

The devastating impact of one mosquito bite

Researcher tries to determine why West Nile hits some so hard

BY SUZANNE MA

For Connie Voynovich, it started with sharp, searing pains through her skull.

"It was almost like a lightning bolt hit my head," she said. "I was in terrible pain. My husband asked, 'Are you okay?' But by then, the pain was gone."

An hour later the pains returned, along with a fever of 39.3 C (102.7 F). She began to vomit, and soon the healthy, active 52-year-old from Welland, Ont., couldn't move her arms and legs. She was rushed to the emergency room at Welland Hospital on Sept. 23, 2005, where doctors ran dozens of tests.

A day and a half later, she slipped into a coma. Feeding tubes were hooked up to her arms, and a breathing tube was pushed down her throat. It took a week for test results to show she had contracted West Nile virus.

West Nile virus, for which there is no vaccine, is carried by mosquitoes. The peak season in Canada is late July and August. About 80 per cent of people who are infected have no symptoms, while 20 per cent complain of fever, muscle ache and rash. Less than 1 per cent of those with symptoms become seriously ill, suffering paralysis, speech difficulty and swelling of the brain.

Last year, there were 236 reported cases of West Nile across Canada. Twelve people died.

The virus can leave some of those infected, such as Ms. Voynovich, on a long road to recovery.

"This has totally devastated my family and my life. It's frustrating when you go from everything to nothing. I'll ask myself why and how. What made it so bad for me but not everyone else?" she said.

That's one of many questions Mark Loeb, an infectious-disease specialist and microbiologist, wants to answer. Since 2003, Dr. Loeb, a professor at Hamilton's McMaster University, has been fol-



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After being infected last year, Connie Voynovich has had a steady recovery, with the help of medical professionals and her husband.

lowing 100 Canadians, including Ms. Voynovich, who contracted West Nile virus.

Dr. Loeb has found that the virus can have devastating, long-term effects on quality of life, mental health, fatigue levels, upper limb movement and neurological functions. "After some people have been infected we're seeing high levels of individuals with functional impairment," he said.

The most severe cases of West Nile result in encephalitis (inflammation of the brain) and meningitis (inflammation of the lining of the

brain and spinal cord), both of which can be fatal. The overall risk of serious health effects increases with age, and people with weaker immune systems are at greater risk.

But the virus can hit anyone. Ms. Voynovich, who was diagnosed with West Nile encephalitis, lived a healthy and active life, taking daily walks, swimming in her backyard pool and riding her bike at least three times a week.

She awoke nine days after falling into a coma, and was shocked to hear the damage wreaked on her body came from the bite of a single

mosquito. She spent eight weeks in the intensive-care unit before moving into a rehab clinic.

"When I got to [rehab], the only thing I could move was my eyes and three fingers on my left hand," Ms. Voynovich said. She had to learn how to walk and talk again.

She was discharged on March 23 of this year but is still unable to walk more than 10 metres. Her voice is scratchy and faint. She cannot move her arms, and her shoulders are stiff. The family purchased a new home so Ms. Voynovich could get around in a wheelchair.

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West Nile virus was first identified in 1937 in Uganda. It spread to parts of the Middle East, Europe and Asia before reaching North America in 1999. The first human cases in Canada were detected in 2002, when 414 people were reported sick, 394 in Ontario. Twenty-two people died.

In 2003, 12 died and the number of human cases detected hit 1,494, with 947 in Saskatchewan alone. In 2004, there were only 26 cases of West Nile across the country, and

two deaths.

This week, the Public Health Agency of Canada reported a probable case of the virus in a person in Quebec. Last Thursday, preliminary tests detected the virus in five people in Manitoba. The severity of the infections is not known. A horse also tested positive for the virus yesterday in Saskatchewan. Infected birds have been found in Alberta, Saskatchewan and Ontario.

This year, Ontario is spending \$20-million to combat the virus; it is surveying and testing birds most at risk (crows, blue jays and ravens), monitoring mosquito traps and continuing to educate the public. As many as 3,000 blood samples have been sent to the Central Public Health Laboratory in Toronto.

There haven't been any cases of human infection in Toronto this year, but public-health officials are bracing for them. Last year, there were 38 cases of West Nile in the city and six people died.

Toronto's associate medical officer of health, Howard Shapiro, warned that city dwellers are most at risk.

"In Ontario, it's mainly an urban disease because the city's artificial habitat breeds it," said Dr. Shapiro, referring to the city's 150,000 catch basins that hold water almost all year round.

Medical experts say the unpredictability of West Nile is frustrating. There is no way to forecast how severe the virus will be year to year, and eradication of every mosquito that carries it is impossible.

"The mosquitoes go someplace relatively warm like a crawlspace in a basement or the storm sewers and survive the winter.

"Then they come out in the spring, and one that is infected can bite a bird or a human and start the whole thing over again," Dr. Shapiro said.

Patients who contract the virus build up immunity, but Ms. Voynovich still takes every precaution. She wears long sleeves and pants, uses insect repellent, and avoids being outdoors at dusk and dawn.

"As soon as [the mosquitoes] come out in gangbusters, I run into the house. Actually, no, I roll into the house," she joked. "I don't want to see anybody else go through what I did, but it's just the reality... not everyone can avoid it."