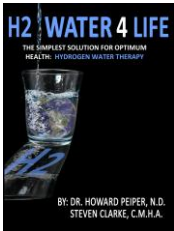


“Enjoy science made simple.”

An **Abbreviated Scientific Essay** written 12.22.2025 by: **Steven Clarke**, 2025 Certified **H2** Advisor, 2018 C.M.H.A., Quantum Medicine Level One Graduate, Complementary & Alternative Medicine (CAM) Liaison, Biology / Chemistry / Biochemistry Student, Lab Technician, Nutritionist, Mineral and Electrolyte Science Specialist, Hydration Consultant & Coach to Celebrities, Pro Athletes, VIPs & Global Companies



Heart disease is called a silent killer because most people are unaware until it is too late. But with **over 3,000 scientific studies**, H2 water has the attention of millions who are concerned. Why? Because they want to avoid serious problems associated with it that include: (1) angina, (2) aortic aneurysm and dissection, (3) arrhythmias, (4) atherosclerosis, (5) atrial fibrillation, (6) cardiomyopathy, (7) congestive heart failure, (8) rheumatic heart disease, and (9) stroke. Many of us know that a stroke often occurs when a **blood vessel** feeding the **brain** gets **blocked** by plaque or a clot. This frequently causes brain damage, major disabilities or even death. Consider the staggering numbers below.

Heart disease continues to surpass cancer as the **Number One Killer** in **America**. Coronary artery disease (CAD) is the most common type. According to the CDC, each year about 855,000 Americans have a **heart attack** ... and ... about 702,000 Americans **die** from heart disease. In the U.S., someone has a **heart attack** every **36 seconds** ... and ... someone **dies** every **44 seconds** from heart disorders. **Worldwide**, cardiovascular disease (CVD) is also the #1 cause of disability and death.

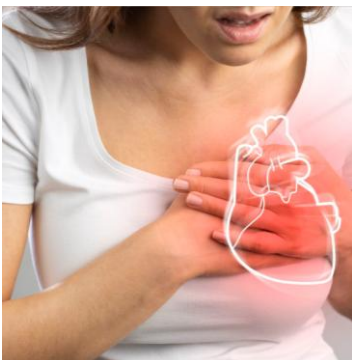
What Are 5 Primary Causes of and/or Other Risk Factors for Heart Disease?

FIRST, of course, are the less common but directly contributing causes and factors such as inherited traits, chromosomal errors, cardiovascular weaknesses and scores of both familiar and rare birth defects. At least eight out of 1,000 infants born in the U.S. each year have a heart defect – about 40,000 annually. This equals about one **child** every **15 minutes** is **born** with a congenital **heart defect**.



SECOND, according to CDC.gov (2024), **“High blood pressure, high blood cholesterol, and smoking are key risk factors.”**

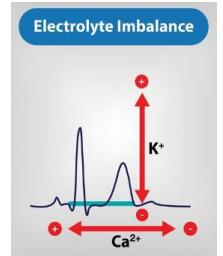
Nearly half (47%) of Americans have at least one of these three factors in their profile. Yet, other medical conditions and lifestyle choices can also put people at a higher risk including diabetes, issues with excess weight or obesity, an unhealthy diet, physical inactivity and excessive alcohol use.



In 2022, Columbia University Irving Medical Center stated: **“Over the past 10 years, heart disease in women – especially young women – has been increasing. More women than men die of heart disease every year.”** Sadly, most women cannot identify many of these other factors and are unaware of their personal cardiovascular risk. This is particularly troubling because some gender symptoms can be different. **Men** are **more likely** to have classic chest pain, difficulty breathing and a heartburn sensation. **Women usually** have atypical symptoms that can include shortness of breath, nausea, vomiting, fatigue, swelling in feet, legs or abdomen, lightheadedness and dizziness. **Carotid artery blockage** is a common precursor.

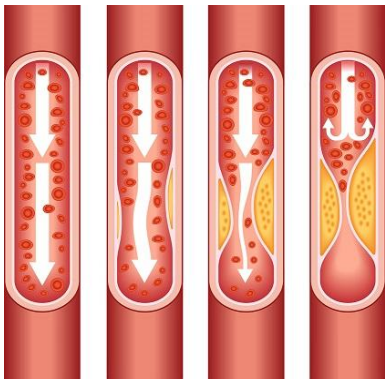
THIRD, severe electrolyte imbalance, both high and low, can have adverse effects on the heart. These include arrhythmias, cardiac arrest and heart failure. These imbalances can also result in seizures and comas. They are frequently **diagnosed too late** during or following a cardiac event while in a hospital response setting.

