CELLULAR INFLAMMATION:

The Silent Killer Lurking Within You

Discover How To Put A Stop To Impending Disease

ABOUT CAROLYN HANSEN

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She has gained a reputation online as an authority on health, exercise and weight loss matters and is the author of several thousand health and fitness articles along with eBooks and programs that can be found here.

She has devoted more than three decades to the fitness industry, both offline and online, teaching people the simple secrets to getting into better shape, losing weight, and improving health.

Her main goal is to change the paradigm of health care from sickness care to wellness care and will be showing people how to live longer, healthier lives while avoiding the many mistaken beliefs and practices that diminish health and longevity.

She will encourage you to become stronger and stay that way through each decade of your life, maintain your health, wellness and vitality and to ensure your "health span" matches your "life span".

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CHAPTER ONE

INFLAMMATION CAN BE BAD FOR YOUR HEALTH

Inflammation in the human body is big business, evidenced by not only the laundry lists of medications and drugs aimed at managing inflammation, but also the never-ending stream of advertisements for anti-inflammatory supplements.

With an aging population looking to live longer and function better in their later years, people are desperate for anything that might help them combat this mysterious enemy responsible for aching knees, degenerating joints, and even more serious conditions such as cancer, diabetes, Alzheimer's and heart disease.

Cellular Inflammation needs to be taken seriously no matter what your age or physical condition. In fact, though hypertension has traditionally been known as the "silent killer," chronic inflammation deserves that reputation as well.

Unfortunately, whether by design or not, the pharmaceutical and supplement industries have made understanding inflammation incredibly confusing for the average consumer. Far too often this leads people to either get "locked on" to a minor part of the puzzle, thinking they are taking care of inflammation while ignoring the big picture; or they simply give up on preventing inflammation and reach for prescription drugs instead.

You cannot see it or feel it, but inflammation may slowly but surely be damaging your body. It has been labelled the "silent killer" because of its role in almost every chronic illness and disease!

Inflammation (swelling), which is part of the body's natural healing system, helps fight injury and infection. But it does not just happen in response to injury and illness.

An inflammatory response can also occur when the immune system goes into action without an injury or infection to fight. Since there is nothing to heal, the immune system cells that normally protect us begin to destroy healthy body tissues like arteries, organs, joints.

Many people have never heard of chronic inflammation, which is a low-grade state of inflammation and is nothing to do with bumping and bruising yourself, often referred to as acute inflammation and represents our body's defence and repair mechanism.

When it comes to inflammation, most of us think of a specific injury that causes a part of the body to become painful and visibly swollen and red such as a sprained ankle, knee or wrist. And rightfully so; this is the body's response to an acute injury or traumatic event.

Most healthcare practitioners learn of inflammation in this same context: Infection or some traumatic injury to the body such as a sprain, broken bone or pulled muscle. Inflammation is rarely discussed as a "chronic, low-grade simmering swelling" affecting cells and causing damage in our body.

Chronic inflammation does not manifest itself like an acute injury or infection. It can take place in the cells of the body from the foods we eat (or don't eat), stress, lack of sleep and sedentary living. And the scary thing is we do not necessarily know or feel its effects. It can take 20 to 30 years before the symptoms appear.

Most of us during our teens, 20s and even 30s consumed large amounts of sugar, flour and omega-6 oils in the form of pastries, doughnuts, cakes, cookies, chips, pretzels, breads, pastas, crackers, salad dressings, packaged and processed foods without necessarily feeling any negative effect.

Yes, we would gain some extra layers of fat and weight, start to notice some energy loss and begin to experience more muscle aches and pains. But the real consequences of diet and lifestyle would not catch up with us until we entered our 40s. What we had consumed for many years triggered chemical processes in our bodies that turned on pro-inflammatory, hormonal-like substances called eicosanoids, cytokines, growth factors and adhesion molecules.

In a healthy, steady state referred to as homeostasis, we have a normal balance of anti- and pro-inflammatory chemicals. However, when we eat a typical Western diet consisting of 60 percent refined sugar, refined grain products, trans fats and oils from soybean, sunflower, corn and peanut, we produce too many of the pro-swelling chemicals. These chemicals can create swelling in our muscles and joints, inflame and bloat our stomachs, narrow our blood vessels and increase fat storage and weight gain.

Eating too much sugar, refined grains and flour also causes spikes in blood sugar, which increases beta cells in the pancreas to pump out increased amounts of insulin. It has been discovered that beta cells also have an additional response to high blood glucose by perceiving that the high sugar is a form of "biochemical injury" and responds by releasing these inflammatory chemicals.

So, in essence, eating large doses of sugar and flour stimulates the same immune or inflammatory response as an infection.

Research now shows that there is a complex link between inflammation, insulin and fat - either in our diet or in the large folds under our skin - and that fat cells behave a lot like immune cells, spewing out inflammatory chemicals, particularly as we gain weight.

Think about coronary artery disease and the narrowing of the vessels carrying blood flow to the heart. We now understand that it is not fat clogging the arteries but inflammatory changes along the arterial wall turned on by increased circulating inflammatory chemicals from diets high in sugar, processed foods and fats, along with stress, lack of exercise and smoking that thicken, harden and narrow our arteries.

This inflammation villain operates in a stealth like manner. We do not feel our arteries closing up until there is no blood supply and thus no oxygen to the heart muscle. We then experience a heart attack.

