# Understanding Autoimmune Diseases

By Tamar Clarke, MLS, MPA

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Note: This information is for educational purposes, and not a substitute for qualified medical care. There is minimal information regarding treatment possibilities.

# Opening, part one

- What does one in 12 Americans have?
- What does one in 9 American women have?
- The answer to the first two questions is autoimmune disease. One source listed that 46 million Americans have autoimmune disease. According to Dr. Amy Myers, the number is now 50 million Americans.
- The statistics are staggering when we compare the statistics for heart disease and cancer.
  - One in 20 will have heart disease.
  - One in 14 will develop cancer.
- This is an issue that all of us need to be concerned about and become aware of in the U.S. It is a problem for other western and industrialized countries.

Source: Nakazawa, pg. xvi

# Opening, part two

- As we discuss health issues, the topic of autoimmune diseases comes up. Autoimmune diseases were not always common decades ago. This type of condition is really about your immune system not functioning properly.
- The current COVID-19 pandemic illustrates the importance of having a strong and healthy immune system.
- In this series of various PowerPoints addressing nutritional medicine issues, we seek to find answers and causes of what can be causing health issues.  Understanding autoimmunity is one.
- Three Factors for Autoimmune Disease
  - Genetic Susceptibility
  - Environmental Triggers (Covered in Appendix C)
  - Loss of  intestinal  barrier function, also known as leaky gut

# Overview

- Definition of Autoimmune Disease and two Types of Autoimmune Disease
- History on Autoimmune Disease
- Causes and Risk Factors on Autoimmune Disease
- Overview of the Immune System
- Organs of the Immune System
- U.S. Government Definition of Gluten
- Gluten Proteins
- Difference between Allergy and Food insensitivity
- Leaky Gut Issues
- Inflammation (Chronic/Systemic)
- Treatment Protocols
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- Impact of Toxins  on Health
- Different Types of Toxins
- Heavy Metals as one type of Toxin
- Industrial Chemicals in our Environment
- Hormone Disrupting Plastics
- Theories on How Toxins Affect the Immune System
- What Else Has Changed in our Environment?
- Listing of some industrial toxins and pesticides

# Definition of Autoimmune Disease and Types of Autoimmune Disease

- Definition:
- An autoimmune disorder occurs when the body's immune system attacks and destroys healthy body tissue by mistake. There are more than 80 types of autoimmune disorders.
- Type of Autoimmune Disease:
- One type of autoimmune disease is one that affects the entire system, like lupus.
- The second type of autoimmune disease is one that targets a specific area or organ in the body. For example, the colon, and it can be ulcerative colitis.  Another example is the thyroid and it can be Hashimoto.
- (Note: Appendix B gives a comprehensive listing of autoimmune disorders.)

# History of Autoimmune Disease

- The first autoimmune disease was discovered in 1957.
- It was another ten years before the idea of autoimmunity was accepted, in the early 1970s.
- As statistics started being collected, more diseases were being discovered.

Source: Nakazawa, pgs 35-37

# Causes and Risk Factors for Autoimmune Disease

- One, is genetic susceptibility.
  - 70% to 80% of the immune system is in the gut.
  - Excessive stress never helps anyone.
  - Gluten sensitivity is a major factor according to Dr. Peter Osborne, Dr. Amy Myers, and Dr. Tom O'Bryan, DO.
  - Untreated leaky gut can perpetuate autoimmune issues.
- Two, is exposure to medications and vaccines
  - Some medicines can contribute to autoimmune disease
  - Vaccines can trigger autoimmune disease

# Causes and Risk Factors for Autoimmune Disease continued

- Three, environmental exposure
  - Exposure to heavy metals is another factor in causing autoimmunity (Note: a number of vaccines include heavy metals like aluminum and mercury.)
  - Environmental toxins exist in the atmosphere, in landfills, and in water.
  - Personal care  and cleaning products include toxins or chemicals.
  - Processed foods with pesticides, artificial coloring and flavoring, and etc.
- Four, other
  - Viruses and other microbes can trigger autoimmune disease.
  - Poor diet with nutritional deficiencies can facilitate autoimmune and other health issues.
  - For women, after pregnancy, the size of thymus becomes smaller. That is one theory as to why more women than men come down with autoimmune disorders.

Source: Dr. Peter Osborne, Master Glutenology Class, Module one
Second Source: Nakawaza, pg 140,143: 1976 Swine Flu vaccine caused 500 cases of Guillain-Barre disease, and the flu vaccine in 1992-94 also caused Guillian-Barre.
Third Source: Dr. Susan Blum, MD

# Overview of the Immune System

- The immune system has two components.
  - One, there are the organs that support our immune system
  - Two, is a whole network of cells that communicate with each other to address sites of injury or foreign matter that does not belong in our bodies and are also a threat to our health.
- There are four major areas where the immune system is active:
  - One, the gut also plays a major role in supporting immune system health. It is where 70% to 85% of your immunity exists.
  - Two, the liver with Kupffer cells
  - Three, white blood cells that travel in the blood stream
  - Four, the brain contains glia cells. (Source: Autoimmune Fix, pg 9)

