

CHAPTER 1

Meet the Inflammation Syndrome

Hank and Debra: The Deadly Effects of the Inflammation Syndrome

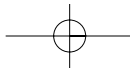
For Hank and Debra, what they didn't know came back to hurt them.

In college they were athletic, trim, and attractive. Hank was the star of the college football team, and Debra was an avid tennis player. Youth was on their side, and they quickly recovered from the inevitable athletic injuries.

After they graduated and married Hank pursued a career in sales, enjoying its competitive nature but not immediately recognizing how it kept him from exercising. Meanwhile, Debra juggled motherhood and periodic jobs to earn extra money. Like many people, they learned to save time by eating mostly ready-to-heat convenience foods and fast-food restaurant meals, which tended to be high in fat and carbohydrates and low in vegetables.

Hank regularly suffered from heartburn and indigestion, but he never figured out that his poor food choices were the source of his stomach upsets. Debra had developed asthma and mild rheumatoid arthritis. Both were prescribed medications by their physicians, but diet was never even considered a potential factor in their deteriorating health.

By middle age their trim athletic figures were little more than a



memory. Hank had gone from a lean 180 to 250 pounds, and Debra's weight had ballooned from 110 to 180 pounds. Hank's blood cholesterol was elevated and, combined with his weight, significantly increased his risk for heart disease. He had also developed chronic aches and pains in his shoulders and hips, a result of old football injuries. Meanwhile, Debra's asthma and arthritis had gotten worse, and she was taking prednisone and other medications to control her symptoms.

In their fifties Hank developed adult-onset (type 2) diabetes and Debra was diagnosed with breast cancer. Hank was prescribed a glucose-lowering drug, and Debra underwent surgery and chemotherapy.

Having gone through all that, their health seemed relatively stable for several years. But retirement saw no relief for their health problems. Hank was taking eight prescription medications and Debra was taking six. At age sixty-two Debra's breast cancer reappeared, and treatment failed. She died at age sixty-three. Hank, who was largely confined to home (and had hot meals and groceries delivered by a local social service organization) had a heart attack and died at sixty-five.

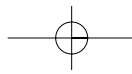
All of Hank and Debra's health problems were treated according to the prevailing medical standards of care. But their doctors failed to see that poor food choices and chronic inflammation were intertwined in many of their health problems. As a result the doctors treated only symptoms, not the causes of Hank and Debra's problems.

Every disease, every ache, and every pain you suffer revolves around inflammation.

Inflammation is what causes the pain of arthritis, the discomfort of allergies, the wheezing of asthma, and the stiffness from overusing your muscles. Inflammation also underlies the most devastating and catastrophic of all diseases: heart disease, Alzheimer's disease, and many forms of cancer.

If that seems hard to believe, consider that over-the-counter anti-inflammatory drugs reduce the risk of heart attacks and Alzheimer's disease. But this book is not going to recommend that you take drugs to reduce inflammation. Their side effects all too often outweigh their benefits, especially when natural and safe anti-inflammatory foods and nutrients abound.

Even if you seem to be pretty healthy today, odds are that inflammation is simmering in your body, quietly damaging your heart, your mind, your organs. Such inflammation may be stirred up by physical injuries,



frequent colds and flus, allergies, eating the wrong types of fats and carbohydrates, and by having a “spare tire” around your middle. At a certain point your inflammation will boil over into painful and debilitating symptoms.

Inflammation is a normal process that can go dreadfully wrong. It is supposed to protect us from infections and promote healing when we are injured.

Chronic inflammation does just the opposite: it breaks down our bodies and makes us more susceptible to disease. Inflammation forces millions of people with arthritis to alter their daily lives, and it adds caution to the millions of people with asthma who do not know when their next suffocating attack will occur. Millions of other people—with multiple sclerosis, lupus, diabetes, and other disorders—also suffer from chronic inflammation.

The Inflammation Syndrome

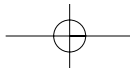
Individual inflammatory disorders such as asthma or rheumatoid arthritis are bad enough. Far more insidious is the Inflammation Syndrome, the significance of which is only now being recognized in medical circles.

