# THE PRIMARY SOURCE OF DEADLY DISEASES: INFLAMMATION

**By Dr. Michael John Badanek, BS, DC, CNS, CTTP, DACBN, DCBCN, MSGR./CH**

Inflammation occurs when chemicals are released by immune cells in order to destroy invading organisms and molecules, and to promote healing of injury or infection. Inflammation is most often recognized by redness, swelling and pain. This is called acute inflammation, and it is considered a protective mechanism.

But there is another type of inflammation called chronic inflammation that lasts longer and can lead to much bigger problems. There is now considerable evidence that chronic inflammation plays a major role in the development of a great many ailments, including:

- Heart failure
- Heart attacks
- Strokes
- Neurodegenerative diseases
- Autoimmune disorders
- Atherosclerosis
- Diabetes
- Seizures
- Pulmonary disorders
- Gastrointestinal disorders
- Most cancers
- Major depression
- Anxiety disorders

There is also growing evidence that inflammation plays a role in many psychiatric and behavioral disorders. In fact, the list of inflammation-induced disorders just keeps getting longer.

Perhaps the most common cause of inflammation is aging itself, which affects not just major organs and tissues, but also the brain.

Another cause now receiving a great deal of attention is abdominal obesity – the accumulation of fatty tissue deep within the abdomen rather than under the skin (also called subcutaneous fat). But in fact, there are a great number of reasons for inflammation many of which can occur in the same person.

## THE GOOD AND BAD ABOUT INFLAMMATION

As noted, inflammation is not always a bad thing. In fact, our entire system of immune protection against invading organisms – such as viruses, bacteria, fungi, mycoplasma, and rickettsia – depends on immune cells producing high levels of free radicals and immune chemicals called cytokines. In essence, inflammation burns up these nasty invaders.

Healing the injuries also depends on this immune system.

Within the brain, inflammatory cytokines (normally found in very low concentrations) act as growth factors that repair damage to brain cells and nerve processes. They also play a vital role at all stages of development of the nervous system.

The danger occurs when the immune system becomes over activated for a prolonged period of time. For example, each year we are told that some young person dies of complications from the flu. In most cases, what kills him or her is over activation of the immune system – that is, immune cytokines released in enormous concentrations. We call this a cytokine storm.

When this occurs, the inflammatory cytokines can damage so many organs that a person dies.

A similar process is at work in cases of autoimmune diseases like multiple sclerosis, rheumatoid arthritis, ulcerative colitis and lupus. With these conditions, specific tissues and organs come under intense, prolonged immune attack.

New studies have shown that the old idea of the immune system mistakenly attacking normal tissue is mistaken. It now appears that in cases of autoimmune disease, the problem is an abnormal immune system that is not functioning the way it should.
Normal immune function requires balance between the components that enhance immune cell attacks and other immune chemicals are out of balance, the immune attack persists and causes destruction of normal tissue and organs.

For example, there is evidence that the enormous number of vaccinations children are getting has resulted in an explosion of autoimmune disorders of every kind, including asthma, lupus, diabetes, multiple sclerosis, and rheumatoid arthritis.

Vaccines are known to change immune system function in a way that promotes autoimmunity. For example, getting the hepatitis B vaccine leads to a threefold increase in the risk of a person developing multiple sclerosis within three years.

Until recently, all newborn babies were given the hepatitis B vaccine before being allowed to leave the hospital. We don't know yet if these babies will grow up with a higher risk of MS, because no one is looking. The studies simply are not being done.

One study claimed to find no association, but it was funded by the pharmaceutical company Merck, maker of the hepatitis B vaccine. Their results were, therefore, no surprise. Follow the money.

Research into the link between vaccines and autoimmune diseases has been led by Dr. Yehuda Shoenfield, who pinpointed the vaccines' adjuvant – the immune-boosting chemicals – as the cause of the problem. Dr. Schoenfield has named the growing vaccine-induced autoimmune disorders ASIA syndrome (autoimmune-inflammatory syndrome induced by adjuvants).

Natural infections that become chronic can also lead to a number of disorders, especially in the nervous system, and can contribute to the development of certain cancers, such as:

- Lymphomas
- Leukemia
- Nasopharyngeal cancer
- Cervical cancer
- Liver cancer
- Brain cancer

This happens because the infection activates the immune system continuously, leading to chronic inflammation.

Such infections include mycoplasma, some bacterial infections, cytomegalovirus, hepatitis B and C, HPV viruses, and herpes viruses. Many of these are what we call "hidden infections", meaning the person is unaware they are infected. In each case, there is either chronic smoldering inflammation or recurrent episodes of inflammation.

