STEPS TOWARD A BETTER ANTI-INFLAMMATORY LIFESTYLE:

FOCUS ON ANTI-INFLAMMATORY DIET

Introduction
The past century witnessed continued changes to our environment and lifestyle: decreased levels of exercise or physical activity; increased environmental pollution; increased levels of stress, anxiety and depression; and drastic changes to our food supply. Together, these changes have contributed to a rise in chronic medical conditions—including inflammatory diseases—and decrease in quality of life.

According to the U.S. Centers for Disease Control and Prevention (CDC), almost half of all Americans (117 million people) have one or more chronic health conditions, and 7 of the top 10 causes of death in 2010 were chronic diseases¹.

Our diet plays an important role in our health, and has been greatly affected by these changes. Added salt, refined sugar, hydrogenated fats, trans-fats, and highly refined grains, among other causes, have increased the prevalence of low grade, persistent inflammation in our bodies.

This handout will discuss the different aspects of inflammation, inflammatory conditions, the role of diet in inflammation and diet and lifestyles changes make to help manage chronic inflammation.

**What Is Inflammation & What Role Does It Play in Our Health?**

“*Inflammation is the cornerstone of the body’s healing response.*”
Dr Weil, MD- author, professor and director of the Arizona Center for Integrative Medicine.

Inflammation is a protective response to tissue injury, which serves to destroy, dilute, or wall off both the injurious agent and the injured tissues.

The inflammatory response can be triggered by a number of different agents:

- Physical: trauma, extremes temperatures, radiations.
- Infectious: viruses, bacteria, fungi, parasites.
- Chemical: toxins, irritants.
- Immune reactions (hypersensitivity).

When one of these causative agents injures body tissues, the damaged cells release chemicals that cause blood vessels to leak fluid into the tissue (thereby causing swelling) and attract white blood cells (that “eat” germs and dead or damaged cells). For most people, it is this inflammatory response that makes disease perceptible – not the disease itself.

Normally, the immune system utilizes the inflammatory response to protect against many diseases and disorders in the short term (acute inflammation). However, a persistent infection and/or an overactive immune response can lead to chronic inflammation. In certain conditions, inflammation may be present for years before it becomes apparent or clinically significant².

**Acute Inflammation**

Acute Inflammation, usually of sudden onset, is normally a localized, protective response following trauma or infection and can last from a few hours to a few days.

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Access Medicine – Williams Hematology, Ch. 17 The Inflammatory Response
AMA Citation

Access Medicine – The Big Picture: Pathology
AMA Citation
The body, after an injury or infection, launches a complex biological cascade of molecular and cellular signals that cause:

- **Redness & heat** from a rush of blood to the injured area,
- **Swelling** from an accumulation of fluid, which acts as a protection to the injured area,
- **Pain** from the release of chemicals that stimulate the nerve endings, increasing the sensitivity in the injured area.
- **Loss of mobility/function.**

**Chronic Inflammation**

*Chronic inflammation*, which is prolonged and persistent, sets in when the inflammatory response never fully shuts off. It can last a few weeks, months or years. Chronic inflammation differs from acute inflammation in that it has a longer time course, involves different immune cells types, and is a state where tissue repair coexists with tissue destruction.

This type of inflammation, when serving no purpose in protecting the body, may damage tissue and cause illness.

**Causes of Chronic Inflammation**

Many different factors can play a role in the development of chronic inflammation:

- **Genetics,**
- **General state of health,**
- **Malfunctioning or over-reactive immune system,**
- **Underlying problem caused by an unhealthy lifestyle** such as inflammatory diet, smoking, stress, lack of exercise or sleep, or mental health issues,
- **Persistent injury or infection** such as ulcer, tuberculosis, gum disease,
- **Insulin resistance,**
- **Excess body fat,**
- **Prolonged exposure to a toxic agent** such as pulmonary silicosis (silica in the lung),
- **Environmental toxins,**
- **Autoimmune disease,** a self perpetuating immune reaction that results in tissue damage and inflammation, such as rheumatoid arthritis, systemic lupus erythematosus, or multiple sclerosis, and/or
- **Stress.**

**What Makes the Body “Jumpstart” the Inflammatory Process?**

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3 [http://www.arizonaadvancedmedicine.com/Articles/2013/June/Chronic-Inflammation.aspx](http://www.arizonaadvancedmedicine.com/Articles/2013/June/Chronic-Inflammation.aspx)


According to SutterHealth physician Dr. Ronesh Sinha, the inflammatory process is “jumpstarted” by our arteries’ inner layer, called the endothelial cell layer (ECL). This cell layer is in constant contact with our blood and can detect even the subtlest chemical or hormonal disturbances. When it feels attacked or threatened, it reacts by “signaling the inflammation alarm.”

