

## **Who's the Smartest of Them All?**

By John Upledger, DO, OMM

In 1960, my mentor, Stacy F. Howell, said to me, "Upledger, I don't know why we're so worried about the Communists. It's the viruses that are going to get us." Dr. Howell, a biochemist and 1937 Nobel laureate runner-up, was referring to the overuse of antibiotics that began in the 1940s and escalated in the 1950s.

How would this make viruses a more significant problem? In our view (I soon shared his perspective) a natural balance exists between bacteria and viruses. Viruses need bacteria to reproduce, and bacteria keep viruses under control. When a virus is through with bacteria, the bacterial cell simply dies. Nature has set up a system that prevents bacteria and viruses from overrunning each other.

The problem is, antibiotics kill bacteria, but not viruses. We'd gone on a "kill the bacteria" campaign that was irrational and out of control. Doctors gave antibiotics to almost every patient with a cold or sore throat, and they were freely used to prevent other infections. This abuse has only just begun to slow down today.

Let's look at this from the viral point of view. The virus uses bacteria as a host in which to reproduce, because it's not equipped to do so on its own - viruses usually contain only DNA molecules (though a few have only RNA).

DNA carries biological information. It determines, for example, the color of your eyes; how smart you'll be; what you'll like or dislike; even whether you'll be a nice person. The virus is mainly a sac full of information. Since other cells contain different things, it seems reasonable to say that, pound for pound, viruses are actually smarter.

The virus enters your body, perhaps through your lungs, skin or mucus membranes, then travels around your blood stream until it finds a cell to fool. Your cells are surrounded by membranes penetrated by channels that select protein molecules from your blood and intercellular fluids, to be used as building supplies. The

virus somehow discovers what a given channel will accept, then imitates that molecule.

When successful, the channel opens and admits the viral molecules. It then transports the viral DNA or RNA to the host cell nucleus, where the viral DNA immediately combines with the host DNA and modifies it to suit its purpose.

Once in the host cell, a virus can quietly exist for as long as seven years, according to some estimates. When the virus decides to activate, the cell releases new viruses into the fluids and bloodstream, often at a rate of up to 500,000 per minute. Is it any wonder patients can get sick so quickly?

When we started our antibiotic rampage years ago, we began killing bacteria by the trillions. The viruses undoubtedly noticed a shortening supply of cell hosts and adapted to the changing conditions. Soon we saw colds and flus become more severe when antibiotics were used, probably because the viruses were forced to invade more human cells. In the past few decades, we've seen an even wider array of viral diseases -- consider not only HIV and AIDS, but the tenacity of herpes and the rapid-acting, deadly Ebola virus.

There's little we can do pharmacologically. Vaccines have some use, but their focus is narrow and viruses can quickly outwit them. Witness the variable success of flu vaccines. Each year the virus changes just enough to require a new formulation. So any victories we achieve using chemical agents will probably be short-lived.

This whole picture may seem depressing. It appears humans have little hope if viruses decide to take over the world. Yet my real encouragement comes from the intelligence of the human immune system, where the "use it or lose it" rule applies.

Our immune system can miraculously improvise and adapt, learning to resist bacterial and viral disease-producing organisms. But if everything is done for the immune system, as in the use of antibiotics or vaccines, we'll never achieve our full potential. We need to be exposed, in moderation, to a wide variety of antigens that stimulate immune responses, rather than relying on external medicines to cure us.

An effective immune system requires exercise; plenty of rest; healthy habits; good nutrition; only reasonable amounts of stress; and a happy emotional and spiritual. The immune system even responds to your thoughts -- if you think you'll get sick, you probably will. However, if you sincerely ask your immune system for help, and express faith and gratitude for its assistance, it will do its best to perform more effectively.

Viruses are smart, but you can help defeat them with an energetic, well-exercised immune system.

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