Electrolytes are formed from minerals and found in body fluids like blood and within cells. They carry an electric charge that helps **maintain electrical signals** which **control heart rhythm**. Many studies have linked electrolyte imbalances to heart problems that include congestive heart failure (CHF), atrial fibrillation and cardiovascular mortality. Our bodies are like **“water bags of electricity.”** Electrolytes trigger electric impulses and chemical signaling in nearly every cell. Thus, it is imperative that we have an adequate daily intake of **healthy organic non-GMO minerals** via diet, hydration and, when needed, high-quality supplements with correct low-dose ratios and no artificials.



FOURTH, severe, acute and/or chronic acidosis is another key risk factor because it can increase artery inflammations. To gain insight, please read it's harmful effects on tissues in the following paragraphs.

What Does Coronary Artery Disease (CAD) Look Like on the Inside?



It looks like a **“clogged”** pipe with plaque which is made of fatty substances, cholesterol, cellular waste and fibrin. As it builds up, artery walls become thicker and stiff. This lessens or blocks blood flow. When our heart does not get enough blood, we may have discomfort or chest pain called angina. Over time, CAD can weaken the heart. This may lead to **heart failure** where our heart cannot pump blood the way that it should. Or, an irregular heartbeat (**arrhythmia**) can develop. Plaque may also peel off or burst to thereafter circulate, form a clot and block smaller blood vessels near or in the heart and brain. This is a common cause of **heart attack** and **stroke**. Or, plaque can weaken

the walls under constant blood flow pressure and a bulge (**aneurysm**) grows inside a vessel or artery.

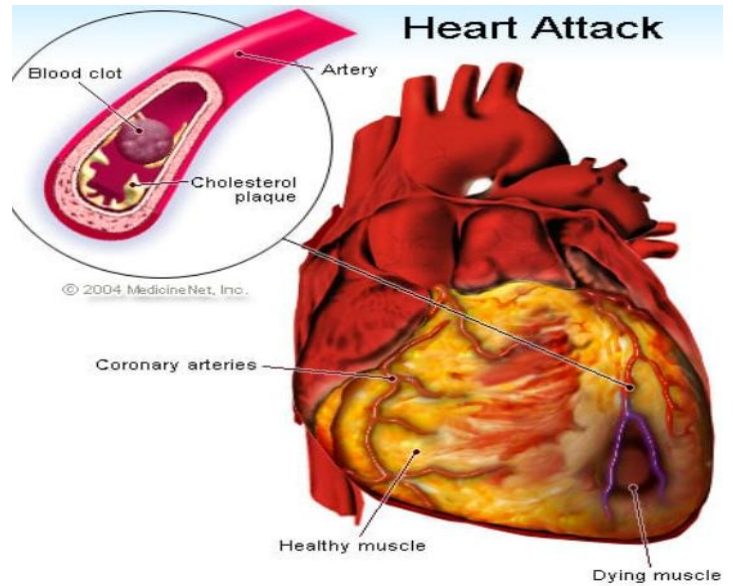
Who are Most at Risk? Putting genetics and birth defects aside, Americans at highest risk for CVD include those with (1) **high blood pressure**, (2) **high cholesterol**, (3) **poor diet**, (4) **excessive salt intake**, (5) **inactivity**, (6) **diabetes** and those who (7) **smoke**. Also, people who develop acidosis are another high-risk group. In the context of our breathing and kidney control systems, Dr. James L. Lewis III, M.D., wrote: *“both mechanisms can be overwhelmed if the body continues to produce too much acid, leading to severe acidosis and eventually heart problems and coma.”* (www.merckmanuals.com)

<https://www.merckmanuals.com/home/hormonal-and-metabolic-disorders/acid-base-balance/acidosis> (Reviewed/Revised March, 2025)

How Does Acidosis Irritate and Inflamm Tissues?

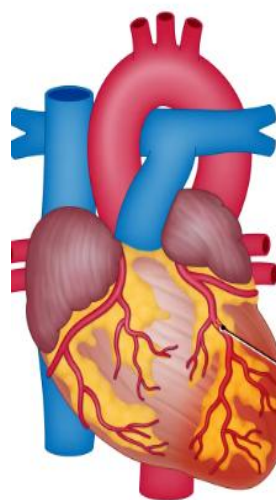
Over time, non-stop acids **slowly wear away** at outer cell membranes as well as the insides of our arteries, veins and heart. This constant acidic process weakens all these to the point where they eventually break down. Let's take a glimpse deep inside an adult heart. Please notice in the following diagram: 1) a **healthy muscle**, 2) a **dying muscle**, 3) **cholesterol plaque** and 4) a **blood clot**.