Toxic metals – including mercury, lead, aluminum, tin and cadmium – industrial chemicals, pesticides, herbicides, fungicides and GMO foods can also induce many of these diseases, especially neurological disorders and cancer.

Even chronic mechanical irritation of the skin can result in the development of skin cancers, especially melanomas. Fluoride and aluminum – especially when they are chemically combined – are highly inflammatory, and can not only cause cancer, but significantly increase the growth and spread of existing cancers.

Several of these toxic metals accumulated within the brain and spinal cord resulting in neurodegenerative disorders such as Alzheimer's disease, Parkinson's disease, and ALS. They can also lead to abnormal brain development in children.

Unfortunately, these toxic metals are all around us, in the air, water, and soil.

## Locating the Cause of Inflammation

With all the possible causes, it can often require a lot of detective work to identify the origin of a person's inflammation. You also have to keep in mind that inflammation can cause different diseases in different people, and the severity of reactions varies considerably.

Sometimes this is because of the process causing the inflammation. But in many cases, the variance of disease is the result of genetic weaknesses that make one person more susceptible to a particular environmental agent.

Keep in mind that not all genetic problems are inherited. Some are epigenetic – the result of environmental agents and/or diet-induced changes in particular sets of genes that make a person more vulnerable to environmental toxins, even years after exposure.

For example, exposure to inflammation while still in the mother's womb can result in higher risks for anxiety, schizophrenic, autism, and major depression later in life, if that person is exposed to inflammation as an adult.

That's why I say it takes a bit of medical detective work to determine why a person is inflamed. The easiest way to find out if a person is, in fact, inflamed, is to get a CRP (C-reactive protein) test, which indicates that there is inflammation in the body, but not where it is.

In some cases, CRP can be normal and inflammation still be a problem. For example, a person can have localized brain inflammation without the rest of the body being inflamed. In such cases, the CRP test will be normal.

The erythrocyte sedimentation rate (ESR) is an older test for inflammation that sometimes reads positive when CRP is normal. The plasma viscosity test is another way to measure inflammation.

But the best way is to measure the most common pro-inflammatory cytokines, such as interleukin-1-beta (IL-1-beta), interleukin-6 (IL-6), and tumor necrosis factor alpha (TNF-alpha).

If you have had a recent infection, your CRP, sed rate, and cytokines will be elevated. In that case, it may be necessary to repeat the test a month later to see if those factors are still elevated.

Once you establish that you are chronically inflamed, you need to track down what is causing the inflammation.

As noted, a tremendous number of things can cause chronic inflammation.

How to Measure Toxic Substances

The first thing you need to do is determine if you have excess toxic metals in your body. This can be done a number of ways, some less accurate than others.

Blood or plasma testing is the least accurate.

Collecting your urine for 24 hours is one good way to measure metals. But in most cases, it requires using an agent to leech the metal out of tissues into the urine.

For example, to measure lead or mercury, you can take a dose of the chelation agent DMSA the day urine collection starts. This will draw out metal from the tissues into the urine, giving an accurate measure of that metal in the body.

Another test is the RBC metal evaluation test, which measures the metal in red blood cells.

Toxic metal levels can also be tested using hair or toe nail clippings samples. The hair screen usually measures a dozen or more metals.

Most of these tests come with special instructions to obtain the best results.

Some laboratories also test for an assortment of toxic chemicals such as pesticides, herbicides, fungicides, and industrial chemicals. Urine or blood samples can be used for these measures. Most laboratories supply an explanation for the results, and some even suggest detoxification methods.

Many toxic substances, especially industrial chemicals and pesticides/herbicides, get trapped in fat tissue. Losing a lot of fat can cause these trapped chemicals to be released in high concentrations and redistributed to the brain and other organs.

The brain is approximately 60 percent fat by weight, meaning these fat-soluble chemicals will be deposited there in high concentrations. Mercury is also fat-soluble.

For this reason, significant fat loss should be accompanied by detoxification measures.

If you have dental amalgams, have taken vaccines regularly, live in areas with high atmospheric or groundwater contamination, work around chemicals, or have metallic surgical implants, you should get these tests.

## Getting Safe Drinking Water

If you use well water, it's a good idea to have your water tested.

In addition, most municipal drinking water is contaminated with an assortment of toxic metals and chemicals, even organic chloride compounds.

Whole house filtration systems are a bad idea because if you are away from home for several days or longer, the water in the pipes beyond the filter can grow numerous organisms and collect toxic metals.

