

Strong maternal antibodies for HIV ineffective for protecting infants from HIV

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HIV+ mothers who possess a strong neutralizing antibody response may be more likely to pass the virus on to her infant through breast feeding. In addition, infants born to mothers with a strong antibody response are significantly more likely to have a serious illness or death, regardless of whether or not they acquire the virus.

The study, published in the journal *mBio*, appears to question conventional wisdom that passive immunization with neutralizing [antibodies](#) (nAbs) may help prevent HIV transmission from mother to child.

A significant number of [infants](#) acquire HIV-1 through their infected mother's [breast milk](#).

Researchers compared plasma antibodies from Malawian mother-infant pairs who transmitted HIV-1 subtype C through breastfeeding and those that did not. The two groups were matched on timing of blood sample collection after birth to ensure mothers exclusively breastfed for the same amount of time in both groups. The groups also were matched on maternal viral load and CD4 T cell counts (which are clinical factors known to effect transmission). Importantly, pre-existing plasma antibodies were sampled prior to the time of estimated transmission which is most analogous to examining the efficacy of envisioned vaccine and passive immunization strategies.

"We found that infants who escaped infection did not possess antibodies that were more effective at neutralizing a global panel of viruses or their maternal variants compared to infants that acquired HIV. Importantly, we did find that mothers who transmitted the [virus](#) to their infant were significantly more likely to have a broad and potent neutralizing antibody response and possibly a stronger response against their own virus. In addition, infants born to [mothers](#) with a broad and potent antibody [response](#) were more than three times as likely to have serious illness or death post-

partum," explained corresponding author Manish Sagar, MD, associate professor of medicine at Boston University School of Medicine (BUSM).

According to the researchers this study is important because despite the effectiveness of anti-retrovirals, 160,000 infants were infected with HIV from their mother in 2016. "Currently, there is a lot of focus on the use of antibodies transferred passively or through a vaccine to prevent infection in infants, however this study cautions against that and suggests that broadly neutralizing antibodies may actually aid in enhancing transmission from mother to child," added Sagar, an attending physician in infectious diseases at Boston Medical Center.

The researchers hope these findings will elicit a sense of caution in future HIV clinical trials set out to use antibodies for prevention, especially in the mother-to-child setting. "This study finds that not only are antibodies not effective at preventing transmission they may adversely influence both frequency of breast milk [transmission](#) and subsequent infant morbidity.

Provided by Boston University School of Medicine

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