HIV Therapeutic Vaccine Developer Reports Encouraging Results

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Vacc-4x, an experimental therapeutic HIV vaccine, helps reduce viral load among people living with HIV remaining off antiretroviral (ARV) therapy for six months, compared with those who didn't receive the vaccine, according to preliminary results from a clinical trial highlighted in a news announcement by the compound's developer Bionor Pharma.

"Final review of Phase IIb data confirms statistically significant 64 percent reduction of viral load set point"—the average of the last two viral load measurements before the end of the study—"in patients receiving Vacc-4x compared to those given placebo, indicating a possible new option for patients and doctors," Bionor writes. "The HIV viral load set point in patients given Vacc-4x was 60 percent lower than [pre-HIV treatment levels]. In the placebo group, no change compared to pre-[ARV levels] was observed."

Therapeutic vaccines have long been eyed as a valuable contribution to the HIV treatment tool chest. Therapeutic vaccines—few of which have made it into advanced clinical trials—may have the potential to "functionally" cure HIV. By training the immune system to more effectively respond to the virus, it may be possible to push viral loads down to very low levels, thereby reducing the risk of health complications and slowing the ongoing spread of the virus while also reducing the need for daily medications.

The new study results reported by Bionor—which still need to be published in a peer-reviewed medical journal—suggest that it may in fact be possible to teach the immune system to at least partially control HIV replication in some people living with the virus.

Bionor's study enrolled 136 people living with HIV who were receiving ARV therapy and who had undetectable viral loads for at least six months and a pretrial CD4 count no less than 400.

During the first 18 weeks of the study, 88 participants received six doses of Vacc-4x and 38 received placebos—in addition to their prescribed ARV regimens. Then ARV therapy alone was continued for another 10 weeks. At the beginning of week 28, provided that study volunteers had CD4 counts above 350, all HIV meds were discontinued. And as long as a patient's CD4 count didn't fall below 350 or drop 50 percent or more, he or she remained off treatment through the final 52nd week of the study and into an extended follow-up period lasting another year.

A primary goal of the study was to compare the time ARV treatment needed to be resumed between the two study groups. Here, according to preliminary data reported at the AIDS Vaccine 2011 conference in Bangkok in September, no significant difference was reported. Across the board, when looking at all people in the study, those using placebo were no more likely to require resuming therapy, compared with those in the Vacc-4x group, between weeks 28 and 52. The majority of patients in both groups were able to remain off treatment for roughly six months.

A second goal of the study was to look at viral load levels among those who actually made it through week 52 without having to restart ARV treatment. Among the 56 patients in the Vacc-4x group who met this qualification, the average viral load at week 52 was 22,300 copies. Among the 25 patients in the placebo group who didn't need to restart therapy, the average viral load at week 52 was 61,900 copies. This difference between the two groups was statistically significant, meaning it was too great to have occurred by chance.

Also highlighted in the Bionor announcement was a comparison involving only those who hadn't yet started ARV therapy at the time of joining the study and, thus, had detectable viral loads. The 18 placebo recipients who met this qualification had no statistically significant difference between pre-ARV therapy viral load (52,731 copies) and the viral load set point at the completion of the study (50,400 copies). In contrast, the 45 patients in Vacc-4x group who qualified for the comparison had an average pre-ARV therapy viral load of 60,470 copies, compared with 24,150 copies at study completion—a statistically significant reduction of 60 percent.

Bionor says it plans to build upon these findings with additional studies. For example, the company plans to re-vaccinate Vacc-4x recipients to see if the viral set point can be reduced even further. "Such an approach may eventually form a functional cure," the company notes, "meaning that HIV viral load is gradually reduced to lower levels following successive [antiretroviral treatment]-free periods."

The company is also planning to combine Vacc-4x with another of its vaccine candidates, Vacc-C5. "Vacc-C5 is designed to induce antibodies to HIV that can reduce HIV associated immune hyperactivation, which leads to AIDS," Bionor explains. "Preclinical studies have shown that Vacc-C5 successfully induced antibodies against HIV in animal models such as rabbits and sheep."

Bionor plans to begin the first human study of Vacc-C5 this spring. Using both vaccine candidates together, the company theorizes, "can potentially revolutionize the management of HIV infections and could form the basis for both a therapeutic and a [preventive] vaccine."