A syndrome is a group of symptoms that characterizes a particular disorder. For example, in my previous book *Syndrome X: The Complete Nutritional Program to Prevent and Reverse Insulin Resistance*, Syndrome X was defined as the clustering of abdominal fat, insulin resistance, hypertension, and elevated cholesterol—all of which significantly increase the risk of diabetes and coronary artery disease.

Similarly, the Inflammation Syndrome reflects the coexistence of at least two inflammatory disorders that significantly increase the risk of more serious inflammatory diseases. What causes this ongoing buildup in inflammation? Although an inflammatory response may primarily affect specific tissues, such as the knees, it commonly radiates through the body and randomly attacks other tissues. Over a number of years this systemic (bodywide) inflammation can contribute to diseases that might appear unrelated but that do share a common thread of chronic inflammation.

Some examples of the inflammation syndrome are in order. Let's start with being overweight, a condition that affects two-thirds of Americans and growing numbers of people in most other developed countries.

Excess weight contributes to inflammation because fat cells secrete chemicals, such as C-reactive protein and interleukin-6, that promote inflammation. Being overweight increases the risk of many other diseases,



and part of the reason is related to inflammation. If you are overweight, you have a greater risk of developing adult-onset diabetes, which also has a strong inflammatory component. Inflammation in diabetes is related to being overweight, to having elevated blood sugar and insulin levels, and to consuming too many refined carbohydrates (such as white bread and sugary breakfast cereals).

The Inflammation Syndrome does not stop here. Having diabetes also increases the risk of periodontitis, a type of dental inflammation. Each of these disorders—overweight, diabetes, and periodontitis—is serious by itself. But as the inflammation in these disorders simmers year after year, it also increases the risk of coronary artery disease, which medicine has recently recognized as an inflammatory disease of the blood vessels. In a nutshell each inflammatory disorder has an additive effect, increasing the body's overall level of inflammation and the risk of very serious diseases.

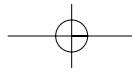
Many other examples of the Inflammation Syndrome abound. Allergies stir up the inflammatory response, increasing the risk of rheumatoid arthritis, an autoimmune (self-allergic) disease. Infections also trigger an immune response, and chronic infections and inflammation account for an estimated 30 percent of cancers. Joint injuries frequently set an inflammatory response into motion, setting the stage for osteoarthritis. Serious head injuries and their resultant brain inflammation increase the long-term risk of Alzheimer's disease, which is also being viewed by doctors as an inflammatory process affecting brain cells.

This is serious and scary stuff, and the stakes for your health are very high. But the point of this book is that chronic inflammation and the inflammation syndrome can be prevented and reversed. This book shows you how.

What Is Chronic Inflammation?

Inflammation assumes many different forms, and everyone experiences it at one time or another. Perhaps the most common type of inflammation is sudden and acute, such as when you burn yourself in the kitchen, overuse muscles when moving furniture, or injure tendons when playing sports. The injured area swells, turns red, and becomes tender to touch.

Under normal circumstances inflammation helps you heal, and it can even save your life. For example, if you accidentally cut your finger with a knife, bacteria from the knife, air, or surface of your skin immediately



penetrate the breach. Unchecked, these bacteria would quickly spread through your bloodstream and kill you.

However, your body's immune system almost immediately recognizes these bacteria as foreign and unleashes a coordinated attack to contain and stop the infection. Inflammation encourages tiny blood vessels in your finger to dilate, allowing a variety of white blood cells to leak out, track, and engulf bacteria. Some of these white blood cells also pick up and destroy cells damaged by the cut. In addition, inflammation signals the body to grow new cells to seal the cut. Within a day or two your cut finger becomes less inflamed, and a few days later it is completely healed.

Your body responds in similar fashion if you strain a muscle, such as by lifting too heavy a box, or by overexerting yourself during sports. The resulting inflammation, characterized by swelling, pain, and stiffness, is designed to remove damaged muscle cells and help initiate the healing process to replace those cells. Again, within a few days the inflammation decreases and you are well on the road to recovery.

Chronic inflammation, however, is very different. It does not go away, at least not quickly, and many people believe from their own experience that it will never go away. It results in persistent swelling, stiffness, or pain. Furthermore, you become more susceptible to inflammation as you age, but that, too, may be reversible.