**Common Conditions and Diseases Associated With Chronic Inflammation**
(Note: inflammatory diseases usually end with the suffix “itis”)

- **Arthritis**: osteoarthritis, rheumatoid arthritis
- **Injuries**: sport injuries, bruises, surgery
- **Infections**: colds, influenzas, otitis media (ear infections), Hepatitis C, HIV, parasites, Epstein-Barr disease, vague low-grade infections
- **Allergies/Autoimmune problems**: Pollen & other inhalant allergies, food allergies, celiac disease, lupus (SLE)
- **Pulmonary**: asthma, Chronic Obstructive Pulmonary Disease (COPD), bronchitis
- **Cardiovascular**: Coronary Artery Disease (CAD), myocarditis, hypertension, stroke, phlebitis, varicose veins
- **Cancers**: various types, including gastric, lung, breast, prostate
- **Neurological**: Alzheimer’s disease
- **Skin**: Sunburn (erythema), eczema, dermatitis, psoriasis
- **Dental**: gingivitis, periodontitis
- **Eye**: conjunctivitis, uveitis
- **Digestive tract**: gastritis, ulcers, Crohn’s disease, Ulcerative Colitis, Inflammatory Bowel disease (IBD), diverticulitis
- **Miscellaneous**: sinusitis, multiple sclerosis (MS)
- **Prediabetes, Diabetes** and
- **Overweight and obesity.**

**How Do I Know I Have Chronic Inflammation?**

Only a medical doctor will be able to diagnose a chronic inflammatory condition by performing a thorough examination, reviewing your symptoms and running tests.

**Symptoms Associated with Inflammatory Diseases**

- Fatigue, low energy levels
- Stress
- Allergies or asthma
- Digestive problems: persistent bloating, gas, abdominal pain, acid reflux, bowel changes, etc.
- Rashes
- Ongoing pain

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Diagnostic Tests

There are blood tests that may be useful in diagnosing specific cases of inflammation (CRP, ESR, etc.). Talk to your doctor to see which tests might be indicated in your case.

Potential Questions for Your Doctor

Below are examples questions to consider asking your doctor if you suspect or have recently been diagnosed with an inflammatory disease:

- What type of inflammation do I have?
- Are there short or long term complications?
- Does this condition put me at greater risk for other type of inflammatory condition or other disease?
- What lifestyle changes can reduce or reverse my inflammation?
- Are there any special considerations that should be addressed regarding my personal life, at work, during holidays, traveling?
- Do I need specific tests?
- What treatment should I follow and for how long? What would be the side effects?
- Is there any alternative/complementary treatment that might help?
- Could this condition negatively affect my getting pregnant or cause any risk to my fetus?
- Are my children at greater risk of developing an inflammatory condition?

The Effect of Progressive Environmental, Lifestyle and Diet Changes on Inflammation

“The profound changes in the environment and lifestyle, …occurred too recently on an evolutionary time scale for the human genome to adjust. …many of the so called diseases of civilization have emerged”.6

Some examples of environmental, lifestyle and diet changes that have evolved over the past century to negatively affect our health include:

- Decreased exercise, or physical activity
- Increased stress, anxiety, depression
- Increased air pollution
- Increased sea/ocean pollution, leading to increased levels mercury in fish
- Use of pesticides on crops
- Use of antibiotics and hormones in farm animals
- Cattle fed on grains and not on grass, altering the Omega 6-Omega 3 ratio in meat and meat products
- Use of food preservatives and artificial colorings
- Presence of endocrine disruptors in every-day consumer products (pesticides, plastic, lining of metal cans, body care products, toys, food, medications, etc.)
- Emergence of fast and highly refined/processed food

The following added or chemically altered nutrients have negatively affected our health:

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• **Refined sugar** can lead to an increased risk of type 2 diabetes, heart disease and overweight.
• **Salt** can lead to high blood pressure, strokes and impaired kidney function.
• **Partially hydrogenated/hydrogenated or trans fats** can raise the bad LDL cholesterol and decrease the good HDL cholesterol. These fats are also pro-inflammatory.
• **Highly refined grains**, which are lower in natural fiber and impair glucose and cholesterol control. These lower fiber grains are associated with conditions like diabetes, cardiovascular disease, autoimmune conditions, arthritis, and cancer.
• **Loss of minerals and vitamins** through certain types of food processing.

