12,000 CANARIES CAN'T BE WRONG

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What's Making You Sick & What You Can Do About It

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Introduction

In 1986, technology replaced the old tradition of using canaries to detect carbon monoxide in coal mines. Miners would take them underground because the canary is particularly sensitive to the gas, and any sign of distress from the canary was a clear signal, warning that environmental conditions in the mine were unsafe and that the miners should be evacuated.

Over the past 30 years I have assessed and followed more than 12,000 patients with chronic medical conditions linked to the environment. Consider them human canaries, warning that our environment is unsafe even if the rest of us can't detect it. Many of these people have distressing symptoms that they attribute to multiple common chemical exposures at levels that the rest of us tolerate. This condition is called multiple chemical sensitivities.

This experience also provided me with the opportunity to eventually see a pattern of illness in these patients that defied explanation. My curiosity and fascination with what I have observed in my medical practice has driven me to scrutinize the literature in cell biology, toxicology, pharmacology, epidemiology, and environmental health. However, most doctors refused to accept the possibility that the pattern of illness in these patients could be real, that exposures to low levels of chemicals that we all seem to be tolerating could be making people sick. Instead, they told these patients that the symptoms were "in their head." This denial, which stigmatized and discriminated against my patients, motivated me to persevere, to try to understand, to consolidate, and to remain up-to-date with the increasingly relentless flow of new information

regarding the impact of pollution exposure on human biology.

The evidence now validates and explains the existence of environmentally related conditions. The existence of multiple chemical sensitivities, myalgic encephalomyelitis/chronic fatigue syndrome, fibromyalgia, and sick building syndrome can no longer be refuted. Not only that, the human canaries were right. These conditions turn out to be just the tip of a giant iceberg.

Humanity is facing a huge challenge. In *12,000 Canaries Can't Be Wrong*: *What's Making Us Sick and What You Can Do About It*, you will read about how pollution evolution is pushing us along a continuum that is leading to the emergence of more and more cases of chronic disease, starting even in early childhood. But this book is not intended to be apocalyptic. You will gain an understanding of the mechanisms behind it all and be better informed about what you can do about it.

Environmental medicine has been discredited or ignored by critics who claim a lack of scientific evidence. That opinion is no longer justified. The concepts in this book are based on information found in more than 2,000 articles from the medical literature published in the peer-reviewed journals of many health and biology disciplines. All the studies can be found in the database of the US National Library of Medicine.

For those who wish to see just how strong the evidence is, there is a sister version of this book available. *12,000 Canaries Can't Be Wrong*: *Establishing the New Era of Environmental Medicine* contains more than 2,000 references. Every scientific statement is supported, sometimes with many citations. It demonstrates how robust the science now is in support of the concepts of environmental medicine.

Successful chronic disease prevention and management is predicated on individualized, person-centred care and empowerment. *12,000 Canaries Can't Be Wrong* will provide you with the information required to make informed decisions to protect yourself and your family, including your future children and grandchildren. You *can* experience a better quality of health for a longer period of time.

— John Molot MD CCFP FCFP

Chapter 10

Sick and Tired

Health is not valued until sickness comes.
— Thomas Fuller

Are you a healthy, busy, active person? Hopefully you feel valuable and useful to your family, friends, and co-workers. How would you feel if that was taken away from you because of illness? How unhappy would you feel if you could not participate in the life of your partner or your children the way you used to? Wouldn't you look for the best available medical treatments?

Imagine how frustrating it must be to become chronically ill, only to be told repeatedly that there is nothing physically wrong. Meanwhile, you continue to feel worse. Your job and income are affected yet your symptoms are dismissed as trivial; you are told to "suck it up" and get on with your life.

I see patients every day who have lived this experience. They often express their frustration by saying, "I'm sick and tired of feeling sick and tired." That statement can be found on the tombstone of Fannie Lou Hamer, a black woman who stood up for her rights as an American citizen only to be beaten and abused because of her colour. She remained a civil

rights activist until her death. The patients I see who are sick and tired of feeling sick and tired are fighting for their rights as well. They experience and must fight against prejudicial judgments that make them feel devalued. They are being deprived of accommodation in the workplace and disability benefits. What perpetuates the judgments against them is that their illness is invisible. That they feel sick and tired makes the struggle even harder.

These patients have the pattern, and they frequently meet the criteria for diagnoses of fibromyalgia and chronic fatigue syndrome.

Fibromyalgia

FJ is a woman in her mid-forties with widespread chronic pain for three years. The onset was gradual. She described it as a flu-like aching and stiffness in the muscles and joints in her neck, upper and lower back, arms, and legs. Because of the pain she had decreased her time exercising, participating in social activities, and doing hobbies. Her ability to perform household tasks such as cleaning, laundry, and meal preparation was reduced.

