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NEWS

Researchers announce first correlates of protection for HIV vaccine

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Researchers have identified the first correlates of protection (measurable signs of immunity) of a vaccine intended to protect against HIV infection. This gives further direction to how a useful vaccine might be developed. The announcement came on 13 September at the AIDS Vaccine Conference in Bangkok, Thailand.

HIV vaccine research began in 1984 when the virus was first identified as the cause of the new AIDS epidemic. After 25 years and continuously dashed hopes, many scientists were surprised to learn in 2009 that the RV144 clinical trial conducted in Thailand showed a modest 31% protection.

"What we now have is clues to why it might have worked. That is something we haven't had over the past 30 years," said Barton Haynes, the Duke University researcher who led the two year effort to uncover those clues.

The collaborative international research team conducted 30 additional tests on stored blood samples drawn from 16 000 participants in the RV144 trial in its search for answers.

One key scientific finding is that "antibodies specific to the V2 region [of the outer coating of the virus] correlated with the lowest infection rates among those who were vaccinated," he said.

When asked if he was surprised to have found correlates of protection, Haynes replied simply: "Yes."

Jerome Kim, a US Army researcher involved with the Thai vaccine trial, cautioned that the correlates they have identified might only apply to this particular vaccine when used against the strain of HIV common in Thailand.

HIV is a diverse virus and mutates rapidly. A handful of major clades or strains of HIV exist, plus different hybrid combinations of those clades, and up to 30% variability in the genetic sequence within a particular clade.

And other vaccine constructs might stimulate production of different antibodies that target other portions of the virus, and hence other correlates of protection that are specific to that vaccine.

The company Sanofi Pasteur developed the pox vector component of the vaccine used in the RV144 Thai trial. Sanjay Gurunathan told the conference that his company is moving forward in collaboration with other partners—including the Bill and Melinda Gates Foundation, and US, Thai, and South African government agencies—to conduct additional trials building on this information.

He noted that protection was as high as 60% in the Thai trial at one year, but it quickly declined. One option is to tinker with the immunogens used in the series of vaccinations to get a stronger, more sustained antibody response. Another option might be to use a different adjuvant. Researchers are still studying new information to better shape additional trials.

Dr Gurunathan said the collaboration partners are planning trials of regional vaccine candidates in Thailand in high risk populations such as men who have sex with men and female sex workers, and in South Africa in high risk heterosexuals.

Modelling has shown that a vaccine with 50% efficacy, administered to 30% or 60% of the highest risk populations, could have a significant public health impact. It could reduce the number of new infections by 5-15% over 10 years and be cost effective.

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