**Why Should I Adopt an Anti-Inflammatory Diet?**

Experts recommend an anti-inflammatory diet for a number of reasons.

- “An anti-Inflammatory diet will provide the buildings blocks of your body, and of particular importance, your immune system, which regulates inflammation.” 7
- “It will promote health and reduce inflammation in the body” 8

**Anti - Inflammatory Diet**

An anti-inflammatory diet emphasizes minimally processed whole foods to prevent and reduce inflammation in the body. While there is no one strict anti-inflammatory diet, below are common anti-inflammatory diet recommendations:

- Aim for a variety of fruits and vegetable across the entire color spectrum. Fruits and vegetables contain hundreds or anti-inflammatory agents

- Eat foods rich in inflammation fighting Omega 3 (fish, grass-fed or flaxseed-fed animal products, flaxseeds and flaxseed oil).

- Reduce intake of pro-inflammatory Omega 6 foods (sunflower, soybean, corn, safflower oils, hydrogenated, trans fats, margarine, non organic animal fats in meat, eggs and dairy products). Choose more fats from plants such as olive oil, avocados, nuts, walnuts, and almonds.

- Consume fish/seafood with low mercury levels. Refer to a resource like the [EWG custom seafood list](http://jackchalem.com/pages/inflammationsyndrome/inflammationsyndrome.html) to identify fish lowest in mercury contamination.

- Choose foods and drinks with little or no added sugar, salt and fat. Water is still the best drink!

- Reduce intake of white flour, white sugar, white rice, and fast- and highly-processed foods such as commercial pastries, crackers, chips, cured meats, instant cereals, some canned foods, and prepared frozen meals.

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7 Jack Chalem, *The Inflammation Syndrome*  

8 Wendy Kohatsu MD – Ch.86 -The Anti-Inflammatory Diet in *Integrative Medicine* - Last Accessed: February 1, 2016
• Control portions of whole grain bread, brown rice, beans, legumes, and seeds to increase fiber intake and help regulate blood sugar and insulin. Remember that excess portions of whole grains can still cause health issues.

• Carefully read food labels to assess nutrient intake and to avoid artificial ingredients (mentioned above) that trigger inflammation.

• Identify portion sizes to avoid overeating.

• Control calorie intake. Talk to your doctor to check the appropriate calorie intake to keep you healthy.

• Limit meals from fast food restaurants.

• Cook more at home. This allows you to control ingredients and calories.

• Try to eat organic as much as possible to reduce the amount of pesticides in your diet. Refer to the EWG Dirty Dozen list to see which foods contain the most pesticides.

• Limit alcohol consumption as excess alcohol results in compromised immunity.

• Reduce/avoid intake of foods with gluten for people with gluten sensitivity and/or allergy.

• Use spices and herbs with anti-inflammatory properties such as turmeric, ginger, garlic, basil, and pepper.

• Take vitamins/minerals as recommended by your doctor.

• Eat Mindfully. Check out the Mindfulness Program at PAMF for ideas on how to start eating mindfully.

**Food Elimination Diet**

To help diagnose a food allergy or autoimmunity, your doctor may ask you to try a Food Elimination Diet, where you temporarily eliminate specific foods from your diet to attempt to resolve your dietary symptoms. This diet usually lasts two to four weeks, and should be administered under the supervision of a physician.

**Inflammatory Bowel Disease (IBD) – A Gastro-Intestinal Inflammatory Disease**

The intestines can be affected by inflammatory conditions, such as Crohn’s disease or Ulcerative Colitis (UC), or damaged by some inflammation-promoting foods, such as gluten as in Celiac disease or Non-Celiac gluten sensitivity (NCGS). (Patients with NCGS test negative for Celiac disease, but are gluten sensitive based on symptoms when they do an elimination diet.) 

People with Celiac disease do seem to be at increased risk for IBD. Some Celiac disease and NCGS symptoms are similar to IBD (abdominal pain and diarrhea).
**Crohn's disease** and **ulcerative colitis** “belong to a group of conditions known as inflammatory bowel diseases, or IBD. These disorders affect the gastrointestinal (GI) tract, the area of the body where digestion takes place. The diseases cause inflammation of the intestine and lead to ongoing symptoms and complications. There is no known cause or cure for IBD, but fortunately there are many effective treatments to help control it.