# Organs of the Immune System

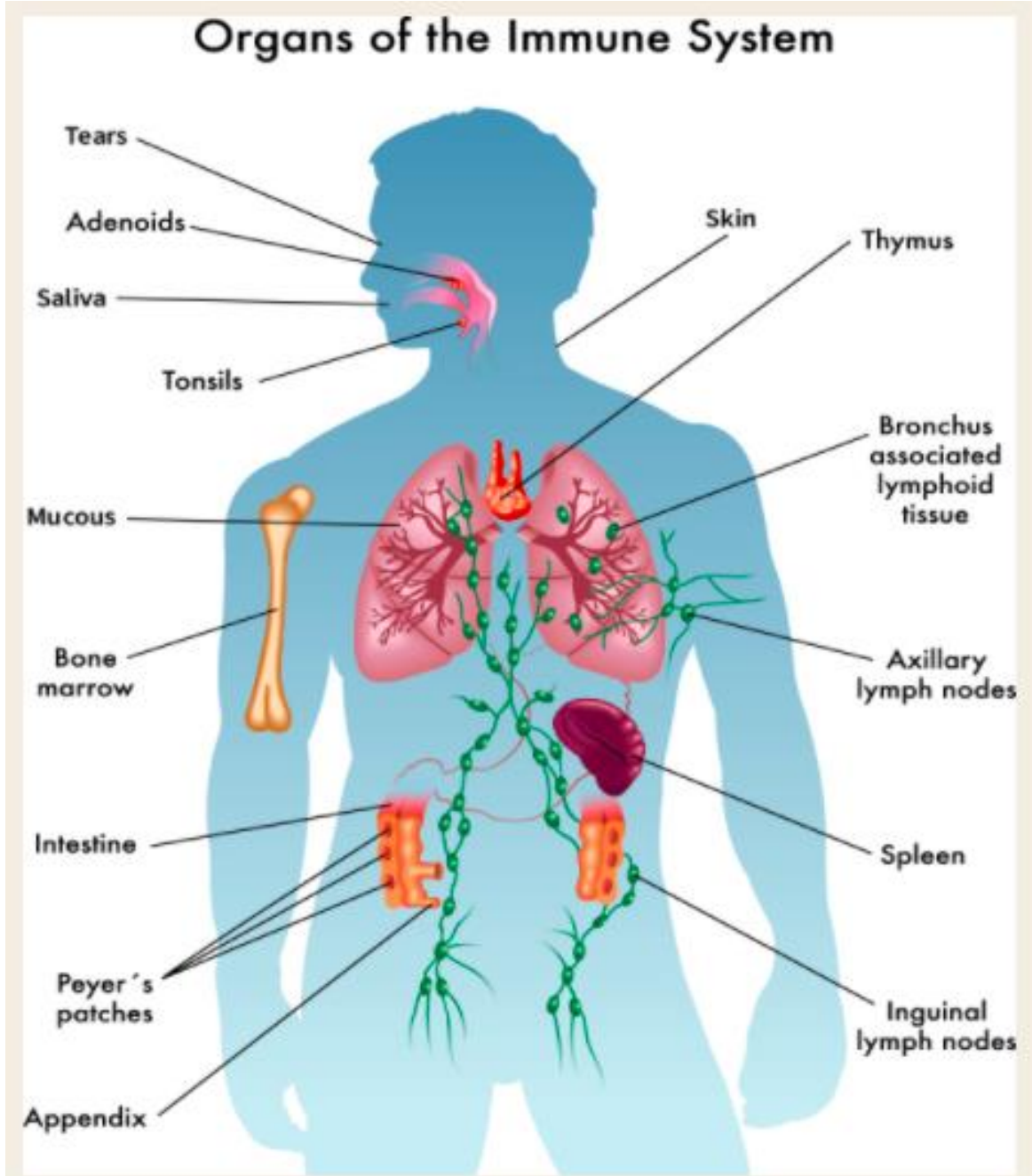
- **Thymus** – T cells mature in the thymus, The thymus makes white blood cells called T lymphocytes (also called T cells). These are an important part of the body's immune system, which helps us to fight infection. The thymus produces all our T cells before we become teenagers.
- **Tonsils and Adenoids** - Adenoids are a patch of tissue that is high up in the throat, just behind the nose. They, along with the tonsils, are part of the lymphatic system. The lymphatic system clears away infection and keeps body fluids in balance. The adenoids and tonsils work by trapping germs coming in through the mouth and nose.
- **Lymph nodes and Lymphatic vessels** - Lymph nodes or lymph glands are an important part of the immune system, acting as "nodes" between the lymphatic vessels that span the body. Immune cells that cluster in these nodes stand ready to attack any bacteria, viruses, or other foreign substances that enter the body.

Source: Perspectives on Disease and Disorders, pg 34

# Organs of the Immune System continued

- **Spleen** - The spleen has some important functions: it fights invading germs in the blood (the spleen contains infection-fighting white blood cells). It controls the level of blood cells (white blood cells, red blood cells and platelets). It filters the blood and removes any old or damaged red blood cells.
- **Peyer's Patches** - Peyer's patches play an important role in immune surveillance of materials within your digestive system. Immune surveillance refers to the process by which your immune system recognizes and destroys potential pathogens.
- **Appendix**-Researchers deduce that the appendix is designed to protect good bacteria in the gut. That way, when the gut is affected by a bout of diarrhea or other illness that cleans out the intestines, the good bacteria in the appendix can repopulate the digestive system and keep you healthy.
- **Bone Marrow** – Ultimate source of all blood cells, including B cells, Bone marrow is the spongy tissue inside bones that produces blood cells. Bone marrow produces red blood cells, platelets, and white blood cells. Lymphocytes are produced in the marrow, and play an important part in the body's immune system.

Source:
https://kidsboostimmunity.com/what-immune-system



# Definition of Gluten

- Gluten is a storage protein in grains
- There are hundreds of different gluten proteins
- Gluten protein helps the seeds to germinate and grow
- This protein is also designed to protect the seeds from being eaten by animals, insects, birds, and etc.

Source: Peter J. Osborne, Master Glutenology Class, Module One

# U.S. Government Definition of Gluten Free

- Many products include nutritional and dietary supplements list themselves as being gluten free.
- The U.S. government and FDA limits foods containing gluten to wheat, barley, and rye.  However, as listed in a later slide, there are a number of other grains that contain other forms of gluten.
- There are also “grains” that can mimic grains that do contain some type of gluten protein.

# Addendum issues on Gluten

- When animals are fed grain type  products like corn, their gluten proteins end up in the meat tissue.
- Food additives, preservatives, and pesticides make the gluten proteins more harmful.
- Gluten can destroy the gut lining, and destroy the person’s ability to digest food regularly.
- Gluten insensitivity is not the same thing as celiac disease.
- More people have gluten insensitivity than celiac disease.

