Cholera!

By Sandi LeFaucheur

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Foreword

Recent waterborne disease outbreaks in Walkerton and Collingwood, Ontario, as well as in North Battleford, Saskatchewan, remind us of the need to be ever-vigilant in safeguarding our water supplies.

While waterborne disease outbreaks are relatively rare today in Canada, it was not that long ago that they were quite common.

This compelling story about the challenges of ensuring drinking water safety in the 1800s is largely about the science of epidemiology—the study of diseases in order to better understand and control them. Epidemiologists are public health disease detectives, amongst whom Dr. John Snow is recognized as a pioneer.

I hope you will enjoy reading this story as much as I did. It is an excellent reminder of the importance of a clean, safe water supply in protecting human health.

Peel residents enjoy and rely on clean drinking water at the turn of the tap. The Region of Peel goes to great lengths to ensure that our drinking water supply is among the safest in the world.

Dr. Howard Shapiro
Acting Medical Officer of Health
Peel Public Health

Glossary of Terms

Cesspool – a pond or chamber for temporary storage of liquid waste or sewage.

Cholera – a serious, infectious disease caused by a type of bacteria. Symptoms include profuse watery diarrhoea and vomiting. Without treatment, dehydration will occur rapidly and death may come within a few hours of onset.

Contagious – communicating disease. This can be by direct person-to-person contact or by germs that contaminate water, food, the air, or surfaces.

Dysentery – an inflammation of the bowel associated with stomach pain, cramps and diarrhoea.

Epidemic – when the number of cases of disease in a community or region clearly exceeds the expected frequency of cases.

Infectious – a disease caused by an infectious agent (a virus, bacteria, fungi, parasite).

Pandemic – when the number of cases of a disease over a very large area such as a country or continent clearly exceeds the expected frequency of cases.

Plague – a highly contagious, often fatal disease, transmitted to man by the bite of infected fleas from rats.

Privy – a method of sewage disposal that does not rely on water carriage (i.e. a flush toilet). An “outhouse” is a privy.

Quarantine – isolating people who have been exposed to contagious diseases to prevent the further spread of disease.

Typhoid fever – a disease caused by bacteria. It usually enters the body through water or food that has been contaminated by a person who has typhoid.

Yellow fever – a disease caused by a virus which gets into the body through the bite of an infected mosquito.
Chapter 1

Have you ever sipped a glass of tap water and wished you could go back to a time before drinking water was chlorinated—back to when water was drunk straight from the stream or the well?

Be careful what you wish for . . .

June, 1832

“She’s dead.”

The unearthly wails of the woman’s children, the violent pitching of the ship as it creaked against the North Atlantic swells, the ghostly shadows of the stinking, skeletal passengers cast by the fitful light of the smoking oil lanterns—the scene was worse than any nightmare Dr. Philips had ever suffered.

He held the lantern close to the dead woman’s husband, blue-faced and comatose.

“He’s not long for this world, either. There’s nothing more I can do.”

The doctor shook the children’s grimy hands from his fine woollen trousers and climbed the steep ladder towards fresh, salt-laden air.

“Well?” The ship’s master tapped his foot as Dr. Philips untied the silk scarf from his face.

“Cholera. There’s no doubt about it. I saw enough of it last year to know; thirty-two thousand people perished in London alone. That was the reason I decided to bring my family to Canada—fresh air, fewer diseases. And now, cholera rages beneath my feet.”

“But you’ll not tell the authorities. It’s bad enough that we have to stop at Grosse Ile to cleanse that lot of vermin-ridden emigrants, but the ship will be quarantined for thirty days if it’s known there was cholera aboard. We’re still six days from landfall. Time enough to send the dead and dying to the bottom of the sea.”

“For God’s sake man, you can’t do that! The dead, certainly, but the dying?”

“They’ll die, anyway. We’ll be doing them a kindness by hastening them to their reward.”

The two men stood silently as a sailor carried the dead woman, wrapped in weighted sailcloth shroud, up the ladder. Dr. Philips closed his ears to her children’s anguished screams echoing from the cavern below.

A splash, a barely perceptible ripple, and Mary O’Flanahan sank beneath the churning Atlantic waters.

“May God have mercy on her soul,” the master murmured.

Dr. Philips sighed deeply. “And on ours, captain. And on ours.”