Ulcerative colitis causes inflammation and ulcers in the innermost lining of the large intestine. With Crohn's disease, the entire thickness of intestinal wall may be involved, but some normal healthy bowel can be found in between sections of diseased bowel.”

Symptoms may include:
- Diarrhea
- Fever
- Abdominal cramps and pain
- Rectal bleeding or bloody stools

Treatments may include:
- Medications to reduce symptoms of diarrhea, pain, anemia due to bleeding
- Anti-inflammatory medications
- Immune system suppressors to decrease inflammation (and therefore improve symptoms) in the intestines
- Supplements such as vitamins and iron
- Special diets
- Surgery

**Celiac disease** is an immune disease in which people can’t eat gluten because it will cause damage to their small intestine. If you have Celiac disease and eat foods with gluten, your immune system reacts to certain components in the gluten and attacks the small intestine. Gluten is a protein found in wheat, rye, and barley. It is found mainly in foods but may also be in other products like medications.

Symptoms can be:
- Stomach pain
- Gas
- Diarrhea
- Extreme tiredness
- Change in mood
- Weight loss
- Itchy skin rash
- Slowed growth

Treatment mainly consists of a gluten free diet.

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Strategies to Deal with IBD Flares

A flare is the reappearance of the characteristic symptoms of IBD.

A flare can be triggered by:

- Stress
- Lapses in taking medications/incorrect dosing of medications
- Recent use of certain medications, such as non-steroidal anti-inflammatory drugs (NSAIDS) or antibiotics
- Eating certain foods
- Smoking

What can I do to help prevent/manage flares? ¹⁰

- Take your medication as prescribed
- Eat a balanced diet
- Take supplements as prescribed
- Maintain a regular exercise routine as much as possible
- Quit smoking
- Manage stress
- Call your doctor for any question and concern

Note: IBS and IBD: Two Very Different Disorders

“Many people are confused about two distinct gastrointestinal disorders -- IBD and IBS. Different intestinal disorders can produce similar symptoms. Irritable bowel syndrome (IBS) is a condition that produces some symptoms similar to those of inflammatory bowel disease (IBD), but they are not the same condition, and they involve very different treatments. Therefore, getting an accurate diagnosis is essential to managing your condition properly.

“Irritable bowel syndrome (IBS) is classified as a functional gastrointestinal disorder, which means there is some type of disturbance in bowel function. It is not a disease, but rather a syndrome, defined as a group of symptoms. These typically include chronic abdominal pain or discomfort and diarrhea, constipation, or alternating bouts of the two. People with IBS are also more likely to have other functional disorders such as fibromyalgia, chronic fatigue syndrome, chronic pelvic pain, and temporomandibular joint (TMJ) disorder” ¹¹

Last Accessed: February 1, 2016

Special & Practical Considerations for People Dealing with IBD:

Dealing with IBD means dealing not only with the physiological effects, but also with the emotional effects in different situations, whether at home, work, during trips, or holidays. For more information on specific IBD issues, see links in the reference section.

What Else Can I Do to Support a Healthy Lifestyle?

- Get enough sleep
- Exercise
- Stop smoking
- Moderate alcohol consumption
- Manage your stress
- Use enough down time/relaxation
- Develop a healthy positive attitude/attitude of gratitude
- Develop meaningful relationships
- Do rewarding work
- Lose/control your weight
- Keep blood glucose, cholesterol and triglycerides within normal range
- Eliminate environmental toxins as much as possible
- Nurture your own spirituality

Alternative & Complementary Medicine

Some people like to look at alternative and/or complementary treatments.

The fields of alternative and complementary medicine include:

- Dietary supplements such as herbs, vitamins, minerals and probiotics,
- Mind and body practices such as:
  - Acupuncture
  - Massages
  - Meditation, deep breathing, or guided imagery
  - Movement therapies such as yoga, tai-chi, or qi-gong
  - Spinal manipulation
  - Healing touch
- Other types of medicine: Chinese, ayurvedic, homeopathy, naturopathy.

A special note on massage: While massages can relax the body and mind, help decrease stress, heal and prevent soft tissue injuries, another benefit is to promote the elimination of bodily metabolic wastes. When muscles are squeezed and massaged, the blood circulation quickens, and so does the removal of cell’s natural by products.

Current Research: How Does Diet Affect our Genes?

- Concept of nutrigenomics: Idea that studying diet-gene interactions can help identify the positive or detrimental effects of dietary compounds. Dr Mercola, MD

For more resources visit the PAMF inflammatory diseases website here: