that can reveal early signs of community outbreaks.

"It is inspiring to see our researchers digging deep into so many different aspects of the pandemic," said ASTMH President Julie Jacobson, MD, DTM&H. "All of these findings have immediate implications for the global fight against this complex virus and how we do our work in the future."

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The American Society of Tropical Medicine and Hygiene, founded in 1903, is the largest international scientific organization of experts dedicated to reducing the worldwide burden of tropical infectious diseases and improving global health. It accomplishes this through generating and sharing scientific evidence, informing health policies and practices, fostering career development, recognizing excellence, and advocating for investment in tropical medicine/global health research. For more information, visit astmh.org.