# Gluten Proteins in Grains

| Grain | Type of Gluten Protein |
|---|---|
| Barley | Hordein |
| Corn | Zein |
| Millet | Penicin |
| Oats | Avenin |
| Rice | Osenin |
| Rye | Secalin |
| Sorghum | Cafrin |
| Teff | Penictin |
| Wheat | Alpha Gliadin |

Note: There are other so called non-gluten seeds like quinoa, buckwheat, and amaranth that unfortunately mimic gluten, even though they don't have gluten.

Source:
glutenfreesociety.org
And Dr. Peter Osborne's Master Glutenology Class

# Differences Between Allergies and Food Insensitivity

**Allergies**

- The immune system is involved when it comes to allergies. It can also cause inflammation in the gut.
- IgE (immediate reaction)
- IgG (delayed reaction)
- IgM (delayed reaction)
- IgA (delayed reaction)
- Note: It is harder to spot delayed allergy reactions as it may not be immediately apparent.

**Food Insensitivity**

- Food insensitivity and intolerance is the inability to digest the food. It can lead to gut dysbiosis.
- It can cause chemical inflammation and tissue damage
- Gluten can create the leaky gut
- Gluten can also disrupt the zonulin.
- Gluten intolerance is the inability to digest gluten.
- Issues about glyphosate are being raised, in how it can  harm the intestinal lining.

Note #1: Traditional skin allergy testing tests IgE immune responses.

Note #2: Source,  Dr. Peter Osborne, Master Glutenology Class, module one

# Leaky Gut Issues

- Leaky gut –
  - It compromises your immune system.
  - Incomplete digested food particles and non-food items leak from the gut and cause more work for the immune system.
  - Gluten can trigger loose gut junctions in the intestinal lining.
  - Stress can aggravate leaky gut issues.
  - Excess lipopolysaccharides should not be leaking from the gut into the body and blood stream.
  - It is also known as intestinal impermeability

Source: Autoimmune fix, pg 61

# Inflammation (Chronic/systemic)

**Plays a role in:**

- Anxiety
- Autoimmune disease
- Chronic pain
- Fatigue
- Insomnia
- Weight gain

**Also linked to:**

- Alzheimer’s
- Cancer
- Diabetes Type 2
- Heart disease
- Lupus
- Parkinson’s

Source: Autoimmune Fix, pg 16

# Treatment Protocols

- One, is testing.  The Gluten Free Society offers a genetic test that can identify gluten sensitivity.
- Two, elimination diets can help to identify foods that don’t agree with you.
- Three, be aware of all of the ingredients found in nutritional supplements. This also applies to personal care products and medications.
- Four, Dr. Amy Myers in her book on the Autoimmune Solutions discusses ways to deal with autoimmune disease. It is called the Myers Way and it involves four different steps.
- Five, Dr. Tom O’Bryan, DO, mentions a test called Multiple Autoimmune Reactivity Test. It is shown in Appendix A.

# Appendixes

# Appendix A

- Autism and Other Childhood Disorders
- Bibliography
- Glossary (15 slides)
- Inflammatory Conditions Statistics
- Resources
- Statistics
- Treatment

# Appendix A: Autism and Other Childhood Disorders

- While autism is a major topic in of itself and somewhat outside the scope of this presentation, autism is a serious disorder in children and should be everyone's concern.
  - Autism may have an autoimmune connection
  - Autistic brains have chronic inflammation
  - Vaccines contained 118 times the EPA's limit on mercury being injected into infants
  - From 1980 to the late 1990's, we are seeing a tenfold increase in autism
- One in six infants born in the U.S. are at risk for developmental disorders because of exposure to mercury while in the mother's womb (Nakawaza, pg 148)
- Exposure to pesticides a factor in the higher rate of autism in children under the age of two. (Nakawaza, pg 236)

Source: Nakawaza, pgs 154-6

# Appendix A: Bibliography


- Autoimmune Fix: how to stop the hidden autoimmune damage that keeps you sick, fat, and tired before it turns into disease (2016) by Tom O'Bryan, DC, CCN, DACBN. (Publisher: Rodale)
- The Autoimmune Solution: prevent and reverse the full spectrum of inflammatory symptoms and diseases (2015) by Amy Myers, MD (Publisher: HarperOne)
- Environmental Protection Agency's EnviroMapper (plug in zip code)
- https://autoimmune.org/disease-information/
- https://blumcenterforhealth.com/medical-center
- https://www.epa.gov/laws-regulations/summary-toxic-substances-control-act

# Appendix A: Bibliography continued


- https://www.healthline.com/health/lectin-free-diet
- https://www.verywellhealth.com/understanding-the-purpose-of-lymph-nodes-2249122
- https://blumhealthmd.com/the-immune-system-recovery-plan/
- Master Glutenology Class, by Dr. Peter J. Osborne.
- National Library of Medicine (NLM) Specialized Information Services (SIS) has released a new TOXMAP Web site. It is accessible at http://toxmap.nlm.nih.gov. (Note: this website was shut down)
- Perspectives on Diseases and Disorders: Autoimmune Diseases (2011) (Publisher: Gale and Greenhaven Press) (Note: A good introduction to this topic)

# Appendix A: Glossary

- Adaptive Immunity – Second line of defense in white blood cells including T cells and B cells (and other more specialized cells). It develops after exposure to the environment.
- AIDS – For clarification, AIDS is not an autoimmune disease. A virus attacks the immune system and destroys it.
- Allergy – When the immune system responds to a harmless foreign substance like ragweed, it is an allergy
- ASIA – Stands for Autoimmune Syndrome Induced by Adjuvants, autoimmune disorders induced by vaccine adjuvants or additives. Dr. Yehuda Shoenfeld covers this. (Dr. Osborne, Glutenology Class)