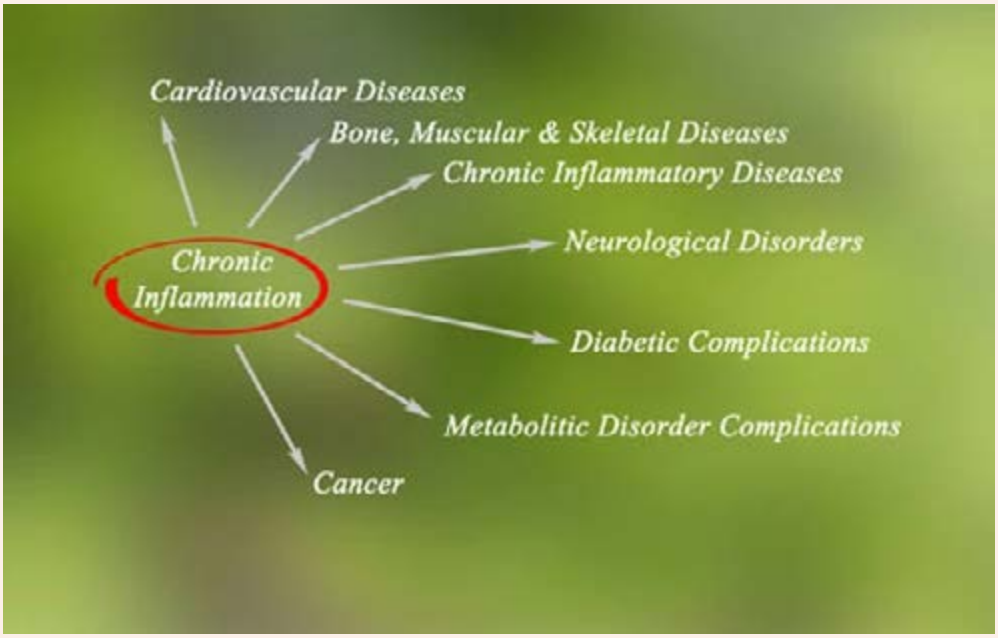
The same thing can happen to our joint and muscle cells. For example, autoimmune diseases occur when our immune system attacks our own tissues. The body thinks the cells are foreign and releases inflammatory chemicals to neutralize or kill them. Basically, the body attacks its own tissues through a barrage of pro-swelling immune cells producing pain and disfigured joints.

Like it or not, what we put in our mouths either turns on the pro-inflammatory chemicals in our bodies or turns them off. The choice of eating healthy along with physical activity and avoidance of smoking is critical to fighting the war against weight gain, chronic diseases and chronic pain, which is the number one cause of long-term disability in the adult population.

It is difficult sometimes for people to understand that their diets of fast food and sugary treats can contribute and even cause their back pain. Even people with full-blown diagnosed autoimmune diseases such as rheumatoid arthritis can get off all medications by cleaning up their diets, getting physically active and losing 50 pounds.

While all of us should be concerned about decreasing our body fat, we should also concentrate on decreasing our body's inflammatory response by the foods we consume and the physical activity we perform.

Yes, there is a genetic component to inflammation, but the process of gaining weight is often a process of inflammation. When you decrease your body's inflammatory response, you will decrease your weight and increase your opportunity for a healthy lifestyle.



CHAPTER TWO
WHAT IS INFLAMMATION, AND WHY SHOULD I CARE ABOUT IT?

Our body can heal itself, which is miraculous when you think about it. If you suffer a cut or infection, sunburn at the beach - or if a disease, allergen or virus finds its way into you - your immune system reacts by sending specialized white blood cells to the affected area. These white blood cells can repair damage, stop the spread of infection or illness and in some cases eradicate the intruder.

Although this activation of cells and cell-derived components mainly have the job of fighting invasions, it can also send in the clean-up crew to sponge up or clear out damaged cells after the body has fought off an invader.

This whole response is what is called inflammation.

It is so amazing that when you suffer say an ankle injury the immune system jumps into action. It begins sending out white blood cells though the blood stream to take care of the damage - for instance, your ankle will swell, be hot to the touch, redness will appear and feel tender - which all indicate that the immune system is working so the healing process can begin.

When injuries or infections occur; this series of events signifies a healthy immune system response and without inflammation, your body would be largely defenceless when faced with injury or illness.

We may wonder what a stubbed toe or a splinter in a finger have to do with your risk of developing Alzheimer's disease, suffering a heart attack or succumbing to colon cancer? More than you might think.

As scientists delve deeper into the fundamental causes of those and other illnesses, they are starting to see links to an age-old immunological defence mechanism called inflammation - the same biological process that turns the tissue around a splinter red and causes swelling in an injured toe.

As not all inflammation is helpful.

Inflammation can become chronic, or at least dysfunctional when it either sticks around when it should dissipate and does not let the healing process begin, or the immune system directs inflammation at something that is not really a threat.

Although inflammation is your body's way of protecting itself from infection, illness and injury, there are two types – good and bad.

Acute inflammation is the 'good' type and is the body's normal response to microbes, tissue damage or metabolic stress. It happens when something harmful or irritating affects our body (e.g. you get a cut, burn or bruise).

The good type is when the inflammatory response is short-term, it serves a useful purpose by kick-starting our body's defence system, protecting against further damage and helping us to recover.

Chronic inflammation is the 'bad' type and happens when the inflammation process goes on for too long, or if there is too much of it.

It is then sometimes called persistent, low-grade inflammation and happens when the body sends an inflammatory response to a perceived internal threat that does not require an inflammatory response. The white blood cells swarm, but have nothing to do and nowhere to go, and start causing mischief like a wayward teenager sometimes attacking internal organs or other necessary tissues and cells.

Other times, the threat is real, but we do not feel it or the inflammatory response, and the inflammation can persist forever.

I personally had an experience that shows how long inflammation can last. I had a root canal around 12 years ago and one of the spaces where the roots are filled became infected. Unbeknown to me it likely persisted as a low-grade infection until it grew into a very painful abscess that started poking out the side of my gum.

My dentist said it had likely been there since the initial procedure.

I was horrified to think my body had been dealing with this for so long and I had not noticed. I could then see how dangerous this could be if during this time a stray cancer cell had come along and needed to be dealt with but slipped through due to the overload on the immune system from fighting the low-grade infection and resulting inflammation.

Its of no surprise that new research is also uncovering a common factor linking this "bad" chronic inflammation and its affect on the immune system and each of nine of the top 10 causes of death by disease.