You should avoid all fluoridated drinking water, as well as toothpastes, mouthwashes and dental treatments that contain fluoride, which is a very powerful toxin, even in the concentrations used in drinking water.

Aluminum, which is also added to drinking water – rapidly binds to fluoride, forming an aluminofluoride compound that is even more toxic than either substance by itself. Studies have shown that in a concentration just one-half of that used in drinking water (1 part per million) aluminofluoride does significant damage to brain cells.

More than 50 studies have now linked fluoride to impaired IQ in children.

These compounds also accumulated in the bones and in the brain, meaning that over time the concentration in the brain can become extremely high.

As we age, we begin to lose bone. As bones dissolve, they also release any toxic metals they contain into the bloodstream, redistributing the metals to other tissues and organs, including the brain, heart, liver, and kidneys.

It's like being poisoned all over again – but with a much higher dose than originally.

## Beware of Hidden Infections

It's estimated that about 70 percent of the world's population carries live cytomegalovirus – one of the herpes family of viruses – in their bodies. In most cases, the person remains completely unaware of the infection because the virus is

dormant or latent. But if his or her immune system is weakened, those viruses can become activated and cause severe illness.

You see this in people who have undergone transplants and are taking immune suppressants, or people with immune suppressing cancers. They can die of overwhelming cytomegalovirus infections.

The same is true with other herpes viruses, such as the Epstein -Barr virus.

Some bacteria and mycoplasma – such as Chlamydia pneumonia, Borrelia burgorferi (Lyme disease) and H. pylori – can also do dormant. And there are also some 50 species of mycobacteria (other than the tuberculosis organism) that may remain hidden in the body.

All of those organisms cause chronic, smoldering inflammation, and lead to conditions, ranging from cancer to neurodegenerative disorders, including possibly Alzheimer's dementia and Parkinson's disease.

Diagnosing these infections can often be difficult, and in some cases very expensive. The least expensive methods are immune antibody tests such as ELISA test or Western blot testing. Of those two, ELISA is much less accurate.

The most accurate test for specific infections is the polymerase chain reactions (PCR) test – though it has some limitations.

If you have a persistently high inflammation, you should have your doctor pursue these tests.

Lyme disease and mycoplasma infections are increasing at an alarming rate, and many cases go undiagnosed. These infections cause a number of symptoms in their active phases, and in some cases latent infection can trigger smoldering inflammation that may lead to

Alzheimer's dementia
Parkinson's disease
ALS
Chronic fatigue syndrome

Fibromyalgia
Progressive degeneration of organs and tissues

Viruses like herpes can also infect blood vessels, leading to rapidly advancing atherosclerosis.

Smoldering inflammation of the vessel lining causes an accumulation of inflammatory cells (monocytes and macrophages) as well as oxidized fats – mainly polysaturated omega-6 fats and oxidized cholesterol – in the wall of the vessel.

At those sites, there are high levels of free radicals and lipid peroxidation products, further damaging the blood vessel and triggering clot formation that can lead to heart attack, stroke or blockage of other blood vessels.

Patients with dormant herpes infections are much more likely to have a heart attack following insertion of coronary artery stents. The same is true for heart transplant patients with latent infections.

Chlamydia infections are also associated with atherosclerosis leading to heart attacks and strokes.

## Gastrointestinal Sources of Inflammation

Another common source of inflammation is the gastrointestinal tract – all the way from the stomach to the colon.

A large percentage of the population takes acid-reducing medications for acid reflux disease. Unfortunately, that increases infections in the small bowel and colon because stomach acid plays a major role in killing bacteria and viruses ini food.

The acid is also critical for activating certain digestive enzymes in the stomach. That means when stomach acid levels are low, undigested contaminated food can enter the small bowel and colon, encouraging infections.

Another growing problem is leaky gut syndrome, in which the normal well-scaled gut lining is disrupted, allowing undigested foods, as well as bacteria and viruses to

enter the bloodstream. This, in turn, triggers an immune reaction throughout the body, resulting in joint pain and joint deterioration, organ malfunction, weakness and tiredness, confusion and clouded thinking, depression, anxiety and poor sleep.

A protein called gluten can also cause chronic inflammation and malabsorption of nutrients, including critical vitamins and minerals. Experts who have studied gluten's effects on the gastrointestinal system maintains that everyone develops inflammation if gluten concentration in the diet is high enough. And some react to even tiny amounts.

Gluten is found naturally in wheat, barley, and rye products. However, these plants are now cultivated to have much higher gluten levels, and more is added to many products during processing.

In addition to the immune reaction, when gluten molecules are broken down in the body, glutamate is released and can cause an adverse effect (excitotoxicity) on the brain.