* * *

Grosse Ile

“But why can’t I go ashore?” Emma Philips demanded. “Grosse Ile looks so pretty. It would do baby Georgina good to leave the ship for a few hours.”
Dr. Philips fought back a wave of annoyance and shook his head. As always, his beautiful but empty-headed young wife saw only what she wanted to see. Viewed from the porthole, the picturesque charm of the rocky island rising from the sparkling St. Lawrence was undeniable, the squalor screened by the bushes growing along the shore. He must protect Emma from the realities of this place in the same way he had carefully shielded her from the horrors below deck. Safe in her mahogany-panelled cabin, she knew nothing of the fifteen people who had died during the voyage or of the half dozen who, in various stages of dying, lay hidden in a storage compartment, the door disguised by sacks of flour. They’d be dead soon enough, and the sailors would slide them overboard under cover of darkness. The captain, as unpleasant—nay, evil—a man as Dr. Philips had ever met, had elected to go contrary to the law and to not disclose the cholera on board. Over a snifter of brandy last night, the captain had drawn up a new manifest, minus the names of the dead and dying. As the old manifest was reduced to ashes, he’d said, “I’ll lose money if I’m stuck in quarantine for thirty days. And it’s not as if I’m sending the passengers into the city to spread their disease. They’re in quarantine; they’re just not in quarantine on Grosse Ile.” Dr. Philips was content to go along with the conspiracy. At least they’d be free to proceed on to Quebec as soon as the steerage passengers had cleansed themselves and the hold was swabbed out. To be stuck for another thirty days on this coffin ship would have been unbearable. Just as well the captain had no scruples.

He closed the cabin door behind him and turned the key, taking no chances on his wife acting on her whim. He leaned on the railing and sipped his cider, watching the immigrants scurrying like ants in the relentlessly intense sunshine. Strains of music from fiddles and tin whistles drifted across the water. A large party of raucous Irish immigrants danced a jig as their stick-thin children, some naked, cavorted like savages. How many of them would become ill before leaving this island? How many would survive long enough to claim their homestead? Still, that wasn’t his problem. He was on his way to York, where he’d been promised a fine house and a steady stream of wealthy, paying patients. No more would he have to walk amongst the dross of humankind. Cholera might rage in Quebec and Montreal, but York was hundreds of miles away. There’d be no cholera in York; there he would be safe.

* * *

Lizzie Trevelyan swiped the tears and sweat from her face with the back of her work-reddened hand, grateful to have the solid ground of Grosse Ile beneath her feet and not the heaving boards of that floating tomb. So this was Canada. This was her dream—nightmare, more like. She’d been married less than a year to Thomas, who’d filled her head with wondrous tales of a country where you could have all the land you wanted for free. Thomas hadn’t claimed his land, not even a patch six feet long for his body; for yesterday, he’d been cast beneath the steel-grey sea.

A walking corpse of a woman, yellow-grey skin hanging from her bones, elbowed Lizzie sharply in the ribs.

“If yer gonna stand there staring, get outter me way. I got work to do, even if you don’t. You bin starin’ at that cauldron long
enough. Hoik yer clothes out and let others do theirs. An’ what about that dress you’ve got on? That has to be washed as well, you know.” Her voice softened at Lizzie’s alarmed face. “You got a shift underneath, don’cher? An’ even so, you ain’t got nothin’ these men ain’t seen in sixty days in steerage!”

“I washed it already,” Lizzie lied. “I did it first and it’s dried.”

“I’ll believe you; thousands wouldn’t. Now, move on.”

Lizzie lifted her clothes from the scalding water with a stick nearly as long as she was tall and dropped them in her basket. Every rocky surface, every bush, was strewn with ragged articles of clothing drying in the sun. She found an empty space and laid her clothes out to dry. Offshore, a dozen or more ships sat at anchor, more than half flying the yellow flag indicating disease—be it smallpox, measles, cholera or a host of other sicknesses—was present on board. No such flag flew on her vessel, thanks to the thorough work and lies of the captain and that doctor. Some doctor. He’d barely looked at Thomas before pronouncing him dead. And now she was a widow. What would become of her? It would have been better if she’d died with her husband. She took from her pocket the money Thomas had been going to use to start his farm. Maybe it was enough to buy a passage back to England. Maybe—

In a heartbeat, Lizzie was knocked roughly to the ground, the money snatched from her hand. Dragging herself to her feet, she searched the crowds. Who’d robbed her? Where had they gone? And what would she do now?

She sank to the ground, buried her face in her hands, and sobbed.

With 70,000 immigrants expected in 1832 and cholera raging in Europe, Grosse Ile, an island in the mouth of the St. Lawrence River, was set up as the quarantine station for the Port of Quebec. Despite a complicated quarantine system, cholera did reach the mainland. After all, it’s hard to stop a disease that you don’t understand . . .
Chapter 2

In June 1832, cholera rode a steamboat down the St. Lawrence and disembarked at Prescott (June 19), Kingston (June 20) and Cornwall (June 21), arriving in York the same day. It soon carried its pestilent pilgrimage to Cobourg, Brantford, Burlington Bay and Hamilton.

“I now pronounce you man and wife.”

Lizzie glanced sideways at the stranger next to her—her husband. She ought to be grateful to him, she knew that, but the empty hollow in her heart swallowed every emotion but despair.

