

Walkerton Tragedy: 10 years of research leads to breakthrough

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Studies of the victims of the Walkerton, Ont. tainted drinking water tragedy have led researchers to discover DNA variations in genes that increase the risk of developing post-infectious irritable bowel syndrome (PI-IBS). The sheer scale of infection and the recording of the health of Walkerton's citizens gave a team of researchers a unique opportunity to study the origin of this disorder.

"Although the exact cause of PI-IBS remains unknown, we now know for the first time that, in addition to the environmental trigger, [genetic factors](#) are also playing a critical role in the development of this disease," explains McGill PhD Alexandra-Chloé Villani, who led the team under the direction of principal investigators John K. Marshall (McMaster) and Denis Franchimont (formerly of McGill). Stephen Collins (McMaster) also collaborated.

Almost 10 years ago, the municipal water supply of Walkerton was contaminated with *E. coli* and *Campylobacter jejuni*, leading to a public health disaster. Seven people died and 2,300 suffered symptoms, including bloody diarrhea. Of these 2,300, 36 per cent developed PI-IBS, giving the town the highest incidence of PI-IBS ever reported.

PI-IBS is a functional bowel disorder that has an acute onset after an episode of gastroenteritis. "These patients suffer from chronic abdominal pain, discomfort, bloating and disturbed defecation in the absence of any detectable structural or biochemical abnormalities," said Marshall, a gastroenterologist. "After the exclusion of known organic

disorders, like Crohn's disease and ulcerative colitis, such patients are diagnosed with PI-IBS."

"The biological implications of the identified genetic risk factors emphasize the important roles of the gut microbial flora, intestinal barrier function and inflammatory pathways in contributing to the onset of PI-IBS," Villani explained. Though these results will not lead to any new short-term treatments for PI-IBS, Marshall is confident that in the longer term the research will lead to better patient care, including potentially novel therapeutic targets for research, as well as improved medical decision-making ("risk stratification") concerning victims of future outbreaks.

More information: The details of the study will be published in the March edition journal *Gastroenterology* (available online at gastrojournal.org).

Provided by McGill University

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