Blood is composed of plasma, red blood cells, white blood cells and platelets. When blood plasma (55% of blood) is kept between 7.38 and 7.42 pH (slightly alkaline), irritation and inflammation in our body are greatly reduced. An amino acid, **homocysteine**, is one main measurement of inflammatory levels in our blood stream. As blood **pH slightly drops toward acidic ranges**, homocysteine levels rise. Studies show that when homocysteine rises too high in response to inflammation, our bodies are at greater risk of (1) **poor overall circulation**, especially into the extremities, (2) **coronary heart disease** and (3) **strokes**.

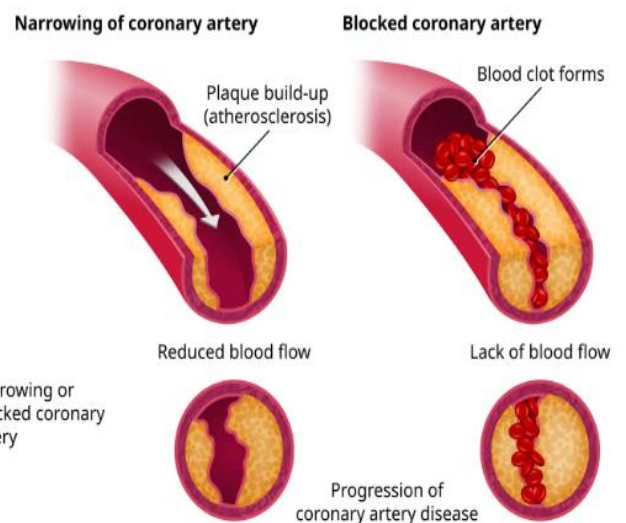


Some research shows that **as acidosis rises**, there is an increased risk of **atherosclerosis** and **blood clots**. When wearing begins in our heart and circulatory system, micro **lesions** and small **tears** can form. Heart-beat **irregularities** may occur. Our arteries can stiffen and become less flexible, causing **peripheral artery disease** (PAD) and **aneurysms**. We are now at very high risk of having a sudden heart attack or stroke.

Dr. Tom Cowan, M.D., author of "What Causes Heart Attacks" said that in virtually 100% of attacks "**a localized acidosis occurs**. This **prevents calcium** from entering [heart] cells, making the cells less able to contract. This **inability to contract** causes localized edema, dysfunction of heart walls and tissue necrosis, in other words, a **heart attack** [a.k.a. myocardial infarction]."



Myocardial Infarction



The aforementioned facts give us substantial evidence. Of what? Perhaps enough proof that an acute or chronic state of **localized acidosis** is **one** of a combination of several **primary factors** in essentially **all heart attacks**, both mild and major ones.

FIFTH, collagen losses are another crucial risk factor. To understand this, please allow me to briefly explain how declining C-levels in our bodies lead to an array of minor to major health problems.

Starting in our mid-20s, a gradual **LOSS** of **1.0%** to **1.5% PER YEAR** in its production begins. Each person's depletion rate is slightly different and unique to their individual body. **NOTICE** our **CHART** on the right. It is not precise but an illustrative approximation.

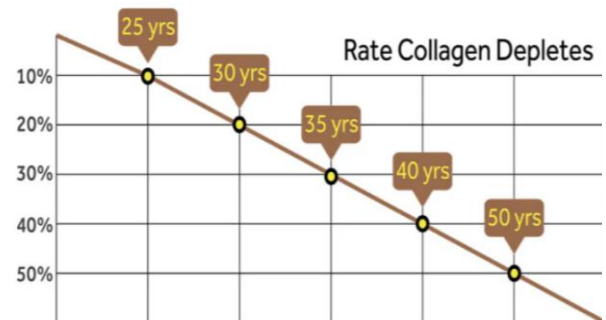
Without some form of supplementation over the years, a person could **lose** upwards of 40% to 50% by ages 50-55. How does this relate to heart disease?

Collagen is a **structural protein**. Its molecules intertwine to form fibers and create a strong framework.

It binds cells and tissues to become the **bio "glue"** that holds body parts and structure together. Collagen is the most abundant protein in our body. It is nearly everywhere including **heart connective tissues** (80-85%) and **blood vessels** (50-60%). Why is it vital for aging adults to replace losses? Because **deficiencies** put us at higher risk for (1) osteoarthritis, (2) osteoporosis, (3) sarcopenia, (4) atherosclerosis, and (5) ulcerative colitis. Also, life-threatening crises such as **heart attacks, strokes, aneurysms** and **comas** often occur when there is a long-term deficiency.