Matthew Nichols had all but tripped over Lizzie as she’d sobbed on the rocky shores of Grosse Ile. He’d been kindness itself and had listened to her tale of her young husband, Thomas, dying of cholera at sea, leaving her penniless and alone in this wild, new land. Matthew had been no happier, for his wife had died in childbirth on board. Only four days previous, he and his three children had clung to the ship’s rail, fearful that the driving North Atlantic wind and rain would send them sliding to a watery grave alongside his wife and newborn son. What difference did money make? Lizzie and Thomas had travelled cooped up like chickens in the hold; Matthew and his family had slept in a fine, panelled cabin. Yet on that dreadful journey, both pauper and gentlewoman had earned the same final resting place. And a week after arriving in Quebec, their widowed partners were joined in a marriage of convenience by the captain of the paddlewheeler *The Great Britain* as she steamed her way from Quebec to York, and points west.

Matthew’s five-year-old son, Wilfred, tugged at his father’s coat tail.

“Papa, I’m thirsty.”

“Come, I’ll take you to the water barrel.” Lizzie led Wilfred by the hand across the deck to the oak cask and dipped the tin cup in the scummy water. Oh, how she longed to drink clear water straight from a well, and not the scummy, greenish-brown slop that passed for water on board ship. On the journey across the sea, the water had been as thick as soup, with dead flies and sometimes the bloated bodies of mice and rats floating in it. This was a little better as it had been dipped yesterday from the harbour in Quebec, and hence was relatively fresh. But even so, it was scarcely fit to drink.

“Look, Wilfred! That’s York over there!”

“Is that where we’ll live?”

“No. We will stay here over night, and tomorrow we’ll travel to a village called Port Credit. Your father has bought some land there, and he’ll build you a fine house.”

Lizzie bit her lip to stop it quivering. Thomas had planned to go further north, to where land was free for the clearing. He’d had no money to buy a fine parcel of land by this immense inland sea.

“Why are you crying, Lizzie?” Wilfred’s anxious face stared up at her.

“No reason, Wilfred. We’ll be happy in Port Credit, you’ll see.”
“Drunkenness! That is the cause of cholera—drunkenness!”

Dr. Philips’ head jerked up as his colleague Dr. Robinson bellowed and pounded the table in his York mansion with his fist, his formidable side whiskers quivering with emotion. “Consider those who have died of cholera this week. With but a few exceptions, each and every one imbibed freely of hard liquor.” He paused long enough to swallow a goodly amount of brandy. “Surely the disease will be halted now the magistrates have taken steps to address the cause. All drunkards found on the streets will be put in jail or the stocks. And if people will cease to consider brandy and opium as preventatives, we will be well on the way to defeating this terrible disease.”

He lifted the brandy bottle with an unsteady hand. “Care for another drop, my dear fellow?”

Dr. Philips stifled a smile. Robinson was a fine one to preach about the evils of alcohol; his hand hadn’t been more than an inch from his glass all evening. York had something in common with England—there was one rule for the rich and one for the poor.

“But sir, surely the disease is borne in the filth in which the poor live, and in the very air they breath,” Dr. Philips ventured.

Robinson slurped his brandy and vented a loud, putrid belch. “Ah well, their houses will be cleaned and washed in lime, drains will be built, and the streets watered to keep the dust down. No stone will be left unturned in our fight to stop this sickness. But those measures are of little consequence if people insist on getting drunk.”

The Nichols’ wagon, having left York behind three hours ago, creaked and jerked through the lush forest. Now and again, Lizzie caught a glimpse of Lake Ontario sparkling like a cache of amethysts and sapphires through the trees. Matthew’s two eldest children, Sophie and Roy, trotted alongside the wagon, exclaiming over the strange animals and birds they spied in the branches and undergrowth. Wilfred was unusually quiet; how he could have fallen asleep in this boneshaker of a wagon was beyond Lizzie. Best check on him. Lizzie clambered over the back of the seat and peeked under the fine linen sheet she’d draped over the child to protect him from the ravenous mosquitoes.

Wilfred lay curled in a ball, his knees drawn up to his chest. With a stifled cry, Lizzie rolled him over. His breeches were soaked through with the pale, watery,
odourless diarrhoea she knew only too well.

"Cholera!" Lizzie clutched the child’s cold, still body, tipping his head to one side as he spewed a sea of vomit. Wilfred’s sunken eyes, as dull as peat, flickered open.

"Mama, water."

Grabbing his son from Lizzie’s arms, Matthew motioned her towards the water barrel. “Papa’s here, son.”

"Want Mama."

Matthew pulled the cup from Lizzie’s hand and held it to the boy’s lips. “Mama’s . . . not here. Drink your water.” Matthew’s voice was tight and angry as his eyes locked with Lizzie’s over Wilfred’s body. “This is your doing. It must be. Your husband died of cholera, and now my son has it. Have I married the devil?”

