Dear NY Post, Bacteria and Viruses are Two (Very) Different Things

By Julianna LeMieux — May 12, 2018

As a microbiologist, I have a pet peeve; when the words bacteria and virus are used interchangeably. It is not an infrequent mistake to see. And, a story this week in the New York Post is no exception.

In an article entitled, "Mom dies after catching flesh-eating bacteria on family vacation," the tragic story of a woman who contracted (and subsequently died from) an infection is described. The article starts with an introduction to a flesh-eating bacteria in the first line followed by the word virus in the third sentence.

An Indiana family’s vacation to Florida reportedly left a mom with a deadly flesh-eating bacteria.

Carol Martin, 50, died Saturday, nearly two months after returning from Clearwater, Fla., with an infection known as necrotizing fasciitis, news station WRTV reported.

Martin’s family said they believe the virus may have been from a hot tub at the local Days Inn hotel.
They then refer to bacteria later in the story, followed again, with the line,

An autopsy was ordered to officially determine whether the virus caused her death.

The words bacteria and virus are used interchangeably in this article. But, those two microbes are not the same - far from it. They are both microscopic and both can cause infection. But, that is where the similarities end.

So, let's clarify some of the differences here.

The big difference between bacteria and viruses, biologically, is that (most) bacteria can exist on their own. They are cells that replicate, make energy and can survive in many different environments. For the subset of bacteria that happen to infect us, they thrive in the warm temperature of our internal body temperature. They cause infections in multiple different ways, including producing and secreting toxins like the cause of cholera (Vibrio cholerae) and whooping cough (Bordetella pertussis) or just invading the wrong area at the wrong time like Strep throat (Streptococcus pyogenes).

In contrast, viruses are not cells. In fact, they are not living at all. They are composed of a genome (either DNA or RNA) that is surrounded by proteins (a capsid) and maybe an envelope. They use the cells of our body to replicate and in doing so, can wreak havoc on our bodies.

Clinically, the two can cause infections that look very much the same. In fact, it can be very challenging for a health professional to tell what is the cause of the infection and new tools are in development to try to help differentiate [3] between the two.

It is important to be able to distinguish between the two because the treatment plans for both differ greatly. Rest and liquids are probably good for both. But, antibiotics are only effective against bacteria. Therefore, in order to stem the problem of the overprescription of antibiotics, differentiating an infection caused by a virus from bacteria is very important.

So, if the woman in the article did indeed have necrotizing fasciitis, or a flesh-eating infection, it was caused by bacteria. The word virus should not have been in the article at all. Unless, of course, the NY Post was making it clear that this infection was not caused by a virus. And, although it may seem like a small difference to some people, accuracy in science writing is better for everyone, and especially for this microbiologist's blood pressure.