THIS "SILENT KILLER" MAY BE DISEASE OF THE AFFLUENT

From an early age, the indigenous Shuar people of the Ecuadorian Amazon are exposed to an army of parasites, viruses, and other microbes. But if children survive to adulthood - no guarantee, given that they are three times more likely to die before the age of 5 than children in the United States - they end up with more efficient immune systems than people living in industrialized nations. That is the conclusion of a new study, which adds weight to the idea that early exposure to pathogens confers long-term health benefits.

Inflammation is part of a healthy immune response, allowing the body to orchestrate an onslaught of immune cells and chemicals to heal an injury and fight infection. But sometimes the process goes awry, as when obesity, periodontal disease, stress, misaligned structural body parts, or a chronic infection such as herpes continuously stimulates the immune system, causing chronic, low-grade inflammation which can interfere with the body's healthy organs and tissues and lead to a disease state.

HEALTH: THE FIRES WITHIN

Chronic inflammation is more common than you think starting as a slow burn inside of your body and acting as an emergency vehicle responding to stressors, lack of physical activity, lack of sleep, infections, injuries, allergens, a poor diet, or toxins.

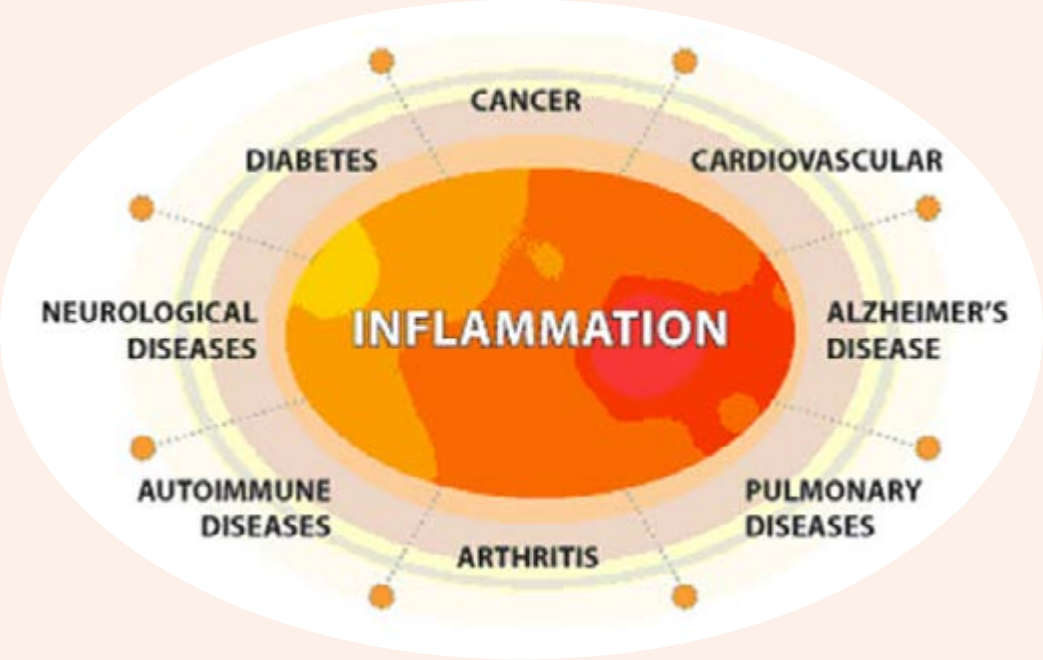
The tender throbbing hot spots which may feel uncomfortable are actually part of your body's natural response. It means your immune system is sending internal signals to launch white blood cells and protein to destroy infection and heal injuries.

But if the inflammation lingers after the job is done, or your immune system becomes confused and misfires by accident, what was once your best friend can quickly become your worst enemy.

When inflammation becomes chronic, your body's natural defence system takes a turn for the worse by starting a sneak attack on your joints, tissue and blood vessels wreaking havoc on all those areas which were once pain free. That is when the slow burning throb becomes a five-alarm fire.

For years, researchers have found that chronic inflammation can be linked to rheumatoid arthritis, multiple sclerosis, and asthma, but the newest and most modern research shows a lot more.

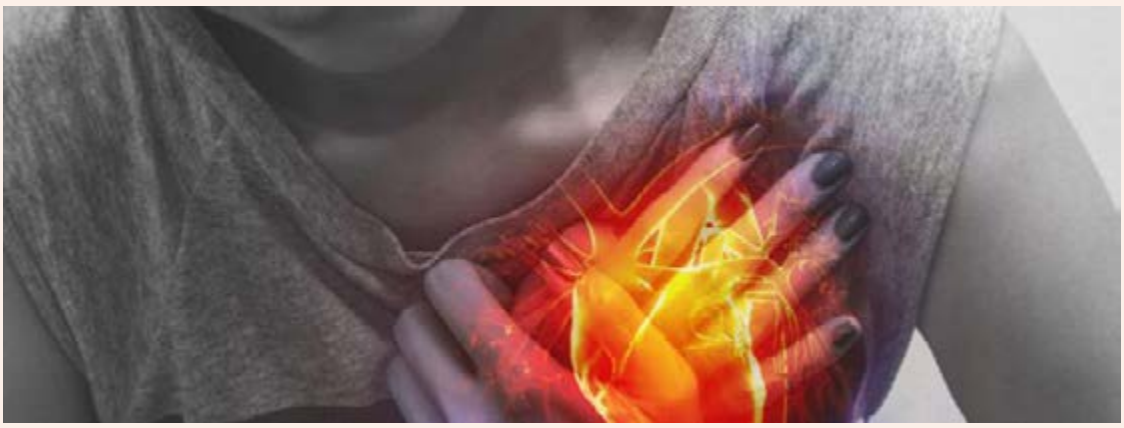
Chronic inflammation can very well be at the heart of the life-threatening diseases which we all fear the most, cancer, heart attacks, diabetes and even Alzheimer's.