# Appendix A: Glossary continued

- **Antibodies** – Are made from B cells. They are highly specific proteins programmed to recognize and remember a specific type of bacteria or virus forever. They have a memory. They are also known as immunoglobulins and abbreviated as Ig. There are several types of antibodies:
  - **IgA** – Concentrates on body fluids, e.g. tears, saliva, secretions in the respiratory and digestive tract
  - **IgD** - In B cells, the function of IgD is to signal the B cells to be activated. By being activated, B cells are ready to take part in the defense of the body as part of the immune system. During B cell differentiation, IgM is the exclusive isotype expressed by immature B cells.
  - **IgE** - IgE has long been associated with detecting very miniscule amounts of specific protein. Several investigators have hypothesized that IgE acts, therefore, as a surveillance mechanism for the immune system. Heyman suggested that IgE is produced to act as an enhancer for other antibody responses such as IgG.
  - **IgG** – They coat microbes, IgG functions by opsonizing microbes for phagocytosis and killing, activating the complement cascade, and neutralizing many bacterial endotoxins and viruses. Selective IgG deficiency is associated with upper respiratory tract infections. IgG food allergies increases inflammation. (Nakawaza, pg. 233)
  - **IgM** – Is effective in killing bacteria

Also, Autoimmune Fix, pg 11; these antibodies respond in a sequence. Specific antibodies can be tested to identify which organs have a potential health risk. (Autoimmune Fix, pg 122)

# Appendix A: Glossary continued

- ANA Testing – test that identifies antibodies that are autoimmune, called antinuclear antibodies
- Antigens – a substance that can trigger an immune response
- Autoantibodies – antibodies that are produced to get rid of damaged cells (autoimmune Fix, pg 35. Note: There are antibodies to toxins. It can get out of control and cause problems. (Autoimmune Fix, pg 35)
- Autoimmune clusters – areas where there is a high incidence of a specific diseases, e.g. Lupus (also called disease cluster)

# Appendix A: Glossary continued

- Autoimmune spectrum – This theory was developed by Dr. Melissa Arbuckle, MD, Ph.D. It means that there is a range of health status from health to degenerative disease state.
  - 1. cellular damage
  - 2. tissue damage
  - 3. organ inflammation
  - 4. organ damage
  - 5. symptoms
  - 6. finally, diagnosed disease
  - (source: Autoimmune Fix, O'Bryan, pg. 3)

Note #1: In the initial states, there are no noticeable symptoms.
Note #2: It brings into question why the U.S. health care system waits for stage 6 before addressing health issues, a factor that increases both health care costs and poorer outcomes.
Note #3: Testing on antibodies can identify potential problems.

# Appendix A: Glossary continued

- B Cells or B lymphocytes come from the bone marrow. B cells become activated and mature into plasma cells, which makes and releases antibodies. It travels via blood vessels and lymphatic vessels.
- Basophils – they are granulocyte cells
- Biomarkers – Biomarkers can indicate which individuals are at high risk for developing an autoimmune disease.
- Booster shots – They are used to reactivate specific antibodies.
- Butyrate or butyric acid – Is fuel for the cells in the colon. It also reduces inflammation. (Autoimmune Fix, pg 72)

# Appendix A: Glossary continued

- Cytokines – Chemicals that are released to facilitate appropriate immune responses, they are signaling proteins. Too high levels of cytokines can hijack the body's immune system. Mast cells release cytokines. (Nakawaza, pg 140, 165) There are different types of cytokines. (O'Bryan, pg 10)
- Cytotoxic T Lymphocytes (CTLs) – These cells are killer cells, attack cells carrying certain foreign or abnormal molecules, and attack viruses.
- Food – Nutritional levels in food have declined as much as 38% since 1950. (Nakawaza, pgs 226-7)
- Endocrine disrupting chemicals – It can suppress some immune cells and overstimulate other immune cells.

# Appendix A: Glossary continued

- Enzyme inhibitors – They provide meal for unhealthy bacteria, leading to gut dysbiosis, and it can lead to SIBO or yeast overgrowth
- Etiology – means cause
- Disease Cluster – It means that there is an abnormally high number of specific autoimmune disease in a specific area, e.g. city or neighborhood.
- Genetic testing – The glutenfreesociety.org offers a genetic test that can identify gluten sensitivity. As much as 33% of the population may be sensitivity to gluten.
  - HLA-DQ2 and HLA-DQ8 means celiac sensitivity
  - HLA-DQ1 and HLA-DQ3 means non-celiac gluten sensitivity
- Gluten-a protein found in a number of grains. It can harm the intestinal lining. Casein can mimic gluten.
- Healthy immune system – An healthy immune system is able to distinguish between its own cells and those that represent foreign threats. A breakdown in this process results in autoimmune diseases. It affects, cells, tissues, and organs.
- Glutathione – it is the body's biggest detoxifier in the liver. If you don't have enough glutathione, toxins hang around in the liver. (Myers, pg 144)

# Appendix A: Glossary continued

- Granulocytes – It is another type of immune cell. They have chemicals including histamine. If released, contribute to inflammation and allergy. Eosinophils and basophils also contain chemicals. (p. 40, Perspectives).
- Heart Disease – A more accurate predictor of heart disease is hs-CRP testing, not cholesterol levels. (Autoimmune Fix, pg 112)
- Helper T Cells – They communicate with other cells and coordinate immune response.
- HLA – It means human leukocytes antigen. It distinguishes one human from another.

# Appendix A: Glossary continued

- Immune cells that are healthy can distinguish between its own cells and those that represent foreign threats, affecting cells, tissues, and organs. Unhealthy immune cells attack its own cells within the body, creating autoimmune disease. There are many types of immune cells. They include:
  - Cell devouring phagocytes
    - Some take on all intruders
    - Others take on specific targets
- Immunotoxicologists- Immunotoxicologists examine immune-mediated toxicities induced by various xenobiotics, including pharmacological agents, environmental contaminants, chemicals, and physical agents (i.e., UV light, radiation).
- Inflammation – The immune system fights infection with inflammation. Non-targeted inflammation damages your tissues and triggers a stress response. (Myers, pg 164) Chronic inflammation  affect different areas of the body. (Myers, pg 60) Inflammation increases cortisol levels. High intake of omega-6 fats increases inflammation. (Osborne)