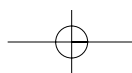


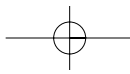
QUIZ 1

How Is Your Current Health?

Have you been diagnosed with one of the following conditions, regardless of whether you are taking medications for treatment:

AIDS or HIV infection	<i>Add 2 points</i> _____
Asthma	<i>Add 2 points</i> _____
Bronchitis	<i>Add 1 point</i> _____
Celiac disease or gluten intolerance	<i>Add 2 points</i> _____
Coronary artery (heart) disease	<i>Add 2 points</i> _____
Diabetes or elevated blood sugar	<i>Add 2 points</i> _____
Gingivitis or periodontitis	<i>Add 1 point</i> _____
Hepatitis	<i>Add 2 points</i> _____
Inflammatory bowel disease	<i>Add 2 points</i> _____





Rheumatoid arthritis	<i>Add 2 points</i> _____
Osteoarthritis	<i>Add 2 points</i> _____
Eczema, psoriasis, or frequent sunburn	<i>Add 1 point</i> _____
Stomach ulcers	<i>Add 1 point</i> _____
Ulcerated varicose veins	<i>Add 2 points</i> _____
A recent physical injury—by accident, or through sports/athletics, or via a severe sunburn	<i>Add 1 point</i> _____

Do you have any consistently stiff or aching joints, such as those in your fingers or knees?

Add 1 point _____

Does your body feel stiff when you get out of bed in the morning?

Add 1 point _____

If you are overweight by ten pounds or less, do you carry all or most of the extra fat around your abdomen?

Add 1 point _____

If you are obese (more than twenty pounds over your ideal weight), do you carry all or most of the extra fat around your abdomen?

Add 2 points _____

Is your nose stuffed up or runny a lot of the time?

Add 1 point _____

Do you get injured (anything from serious bruises to broken bones several or more times a year) because of accidents, the nature of your work, or athletic activities?

Add 1 point _____

Have you been hospitalized for surgery during the past twelve months?

Add 1 point _____

Do you smoke or chew tobacco products?

Add 2 points _____

Do you get frequent colds or flus?

Add 1 point _____

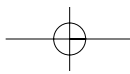
Do you have any seasonal allergies, such as to pollens or molds?

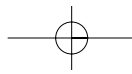
Add 1 point _____

Do you have any skin sores or rashes that don't seem to go away?

Add 1 point _____

Your score on quiz 1: _____





Interpretation and ranking:

- 0–1 Low.** You have a low level of inflammation, which is healthy.
- 2–6 Moderate.** You have a moderate level of inflammation that affects your current health and poses risks to your long-term health, and you should work to reverse it.
- 7–20 High.** You have a high level of inflammation, which is very harmful and requires immediate attention to reverse.
- 21+ Very high.** Although rare, your level of inflammation is extremely high and should be reversed without delay.



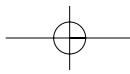
Can Your Doctor Measure Inflammation?

For many disorders inflammation is so obvious it does not have to be measured. For example, the pain of arthritis is a clear enough sign of inflammation. Swelling, redness, and tenderness to the touch also are obvious signs of inflammation in muscle injuries, gingivitis, and many other disorders. These are typically localized forms of inflammation, though they burden the entire body with a variety of inflammation-promoting substances. Tests to confirm inflammation in these situations may be an unnecessary expense.

More general systemic, or bodywide, inflammation is not always apparent. Inflammation of blood vessel walls increases the risk of a heart attack, and inflammation of the stomach wall (gastritis) greatly increases the risk of ulcers and gastric cancer.

A common blood test measures the sedimentation rate (or “sed rate”), reflecting how fast red blood cells settle and form a sediment. Inflammation makes blood cells settle faster. The drawback to the sedimentation rate is that it is an extremely general indicator of inflammation.

Another test, called the high-sensitivity C-reactive protein (hs CRP) test, is a better indicator of systemic inflammation, though it still has the drawback of being a general indicator rather than pointing to a specific type of inflammation. Elevated CRP levels are associated with a 4.5 greater risk of having a heart attack, making it a far more accurate predictor than elevated cholesterol. Elevated CRP levels also are found in people with Alzheimer’s disease, cancer, arthritis, acute infection, and physical trauma.