Collagen & Age

ILLUSTRATIVE
Approximation of



Strokes are caused by a blockage in the brain's blood vessels. (piyaset/iStock/Getty Images Plus)

WEAK / STIFF BLOOD VESSEL WALLS. Our **60,000-mile vascular system** that includes arteries, veins and capillaries needs **strong** but **flexible interior** and **exterior walls**. Collagen loss can lead to major risks such as **myocardial infarction** and **stroke**. Why? Because our formerly strong and flexible blood vessels as a youth slowly become hard and stiff as well as weaker. This can set up the perfect storm for a serious cardio event.

Bottom line: Globally, CVD repeatedly develops very **slowly** due to a combination of cumulative consequences. People may not detect early symptoms. Sadly, some outcomes are self-induced.

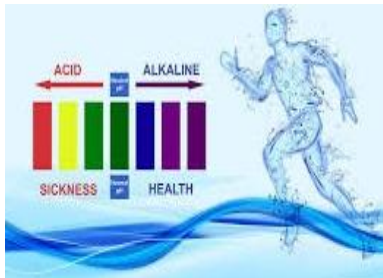
Yet, there is good news. **H2 Water** combined with **non-GMO, organic electrolytes** and the **best multi-collagen peptides powder** may help heart disease. Below are a few Testimonials and Studies that suggest freshly-ionized alkaline **H2 Water** has a bounty of potentially therapeutic benefits.

➤ TESTIMONIALS

Heart Working Properly Again – Rich Cox. *“I had serious heart issues for 10 years; coronary infarction and ejection fraction. 1/3 of my heart was not working because it [was] damaged by scar tissue. I am 64-years-old; been drinking [H2] alkaline ionized water 12 months. My blood pressure went down and heart [is] working again. My heart doctor was so impressed that he now drinks the water too. Most important choice for my health that I’ve [ever] made.”* (Health News Volume 17, #4)



Blood Pressure Normal – **Hollie S.** “I think of myself as a healthy person. However, I found out that I had a condition that I was very concerned about. I ended up in the doctor’s office [and he] took my blood pressure. It was extremely high – **210/114**. At the same time, I [heard] about antioxidant water. I decided this would be a good time to try [ionized H₂] antioxidant water. Seven days after drinking the water, my blood pressure was at 168. At [week 3], it was **down to 136/68**. The **only change** I made ... was **drinking** [ionized H₂ alkaline] water.” (Health News Volume 21, #10)



Better Able to Manage My Blood Pressure – **Julita W. (Nevada & South Korea).** “In 2017, I heard about health benefits of hydrogen alkaline water. For over **20 years**, I suffered migraines and developed high blood pressure. So, I bought my first ionizer system. In **2 months**, when I reached level 3 alkaline with more H₂, my migraines were gone! [By] **drinking 8 to 10 glasses** a day, I was better able to manage my blood pressure.” (H₂ WATER 4 LIFE Book, 2018, Chapter 22)

➤ CLINICAL STUDIES

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SIMON, A. R., et al., (2012) **Hydrogen-supplemented Drinking Water, JUST A SODA OR AN ELIXIR OF LIFE?** *Transplant International.* 25(12): p. 1211-12

NODA, K., et al., (2012) **Hydrogen-supplemented Drinking Water PROTECTS CARDIAC ALLOGRAFTS (transplants) from inflammation deterioration.** *Transplant International.* 25(12): p.1213-1222

QIN, Z. X., et al., (2012) **Hydrogen-rich saline prevents neointima (scar tissue in blood vessels) formation.** *Atherosclerosis.* 220(2): p. 343-350

HYASHIDA, K., et al., (2012) **H₂ Gas improves functional outcome after cardiac arrest (Heart Attack).** *JOURNAL of AMERICAN HEART ASSOCIATION.* 1(5): p. e003459

YOSHIDA, A., et al., (2012) **H₂ (stabilized hydrogen) MEDIATES CARDIO-PROTECTION via K(ATP) channels and permeability transition pores of mitochondria.** *Cardiovasc Drugs Ther.* 26(3): p. 217-226

SONG, G., et al., (2013) **Hydrogen-rich Water DECREASES serum LDL-cholesterol levels and IMPROVES HDL function in patients.** *Journal of Lipid Research.* 54(7): p. 1884-1893

NODA, KENTARO, ET AL., (2013) **A novel method of preserving cardiac grafts using hydrogen-rich water bath.** Affiliation: Dept of Cardiothoracic Surgery, Univ of Pittsburg Medical Center, Pittsburg, PA, USA *J Heart Lung Transplant.* 2013 Feb;32(2): p. 241-50