Lizzie shook her head with disbelief. “Matthew, how can you say such a thing? How could I have given him cholera?”

“He got it from somewhere, didn’t he? He was fine for the whole voyage and now . . . now . . .” His voice trailed off.

“And am I also responsible for the thousands of people who have died across the British Empire? Am I?”

Wilfred’s tongue flicked in and out from his dry lips. Lizzie refilled the cup and held it to him, smoothing his cold, dry cheek. Sophie and Roy peered wide-eyed, terrified, over the side of the wagon.

“Papa,” Sophie whispered, “will he recover?”

Stone-faced, Matthew shook his head and rocked his son back and forth, back and forth.

As the sun settled behind the trees, Matthew Nichols dug the rich, loamy soil of Upper Canada for the first time. His eldest son carefully carved “Wilfred Nichols 1832” on a small, wooden cross he’d hewn from a maple branch. In the distance, a lone wolf howled.

Lizzie knelt by the shore, her salty tears raining into the cold, clear lake. She splashed her face, allowing the water to trickle from her fingers. Water. The stinking, filthy drink on the ship, the swampy brew on the paddlewheeler . . . Her head jerked up.

What if the cholera was in the water?

From the onset of symptoms, death from cholera can occur in hours. In the summer of 1832, 377 of York’s 6,000 inhabitants suffered the rapid, distressing death—and no-one knew the cause or the cure. We will never know how many contracted cholera while in York and were buried in unmarked graves en route to their claims in Peel.
Chapter 3

York’s cholera epidemic of 1832 was followed by another less severe outbreak in 1834, by which time the town had been renamed “Toronto”. After making excursions across the Etobicoke River to Peel in 1833 and 1834, the pestilence waited fifteen years before marching once more through the streets of Toronto.

Summer, 1849

“I want to be a doctor.”

Feet planted firmly, eyes fixed, chin jutting—Georgina Philips bore a stronger resemblance to an angry bulldog than to a well-brought-up young lady. Her mother despaired of her, and her father—Dr. Philips—wished she could turn into the son he’d never had. Ever since she’d read in the paper about that dreadful woman in America who’d become a doctor, it was all she spoke about. Such dedication would be admirable in a man, but in a young woman? He shuddered.

“I’ll do it. You mark my words.”

Georgina turned on her heel and stomped out, slamming the door with a force that rattled the pictures on the walls. Her feet automatically traced the path to the hospital. Papa had forbidden her to go inside; he’d said it wasn’t suitable for a young lady. Georgina snorted. Young lady, nothing. If she was going to make good her resolve to become Canada’s first female doctor, he’d better get used to her going into hospitals. Georgina strode up the path and yanked open the side door. Oh, the stench! She reeled backwards, then squared her shoulders and marched in.

Twenty souls lay in the ward—some shivering, groaning, writhing in agony; others as still as if Death had reaped another sheaf in his grim harvest.

“Water, please—water,” a writher whispered, her claw-like fingers plucking Georgina’s skirt.

Georgina held an enamel mug to the woman’s cracked lips, but the water trickled uselessly from the side of her mouth. With a deep, rattling sigh, she slumped against Georgina, her eyes fixed and staring. Was she dead? She couldn’t be—but she was so still, so cold. What to do? If only she was a doctor. Georgina’s eyes raked the wards for a nurse. Surely someone must notice; someone must care.

A stooped, sinewy man crashed through the doors at the far end of the ward, pushing a hand-cart.

“All right,” he snarled, “who’s for the bone-yard?”

He bent over a still form surrounded by a group of Irish, wailing their traditional lament. “This one’s had it,” he proclaimed, dragging the body from the bed.

“No, no, he can’t be dead! He’s not had the last rites. Where’s the priest? Oh, Mary, where’s that priest?” A young woman, scarcely older than Georgina, clung to the carter and tried to prise his fingers from the body.

“He’s dead, I’m telling you.” With a flick of his arm, the carter flung the woman aside, sending her sprawling.

Georgina laid her patient gently against the rock-hard pillow. “I’ll be back,” she whispered and marched down the ward.

“What’s going on here? How dare you treat this family with such disrespect?”

The carter looked her up and down, leering. “And who are you when you’re at home? Snip of a lass telling me what to do.
I know my job and I know a dead body. They come here to die, little Miss Nosy, and die he has. So now he leaves and another one takes his place.” With an elbow to her stomach, he shoved Georgina aside and threw the young man on his barrow. He made his way down the ward, his barrow’s wheels creaking under the weight as two more bodies joined the young man.

The man reached the bed by the door—the bed bearing the woman who had collapsed in Georgina’s arms. He reached down.

“No!” Georgina screamed, picking up her skirts and pelting down the long room. Skidding to a stop, she barrelled into an elegantly-dressed gentleman.