These inflammatory reactions occur in the bloodstream, which means they can affect the brain both via the blood-brain barrier and the parts of the brain that don't have a barrier.

And there is another route to the brain that can wreak havoc by inducing chronic inflammation and immunoexcitotoxicity. When the walls of the intestines are inflamed, impulses travel along the vagus nerve, an extensive network of nerves that stimulate the entire GI tract, from esophagus to colon, and then travels to the brain stem.

Studies have shown that these impulses can activate microglia, first in the brainstem and eventually the entire brain causing brain inflammation and excitotoxicity (immunoexcitotoxic neurodegeneration). This can lead to degenerative brain diseases such as Parkinson's and Alzheimer's.

In fact, there is growing evidence that Parkinson's disease begins in the colon, the same may be true for Alzheimer's dementia.

The Western diet is pro-inflammatory because of the high levels of glutamate additives, omegas-6 fats, calcium and iron, and low levels of omeda-3 fats and magnesium. All of that adds up to intestinal inflammation.

Antibiotics in municipal drinking water and meats along with extensive direct use of antibiotics to fight infections, have led to significant probiotic organism deficiencies. This causes the immune system to be dysfunctional leading to further inflammation.

Many people especially the elderly are also chronically constipated. Believe it or not, I've talked to many patients who thought it was normal to have a bowel movement only once a week.

Magnesium, triphala, apigenin, and luteolin all reduce intestinal inflammation, and improve bowel movements. Curcumin, quercetin, ellagic acid, DHA, GLA, vitamin C, mixed tocopherols and tocotrienois, and silymarin all reduce intestinal inflammation.

To be sure your colon and intestines are healthy; you can undergo a comprehensive stool analysis, available from Genova Diagnostics and Doctor's Data. These tests will tell you if you have inflammation factors in your intestine, as well as your levels of intestinal short-chain fatty acids and probiotic contents. It will also screen for intestinal yeast infections and take other measures of intestinal health.

Doctor's Data also has a test available for leaky gut syndrome (Zonulin test) and comprehensive gluten sensitivity testing.

Life Extension labs offers a comprehensive test for food allergies and food sensitivities.

Because food sensitivities are so common, especially in the face of rising incidences of leaky gut syndrome, I think it is important to get a baseline evaluation to detect reactions to specific foods. Their Food Safe Allergy Test – Extended, examines 95 foods under the classification of vegetable, spices, nuts, meats, dairy, fruits, grains, and miscellaneous foods.

**Dealing with H. Pylori**

H Pylori is one of the latent bacterial infections that often go undiagnosed or misdiagnosed. Frequent acid reflux and gastric pains, frequent indigestion, and a sensation of stomach fullness after a small meal are all signs of a possible H Pylori infection.

Constant gastritis interferes with emptying of the stomach. That causes bloating. It has also been shown that H.Pylori infections are associated with a higher incidence of heart attacks and strokes, glaucoma, stomach cancer, esophageal cancer, and possibly Alzheimer disease – all because of constant inflammation.

Keeping the immune system strong – especially cellular immunity – is critical for keeping these infections under control. It is this arm of the immune system, cellular immunity, which keeps these viruses, and bacteria under control and dormant.

This can be accomplished by taking 250 mg to 500 mg of beta 1,3/1-6 glucan on an empty stomach once a week or at least every two weeks,

Olive leaf extract also keeps immunity strong and reduces the risk of heart attack. Unlike beta-glucan, it increases the phagoocytic effectiveness of white blood cells, needed to remove bacteria and viruses.

Probiotic health is also important as it plays a major role in keeping immunity strong and healthy.

**Measuring Oxidative Damage**

There are also a number of tests that can tell you how much oxidative damage has been done to your DNA. That's a good measure of free radical and lipid peroxidation production.

Doctor's Data offers a DNA Oxidative Damage Assay that uses a urine sample to measure metabolites of your DNA damaged by oxidation. This is vital information for people with chronic diseases such as diabetes, kidney disease, liver diseases, and autoimmune disorders.

Another important test measures detoxification ability, Called the Hepatic Detox Profile, it analyzes D-gluonic acid and mercapturic acids.

D-gluconic acid levels indicate a person's exposure to chemical toxins such as pesticides, herbicides and petrochemicals, as well as showing how well the liver is getting rid of them. It measures what's called Phase I detoxification.

The mercapturic test evaluates the health of phase II detoxification. Both tests utilize a urine specimen.

An iron panel is also valuable, because iron plays a major role in neurodegenerative diseases, cancer, and many other degenerative disorders.