# Appendix A: Glossary continued

- Innate Immunity – It is the first line of defense, consisting of our skin and mucous membranes.
- Leaky gut – It compromises your immune system. Incomplete digested food particles and non-food items leak from the gut and cause more work for the immune system. Gluten can trigger loose gut junctions in the intestinal lining. Stress and excess lipopolysaccharides are additional factors. (Source: Autoimmune fix, pg 61) Dr. Myers lists symptoms of a leaky gut. (Myers, pg 76) It can include anxiety, depression, and brain fog. There can also be a leaky brain barrier, as well. (Osborne)
- Lectins - Lectins are a family of proteins found in almost all foods, especially legumes and grains. Some people claim that lectins cause increased gut permeability and drive autoimmune diseases. While it's true that certain lectins are toxic and cause harm when consumed in excess, they're easy to get rid of through cooking. Lectins are carbohydrate binding proteins, keeping two carbohydrate molecules together. It is considered to be an anti-nutrient. It can be a problem for people with autoimmune disorders. It stimulates the pancreas to produce more insulin. (Source: Dr. Amy Myers)

# Appendix A: Glossary continued

- Leukocytes – They are also known as white blood cells.
- Lipopolysaccharides (LPS) – If they leak from the intestine, it can trigger inflammation. It can be tested. (Autoimmune Fix, pg 56) A test that can measure LPS is Intestinal Antigen Permeability Screen) (Autoimmune Fix, pg 133)
- Lymphocytes – It is a type of immune system cell manufactured in the lymphatic system. It includes B and T cells. (Myers, pg 54)
- Mast cells – They are found in the lungs, skin, tongue, nose lining, intestines and contribute to allergy. Functions like basophils.
- MHC – Also known as major histocompatibility complexes, which are unique to each of us. If it is too different like an organ transplant, T cells will attack it. It provides information on:
  - What kind of cell it is, e.g. nerve, muscle, blood cell, and etc.
  - To whom the cell belongs to
- Microbiome – The microbiome is a mix of good and bad bacteria. It also contains genes and cells. A unhealthy microbiome causes health issues. It plays a number of roles
  - Manufactures vitamins
  - Regulates metabolism
  - Influences genetic expression and brain chemistry (Source: Autoimmune fix, pg 65)

# Appendix A: Glossary continued

- Mimicry - Mimicry, in biology, phenomenon characterized by the superficial resemblance of two or more organisms that are not closely related taxonomically. In autoimmune situations, the immune system gets confused and instead of targeting the invader, it attacks or targets the body's tissues.
- Multiple Autoimmune Reactivity Screen – A test that identifies autoimmune status. (Autoimmune Fix, pg 131)
- Natural Killer Cells, also known as NK cells - A type of immune cell that has granules (small particles) with enzymes that can kill tumor cells or cells infected with a virus. A natural killer cell is a type of white blood cell.
- 1976 Toxic Substances Control Act - The Toxic Substances Control Act of 1976 provides EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from TSCA, including, among others, food, drugs, cosmetics and pesticides.

# Appendix A: Glossary continued

- NSAIDS – Occasional use of NSAIDS medications are acceptable. Long term use causes damage. However, it doesn't address the underlying issue causing pain.
- Oxidative stress – Free radicals can pile up and cause oxidative stress, which damages any cell in the body. When t here are enough tissue damage, this leads to organ dysfunction. (Autoimmune Fix, pg 19)
- Passive Immunity – At birth, an infant has the antibodies received from the placenta (from the mother).
- Phagocytes – They are large white cells that swallow and digest microbes. Monocytes are phagocytes. When in tissues, monocytes develop into macrophages. Macrophages play many roles.
  - They get rid of the body of worn out cells and other debris
  - Send out chemical signals
- Platelets – They are cell fragments. They promote blood clotting and wound repair. They activate some immune defenses.

# Appendix A: Glossary continued

- Predictive autoimmunity- Autoimmunity issues can be identified before the disease state.
- Protein markers – Every cell carries protein markers that identify it in two ways. It is called histocompatibility complex (MHC). When this is functioning properly, the immune system will not attack it. If the immune cells do not recognized the cell as “self”, they will send out a signal that the body has been invaded.
- Specific Immunity – It can take 2 days to 2 weeks to develop
- Superfund sites – Specific geographic areas where there is deadly toxins seeping into the environment. It may stem from an industrial facility that no longer in operation.

Source: Perspectives on Disease and Disorders

# Appendix A: Glossary continued

- Synergetic effect – When there is more than one chemical, the effects are more harmful than each one being alone.
- T Cells – They are also known as lymphocytes mature in the thymus and help the B Cells to create antibodies. T cells can attack virus infected cells and antigens directly. It travels via blood vessels and lymphatic vessels. There are also good T cells and bad T cells. It is the bad T cells that attack the body.
- White blood cells - They are also known as leukocytes. There are two types of lymphocytes, the T cells and the B cells
- Zonulin – It is a protein, an anchor, that holds your gut cells together. Gluten proteins can disrupt the zonulin, causing holes to be opened and remain open in the intestinal lining, causing leaky gut.

# Appendix: Inflammatory Conditions Statistics

The following is a listing of inflammatory conditions:

- Obesity  90 million
- Excess Weight  88 million
- Cardiovascular  80 million
- Allergies  50 million
- Asthma  50 million
- Eczema  7.5 million
- IBS  1.4 million

Source: Myers, pg 26

# Appendix A: Resources

- EWG – Environmental Working Group
- U.S. Environmental Protection Agency

# Appendix A: Statistics

- To indicate that autoimmune disease affects a significant number of Americans, Dr. Myers reports the following statistics:
- Graves  10 million
- Psoriasis  7.5 million
- Fibromyalgia  5 million
- Lupus  3.5 million
- Celiac  3 million
- Hashimoto's  3 million