“I’m so sorry,” she gasped, “but I had to stop the carter. He was going to take that lady away, and she’s not dead. I know she’s not.”

The gentleman took a small mirror from his breast pocket and held it to the woman’s mouth. No fog.

“I’m sorry, dear lady, but I fear you’re mistaken. Permit me to introduce myself—Dr. Roy Nichols. Are you a relative?”

“No. No, I’m not. I came in here because . . . because I want to be a doctor.” There, it was out.

How amazing—he didn’t laugh.

“And do you still wish to be a doctor, now you’ve seen a pestilence ward?”

“Yes, I do. Now more than ever. Surely there must be something that can be done to help these people, to stop their suffering.”

He nodded. “My goal is to eradicate the disease—to wipe the world clean of cholera. Walk with me to the lake. I’d like to show you what I mean.”

* * *

“Look at the bay. Tell me what you see.”

The joyous sun danced on the blue waters and split into a million shimmering shards. Along the shore, emerald green forests fringed the amethyst lake. And on the filthy, slime-covered rocks by Georgina’s feet, a flock of seagulls fought over the entrails of a long-dead rat.


There was no humour in Dr. Nichols’ bark of a laugh. “It doesn’t deserve to be called water. Sewage is what it is. The bay, the source of drinking water for many of the townspeople of Toronto, is filled with their excrement. Would you drink from your chamber pot? Of course you wouldn’t. But that is what people, not only in Toronto, but around the world do. Their filth, their garbage, dead animals—they dump
everything in the nearest body of water. And then they drink from it and wonder why they get ill.”

“So do you think it’s the water that causes cholera? My father says it’s in the air. Miasma, he called it.”

Dr. Nichols nodded. “That’s what most people think. But I believe otherwise. Let me tell you a story. I came from England seventeen years ago as a child of eleven. My mother died on board ship, and my father, wishing to have someone to raise his three children, married a young woman from steerage whose husband had died of cholera. On the way to our new home in Port Credit, my youngest brother died. Cholera. In his grief, my father blamed Lizzie—that’s my stepmother. Remembering the putrid water on board, Lizzie always believed that cholera was in the water, not in the air. I think she may be right. I can’t prove it yet, but I’m going to. A doctor in England, John Snow, is working on this very theory. Next week, I’m sailing for England to work alongside him. Until we can prove conclusively that mistreating our water supply is causing not only cholera, but also a host of other illnesses, we will be unable to force the authorities to ensure the regular provision of safe, clean drinking water. That is my goal, because clean water is the right of every person, rich or poor.”

Most doctors of the time believed that cholera was caused by miasma (bad air arising from decaying organic matter) and that cleansing and scouring would wipe out the disease. Dr. Snow’s theory that cholera was transmitted through drinking water was viewed as peculiar.
Dr. John Snow was not a typical hero. Quiet, reserved, humble, unfailingly courteous and kind to the poorest of London’s inhabitants, he was viewed as peculiar by his contemporaries. Some people now consider this nondescript man the greatest doctor of all time.

The Broad Street Pump, London

August, 1854

“Shhh. Shhh. There now.” Annie trudged up and down the kitchen, clutching her whimpering baby. His excrement had soaked through the thin diaper and dripped between Annie’s fingers. “You’ve soiled yourself again, haven’t you, poor little mite.”

Annie knelt before the fire and removed the infant’s diaper, her heart sinking further than she’d ever thought possible. The fabric was drenched through with diarrhoea so thin, it was no more than water. “What’s the use?” she whispered. “What’s the use?”

Her baby lay still and quiet on the hearth as Annie dropped the fouled diaper in a bucket of water. So many diapers. So many. She’d never get them all washed and dried. She swilled them around, wrung them out and hung them on the drying rack suspended from the ceiling. They weren’t very clean, but they’d have to do. She cast an anxious eye at the baby, lying on the mat as motionless as a graveyard’s marble effigy, and carried the pails to the cesspool drain in front of her house. Annie dumped their putrid contents and refilled the buckets from the nearby pump.

In the next few days, 127 of her neighbours would die—all because of two pails of water.

* * *

“It must be the Broad Street pump at fault.” Dr. Snow spread out the map showing each case of cholera in the area. “See how all the deaths are clustered in that area? And from where would the people draw their water? From that pump!”

Dr. Nichols frowned. “But with the greatest respect, John, what about the workhouse here?” He tapped the map. “There are five hundred inmates, and only five deaths have been recorded. And directly opposite the pump is a brewery and none of the workers have fallen ill. Not to mention, there have been deaths in Hampstead and Islington—both north of London, miles away from Broad Street. If the source of contamination is the pump, why would that be so?”
“Valid points, Roy, worthy of investigation. If I’m wrong, I won’t stop digging until I’ve found the truth. But if I’m right—”

Nichols finished the sentence for him. “If you’re right, John, then at last people will believe your theory that cholera is borne in the water.”

