Tulane University researcher awarded $4.1 million to study impact of malaria, HIV co-infection in pregnant women

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Jennifer Manuzak, an assistant professor of microbiology and immunology at the Tulane National Primate Research Center, has been awarded a five-year, $4.1 million grant to identify key factors that drive poor maternal and fetal outcomes for women living with HIV who become infected with malaria during pregnancy. (Photo by Robin Rodriguez)

More than 38 million people worldwide currently live with HIV and among them are women who become infected with malaria during pregnancy. These women and their fetuses tend to have very poor health outcomes, but the specific mechanism for how these two diseases interact — particularly during the unique state of pregnancy — has not yet been studied or understood.

Jennifer Manuzak, an assistant professor of microbiology and immunology at the Tulane National Primate Research Center, has been awarded a five-year, $4.1 million grant from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development to identify key factors that drive poor maternal and fetal outcomes for women living with HIV who become infected with malaria during pregnancy. Understanding how these two infections interact with each other for women already on antiretroviral therapy (ART), the drugs used to manage HIV, is the first step in developing new treatments for this particularly vulnerable population of pregnant women.

Women living with HIV who manage their infection with antiretroviral therapy often lead long lives and enjoy healthy pregnancies. But globally, the places that experience the highest rates of HIV also suffer from endemic malaria, leaving many women and their unborn babies vulnerable. Researchers know relatively little about the impacts of co-infection and current treatments available to help prevent malaria in pregnancy have limited success in women with HIV.

Manuzak is particularly interested in investigating immune layers that act as an interface between the external and internal world. In pregnancy, the decidual lining of the placenta serves as the maternal side of this maternal-fetal interface and Manuzak seeks to understand how the inflammation and activation of immune cells in this tissue during co-infection contribute to poor maternal and fetal outcomes including low birth weight, still birth, preterm delivery and death.

“I’m interested in understanding how atypical immune responses in the decidua could be contributing to significantly higher rates of disease and death among HIV and malaria co-infected mothers and their unborn babies,” Manuzak said. “My hope that this will eventually lead to effective preventatives and treatments in areas where these diseases overlap.”

Manuzak’s team will simulate HIV and malaria co-infection in pregnant women on ART using a nonhuman primate model of disease whose gestation, immunology and

physiology closely mimics that of humans.

The Eunice Kennedy Shriver National Institute of Child Health and Human Development seeks to reduce the burden of malaria infection in vulnerable women living with HIV, particularly in resource-limited countries where prevention of those diseases is particularly difficult.