FJ had days of fatigue several times per week, but she felt better if she exercised. Other central nervous system (CNS) complaints included intermittent cognition difficulties such as difficulty finding words, decreased attention span, poor concentration, poor short-term memory, and distractibility. She had been diagnosed with occasional migraines, which occurred once or twice per month. Her sleep pattern was normal but she woke up feeling achy and unrefreshed.

There were no mood changes consistent with anxiety or depression. When FJ was growing up, her parents often argued, and they divorced when she was nine. She had been sexually abused at age eleven by a neighbour and was in therapy for one year in her early twenties. She worked full-time as a bookkeeper in an accounting firm and was married, with three young children.

This patient also had occasional gas and bloating and had been diagnosed with irritable bowel syndrome (IBS). She had allergies to pollens and shellfish and intolerance to alcohol; her occasional hives and

asthma required no medication. She also described some chemical odour intolerance: the odours of strongly perfumed products, dry cleaning solvent, deodorizers, fresh paint, and varnish could provoke migraine headaches.

Her environmental exposure history revealed that FJ worked in a sealed high-rise office building. She had symptoms of itchy eyes and nose, sore throat, hoarse voice, headache, fatigue, and poor concentration when in the workplace, and the symptoms diminished when she left the building. However, there had been no complaints from her colleagues.

She was taking duloxetine, an antidepressant used often for management of chronic pain, which had been somewhat beneficial. Physical examination revealed generalized tenderness. All her blood tests were normal.

FJ exhibited the typical pattern. Her main complaint was chronic pain but she had multiple system involvement, including the brain, respiratory, gastrointestinal, and immune systems. The brain was the most significant organ system, with pain, cognitive complaints, and sleep disturbance. There was evidence for environmental sensitivity: she had chemical odour intolerance, sick building syndrome, and classical allergies. Her primary diagnosis was fibromyalgia. We measured the impact of her pain on her ability to function, and her score was average for fibromyalgia.

Fibromyalgia is a widespread pain disorder with no biological markers. Since 1990 these have been the most commonly used criteria for the diagnosis of fibromyalgia:

- a history of widespread pain that has been present for at least three months (the pain is considered widespread when the following symptoms are present);
- pain in both sides of the body;
- pain above and below the waist; and
- pain induced by palpation in at least 11 of 18 designated tender point sites.

It has been 20 years since the American College of Rheumatology (ACR) established these diagnostic criteria for fibromyalgia. Because this is a new and evolving area of medicine, the criteria are changing to reflect new information as it becomes available. The ACR is now proposing new diagnostic criteria that remove the absolute requirement for tender points. That criterion had been a factor designed to improve objectivity but often proved to be a point of contention among physicians. Some doctors did not even look for the tender points, others examined them incorrectly, and some physicians went so far as to refuse to accept the diagnosis as valid if patients were tender in other locations as well. Also, the number of tender points can vary from one appointment to another, as severity of the condition fluctuates.

So the rules do need to change. We should remove sole reliance on a mandatory number of tender points and augment them by considering the severity of the widespread pain, fatigue, poor sleep restoration, and cognitive complaints. Spending the time to obtain a more detailed description and measurement of the impact of these complaints seems like a good addition. In fact, it is a distinct improvement because it captures the essence of the condition. It allows doctors to quantify and follow symptom severity. All these criteria and discussions about improvement are being promoted and directed by the ACR, yet the majority of rheumatologists still do not wish to be responsible for the care of patients with fibromyalgia. In fact, more than half of them still believe that fibromyalgia is primarily a psychosomatic illness.

FJ also met the new criteria for the diagnosis of fibromyalgia. According to the medical literature, this is clearly a central nervous system disorder caused by an abnormality in the mechanism of pain. It involves the limbic system: the peripheral pain receptors have become sensitized and the sensation of pain is maintained by continuous impulses from deep tissues such as muscle and joints, in combination with central sensitization mechanisms.

Central Sensitization

We all have a system for pain, and if all goes well, it is not being activat-

ed. When you stub your toe, pain receptors become excited and start transmitting the pain message, via the nerves, to the spine and up to the pain centre in the brain, located in the limbic system. Once the message of pain is received, another message is sent back down to the pain receptors in the toe, telling them to turn off. If there is no damage to your toe, the pain goes away. If not, the message will continue cycling until healing takes place. In fibromyalgia the pain receptors are turned on, the message up to the brain is exaggerated, the processing by the limbic system is amplified, and the message to turn off the excited pain receptors is deactivated. This is one wired-up continuous loop. Given that it involves the central nervous system, it is called central sensitization.