* * *

The workhouse door creaked open. A pale ghost of a girl—grey dress, grey face, grey expression—bade Dr. Snow to enter. “I’ll fetch the superintendent for you,” she whispered.

A stout gentleman, gold watch in hand, bustled up. “Dr. Snow!” he boomed. “What brings you here? We have no ill residents.”

“And that, sir, is my purpose in calling—the fact that you have had but five cases of cholera. I must admit this puzzles me. Here we have a large institution, people living cheek by jowl, and no cholera, while the rest of the neighbourhood has been sorely stricken.”

“Good management, plain food, hard work. That’s the reason why.”

“If that is your secret, sir, then I would be glad to have you share it with the rest of the nation. Would you be kind enough to show me around your establishment?”

The superintendent shrugged. “You’ve been here often enough, doctor, but if you wish. Through here is the laundry.”

A scene from Dante’s “Inferno” met the doctor’s eyes. Shrouded by billowing clouds of steam, wraithlike women stirred massive copper cauldrons, their rough grey dresses plastered to their bodies with sweat. “And here is the kitchen.” More nearly-invisible women stirring cauldrons, this time full of watery, grease-laden stew. “You must use a good quantity of water, sir. From where do you get it? The pump on Broad Street?”

The superintendent laughed. “Good heavens, no. How would we carry it back here? Why, we’d be back and forth all day! We have our own pump—there, in the yard.”

Dr. Snow scraped a clear spot in the scum on the window and peered through the bars. Sure enough, there was a pump. He smiled.

“What do you know of the brewery down the road? Their employees seem to enjoy remarkably good health.”

“As well they might, but they’ll be pickled from the inside out by the time they die. They drink nothing but beer. Never touch water, just beer, all day long. And all night, too, I’ll warrant.”

Dr. Snow pumped the superintendent’s hand up and down. “Thank you, sir. Thank you very much indeed.”

The superintendent closed the door behind the doctor and scratched his head. What a most peculiar fellow.

* * *

Dr. Snow stood at the open window of a Hampstead drawing room, breathed deeply of the pure, sweet air, and gazed down on the smoky city beneath him. Even from this distance, London looked diseased, but to find such illness here in leafy Hampstead? Curious.

He waited patiently while Mrs. Smythe poured tea into a wafer-thin cup and offered him a cucumber sandwich before gently prompting her to continue her tale.
“I couldn’t understand it,” Mrs. Smythe said. “I don’t think there’s anything wrong with the water in Hampstead. But my sister could never get used to it. She preferred London water, so every day she’d send for a large bottle of it. Can you imagine? All that trouble just because she didn’t like the taste of Hampstead water.”

Dr. Snow dropped an extra spoonful of sugar in his tea. “And where did she get the water from? Any particular area?”

“Not just a particular area, but a particular pump. It had to come from Soho—from the pump on Broad Street.”

The cup rattled in Dr. Snow’s hand. He placed it on the table quickly before he dropped it, and drew out his notebook from his breast pocket.

“I suppose I’d better cancel the order,” Mrs. Smythe mused. “Hampstead water is good enough for me.”

Dr. Snow nodded. “Did anyone else drink the London water?”

“Only one other person, our niece. She agreed with my sister about the taste of the water and always drank it when she visited. But she won’t be coming anymore. She died, too.”

“I’m so sorry to hear that. And where did your niece live?”

“Islington. She lived and died in Islington.”

* * *

Roy Nichols slapped Dr. Snow firmly on the back. “So you were right, my old friend! The Broad Street pump is the source of the contagion!”

“So it would appear.” As ever, Dr. Snow was modest about his triumph. “Even the symptoms—diarrhoea, vomiting—make it obvious that cholera has nothing to do with the lungs, and everything to do with the stomach. The material causing cholera must be swallowed. Consider—doctors, who wash their hands before they eat and who don’t partake of meals in patients’ homes, seldom get cholera; whereas those who attend constantly to patients in the sickroom, eat in the home, or attend the funeral tea fall ill. Children, whose hands are always in their mouths, are especially susceptible.”

“So we know how cholera is contracted and we know the source of this outbreak. But how are we going to stop it?”

“Simple, my dear fellow. We’ll remove the handle from the pump!”

Once the handle was removed from the Broad Street pump, the epidemic was stopped in its tracks. But how had cholera entered the water source? A survey of the cesspool showed that like many other cesspools in London, the brickwork was decayed and sewage was leaking into the water source—just three feet away.
Chapter 5

Dr. Snow showed that yellow fever, plague, dysentery, and typhoid fever are, like cholera, communicated by water. Again and again, typhoid reared its head in Peel County’s towns, villages, and farms from Port Credit to Alton. In 1883, the fear that cholera would cross the Atlantic from an epidemic in the Orient led to sanitary reforms in Ontario. Every municipality was to form a board of health with a medical officer or sanitary inspector. The Provincial Board of Health’s report for 1884 stated “typhoid has been present almost everywhere.”

