Research Update: What ever happened to the Thai HIV vaccine?

By James Wilton

In 2009, it was announced that the first successful HIV vaccine, the Thai vaccine, had been identified. At the time, this news was greeted with both excitement and skepticism, but we haven’t heard much about it since. What happened to the vaccine? Why isn’t it available? Will it ever be?

Revisiting the RV144 vaccine

The HIV vaccine known as the RV144 vaccine or “Thai vaccine” was found to moderately reduce the risk of HIV infection among heterosexual men and women in Thailand. The Thai vaccine wasn’t a simple one-shot injection; it included two different vaccines and required participants to receive six injections over a period of six months.

The three-year study to test the vaccine found that after one year, there were an impressive 60% fewer infections among those who received the vaccine compared to those who received a placebo. But this 60% decreased to 31% by the end of the study. So, overall, there were only 31% fewer infections among participants who received the vaccine.

Read the CATIE News story on this study

Although the news was exciting for some people working in the field of HIV prevention, many experts questioned the results and whether the lower number of HIV infections among the vaccine recipients was a result of the vaccine or simply due to chance. There were also questions about whether the protection that the vaccine offered was high enough to justify making it available.

Recent research advancements have helped answer these questions and provide direction for the future of the Thai vaccine and, indeed, for the field of HIV vaccine research.

Did the vaccine work?

Since the results were published, vaccine researchers have been trying to figure out if the vaccine worked by looking more closely at how the vaccine may have prevented HIV infection in some vaccine recipients.

At the September 2011 AIDS Vaccine Conference, researchers announced they had found an antibody produced by the immune system of some Thai vaccine recipients, which may have protected them from HIV infection. Those who received the vaccine and produced this specific antibody were 43% less likely to become infected with HIV than those vaccine recipients whose immune system did not produce this antibody.

This finding is exciting because it suggests that the Thai vaccine may indeed have reduced the risk of HIV infection. Researchers are continuing to look for other immune responses that may have protected vaccine recipients from becoming infected.
Should the vaccine be made widely available in Canada?

The Thai vaccine trial has raised important questions about how much protection a new vaccine should provide in order to be approved and made available. Although the vaccine only provides a low level of protection to an individual, recent studies suggest that it could prevent a small but significant number of HIV infections if enough people in a population or country were vaccinated.\(^6\ 7\ 8\ 9\ 10\ 11\ 12\)

Still, there is a general consensus that 31% protection is too low. The low level of protection raises questions about the cost-effectiveness of the vaccine and concerns that people may gain a false sense of security after being vaccinated and participate in more risky behaviours as a result. Modelling studies suggest that if a vaccine that offered a low level of protection was made widely available, increases in risk behaviours could potentially lead to more HIV infections instead of fewer.

Furthermore, there is still much we don’t know about the vaccine. We don’t know if the Thai vaccine can reduce the risk of HIV infection among populations that were not included in the trial, such as men who have sex with men and people who use injection drugs. Since many of the new HIV infections that occur each year in Canada are among these groups, it is difficult to predict the impact of the vaccine on the epidemic in Canada. We also do not know how many people would want to get a vaccine that is only moderately effective and requires several injections over a six-month period.

Until we know more about the Thai vaccine, it is unlikely that the vaccine will be made available in Canada.

The way forward

Additional studies of the Thai vaccine are planned. Researchers are investigating whether giving additional shots, after the initial six-month vaccine regimen, can boost the immune system and prevent the level of protection from decreasing over time. If the extra booster shots can maintain the level of protection at around 60%, there may be a stronger case for making the vaccine widely available. Additional studies will also enroll men who have sex with men to determine if the vaccine can provide protection against transmission through anal sex.

Other possible HIV vaccines are also being studied. Currently, only one large trial is ongoing. This vaccine is different from the Thai vaccine and is being evaluated in the United States among 2,200 men who have sex with men, and trans women who have sex with men. Results are expected in 2013. Several vaccine candidates are also in earlier stages of development; however, these may not proceed to larger trials for several years.

References

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