CHAPTER THREE
SIGNS YOU HAVE CHRONIC INFLAMMATION

Early symptoms of chronic inflammation may be vague, with subtle signs and symptoms that may go undetected for a long period. You may just feel slightly fatigued, or even normal. Left unchecked and as inflammation progresses, however, it begins to damage your arteries, organs and joints setting the stage for serious life-threatening disease to set in such as when immune system cells that cause inflammation contribute to the buildup of fatty deposits in the lining of the heart's arteries.

These plaques can eventually rupture, which causes a clot to form that could potentially block an artery. When blockage happens, the result is a heart attack.



Left unchecked, inflammation can contribute to chronic diseases. The red flag for chronic inflammation comes when a disease associated with it shows up, like heart disease, blood vessel disease, diabetes, cancer, autoimmune disease like MS, ulcerative colitis, Crohn's disease or rheumatoid arthritis, Alzheimer's disease and other conditions. If you already have one of these conditions the pro-inflammatory choices have already had a profound impact in your life.

Other signs:

- Ongoing, irritating pain in the body (like the joints or muscles)
- Allergies or asthma (especially when they keep getting worse)
- High blood pressure or blood sugar problems
- Ulcers and Irritable Bowel Syndrome
- Constant fatigue or lethargy
- Skin problems or red, bloodshot eyes

If you think you have signs or symptoms of chronic inflammation, you can get testing done to find out if you are dealing with the "silent killer."

WAYS TO TEST FOR CHRONIC INFLAMMATION

There is not a single silver bullet test for chronic inflammation. But there are a series of tests that, coupled with your history, can give you a picture of the levels of inflammation in your body.

Here are 6 common inflammatory markers you can ask your Doctor to test for:

- Elevated High Sensitivity C-Reactive Protein (HS-CRP)
- SED Rate
- High levels of Homocysteine

- Elevated Ferritin in the blood
- Elevated HDL
- Elevated Monocytes can be a secondary indicator of inflammation
- Elevated Blood Glucose is a leading indicator of inflammation

If the combination of these tests indicate you have signs of chronic inflammation, you need to focus on making anti-inflammatory choices from here on out.

This is life or death. Pro-inflammatory or anti-inflammatory. The real problem with chronic inflammation is that it is not short-term gratification. It's easy to pick the inflammatory choices and rationalize that it's not a big deal. But the bottom line is: these pro-inflammatory choices add up over time until one day, chronic inflammation is the reason you have heart disease, rheumatoid arthritis or even worse...

ITS EASIER TO SIMPLY ADD MORE HEALTHY LIFESTYLE CHOICES

Whether you get tests or not, or you think you have inflammation or not, you should be living your life as if you already have it. Its simply not practical to keep getting expensive testing done when you have the power to change things that may be causing your body to become inflamed both now and in the future.

Its comforting to know, when balanced, the body has the capacity to counter the inflammatory chemicals that are produced when it perceives a danger. However, when the body becomes imbalanced, it loses its ability to produce anti-inflammatory chemicals to counteract inflammation. This may go undetected for long periods of time – however, symptoms of chronic inflammation can manifest as arthritis, colitis, fatigue, sinusitis, cataracts, chronic pain or hair loss.

Chronic inflammation can also be felt as joint and muscle aches, fatigue, weight gain, food intolerances, difficulty sleeping, mental fog, memory loss, bloating and bowel irregularities, headaches, runny nose, and difficulty in breathing.

You can see chronic inflammation in yourself by looking in the mirror and asking "Does my skin look in good condition? Is my hair dry and listless? Is there swelling under my eyes? Am I carrying too much weight, especially weight which is difficult in coming off?" Do I have tons of natural energy?

The physical signs of chronic inflammation are easy to identify for those who simply ask the question "Do I look and feel well and healthy?"

Chronic inflammation is usually seen in people who have diets with a high ratio of Omega-6 to Omega-3 Essential Fatty Acids, lead lives with high stress levels, have excess body fat or eat high carbohydrate content meals.

If you do have even an unnoticed low-grade infection process happening in your body this can also set the scene for a cascade of biological reactions or events including the destruction of your good gut bacteria or flora, which can threaten your long term physical and mental health when your body embarks on war with itself.

New research published in the journal Nutrition and Clinical Practice shows that your gut flora can affect numerous processes in your body, including your metabolism, immune function, energy production, body weight, nutrition and genetic expression i.e. whether your disease-inducing genes are suppressed or turned on.

It is really important to understand that there are very few, if any symptoms of chronic inflammation; it smoulders like a slow burning log and then through time, erupts like a volcano, when symptoms become apparent, but very often it is either too late or life changing, e.g. heart attack, cancer, diabetes, Alzheimer's.

CHRONIC INFLAMMATION AND DISEASE

Research is revealing that chronic inflammation IS the reason why we get sick, the catalyst for most, if not ALL disease. Apart from the conditions already mentioned, chronic inflammation leads to poor gut health (and vice versa), creating a domino effect which in turn causes:

- Poor nutrient absorption
- Fat storage
- Mood disorders
- Depression
- Insulin resistance
- Digestive disorders; bloating, gas, nausea, heartburn, diarrhoea, leaky gut syndrome, irritable bowel syndrome, Crohn's disease, acid reflux and constipation are potential signs of an elevated inflammatory response

It's easy to fall into the trap of thinking that tummy problems are no big deal, and they may not be. However, if these problems are persistent, it's not normal – and may be an indication of an underlying health condition.

It's a good thing that inflammation has become one of the hottest areas of medical research. Hardly a week goes by without the publication of yet another study uncovering a new way that chronic inflammation does harm to the body.

Recent studies are revealing it destabilizes cholesterol deposits in the coronary arteries, leading to heart attacks and potentially even strokes. It chews up nerve cells in the brains of Alzheimer's victims. It may even foster the proliferation of abnormal cells and facilitate their transformation into cancer.

In other words, chronic inflammation is proving to be the engine that drives many of the most feared illnesses of humanity.

This concept is so intriguing because it suggests a new and possibly much simpler way of warding off disease. Instead of different treatments for, say, heart disease, Alzheimer's and colon cancer, there might be a single, inflammation-reducing remedy that would prevent all three.