Typhoid claims another victim

September, 1884

The thick, black mire slurped and sucked at Dr. Roy Nichols’ rubber boots, threatening to tear them from his feet, as he sloshed his way through the barnyard.

Typhoid. Seven people in this house with it—two, at least, sure to die before the sun set tomorrow. All science’s new-found knowledge of germs wouldn’t help this family, for they lived in the same manner their ancestors had—in a bog of animal and human excrement. This fresh, new land was becoming as squalid as the old countries the settlers had left behind.

He squelched his way down a slope to the well, a brick island in a sea of filth, and peered down to the stale, murky water. Farmyard muck had found its way through the cracked bricks and mortar and streaked the inside of the well. Slugs and snails slid furtively through the slime. There wasn’t much point in taking a sample of the water; the results would be obvious. Still, it had to be done.

He beckoned to his wife, Georgina, who usually accompanied him on his rounds, raising eyebrows with the corduroy breeches she wore when visiting farms and homesteads in foul weather. Georgina took a bottle from her Gladstone bag as he cranked up the windlass. She sighed and shook her head in dismay at the scene around her.

“How can people live this way? Pigsty, privy, cow barn, and in the middle of it all—the well. Doesn’t it occur to people that to surround their source of life with rubbish is the greatest foolishness?” She filled the bottle from the bucket, corked it, and placed it back in her bag.

Roy steadied her as she slipped on a cowpat. “The medical report for Streetsville noted that the pollution in two wells in the village arises from being next to the overcrowded graveyard.”

Georgina laughed and wrinkled her nose. “Well, I suppose they’ll always have Uncle Fred with them if they’re drinking him!”

“You’re disgusting,” he commented with a smile, noting with pride that at the age of fifty-three, she could still clamber into the buggy with no assistance. Yes, Georgina Nichols was a phenomenal woman. It was medicine’s loss that she’d been denied entrance to medical school.
because of her sex; she’d proved herself a far better doctor than most of his male colleagues. Not to mention, she looked a darn sight better in corduroy breeches than they did.

* * *

Roy Nichols never imagined his stepmother would contract typhoid. He’d ensured her well was deep, clean and upstream from the privy. And yet, here he stood, helplessly watching her life slip away.

“I killed him,” Lizzie Nichols whimpered, her bent and twisted fingers picking at the quilt. She pointed at Roy, standing at the foot of her bed. “Go away. This isn’t for your ears.”

After the door clicked behind her husband, Georgina sat beside his elderly mother and took her hand. “Of course you didn’t kill anyone, Mother Lizzie. It’s the typhoid making you delirious. When we get your temperature back down, you’ll forget you ever said this.”

“No, it’s true. I swear it.” Lizzie gasped as the cramps seized her stomach and thighs. Her cheeks were flushed crimson in her grey-yellow face, and her once sky-blue eyes were dull puddles. “Roy had a little brother, Wilfred.”

Georgina nodded. “I know. He died of cholera on the road from York to Port Credit.”

“I killed him, Georgina. I gave him the cholera.” Lizzie’s dry, brown-furred tongue flicked in and out. Georgina held a glass of lemonade to Lizzie’s cracked lips. She pushed Georgina’s hand away, her eyes focussed on a fly on the ceiling. “Listen to me. I must tell this before I die. I always suspected that the cholera was in the water, not in the air. And that Dr. Snow fellow in England proved me right, didn’t he? But you know as well as I do that it lives on contaminated fabric as well—on clothes, blankets, mattresses. It lived on my dress. I had only two dresses, one was in my baggage, and the other I wore when my first husband died in my arms on board ship.”

“But Lizzie, you had to wash all your clothes and belongings at Grosse Ile. You told me that.”

“I washed everything but the dress I wore. I wasn’t going to strip down to my petticoat like the others. I was too proud. Anyway, I’d been married in that dress, and I wasn’t going to ruin the fine wool by boiling it. It must have been alive with those—what are they called?”

“Germs.”

“Yes, those germs. Wilfred was only a tiny thing. He was afraid he’d be separated from us, and so he clung onto my skirt. You know how children always have their hands in their mouths. He took the germs from my dress and put them in his mouth. And he’s been fifty-two years in a little grave on the side of the Lakeshore Road.”

Georgina sat silently. Poor Lizzie. What a burden she’d borne for over half a century.

“You weren’t to know, Lizzie,” she whispered. “Had you realized the consequences, you would have scrubbed that dress until it was threadbare. I know that.”