HUO, T. T., et al., (2014) **Hydrogen-rich saline IMPROVES SURVIVAL and NEUROLOGICAL OUTCOME AFTER CARDIAC ARREST and Cardiopulmonary Resuscitation by reducing oxidative stress and inflammation.** THREE-FOURTHS (3/4) OF CARDIAC ARREST PATIENTS DIE BEFORE HOSPITAL DISCHARGE OR EXPERIENCE SIGNIFICANT NEUROLOGICAL DAMAGE. Hydrogen-rich saline is a portable, easily administered and safe means of delivering hydrogen gas. *Anesthesia and Analgesia.* 119(2): p. 368-80

Renada Alves Carnauba, et al., VP Research Institute, Sau Paulo, Brazil. (2017) **“Diet-Induced Low-Grade Metabolic Acidosis and Clinical Outcomes”** *Nutrients.* 2017 June; 9(6): 538 PMC5490517
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5490517/>



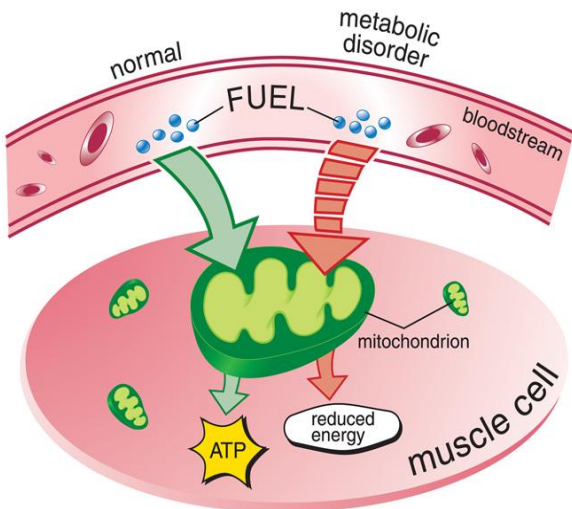
James DiNicolantonio, James O’Keefe (2021) “Low-grade metabolic **acidosis** as a driver of chronic disease: a 21st century public health crisis” published in *Open Heart* 2021; 8(2): e001730
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8549658/>



DR. JAN SLEZAK MD, PhD, D.Sc.
 SENIOR ADVISOR, MHF/MHI
*“All my scientific life has been devoted to **heart physiology** ... I learned about **H2 [Molecular Hydrogen]** as a potential ...*

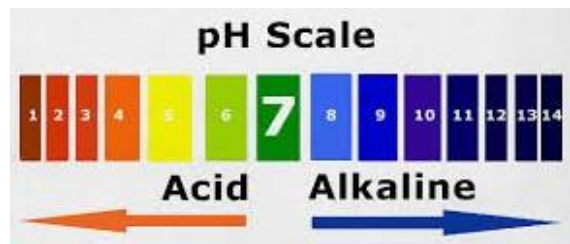
*... radical scavenger that could more easily permeate injured organs; ALTHOUGH SKEPTICAL, our lab began investigations and **were amazed** at the **protective effects**. We did the experiments again and again to confirm results. The clinical applications of **hydrogen as a medical gas** strongly warrant further attention.”*

According to the American Heart Association, **“Staying Hydrated, Staying Healthy ... is critical for heart health. Keeping the body hydrated helps the heart more easily pump blood through the blood vessels to the muscles. And, it helps the muscles work efficiently. ‘If you’re well hydrated, your heart doesn’t have to work as hard,’** said John Batson, M.D., a sports medicine physician with Lowcountry Spine & Sport in Hilton Head Island, S.C.”



*“Mitochondria need a **broad spectrum of electrolytes**. Why? Because they ignite the sparks that keep our body alive and running ... Our cells (especially brain, nerve, heart, and muscle) [need] these ‘**sparks**’ ... When our electrical system is **unbalanced** and **malfunctions**, some body processes can overreact. Others can weaken, slow down or even shut off ... So, to feel better and achieve optimal results, we should use moderation and drink high-quality electrolytes with **H2 Water 4 Life.**”* – Steven Clarke **“To Understand Electrolytes – Learn About Minerals”** (2025)

*“When we are **pH acid-alkali balanced**, there is **little to no** excess acidity, reflux, autotoxins, poisons and buildup of toxemia. Brain and nerves are well nourished. Red blood cells flow vigorously to body parts. Oxygen is abundantly supplied. We can potentially **regain** a form of biological **youth**, age **gracefully** and live **joyfully.**”* – **H2 Water 4 Life** (2025)



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