Chronic inflammation also fascinates scientists because it indicates that our bodies may have, from an evolutionary perspective, become victims of their own success. We evolved as a species because of our ability to fight off microbial invaders. The strategies our bodies used for survival were important in a time when we did not have processing plants to purify our water, when we did not have sewers to protect us.

But now that we are living longer, those same inflammatory strategies are more likely to slip beyond our control. Making matters worse, it appears that many of the attributes of a Western lifestyle - such as a diet high in sugars and saturated fats, accompanied by little or no exercise - also make it easier for the body to become inflamed.

CANCER: THE WOUND THAT NEVER HEALS

Back in the 1860s, renowned pathologist Rudolf Virchow speculated that cancerous tumours arise at the site of chronic inflammation. A century later, oncologists paid more attention to the role that various genetic mutations play in promoting abnormal growths that eventually become malignant. Now researchers are exploring the possibility that mutation and inflammation are mutually reinforcing processes that, left unchecked, can transform normal cells into potentially deadly tumours.

How might that happen? One of the most potent weapons produced by macrophages and other inflammatory cells are the so-called oxygen free radicals. These highly reactive molecules destroy just about anything that crosses their path - particularly DNA.

A glancing blow that damages but does not destroy a cell could lead to a genetic mutation that allows it to keep on growing and dividing. The abnormal growth is still not a tumour, but to the immune system, it looks very much like a wound that needs to be fixed.

When immune cells get called in, they bring growth factors and a whole slew of proteins that call other inflammatory cells that come in and go 'heal, heal, heal.' But instead of healing, you are in fact 'feeding, feeding, feeding.'

Most of the time, inflammation is a lifesaver that enables our bodies to fend off various disease-causing bacteria, viruses and parasites. (Yes, even in the industrialized world, we are constantly bombarded by pathogens.) The instant any of these potentially deadly microbes slips into the body, inflammation marshals a defensive attack that lays waste to both invader and any tissue it may have infected. Then just as quickly, the process subsides and healing begins.

Every once in a while, however, the whole feverish production doesn't shut down on cue. Sometimes the problem is a genetic predisposition; other times something like smoking or high blood pressure keeps the process going. In any event, inflammation becomes chronic rather than transitory. When that occurs, the body turns on itself - like an uncooperative child who can't resist picking a scab - with aftereffects that seem to underlie a wide variety of diseases.

CHAPTER FOUR
THE BRAIN ON FIRE: DEPRESSION AND INFLAMMATION

Studies also show that there is a strong link between inflammation and depression.

Depression is one of the most common mental disorders in the Western world with antidepressant use jumping 65 percent in the last 15 years, with one in eight of us over the age of 12 taking antidepressants.

These statistics are alarming considering the root causes of depression are going unaddressed. Like pain or injury anywhere in the body, depression is a warning flag from the body that the system is out of balance. Stamping out the root causes of depression is like removing the engine light in your car instead of investigating what is actually wrong with the car.

Its important to look at the body as an integrated whole, with all parts working together and influencing one another. It does not make sense to isolate and treat one part of the body - such as the brain in depression - without including the overall health of the body.

Is depression a kind of allergic reaction?

A growing number of scientists are suggesting that depression is a result of inflammation caused by the body's immune system.

Could depression be a form of "sickness behaviour"?

We often see a celebrity "opening up" about their "battle with depression". This, apparently, is a brave thing to do because, despite all efforts to get rid of the stigma around depression, it is still seen as some kind of mental and emotional weakness.

But what if was nothing of the sort? What if it was a physical illness that just happens to make people feel pretty lousy? Would that make it less of a big deal to admit to? Could it even put a final nail in the coffin of the idea that depression is all in the mind?

According to a growing number of scientists, this is exactly how we should be thinking about the condition, that it has as much to do with the body as the mind.

The basis of this new view is blindingly obvious once it is pointed out: everyone feels miserable when they are ill. That feeling of being too tired, bored and fed up to move off the sofa and get on with life is known among psychologists as “sickness behaviour”. It happens for a good reason, helping us avoid doing more damage or spreading an infection any further.

It also looks a lot like depression. So, if people with depression show classic sickness behaviour and sick people feel a lot like people with depression – might there be a common cause that accounts for both?

The answer to that seems to be yes, and the best candidate so far is inflammation – a part of the immune system that acts as a burglar alarm to close wounds and call other parts of the immune system into action. A family of proteins called cytokines sets off inflammation in the body and switches the brain into sickness mode.

Both cytokines and inflammation have been shown to rocket during depressive episodes, and – in people with bipolar – to drop off in periods of remission.

There are other clues, too: people with inflammatory diseases such as rheumatoid arthritis tend to suffer more than average with depression; cancer patients given a drug called interferon alpha, which boosts their inflammatory response to help fight the cancer, often become depressed as a side-effect.

As evidence like this continues to stack up, it is not surprising that some people have shifted their attention to what might be causing the inflammation in the first place.

A diet rich in trans fats (man-made fats and oils) and sugar has been shown to promote inflammation, while a healthy one full of fruit, vegetables and oily fish helps keep it at bay. Obesity is another risk factor, probably because body fat, particularly around the belly, stores large quantities of cytokines.

Add this to the fact that stress, particularly the kind that follows social rejection or loneliness, also causes inflammation, and it starts to look as if depression is a kind of allergy to modern life – which might explain its spiralling prevalence all over the world as we increasingly eat, sloth and isolate ourselves into a state of chronic inflammation.

If that is the case, prevention is probably the place to start. It is not a great idea to turn off inflammation entirely, because we need it to fend off infections, but "lowering levels of systemic inflammation to manageable levels is a good goal to have".

And as for the stigma – could it really be killed off by shifting the blame from the mind to the body? Time will tell. This is not the first time that depression has been linked to a physical phenomenon, after all. A recent survey found that despite wider awareness of the theory that "chemical imbalances" in the brain cause depression, this has done nothing to reduce stigma; in fact, it seemed to make matters worse.