“But I didn’t, did I? And a child died because of it.” Lizzie drew her legs up and grimaced. Georgina wiped the sweat from her forehead. “I’m glad I’ve got typhoid. I deserve it. A life for a life, eh, Georgina? And soon I will have paid my debt. Go away. I want to sleep.”
Georgina crept from the room.  
“What did she mean?  Whom did she kill?” Roy asked, as she gently shut the door.

Georgina’s eyes slid from her husband’s face.  What would be gained from telling him?  She’d carry the secret to her grave, just as Lizzie had.  How many other people had unknowingly infected the people they loved?  Would the world ever be free from scourges in the air, in the water?  Maybe one day, people would be confident that their water would do them no harm.  Maybe one day, cholera and typhoid would be but a distant memory.

Georgina sighed and squared her shoulders.  Maybe.  One day.

The Region of Peel is proud of its exemplary water quality.  Both water and wastewater are thoroughly treated and tested to ensure that every drop of municipal water flowing from your tap is safe to drink, and meets or exceeds Ministry of the Environment regulations.

Diseases such as cholera and typhoid are still pandemic in developing countries.

Postscript

In the 1800s, most people lacked indoor plumbing.  Raw sewage could be seen in alleys, ditches, streams and lakes in urban areas like York (now Toronto).  After rainfalls the sewage, ripe with disease-causing bacteria and viruses, was washed into drinking water wells, homes, and stores.

After a number of outbreaks of cholera in London, England, Dr. John Snow, a pioneer of public health, developed a theory that the disease was spread by drinking contaminated water.  Dr. Snow gathered evidence to support his theory and convinced community leaders to remove the pump handle on London’s Broad Street well, thereby shutting off access to the suspected source of contamination.  After the pump handle was removed on September 8, 1854, additional cholera deaths were prevented and Dr. Snow proved the connection between contaminated drinking water and cholera.

2004 marks the 150th anniversary of Dr. Snow’s remarkable detective work.

As a result of his findings, governments began investing in sanitary sewage disposal to protect drinking water supplies.  Later, more effective methods of water treatment enhanced the quality and
safety of our drinking water. Today, sedimentation, filtration and chlorination systems kill disease-causing bacteria and protect drinking water in the piped distribution system from becoming contaminated. Fluoride is also added to most municipal drinking water as a preventative public health measure to prevent tooth decay.

The Region of Peel is proud of its exemplary water quality. Both water and wastewater are thoroughly treated and tested to ensure that every drop of municipal water flowing from your tap is safe to drink and meets or exceeds the Ontario Ministry of the Environment’s regulations.

Unfortunately, diseases such as cholera and typhoid are still pandemic in developing countries around the world. It is estimated that a child dies every eight seconds from a water-related illness.

Bibliography


Grant, Sarah. *Dr. John Snow Named the Greatest Doctor.* Hospital Doctor, March 2003


Grades 7 and 8

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Sample Activities Using “Cholera!” in Grades 7 & 8

- **Write, perform, and review a play based on “Cholera!”**

  “Cholera!” is told in 5 short chapters, each suitable for developing into a play or skit. Additional research should be done into the costumes of the day, methods of transportation, the role of women in society, living conditions, etc., to add realism to the production.

- **Interview a character from “Cholera!”**

  Choose a character from “Cholera!” who led an interesting life and interview them, either for a newspaper article or for a talk show.

  **Examples:**

  - Lizzie: Left a penniless young widow in a strange new land, she carried the guilt of a young boy’s death with her throughout her life.

  - Dr. Snow: A historical figure, Dr. Snow is often hailed as one of the greatest physicians who ever lived, but he was unfailingly modest and kind.

  - Georgina: She wanted to be a doctor at a time when this was not an option for young women.

- **Identify literary devices used in “Cholera!”**

  - Alliteration: Slugs and snails slid through the slime
  - Simile: Scurrying like ants
  - Metaphor: A walking corpse of a woman
  - Hyperbole: A sea of vomit
  - Foreshadowing: What if the cholera was in the water?
  - Personification: Cholera marched through the streets of Toronto
  - Onomatopoeia: The thick black mire slurped
• **Migration**

  Why did Lizzie and her husband move to Canada? Why did Dr. Philips and his family move?

• **Earth and Space Systems**

  Cholera and typhoid are waterborne diseases still pandemic in some nations. Why don’t we worry about such diseases in Canada? Can waterborne illnesses still pose a risk to Canadians, despite our advanced treatment practices?

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**Grades 11 and 12**

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• **Science**

  Through the genre of historical fiction, “Cholera!” presents facts about waterborne diseases and the birth of public health and epidemiology.

• **History**

  “Cholera!” discusses developments in scientific and medical technology in the Victorian era.

  Students who enjoy history may wish to apply their interest as a researcher or novelist.

• **English**

  A 6,000-word historical fiction for young adults, “Cholera!” is an ideal short work for critiquing.