

Raccoons can catch and spread the flu, researchers say

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The Canadian Press



Raccoons can be infected with both bird and human flu viruses, scientists say. (Phil Coale/Associated Press)

Who knew? Raccoons can catch the flu.

New research shows the pesky critters, called the animal world's "Typhoid Mary" by one of the study's authors, can catch and spread both human and avian strains of influenza.

Lead author Jeffrey Hall isn't suggesting the raccoon you have to shoo away from your garbage bin is likely to infect you with the flu.

But his findings point to the possibility that raccoons play a role in the emergence of new strains of influenza, helping bird viruses adapt to be able to infect mammals. That process, which involves the swapping of genes among viruses, is called reassortment and it is one of the ways a strain capable of causing a flu pandemic could arise.

"I wouldn't be afraid that I would get flu from a raccoon," said Hall, a research virologist with the U.S. Geological Survey National Wildlife Health Center in Madison, Wis.

"No one cares if the raccoon has flu. But the risk is that they're going to generate something that we're not ready for. That's my personal take on the whole issue."

The study will be published in the December issue of the journal *Emerging Infectious Diseases*.

False assumptions

A separate study in the same issue reports that red foxes can be infected with the H5N1 avian flu virus, although the Dutch researchers who did the work did not show that deliberately infected foxes could pass the virus to nearby healthy ones.

But both studies serve as a reminder that there is much left to be learned about how influenza strains evolve, which species are susceptible to them and how viruses designed by nature to infect the guts of water birds evolve to infect the respiratory tracts of horses, dogs, pigs, cats, seals, humans and now clearly some small scavenger mammals.

"We're finding out how little we know about the natural ecology of this virus," said Dr. David Halvorson, a veterinarian and avian flu expert at the University of Minnesota in Minneapolis.

"It makes it fun to see these studies come out. Because it tells you that a lot of our assumptions from 20 years ago are totally false. Or partially false."

In the raccoon study, Hall took blood samples that were gathered from a variety of parts of the U.S. and tested them to see if there was evidence of antibodies to flu.

The blood samples had been gathered for an earlier study designed to see if raccoons were susceptible to West Nile virus. (They were.) Testing showed evidence of previous infection with several avian flu viruses among a percentage of the raccoons, though that percentage ranged from zero in Texas and California to 12.8 per cent in Colorado and 25 per cent in Wyoming.

"I actually was not surprised," Hall admitted. "It turns out raccoons are like the Typhoid Mary of wild animals."

"More diseases have been found in raccoons than pretty much any other wild animals.... You name it, raccoons get it. But they're tough as nails."

So the researchers deliberately tried to infect 12 wild raccoons trapped especially for the experiment. Eight were exposed to an avian virus of the H4N8 subtype — four became infected. Four others were exposed to human H3N2 viruses; all became infected.

Four other animals were housed in cages near those the scientists tried to infect, to see if infected raccoons would spread disease to healthy ones. One of the four was infected, with the avian flu virus.

Testing showed the infected raccoons were shedding flu viruses — meaning they were infected — but the animals showed no signs of being ill. One of the nearby raccoons was infected with the avian virus as well.

The researchers also looked at tissue from the respiratory tract of five adult raccoons that had been euthanized for another study and found they contained receptors — sites to which viruses can attach — for both avian and human flu viruses.

The fact that raccoons can be infected with both bird and human flu viruses suggests in theory they could be infected with both at the same time, giving rise to a hybrid virus new enough to humans to cause widespread disease and even a pandemic, Hall and Halvorson said.

"I think it's extremely interesting. It still doesn't really say that they play a role. But I would say that it certainly is an interesting finding. And it raises possibilities of something that might be going on here," Halvorson said.

Animal 'mixing vessels'

It has long been thought that pigs play the pivotal role in developing hybrid flu viruses. In the language of the flu world, pigs are called "the mixing vessel" for the emergence of reassorted pandemic strains.

But Hall said this work suggests there may be other mixing vessels in the animal kingdom. "It turns out that raccoons are just like pigs in that regard. They have the same receptors as pigs do in terms of avian

and human viruses."

He said more study should be done on raccoons and other types of small-to mid-sized wild mammals — animals like skunks and minks — that potentially have contact with waterfowl or ponds visited by waterfowl to see if they, too, catch flu.

"Clearly the ecology of influenza in the wild, out there in the fields and marshes, is complicated," Hall said.

"And the focus on waterfowl and shore birds as reservoirs is important, but there's another side of the story that I think needs to be examined. Raccoons being a potential mixing vessel just underscores that other species need to be looked at."

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CrackMonkey74 wrote: Posted 2008/11/06

at 1:46 PM ET From the article *"Testing showed evidence of previous infection with several avian flu viruses among a percentage of the raccoons, though that percentage ranged from zero in Texas and California to 12.8 per cent in Colorado and 25 per cent in Wyoming."*

The article doesn't specifically say that Raccoons in the wild were found with human strains (although they were deliberately infected for the experiment). This makes sense because it is fairly easy to imagine that Raccoons scavenging and predating waterfowl could become infected with avian strains but it is difficult to imagine that they would commonly be infected with human strains. I think that this substantially reduces the risk of human/avian influenza chimeras originating from Raccoons, but I could be wrong.

I guess that this reinforces the wisdom of not keeping Raccoons as pets and *never* releasing pets into the wild.

keepcool: *"They used to air drop bait laced with a rabies vaccine to inoculate the foxes, the main carriers of rabies.*

Could this similar process with flu vaccine work with raccoons?"

The rabies program in eastern Ontario is one of the great success stories for the OMNR. Before this program, Eastern Ontario had among the highest densities of rabies in North America. Now that strain is almost extinct here. Unfortunately influenza has a much higher rate of evolution than rabies viruses. Unless a vaccine is developed that is broadly effective against many strains is developed (no success on that front so far) there is no chance of an effective bait program.

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keepcool wrote: Posted 2008/11/06

at 9:39 AM ET They used to air drop bait laced with a rabies vaccine to inoculate the foxes, the main

carriers of rabies.

Could this similar process with flu vaccine work with raccoons?

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cyberclark wrote:Posted 2008/11/05

at 6:47 PM ETTime to teach the kids (and adults) that kissing the wet little noses is really really bad for your health!

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KarenMcKinley wrote:Posted 2008/11/05

at 5:52 PM ETThanks BK Feir. I'll look for it. I wondered where that came from. It should be in the children's section, it would be a great reference. Teach them about real nature instead of sugar-coating it like we have done for decades.

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BKFeir wrote:Posted 2008/11/05

at 2:14 PM ET@KarenMcKinley:

There's a version of that in "There's a Hair in my Dirt: A Worm's Story" by Gary Larson (of The Far Side), who has a long history of work with the humane society as well.

Also included are the girl admiring birdsong, thinking it showed how happy the birds were, when in fact they were threatening each other to stay out of their turf; helping a baby bird back into its nest (where it promptly got thrown back out again); and various other things that demonstrated her complete lack of understanding of how the animal world really worked.

Well worth picking up.

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