Recognizing Inflammatory Disorders

Physicians often speak in their own language, but it is actually very easy to identify most inflammatory diseases when you hear them in conversation or read about them. Most inflammatory diseases end with the suffix “-itis.” For example, gastritis means inflammation of the stomach, tendonitis refers to inflammation of the tendons, and gingivitis means inflammation of the gingiva (gums).

At one time a physician’s diagnosis typically included both the symptoms and the apparent cause of a disease. Unfortunately, that has changed, and the diagnosis of an -itis disease (and most other diseases as well) is now often nothing more than a description of symptoms. Dermatitis, an inflammation of the skin, can have many causes, including allergies, infections, a toxic reaction to a chemical, or abrasion. As good as you or your doctor might feel after a diagnosis, it is not likely that he or she will actually identify the underlying cause.

In the case of coronary artery disease something inflames blood vessel walls, triggering a cascade of events. That “something” might be a corrosive protein by-product called homocysteine, a low-grade infection, or oxidized cholesterol, all of which increase the risk of heart disease. (This relationship between inflammatory and cardiovascular disease will be discussed in depth in chapters 9 and 12.) In response, white blood cells migrate to artery walls, where they release free radicals, fuel inflammation, and exacerbate the damage. The most accurate predictor of whether you will have a heart attack is not your cholesterol, triglyceride, or blood sugar level. Rather, it is a high blood level of C-reactive protein, an indicator of your body’s overall inflammation.

Common Inflammatory Diseases and Disorders

Inflammation is a symptom of virtually every disease process, and it often makes the condition worse. These are some examples of common disorders that involve inflammation:

Arthritis

- Osteoarthritis
- Rheumatoid arthritis

Injuries

- Athletic: tendonitis, bursitis, muscle strains, and bruises
- Cuts, broken bones, bruises, surgery

Infections

Colds, flus, otitis media, hepatitis C, HIV, parasites, vague low-grade infections

Allergies/autoimmune

Pollen and other inhalant allergies (rhinitis, nonallergic rhinitis)

Food allergies

Celiac disease (gluten intolerance)

Lupus erythematosus

Pulmonary

Asthma

Chronic obstructive pulmonary disease

Bronchitis

Cardiovascular

Coronary artery disease, myocarditis, hypertension

Phlebitis, varicose veins

Cancer

Various types, including gastric, lung, breast, and prostate

Neurological

Alzheimer's disease

Skin

Sunburn (erythema)

Eczema and dermatitis

Psoriasis

Dental

Gingivitis

Periodontitis

Eye

Conjunctivitis

Uveitis

Digestive tract

Gastritis, ulcers

Crohn's disease

Ulcerative colitis

Diverticulitis

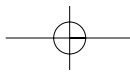
Miscellaneous

Sinusitis

Multiple sclerosis

Obesity

Diabetes



The Prevalence of Inflammation

One way to look at the prevalence of inflammatory diseases is to track sales (and, by implication, the use) of anti-inflammatory drugs such as aspirin, ibuprofen, naproxen sodium, and Cox-2 inhibitors. Each year more than 30 billion tablets of nonsteroidal anti-inflammatory drugs (NSAIDs) are sold over the counter in the United States—more than one hundred for every man, woman, and child. In addition, doctors write 70 million prescriptions for even stronger NSAIDs. Although some NSAIDs are often used to treat headaches (which may be caused by inflammation), these numbers reflect an enormous dependency on anti-inflammatory drugs.

Indeed, one of the pieces of evidence that coronary artery disease and Alzheimer's disease are inflammatory diseases is the fact that both may be prevented with some anti-inflammatory drugs. Aspirin reduces the risk of a heart attack, and ibuprofen (the active ingredient in Advil) appears to reduce the risk of Alzheimer's disease. Unfortunately, serious and sometimes life-threatening side effects are common from both drugs, which makes them undesirable approaches to prevention or treatment.

None of these drugs treats the underlying causes of inflammation. At best, they provide short-term relief. Worse, some NSAIDs hasten the breakdown of joint cartilage, increasing the damage and the progression of osteoarthritis. You will learn more about the dangers of anti-inflammatory drugs in chapter 5.

