

CAN MOSQUITOES TRANSMIT HIV? NO!

Our staff is often asked whether mosquitoes can transmit human immunodeficiency virus (HIV), the agent that causes acquired immunodeficiency syndrome (AIDS). The answer is an emphatic NO!

An article in *Wing Beats* (Dr. Wayne J. Crans, Spring 1994), a publication of the American Mosquito Control Association, lists three theoretical ways that a mosquito could transmit HIV, and the reasons why these scenarios cannot occur. The following is a summary of the article explaining these possible mechanisms.

MECHANISM 1

A mosquito obtains blood from an HIV-infected human. The virus multiplies in the mosquito, and reaches the salivary glands. The mosquito transmits the virus when she injects saliva during subsequent feedings.

This is how most mosquito-borne infections are transmitted. Studies have clearly shown that **HIV in blood is digested by the mosquito, and thus does not survive to reach the salivary glands. This means that HIV cannot be transmitted by feeding mosquitoes.**

MECHANISM 2

A mosquito begins feeding on an HIV-infected human, but is interrupted. The mosquito then feeds on an uninfected human, and transmits the virus with its contaminated mouthparts.

Mosquito-borne diseases are rarely transmitted this way. Agents that are transmitted by contaminated mouthparts must be present at very high levels in the bloodstream of their host. The amount of HIV in the bloodstream of an infected human is well below that of any known mosquito-borne disease. An uninfected human needs to be bitten by 10 million mosquitoes that were interrupted while feeding on an HIV-infected individual in order to receive one unit of HIV.

MECHANISM 3

A mosquito begins feeding on an HIV-infected human, but is interrupted. The mosquito then feeds on an uninfected human, but is crushed, and HIV-contaminated blood is smeared into the wound.

The argument against Mechanism 2 also applies here. There is still not enough HIV in the meal of blood from a fully engorged mosquito to infect a human.

Lastly, mosquitoes are not flying syringes. Unlike the single channel of a hypodermic needle, their proboscis is a complex structure, where blood is ingested through one tube and saliva that prevents clotting is excreted through another. Thus, blood is always taken in, and never put back!

As can be seen from above, **mosquitoes cannot transmit HIV!** If you have any further questions regarding HIV transmission by mosquitoes, please call the District office at the telephone numbers listed below.



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