Source: Myers, pg 19

# Appendix A: Treatment

- Dr. Amy Myers, MD successfully treated her own autoimmune condition and is able to help others, as well. She uses functional and integrative medicine protocols.  Conventional medicine basically addresses the symptoms, not the underlying causes.
- It requires:
  - A healthy diet
  - Testing to identify nutritional deficiencies, genetic differences, and other tests.
  - Lifestyle changes
  - Quality supplements
  - Need to treat leaky gut issues
- (Source: The Autoimmune Solution, by Dr. Amy Myers, MD)

| TEST | RESULT | | | |
|---|---|---|---|---|
| Array 5 – Multiple Autoimmune Reactivity Screen | IN RANGE (Normal) | EQUIVOCAL | OUT OF RANGE | REFERENCE (ELISA Index) |
| Parietal Cell + ATPase | 0.58 | | | 0.1-1.4 |
| Intrinsic Factor | 0.54 | | | 0.1-1.2 |
| ASCA + ANCA | 0.84 | | | 0.2-1.4 |
| Tropomyosin **** | 0.54 | | | 0.1-1.5 |
| Thyroglobulin | 0.59 | | | 0.1-1.3 |
| Thyroid Peroxidase | 0.60 | | | 0.1-1.3 |
| 21-Hydroxylase (Adrenal Cortex) | 0.57 | | | 0.2-1.2 |
| Myocardial Peptide | 0.68 | | | 0.1-1.5 |
| Alpha-Myosin | 0.73 | | | 0.3-1.5 |
| Phospholipid | 0.67 | | | 0.2-1.3 |
| Platelet Glycoprotein | 0.66 | | | 0.1-1.3 |
| Ovary/Testis *** | 0.57 | | | 0.1-1.2 |
| Fibulin | 0.65 | | | 0.4-1.6 |
| Collagen Complex | 0.67 | | | 0.2-1.6 |
| Arthritic Peptide | 0.64 | | | 0.2-1.3 |
| Osteocyte | 0.73 | | | 0.1-1.4 |
| Cytochrome P450 (Hepatocyte) | 0.81 | | | 0.3-1.5 |
| Insulin + Islet Cell | 1.07 | | | 0.4-1.7 |
| Glutamic Acid Decarboxylase 65 | 0.73 | | | 0.2-1.6 |
| Myelin Basic Protein | 0.87 | | | 0.1-1.4 |
| Asialoganglioside | 0.85 | | | 0.1-1.4 |
| Alpha-Tubulin + Beta-Tubulin | 0.53 | | | 0.4-1.4 |
| Cerebellar | 0.76 | | | 0.2-1.4 |
| Synapsin | 0.78 | | | 0.1-1.2 |

# Appendix A: Treatment continued

Name of Test:
Multiple Autoimmune Reactivity Test. It assesses the body's status in regard to antibodies and autoimmune status.

Source:
Autoimmune Fix,
Page 132

# Appendix B: Listing of Autoimmune Diseases

- Note: While this is a pretty comprehensive list of autoimmune diseases, there are even more, than what has been listed.

# Appendix B: Listing of Autoimmune Diseases

- Achalasia
- Addison's disease
- Adult Still's disease
- Agammaglobulinemia
- Alopecia areata
- Amyloidosis
- Ankylosing spondylitis
- Anti-GBM/Anti-TBM nephritis
- Antiphospholipid syndrome
- Autoimmune angioedema
- Autoimmune dysautonomia
- Autoimmune encephalitis
- Autoimmune hepatitis
- Autoimmune inner ear disease (AIED)
- Autoimmune myocarditis
- Autoimmune oophoritis
- Autoimmune orchitis
- Autoimmune pancreatitis
- Autoimmune retinopathy
- Autoimmune urticaria
- Axonal & neuronal neuropathy (AMAN)

# Appendix B: Listing of Autoimmune Diseases

- Baló disease
- Behcet's disease
- Benign mucosal pemphigoid (Mucous membrane pemphigoid)
- Bullous pemphigoid
- Cicatricial pemphigoid
- Cogan's syndrome
- Cold agglutinin disease
- Complex regional pain syndrome (formerly known as reflex sympathetic dystrophy)
- Congenital heart block
- Coxsackie myocarditis
- CREST syndrome
- Crohn's disease

# Appendix B: Listing of Autoimmune Diseases

- Dermatitis herpetiformis
- Dermatomyositis
- Devic's disease (neuromyelitis optica)
- Discoid lupus
- Dressler's syndrome
- Endometriosis
- Eosinophilic esophagitis (EoE)
- Eosinophilic fasciitis
- Erythema nodosum
- Essential mixed cryoglobulinemia
- Evans syndrome

# Appendix B: Listing of Autoimmune Diseases

- Fibromyalgia
- Fibrosing alveolitis
- Giant cell arteritis (temporal arteritis)
- Giant cell myocarditis
- Glomerulonephritis
- Goodpasture's syndrome
- Granulomatosis with polyangiitis
- Graves' disease
- Guillain-Barre syndrome
- Hashimoto's thyroiditis
- Hemolytic anemia
- Henoch-Schonlein purpura (HSP)
- Herpes gestationis or pemphigoid gestationis (PG)
- Hidradenitis suppurativa (HS) (Acne inversa)
- IgA nephropathy
- IgG4-related sclerosing disease
- Immune thrombocytopenic purpura (ITP)
- Inclusion body myositis (IBM)
- Interstitial cystitis (IC)

# Appendix B: Listing of Autoimmune Diseases

- Juvenile arthritis
- Juvenile diabetes (Type 1 diabetes)
- Juvenile myositis (JM)
- **K**
- Kawasaki disease
- Lambert-Eaton syndrome
- Lichen planus
- Lichen sclerosus
- Ligneous conjunctivitis
- Linear IgA disease (LAD)
- Lupus
- Lyme disease chronic

# Appendix B: Listing of Autoimmune Diseases

- Meniere's disease
- Microscopic polyangiitis (MPA)
- Mixed connective tissue disease (MCTD)
- Mucha-Habermann disease
- Multifocal motor neuropathy (MMN) or MMNCB
- Multiple sclerosis
- Myasthenia gravis
- Myelin oligodendrocyte glycoprotein antibody disorder
- Myositis
- Narcolepsy
- Neonatal lupus
- Neuromyelitis optica / devic disease
- Neutropenia
- Ocular cicatricial pemphigoid
- Optic neuritis
- Palindromic rheumatism (PR)
- PANDAS (Pediatric autoimmune neuropsychiatric disorders associated with streptococcus infections)