This time, though, the target is not any kind of brain or mind-based weakness but a basic feature of everyone's body that could strike anyone down given the right – or wrong – turn of events. Many factors can play into depression, including blood sugar imbalances, hormonal imbalances, immune dysregulation, gut health, and gut microbiome dysfunctions.

All of these factors can lead to brain inflammation, which scientists are increasingly finding is the most common cause of major depressive disorder. This type of depression does not respond to antidepressants.

Antidepressants target brain chemicals. called neurotransmitters, that govern mood, motivation, behavior, and mental activity. Some natural remedies, such as 5-HTP or Saint John's Wort, also target neurotransmitters.

However, this model does not take into account newer research that shows depression is usually due to inflammation. Inflammation in the brain disrupts brain function in several ways that leads to depression.

BRAIN INFLAMMATION SLOWS FIRING BETWEEN NEURONS

Your brain operates through communication, or firing, between neurons. However, when the brain becomes inflamed, the inflammation slows down conduction between neurons. Slowed firing between neurons in the frontal and limbic lobes of the brain leads to depression.

BRAIN INFLAMMATION PREVENTS THE PRODUCTION OF NEUROTRANSMITTERS

Feeling happy and content instead of depressed depends on proper neurotransmitter production and activity in the brain. Brain inflammation has been shown to sabotage the synthesis of dopamine and serotonin, the two neurotransmitters most associated with depression.

Dopamine is called the "pleasure and reward" neurotransmitter.

SYMPTOMS OF LOW DOPAMINE INCLUDE:

- Inability to handle stress
- Inability to self-motivate
- Inability to start or finish tasks
- Feelings of worthlessness
- Feelings of hopelessness
- Short temper over minor upsets
- Isolating oneself from others
- Unexplained lack of concern for family and friends

Serotonin is the “joy and well-being” neurotransmitter.

SYMPTOMS OF LOW SEROTONIN INCLUDE:

- Feelings of depression
- Feelings of inner rage and anger
- Difficulty finding joy from life’s pleasures and favorite activities
- Depression when it is cloudy or when there is lack of sunlight
- Not enjoying friendships and relationships
- Not enjoying favorite foods
- Unable to fall into deep restful sleep

As dopamine levels drop, you lose your motivation and drive. As serotonin drops, you lose your mood, sense of happiness, and satisfaction with things you used to love.

While this may look like a neurotransmitter problem, antidepressants typically have no effect because they do not address the brain inflammation causing it.

The inflammatory response is a key component of our immune system. As already discussed, when our bodies are invaded by bacteria, viruses, toxins, or parasites, the immune system recruits cells, proteins, and tissues, including the brain, to attack these invaders.

The main strategy is to mark the injured body parts, so we can pay more attention to them. Local inflammation makes the injured parts red, swollen, and hot. When the injury is not localized, then the system becomes inflamed.

When any part of the body or brain becomes inflamed, the body recognises it as an “injury’ or invader threat. We then slip into “sickness behaviours” which include physical, cognitive and behavioural changes.

Typically, the sick person experiences sleepiness, fatigue, slow reaction time, negative mood, social withdrawal, cognitive impairment, loss of appetite and anhedonia (loss of pleasure).

This constellation of changes that take place when we are sick is adaptive. It compels us to slow down and get more rest/sleep to heal.

A sick animal would move away from its group, find somewhere quiet to hide, stop eating and drinking to conserve energy and spend time resting or sleeping so the body could focus on healing.

This isolation helps it be away from the disturbances of its group mates and minimizes the chances of drawing unwanted attention to the others. The evolutionary advantage for such behavior would occur as a result of the avoidance of contact with others in the group and thereby reduce the spread of the infection.

Such symptoms would be beneficial for survival as they allow the animal to withdraw into a safe environment so that the healing process may occur. The term “sickness behavior” was devised to describe such behavior.

This suggests that sickness behavior is a relatively short-term reaction to an acute inflammatory challenge and reflects a strategy that was critical for the survival of both animals and humans since time began.

When you are physically unwell, it is easy to be depressed. But Nature also designed our bodies to change our behaviour when we are sick and unwell, as a response to try to get you well again.

A prolonged inflammatory response can wreak havoc in our bodies and can put us at risk of depression and other illnesses. There is plenty of evidence solidifying the link between inflammation and depression.

People who do not feel physically well can be sad, they can also be depressed. There is a big difference. Sadness, it is said, is a response to something bad happening in your life, the response to loss or disappointment or even medical concerns. There is a physical and emotional stimulus that makes you feel sad. If that stimulus is repaired or fades away, as the old expression goes, “time heals all wounds,” then the sadness fades away.

It is said about depression that a major characteristic of the sufferer is that they cannot overcome the physical and emotional stimulus of sadness. Why?

A major characteristic of the depression sufferer is NOT that they cannot overcome the stimulus of sadness, but that they cannot overcome the stimulus of chronic inflammation.

This is because the brain's immune cells don't have an off switch like the body's. When they are triggered by a brain injury, an inflammatory food, unstable blood sugar, a chronic infection, poor gut health, infectious bacteria in the gut, chronic stress, alcohol abuse, and other insults, they become over-activated in an effort to protect the brain.

Unfortunately, they do not necessarily turn off afterward and can stay in a "primed" overactive state indefinitely if constantly triggered by poor dietary and lifestyle choices. This is what causes brain inflammation and depression.

I hope you can see now why it is so important to address the root causes of depression. Failing to do so allows body or brain inflammation to continue unchecked, and the "sickness behaviour" continues raising the risk of dementia, Alzheimer's, Parkinson's, and other brain degeneration diseases.

All of this gives us an interesting new perspective on how body, brain and mind are deeply intertwined and related to each other.

CHAPTER FIVE

HEALTH: THE FIRES WITHIN

Inflammation is often compared to fire. In controlled amounts, there is no question that fire keeps us warm, healthy, and protected, but when there is too much fire, or if fire gets out of control, it can be destructive.

