Zika Caught From a Blood Transfusion: What That Means

By Josh Bloom — February 4, 2016

In the latest Zika news [1], someone in Brazil caught Zika from the infected blood. While it would be far bigger news if someone who received infected blood did not come down with the virus, it is still a worry for the public. So I will explain what is happening.

Zika, like many other pathogens, is blood borne transmitted via infected blood. So it's reasonable to assume that you're going to get it from a transfusion, when you're getting a pint or more of blood. Compare that to the amount you might get from mosquito.

So the transfusion part is news, but it also brings up two real issues, and they are more important and the solutions are less obvious. Both have to do with exactly how easy it is to become infected, and what could be done to prevent it. There is also an unanswered question that may be even more interesting.

1. Many diseases are spread by mosquitoes. Some are West Nile, malaria, yellow fever, Eastern Equine Encephalitis, Dengue fever, Chikungunya, many more. If a pathogen is capable of infecting a person or animal by a tiny bite, it's a pretty good bet that a pint of blood is going to do the job quite well.

2. But, there are blood borne infections which are not transmitted in this way, and for this we are very fortunate. One is HIV. Can you imagine? Would there even be anyone left? But, HIV does not survive long outside the blood, and is not terribly infectious. Otherwise, AIDS drugs, which cut HIV loads to levels that can’t be measured (BQL), would not prevent the spread of the virus. But they do. Sometimes by 100 percent [2]. The number of HIV particles in BQL patients is low, but it is not zero, yet sexually-transmitted infection can be largely prevented. Hepatitis C is also blood borne, but is also not transmitted by insect bites, which is quite fortunate, since there are already 170 million people in the world who are infected.

3. What about a screen to prevent Zika transmission? This shouldn't be too bad. Hepatitis C was discovered in 1989, and by 1990 there was a screen. HIV was more difficult, since it was first identified 1981, and the first screen was not approved until 1985. Keep in mind that the advances in molecular biology between 1985 and 1990 were significant. In fact, much of
the pharmacological battle against hepatitis C was based on previous HIV research.

There is still much to be learned, but it is likely the transfusion issue will vanish before too long. But, key questions remain unanswered: Will the infection spread northward? And, if so, will it be by the *Aedes aegypti* mosquito, which transmits Zika and yellow fever, or will other common species like *Culex*, which is endemic to the Northeast be carriers of the disease.

So much to learn. So many questions. Stay tuned.

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