Central sensitization is the term used to describe an increased response by the brain to a normal sensory input. It is the exaggerated response to and by a hypersensitive limbic system. This is the part of the brain that receives and responds to all sensory information, helping us read and respond to the environment. When sensitized, the limbic system is likely to overreact to stimulation. We call this tendency hypervigilance.

Central sensitization has been described in several functional disorders besides fibromyalgia. For more than 15 years many researchers have suggested, in reputable journals such as the *Annals of the New York Academy of Sciences*, that central sensitization is the physiological explanation for MCS. The theory had been considered unproven until recently. Studies now provide strong objective evidence for the occurrence of central sensitization in MCS.

It is no surprise that FJ also had MCS. Central sensitization occurs in fibromyalgia, MCS, migraine, and IBS. It is one of the mechanisms responsible for manifestation of the pattern, and it explains the pattern seen in FJ's medical history.

Central sensitization turns on an exaggerated sensory pathway for pain, with an exaggerated response to any mild stimuli. Some patients with fibromyalgia find that even tight clothing hurts. This is because the perception of pain is so amplified that even stimuli not normally perceived as painful initiate a sensation of pain. There is also a heightened response to painful stimulation. It is like turning up a volume control setting too high.

Chapter 11

More Dots to Connect

Vision is the art of seeing what is invisible to others.
— Jonathan Swift

DM is a high-functioning mother and wife who runs her own business. She had frequent headaches, shoulder pain, and heartburn. When she came to see me because of increasing chemical sensitivities, she had been taking over-the-counter (OTC) pain medications and antacids for more than 20 years. "I just pop a pill and get on with it."

Most people with the pattern consider themselves healthy. You do not have to be disabled with fibromyalgia or ME/CFS when you have it. There is a spectrum of complaints, and mild pain or fatigue can still be part of the pattern. Maybe you don't see yourself as having a chronic pain issue because you can control it with analgesics. This happens frequently. Pain relievers as a group have the highest sales among OTC drugs. In the United States, 9 to 13 billion tablets of acetaminophen are used annually, amounting to 50 to 70 tablets per person per year. Pain seems to be a problem even in people who consider themselves healthy.

When patients have pain and all the tests come back negative, doctors still need to label the condition. Using the description of the pain provided by the patient, the doctor provides an appropriate diagnosis. The common ones are described in this chapter. As you read through these

chronic pain conditions, you might recognize yourself, a family member, or a friend. Even if you are reassured about the benign nature of the episodes of pain, you should not accept this situation blindly without considering the dynamics behind it. Is there evidence for the pattern? Are you developing a hypervigilant limbic system, central sensitization, and oxidative stress? Are you becoming the next canary?

Chronic Migraine Headaches

Migraine is usually a debilitating headache. The pain can be so severe that it can disrupt work, time with family, and social life. People take a pill for the headache when required, or more regularly to prevent recurrent migraines. The cost to the medical system is low; however, the cost to society of absence from work and reduced productivity is considerable.

The diagnosis of migraine is based on clinical history, because there are no biological markers or specific clinical tests. Most common are episodic migraines, which are characterized by headaches that last 4 to 72 hours. Patients typically describe the pain as unilateral (on one side), pulsating, moderate or severe, aggravated by routine physical activity, and associated with nausea and/or sensitivity to bright light and noise.

Chronic migraines are more debilitating. They are considered chronic if they occur at least 15 days per month. They are different from the occasional episodic migraines because when they develop, there are measurable changes in the limbic system, with robust evidence for central sensitization. The pain system is turned on in these patients. Currently migraine is considered a continuum or spectrum disorder, because people with episodic migraines are more likely to develop chronic migraine headaches and central sensitization.

Chronic Tension Headaches

Tension headache is the most common headache type worldwide, and most people do not seek medical attention unless it becomes frequent and debilitating. It is usually bilateral and feels like a pressure or tightening in the head, sometimes accompanied by nausea. Just like chronic migraines, tension headaches are labelled as chronic when they occur 15 or

more days per month for at least six months. Tension headaches can be caused by muscle contraction in the head and neck, but chronic tension headaches are due to a turned-on pain system. Studies now confirm the association of these chronic headaches with central sensitization.

Chronic Low Back Pain

The lifetime incidence of low back pain is between 50 and 80 percent of the population, and it often follows a prolonged course of recurring episodes and remissions. It is a musculoskeletal disorder that is often caused by muscle overuse or strain sustained over a period of time. It is thought to be due to mechanical causes. The definition of chronic low back pain is established by persistence of the pain beyond three or six months, depending on which studies you read. When it becomes chronic, central sensitization is playing a role.