But a fire does not need to be big to cause damage. It is now understood that low-grade chronic or on-going inflammation that is below the level of pain, can contribute to many chronic health problems and can itself become a disease.

This ongoing low-grade inflammation is the stage where your body no longer has the ability to turn off the inflammatory response and starts damaging healthy tissue or prevents them from properly repairing.

It also begins to destroy healthy cells in arteries, organs, joints, and other parts of the body. It could damage the intestinal lining in your gut and cause digestive problems, it could damage the arteries in your heart and cause heart disease, or it could damage your joints and cause rheumatoid arthritis.

At that point, too many pro-inflammatory choices have created a monster.

HOW TO PREVENT OR REDUCE UNNECESSARY INFLAMMATION

Often, people take medications to decrease inflammation. Drugs like ibuprofen and aspirin can change the body's chemical reactions, but they are not without side effects. Research has shown that lifestyle choices can decrease inflammation too; our choices can influence how much inflammation we have in our bodies. Adopting a healthy diet as well as other healthy lifestyle behaviors can have a dramatic effect on inflammation levels.

The wonderful news is, you can control - and even reverse - inflammation through a healthy lifestyle. When you don't eat healthy, don't get enough muscle building and maintaining exercise, don't get enough quality sleep or have too much stress, the body responds by triggering inflammation.

We have talked about the damaging consequences of inflammation to your body, brain and health over the long term. So, the food you eat, how much exercise you get, how much stress you are experiencing and the quality of sleep you get all really matter when it comes to reducing inflammation.

There are many simple things we all can do to dampen, counteract and prevent health issues caused by chronic inflammation and I will be explaining how I can help you with that and give you simple plan on the last page of this eBook.

But for now here are the big ones:

- **LOSE WEIGHT -** If you are overweight, losing weight is a great place to start as it induces those fat cells to product fewer harmful cytokines.The more excess weight you carry as fat, the more active those fat cells are and the more inflamed you will be.

Visceral (deep internal) fat triggers inflammation.

Here is how this works:

1. Excess fat from the cells oozes out, triggering an immune response.

2. Fat cells undergo mechanical stress, triggering an immune response.

What this means is that macrophages (the foot soldiers of the immune system) make their way into fat tissue to see what all the fuss is about.

Everybody has some macrophages in their fat tissue. But the proportion varies considerably – from 10 percent macrophages in lean people, to 50 percent in obese people. As the macrophages make their way into fat tissue, the body shows an increase in markers of inflammation.

The important point is that chronic inflammation is not just another a side effect of obesity. Instead, it appears to be the link between obesity and disease.

- EXERCISE - Hands down the best way to reduce inflammation is with proper exercise. The dominant response from exercise is anti-inflammatory. The cellular signals released from contracting muscles during exercise inhibit the negative inflammatory response reducing pro-inflammatory signals and reductions in low-grade chronic inflammation.

Over time, the benefits from reduced chronic inflammation can include improved glucose management, fat metabolism and immune function, thereby enabling our bodies to be more prepared to combat illness and recover from an injury.

Exercise also teaches our bodies to react better to stressors imposed on it.

Avoiding chronic inflammation will help improve nutrient absorption, alleviate cravings, improve insulin function, help control body weight, and improve your mental state; 90 percent of the “feel good” brain chemical, serotonin which is produced in the gut.

Inflammatory foods cause a constant immune response and should be limited or even better avoided. These include:

- GET YOUR OMEGA-3 - You need to get a proper balance of omega-6 to omega-3 fats: Prostaglandins, the lipid compounds derived from fats, can be either pro-inflammatory or anti-inflammatory. The prostaglandins produced by the breakdown of omega-6 fats are mostly pro-inflammatory, and the prostaglandins produced by omega-3 fats are mostly anti-inflammatory.

Many people consume too much omega-6 fat and not enough omega-3 fat. The solution? Dump cooking oils made with corn, safflower and other omega-6 oils, choose grass-fed meat over grain-fed meat, and eat more cold-water fish (or take fish-oil supplements). Most adults should aim for an omega-6: omega-3 ratio of 2:1 or 3:1.

Omega-3s contain potent anti-inflammatory properties. Some foods rich in this fatty acid include chia seeds, fish, fish oil, flaxseeds, lean meats, seafood, soybeans, spinach, and walnuts.

- AVOID TRANS FATS - Trans fats (man-made fats and oils) inhibit the enzymes responsible for breaking down omega-3 and omega-6 fats, crippling your body’s ability to process healthy fats normally. These fats are found in processed foods - things that come in a packet, bag, tin or frozen in the supermarket that contain generic refined vegetable oils, hydrogenated and partially hydrogenated fats (aka trans fats).

These include margarines, non-butter spreads, baked goods, some packaged foods, vegetable shortenings, sunflower, safflower, corn, grape seed, groundnut (peanut) soya oils and the processed and fried foods that contain these food villains.

These “bad” fats are high in omega 6, disrupting the crucially important omega 6 to omega 3 balance. Use cold pressed oils like extra virgin olive oil, macadamia and avocado oils for drizzling and dressings only. Although some cold pressed nut and seed oils can be pricey such as walnut, flax seed, hemp and hazelnut they are worth the money spent on them.

For cooking use organic or grass fed butter or ghee, virgin coconut oil or animal fat (lard) from a grass fed animal; they are all stable at higher temperatures and do not degrade into oxidative compounds.

- LIMIT REFINED CARBOHYDRATES - Consuming excess refined sugars contributes to inflammation both by increasing the production of pro-inflammatory prostaglandins and raising insulin levels, which is not catastrophic by itself, but will eventually lead to increased inflammation.

To reduce the effects of inflammation and inflammation-related medical conditions, and to control blood sugar levels it is essential to decrease or eliminate the amount of flour and sugar from our diets. Some of the more common sources of refined carbs include bread, cereal, cookies, crackers, pasta, and soft drinks.