# Appendix B: Listing of Autoimmune Diseases

- Paraneoplastic cerebellar degeneration (PCD)
- Paroxysmal nocturnal hemoglobinuria (PNH)
- Pars planitis (peripheral uveitis)
- Parsonage-Turner syndrome
- Pemphigus
- Peripheral neuropathy
- Perivenous encephalomyelitis
- Pernicious anemia (PA)
- POEMS syndrome
- Polyarteritis nodosa
- Polyglandular syndromes type I, II, III
- Polymyalgia rheumatica
- Polymyositis
- Postmyocardial infarction syndrome
- Postpericardiotomy syndrome
- Primary biliary cholangitis
- Primary sclerosing cholangitis
- Progesterone dermatitis
- Progressive hemifacial atrophy (PHA) Parry romberg syndrome
- Psoriasis
- Psoriatic arthritis
- Pure red cell aplasia (PRCA)
- Pyoderma gangrenosum

# Appendix B: Listing of Autoimmune Diseases

- Raynaud's phenomenon
- Reactive arthritis
- Relapsing polychondritis
- Restless legs syndrome (RLS)
- Retroperitoneal fibrosis
- Rheumatic fever
- Rheumatoid arthritis
- Sarcoidosis
- Schmidt syndrome or Autoimmune polyendocrine syndrome type II
- Scleritis
- Scleroderma
- Sjögren's Disease
- Stiff person syndrome (SPS)
- Susac's syndrome
- Sympathetic ophthalmia (SO)

# Appendix B: Listing of Autoimmune Diseases

- Takayasu's arteritis
- Temporal arteritis/giant cell arteritis
- Thrombocytopenic purpura (TTP)
- Thrombotic thrombocytopenic purpura (Ttp)
- Thyroid eye disease (Ted)
- Tolosa-Hunt syndrome (THS)
- Transverse myelitis
- Type 1 diabetes
- Ulcerative colitis (UC)
- Undifferentiated connective tissue disease (UCTD)
- Uveitis
- Vasculitis
- Vitiligo
- Vogt-Koyanagi-Harada disease
- Warm autoimmune hemolytic anemia

# Appendix C: Environmental Triggers

- Impact of Toxins  on Health
- Different Types of Toxins
- Heavy Metals as one type of Toxin
- Industrial Chemicals in our Environment
- Hormone Disrupting Plastics
- Theories on How Toxins Affect the Immune System
- What Else Has Changed in our Environment?
- Listing of some industrial toxins and pesticides

# Appendix C: Impact of Toxins on Health

- One, environmental toxins seem to interfere with the signaling between immune cells.
- Two, farmers who work with crops and used pesticides and other chemicals, they were more likely to die from an autoimmune disease.
- Three, environmental toxins are also a factor with cancer.
- Four, many of the environmental toxins are now being found in our bodies, even babies.  They are like invisible invaders.  EWG has found that 91 contaminants are found in our bodies. Some even report higher levels of toxins in our bodies.) (Nakawaza, pg. 45; Myers, pg 121)

# Appendix C: Different Types of Toxins

- Dr. Amy Myers specifies four different types of toxins. They are:
  - Heavy metals
  - Mycotoxins (mold)
  - Industrial (and agricultural pesticides) Chemicals
  - Hormone disrupting plastics
- 287 industrial chemicals are being found in newborn babies. (Autoimmune Fix, pg 148) There is a concern as to what effect this has on the brain.
- The body increases white fat cells to store toxins your body cannot shed. (Autoimmune Fix, pg 149)

# Appendix C: Heavy Metals as one type of Toxin

- Heavy metals include: lead, mercury, cadmium, and arsenic
- Lead (heavy metal) – It disrupts immune system cells
- Mercury - One toxin that can play a factor in promoting autoimmune disease is mercury. Two types of mercury exist, methyl mercury and mercury vapor. They both cause problems and can cross the placenta and lodge in the fetal brain.
- Mercury can be found in a number of sources, starting with dental fillings, cosmetics, pesticides, some vaccines, pollution, and occupational exposure. Levels of mercury are higher in the atmosphere near coal burning plants. It settles on the ground and on waterways. (Myers, pg 139)
- The use of mercury known as thimerosal and aluminum in vaccines can cause harm.

# Appendix C: Industrial Chemicals in our Environment

- As we address environmental toxins, we need to address superfund sites, and the need to clean them. The chemicals in these sites can leak into the ground water, and they can also escape into the atmosphere. (Nakazawa, pg 63)
- Fires, like home fires and the World Trade Center, it releases a lot of chemicals.
- According to the EPA, over 80,000 chemicals are in use. The FDA approves 90% of new compounds without restriction. (Nakazawa, pg 77)

Source: Source: Nakazawa, page xvii
Note #1: To cover these toxins would require another presentation.
Note #2: It is also a factor in cancer.

# Appendix C: Hormone Disrupting Plastics

- A number of these chemicals are endocrine disruptors. This means that our bodies cannot distinguish the false hormones, the endocrine disruptors, from the genuine hormones. They can block the function of the real hormones or change their function. Note: Chemical manufacturers try to counteract the growing evidence the harm that these chemicals cause (Source: Nasakawa, pg. 58)
- PCBs, BPA, common pesticides can mimic estrogen, block receptors or send out the wrong signals, affect the brain and reproductive system, and can disturb the regulation of the immune system. PCBs can get into the soil. These are hormone disrupters (Source: Nakawaza, pgs 54-5 and 119)

# Appendix C: Theories on How Toxins Affect the Immune System

- 1. Heavy metals alter or damage the cells in various tissues.  Altering tissues, this can trigger an autoimmune response.
- 2. Heavy metals stimulate the immune system, so that the immune system goes into high gear and high alert and becomes unable to distinguish what is self and foreign.
- 3. Both results in inflammation.
- 4. Toxins can trigger autoimmunity when the “educated” T cells who are taught to recognize foreign invaders, there are not enough of these T cells or they are improperly trained.
- 5. While GMOs are not “technically” a toxin, there is concern that GMOs are a major factor in increasing the incidence of gluten sensitivity. (Autoimmune Fix, pg 152)

# Appendix C: What Else has Changed in our Environment?

- Our food has been changed, especially as diets changed from being whole foods to processed foods.
- Too many of the processed foods contain ingredients that are not healthy for us.
- The other component regarding our food is the decline in the nutritional status of our soils.  This means that food grown today contain fewer levels of nutrients than the food grown several decades ago.
- Foods grown with pesticides, herbicides, and insecticides, etc., in many cases, it becomes part of the food.
- Factory farming and feeding these animals corn changes their nutritional composition.