Rheumatic (Immune) Diseases

Rheumatic diseases are inflammatory conditions that involve muscles and joints, such as rheumatoid arthritis and lupus. Because widespread pain is generated by the inflammation, the pain system is constantly being stimulated. Therefore we see central sensitization occurring more frequently in rheumatic diseases.

Osteoarthritis

Osteoarthritis is a common progressive deterioration of joints associated with aging, obesity, and family history. Pain is the most common symptom, but it does not correspond well with the X-ray findings, which usually don't look as bad as the patient feels. Several studies of osteoarthritis have demonstrated the presence of hyperalgesia (abnormal pain sensitivity) with central sensitization. My mother, who was healthy for 95 years, had significant osteoarthritis in her hands. She needed to use both hands to hold a glass of water because she could not grip it with her fingers. She had minimal pain and took no medication — she did not have central sensitization.

Chronic Pelvic Pain

Chronic pelvic pain affects nine million women in the United States. Doctors often tell these women that nothing can be done and that the cause is unknown. Approximately 40 percent of gynecological laparoscopies are performed to assess chronic pelvic pain, but they find no pathology in 35 percent of them. Several common, difficult-to-treat conditions — such as vulvodynia, painful menstruation, interstitial cystitis/painful bladder syndrome, and chronic prostatitis in men — fall under the umbrella of chronic pelvic pain.

Vulvodynia is a chronic type of pain that affects the female external genital area (vulva) and has no identifiable cause or visible pathology. I once had a patient whose husband drove her 1,500 kilometres to see me because she had vulvodynia. It was so painful for her to sit for long periods that she lay on the back seat of the car with her feet out the window, wearing a skirt in order to get relief from the cool air.

Although this was an extreme case, this condition affects approximately 16 percent of women. The most common description is burning pain, but others have described it as knifelike or like acid being poured on the skin. Sex is painful, and the pain can be provoked by anything that exerts pressure on the area, such as tampon insertion, speculum examination by a physician, riding a bike, or even sitting for a long period of time. Vulvodynia is a complex regional pain syndrome caused by central sensitization.

Primary dysmenorrhea (painful menstruation) is menstrual pain without any pelvic abnormality, and it is the most common gynecological disorder in women of child-bearing age, especially in adolescence. These women display evidence of central sensitization that is maintained throughout the entire menstrual cycle, even in the absence of pain.

Chronic prostatitis is a pelvic pain. Whether or not the pain is generated by the prostate is not clear. The pain can be felt in the testicles, penis, lower abdomen, or perineum (the area between the scrotum or vagina and the anus); urination or ejaculation may intensify it. The cause is unknown and attempts to find prostate pathology have failed. Nonetheless, there are many men with this condition whose lives have been dramatically altered because of reduced physical activity, social life, and sexual activity. The

studies show that these men demonstrate central sensitization.

Interstitial cystitis/painful bladder syndrome is a group of symptoms that include decreased bladder capacity; an urgent need to urinate frequently, day and night; feelings of pressure, pain, and tenderness around the bladder, pelvis, and perineum; painful sexual intercourse; and discomfort in the penis or scrotum. This disorder is another confirmation of central sensitization. I see it frequently in my practice and consider it part of the pattern.

Irritable Bowel Syndrome and Reflux

Irritable bowel syndrome (IBS) is a very common gastrointestinal (GI) motility disorder, occurring in up to 23 percent of the population. It is most commonly diagnosed when cramping, abdominal pain, bloating, constipation, and/or diarrhea occur frequently in the absence of any abnormal tests. Two-thirds of these patients report food intolerances, although for many reasons, food challenge studies have varied widely in their support.

The distress caused by the symptoms of IBS ranges from mildly abnormal stool production to significant pain and impact on function. It ranges from the physical discomfort of abdominal bloating and flatulence to severe urgency to defecate. This urgency can result in frustration during simple everyday tasks such as standing in line at the bank. For some people IBS can be so disabling that they may be unable to work, attend social events, or even travel short distances because of urgency to defecate or pain. I once had a patient who was on disability for severe IBS because his job was to lead canoe trips. Patients with IBS must often plan the events of their day according to the availability of toilets. Paradoxically, IBS also includes the other end of the spectrum: constipation.

Many patients feel that IBS is a "garbage-can diagnosis" because the doctor can't find anything wrong. This is because X-rays, scans, and scopes do not show the movements of the intestine. IBS is a disorder of bowel wall movements. If food travels through the gastrointestinal system too quickly, the water used to help digest it is not reabsorbed enough, and we pass a watery, poorly formed stool, which we call diarrhea. If it goes through too slowly, we are constipated. We can detect disorders in gut motility in research labs, using swallowed radio-opaque

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