One easy rule to follow is to avoid white foods, such as white bread, rice and pasta, as well as foods made with white sugar and flour. Build meals around lean proteins and whole foods high in fiber, such as vegetables, fruits and whole grains, such as brown rice and whole wheat bread. Check the labels and make sure that “whole wheat” or another whole grain is the first ingredient.

Note: Don’t be fooled by gluten free products as they are high in other starch flours like potato and rice, which cause high insulin responses leading to potential fat storage, contain anti-nutrients as well as being devoid of nutrition.

SUGARS AND THEIR BY-PRODUCTS. Sugar has many guises; corn syrup, dextrose, maltodextrin, fructose, golden syrup, maltose, agave syrup, sorghum syrup and sucrose are some of the creative names used. Artificial food additives such as aspartame and other artificial sweeteners, MSG, colourings and flavourings should be avoided. Use natural sweeteners like Truevia, Purevia or pure Stevia.

INCREASE DIETARY ANTIOXIDANTS: In general, a diet high in healthy fats down-regulates the production of inflammatory cytokines; coconut and its by-products, cold pressed oils, fat from naturally raised animals and poultry, raw nuts and seeds, olives, avocados, oily fish, wild fish, meats including offal and poultry from free range, grass fed or naturally reared animals, eggs, high fat organic or grass fed dairy in moderation, fruits, vegetables and all spices and herbs.

OTHER FACTORS AND INFLAMMATION

- Sleep or the lack of, is also a cause of elevated cytokines (inflammatory markers).

- Stress is a major contributor to inflammation and steps should be taken to reduce it; a proper night's sleep is in actual fact one of the best strategies, along with adherence to a regular exercise program which will help deal to stress.

- Environmental toxins, also labelled as endocrine disrupters or hormone mimickers, increase oestrogen levels in turn causing fat gain as already discussed; fat is a factory for cytokines (inflammatory chemical mediators).

These toxins are found in household cleaners, pesticides, canned foods, plastics, toiletries in particular phthalates and parabens, industrial products e.g. solvents and paints, herbicides and non-filtered water; they all cause inflammation.

To summarise an anti-inflammatory lifestyle includes:

- Eating anti-inflammatory foods
- Adequate exercise and being active
- Managing weight
- Not smoking
- Limiting alcohol intake
- Getting enough quality sleep
- Managing stress well

When it comes to chronic inflammation, there is evidence to show that your diet, weight around your stomach, stress levels, smoking status, activity levels and amount of sleep can affect your overall health and risk of developing chronic disease.

Inflammation is a natural part of life, but today's lifestyle is causing more than ever before. Inflammation is caused by stress, sugars, trans fats, soy, msg, gluten, aspartame, alcohol, chemicals ingested, sometimes dairy and everything that is refined. It is just part of everyday life, but what if there was a way to naturally reduce inflammation?

Every action contributes to health or promotes disease

Each day we make choices about this so called "silent killer". For example, every item of food we choose to eat, every pill we take, the time we decide to go to bed, the city we choose to live in, the job we choose to have… each one contributes to chronic inflammation or helps calm it down.

Every choice we make about our health boils down to this: Pro-inflammatory or anti-inflammatory.

For example:

- Working 100 hours a week at a stressful job with little sleep? Pro-inflammatory
- Eating a high-carb, low-fat diet filled with grains and sugar? Pro-inflammatory
- Drinking a few beers a night? Pro-inflammatory
- Exercising regularly and living an active lifestyle. Anti-inflammatory
- Eating lots of healthy fats Anti-inflammatory
- Getting 8 hours of sleep? Anti-inflammatory

Years of making pro-inflammatory choices add up to chronic inflammation and is something way too common in our bodies these days. Fighting it through simple lifestyle choices is what we are aiming for every day.

The great thing about an anti-inflammatory lifestyle is that apart from reducing inflammation it also gives us a clearer mind, healthier looking skin, a strong and fit body, a calm and happy tummy and many other benefits.

Who wouldn't want that every day?

This “super wellness” is all about staying well when you are healthy. It is about building a strong, disease resistant body and even if you get sick it is about finding and eliminating the cause of the disease not just managing the symptoms.

THE GOALS OF A WELLNESS LIFESTYLE ARE (AT ANY AGE)

- Robust healing and healthy cell renewal processes
- Healthier - above simply “not being sick”
- To remain strong and energetic regardless of age
- Slow the aging process
- Live a peak performance life
- Improve body composition (muscle to fat ratio)
- Physically, mentally and emotionally strong and resilient
- Being free of - and not at risk of disease
- Wellness through every decade of life
- Health span equals life span
- Tons of energy and “zest” for life and living

I think you’ll agree with me that any one of these bullet points are something wonderful. BUT imagine how powerful they all are TOGETHER?

Lets improve YOUR health…starting today

DO YOU NEED YOUR OWN WELLNESS WAKEUP CALL?

My day job is devoted to accelerating just the kind of inflammation-reducing changes I have advocated in this book as being necessary to robust long-term health.

Most of these activities I carry out online, challenging others to advocate for their own self-interest by adopting the same lifestyle habits that have helped me to remain inflammation-free, highly mobile, and still able to enjoy good health after decades of helping others to do the same.

Today I further address those issues with my “Wellness Wakeup Call” program designed to help you meet the health challenges of a rapidly changing world.

Let me teach you how to be your own coach and leader, to get yourself going and live life on your terms, without the burden of chronic inflammation that can really crimp a life!

Don't wait for tomorrow. Allow this report to be the instigating factor for change in your life and join me in my special "Wellness Wakeup Call" program. The link to register and get started immediately can be found below.

This program goes much further than simply addressing what needs to be done to check chronic inflammation in your body and withstand the onslaught of disease.

Using an ongoing series of "wakeup" calls which I send directly to your email inbox, my goal is to keep you apprised of what truly matters for the preservation of your long-term health. Because ultimately it is up to YOU to continue to make the right decisions daily when it comes to your well-being.

If this approach sounds like something you would be interested in knowing more about, come check out my "Wellness Wakeup Call" trainings:

Click here to learn how my Wellness Wakeup Call works

To your health...always!

Carolyn