# Appendix C: What Else has Changed in our Environment? continued

- While we are on the subject of autoimmune disorders, the nutritional levels in our foods have declined 38% since 1950. (Source: Kakazawa, pg 226)
- The declining nutritional levels in foods is another factor in the growing autoimmune epidemic (and other health issues besides autoimmune.)

# Appendix C: Listing of some industrial toxins and pesticides

- **Atrazine** – a herbicide (Nakazawa, pg. 50) Atrazine has a lot of adverse effect on health such as tumors, breast, ovarian, and uterine cancers as well as leukemia and lymphoma. It is an endocrine disrupting chemical interrupting regular hormone function and causing birth defects, reproductive tumors, and weight loss in amphibians as well as humans.
- **Benzene** - Benzene is a chemical that is a colorless or light yellow liquid at room temperature. It has a sweet odor and is highly flammable. Benzene evaporates into the air very quickly. Its vapor is heavier than air and may sink into low-lying areas. It has been banned in products designed for home use.
- **Cadmium** - Only a small amount of cadmium remains in the body after eating food contaminated with cadmium, but if consumed over a long period of time, cadmium can lead to kidney disease and cause bones to become weaker. Large amounts of cadmium can damage the kidney, liver and heart and in severe cases may cause death. Cadmium is a naturally occurring toxic metal with common exposure in industrial workplaces, plant soils, and from smoking. Due to its low permissible exposure in humans, overexposure may occur even in situations where trace quantities of cadmium are found.

# Appendix C: Listing of some industrial toxins and pesticides

- **Dioxin** – a by product of exhaust fumes of diesel trucks and buses and it is in our environment. In packaging. It is an immune suppressor. (Nakazawa, pg. 52)
- **Organophosphate (pesticide)** – Infants are not able to break down this chemical because of lack or low levels of PON1 enzyme. This chemical interferes with neurodevelopment. (Nakazawa, pg. 236)
- **PCBs** – PCBs, or polychlorinated biphenyls, are highly toxic industrial compounds. They pose serious health risks to fetuses, babies and children, who may suffer developmental and neurological problems from prolonged or repeated exposure to small amounts of PCBs. These chemicals are harmful to adults as well. It can be in the soil (Nakazawa, pg 119)

# Appendix C: Listing of some industrial toxins and pesticides

- **PBDE**- Polybrominated diphenyl ethers or PBDEs, are a class of organobromine compounds that are used as flame retardants.to reduce flammability. It gets attached to dust, we breathe it and it damages our immune cells (Nakazawa, pg. 47)
- **Pesticides (general)** – A factor in the higher rate of asthma in children under the age of two. (Nakazawa, pg 236)
- **PFOA**- Perfluoriooctaoic acid found in Teflon pans, it was found to impair rats' immune response. It can alter function of our immune cells.
- **TCE** – Trichloroethylene, a toxin, has been found in toxic sites, it can change into a vapor, and seep into the ground water. (Nakazawa, pg 63)

- Note #1: Many of these toxins can end up in our environment:
  - Garbage dumps
  - Landfills
  - Toxic Waste Spills (including on the ocean)
  - Note: I would add, in the ground water.

Note #2: In the U.S., 80,000 chemicals are registered with the Environmental Protection Agency. FDA approves 90% of the new compounds without restriction.

# Conclusion

- As the dangers of chemicals, toxins, heavy metals, adding fluoride (industrial waste) to municipal water systems become better known, when government agencies like the FDA and industry say the following: “more study is needed argument”, that is really a denial of the reality.
- What occurs in the U.S., is first we see the harm, only then do we check it out. We need to do the reverse, using the precautionary principle, test it first for safety before we proceed. This include industry and the private sector.
- Some people are more susceptible to environmental toxins at lower levels and at higher risk for developing an autoimmune disease, that can range from being mild to causing severe disability and even death. If the levels become high enough, no one will be safe from coming down with an autoimmune condition. These toxins also affect plant life, animal and insect life, and sea life.

# Conclusion continued

- When someone has one autoimmune disorder, they are at risk to develop another autoimmune disorder.
- This also emphasizes the need for an arm's length relationship between the private sector and the public sector, so that the public sector does not get compromised in their basic function to support and promote public safety and in this case, also public health.
- Each one of us in the U.S. are now carrying over 100 chemicals in our bodies. (Nakawaza, pg 256)
- The U.S. health care system seems to focus on the disease state, ignoring the various stages of the autoimmune spectrum which can be identified through proper testing on antibodies. The failure to do so results in higher medical costs with fewer beneficial outcomes. When diagnosed with a disease, most doctors will say that it is too late to reverse these conditions. (Autoimmune Fix, pg 115)

Note: There are strategies that can be used to reduce the risk of developing an autoimmune condition. However, this is another whole topic. Dr. Amy Myers addresses treatment options in her book: The Autoimmune Solution.

# Conclusion  continued

- The cost of treating autoimmune disease is now approaching $120 billion annually.
- There are three factors in addressing autoimmune disease. They are:
  - Genetics
  - Environmental Exposure and Triggers
  - Loss of Intestinal Barrier Function, also known as the leaky gut. (This is one factor that we can address; source: Autoimmune Fix, pg 34)
- When people have to visit multiple doctors before finally getting their health issues addressed as well as the lack of appropriate testing, this does not speak well for the U.S. healthcare system. (Autoimmune Fix, pg 107)
- It is time for the U.S. healthcare system to address  issues before they reach a disease state.