Men tended to accumulate iron in their tissues, especially the brain, from their late 20's on. Women generally begin after menopause. In fact, after menopause women accumulate iron faster than men.

The iron panel test measures free iron levels, total iron levels, total iron binding capacity (TIBC), ferritin, and transferring saturation.

High ferritin levels indicate inflammation; in cancer patients, high levels can indicate tumor metasis.

Abnormal brain iron levels are common with many neurodegenerative disorders, including Alzheimer's and Parkinson's disease.

The best levels for your test would be just below mid-range of normal as high normal levels can also increase damage to tissues and organs,. High iron levels in cancer patients are especially dangerous, because iron promotes cancer growth and invasion.

## Other Tests That Detect Disease

It's important to know how well your thyroid gland is functioning. Tests should include a TSH level, T3 and T-4 levels, reverse T3 level, and the levels of antithyroid antibodies (thyroglobulin antibodies and thyroid peroxidase antibodies)

Even a low normal test for T3 can indicate poor thyroid function and a need for additional iodine. Forskolin will also increase thyroid function.

Women can also benefit from testing their sex hormones, including progesterone, the three principle types of estogens, testosterone levels, DHEA-S, and FSH/LH levels.

Doctor's Data labs has a Salivary Sex Hormone and HPA Axis/Adrenal Function Panel, which tests all three of the estrogenic hormones, progesterone testosterone, DHEA,cortisol and melatonin.

Men need a test to measure free testosterone and sex hormone binding globulin (SHBG), or bound testosterone level. Only free testosterone is functional. Saliva testing is the best way to evaluate hormone levels.

One of the best cardiovascular tests is the Advanced Oxidized (LDL Panel from Life Extension Labs. This test measures oxidized LDL cholesterol (the type associated with heart attack and stroke risk) and myeloperoaise (MPO) a destructive enzyme that indicates vessel wall inflammation. It also tests for F-2 isoprostanes, which are lipid peroxidation measures linked with elevated blood vessel constriction and elevated blood pressure.

These tests are more important than traditional cholesterol measures. In fact, 50 percent of people who suffer a heart attack have normal cholesterol levels.

Oxidized LDL cholesterol (along with oxidized omega-6 fats) is what triggers the inflammation that causes atherosclerosis. Under conditions of intense oxidation, even HDL cholesterol – the so-called "good cholesterol" – can lead to atherosclerosis, heart attacks, and strokes. If oxidation levels are not measured you can't know the risks.

The B-type natriuretic peptide test measures the status of the heart muscle and therefore risk of developing heart failure, fibrillation, and even risk of stroke. It's a good way to measure asymptomatic heart disease – that is, detecting heart dysfunction before trouble appears.

The D-Dimer test measures for blood clots too easily, increasing the risk for deep vein thrombosis, stroke and heart attack.

Phosphoplipase A2 is an enzyme that is linked to plaque rupture and a high risk of having a heart attack or stroke. This can be tested for using the PLAC test for Lp-PLA2 activity. High values are associated with a high-risk of atherosclerotic plaque rupture, which represents the highest risk for a sudden heart attack or stroke.

A number of other health biomarkers are also important. Hemoglobin A1c measures the long-term (more than 120 days) glucose status, giving a better idea of the risk of insulin resistance.

Homocysteine testing is important for many reasons, including risk of cardiovascular and cerebrovascular disease. It is also important for measuring risk of neurodegenerative diseases. Homocysteine is metabolized in the body into a group of excitotoxic compounds such as homocysteic acid, which is metabolized in the body into a group of excitotoxic compounds such as homocysteic acid, which can severely damage brain cells and brain connections.

One of the most important tests is the blood level of vitamin D3, which is now widespread, mainly because people are avoiding the sun to prevent skin cancer.

In fact, it has been noted that rickets is now making a comeback among kids, especially dark-skinned children, because vitamin D3 levels are so low.

Dark-skinned people need twice as much direct sunlight exposure to produce enough vitamin D3 compared to light-skinned people. Healthy levels are between 65 ng/mL and 100 ng/mL.

Vitamin D3 inhibits many cancers, protects the brain, heart, intestines, and other organs as well as protecting the skin. It has been shown that intake of less than 2,000 IU a day will not raise blood levels at all.

**Dr. Badanek has been and currently is 37 years into active/private practice in the Ocala/Marion County, Florida region. Find him online at Dr.Badanek.com and wwww.alternativewholistic.com, and see what the facility has to offer the sick and health challenged. To schedule an appointment call 352-622-1151**