



Hello all,

Welcome to *Swan & Stone, Volume 1, Issue 11, Essential Hypertension: Inoculate Yourself With Knowledge*. We hope you enjoyed Issue 10, Circulatory Physiology: A Functional Model. We'll make use of that model in this issue.

Cardiovascular disease accounts for ~1/3 of global human deaths each year. In 2013 alone, total deaths due to cardiovascular disease equaled 17M. Of deaths due to cardiovascular disease, hypertension and its complications accounted for 9.4M (55% of cardiovascular deaths) and 18% of all human deaths, making hypertension, a.k.a. high blood pressure, the #1 global mortality risk, this being due to its contribution to deaths from heart attack, stroke, aneurysm, nephritis (kidney disease), diabetes, and Alzheimer's.

Modern medicine defines two categories of hypertension: 1) primary or "essential" hypertension (having no disease related cause), and 2) secondary hypertension (having disease related cause), the first category, "essential hypertension" accounting for 95% of cases. Applying this on average to global deaths from hypertension, *approximately 9 million people per year die from a symptom with no disease related cause, global medical costs running hundreds of billions of dollars per year. The suffering is untold, in that death from hypertension occurs after decades of life in the hypertensive state.* Yet, however grave it's consequences, hypertension itself is not a disease. It is a symptom – but of what?

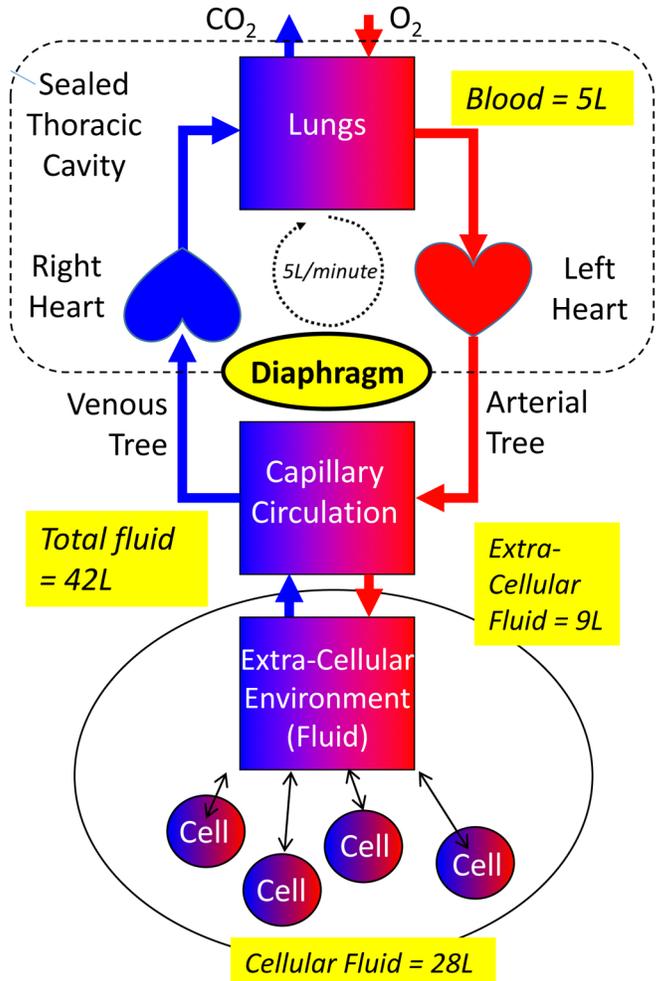


Figure 1: Circulation – A Functional Model

The current popular medical perspective is that the cause of essential hypertension remains mysterious, mostly having to do with "life style matters" including diet, activity level, smoking, salt intake, etc. There is no question that these factors do matter when one is disposed to high blood pressure. Edema of the hands and feet is a common consequence of consuming salt when hypertensive. This swelling results from autonomic regulation of the salinity of extra-cellular fluid, i.e. water is added to lower the salinity, thereby preventing excess salinity of the homeostatic cellular environment. This example of edema, is a symptom of consuming salt when suffering from the symptom of essential hypertension, symptom-on-top-of-symptom.

As a life scientist I reject this explanation. I posit that the cause of essential hypertension is clear and that the cause is in fact "physical", this being failure of the 5L of blood in the body to flow in a circle. This failure of blood to flow is a consequence of failure of the diaphragm to move downward with inhalation, thereby emptying the venous tree. When the venous tree fails to empty capillary blood has nowhere to go. Flow in the circle slows and arterial pressure increases. The autonomic nervous system knows about flow and increases pressure to sustain flow, again attempting to preserve a homeostatic cellular environment. This is the autonomic nervous system's #1 imperative and it will result in escalating blood pressure if the root cause is not addressed. I could argue that the root cause of essential hypertension is failure to move the diaphragm with significant depth but this would not be the true "root" cause. The true root cause is our general lack of understanding that the way we breathe directly affects how our circulation works – that healthful circulation requires that the diaphragm move. Essential hypertension indicates that the circulatory system is malfunctioning, that blood flow is impeded.



I've written about hypertension a number of times, and I will continue to as I believe that the 9M deaths per year resulting from it are the proverbial tip of the iceberg. What happens to the human body and brain over the course of decades as the circulatory system malfunctions and blood flow is impeded? There is hard evidence that chronic high blood pressure damages the heart & kidneys, organs that are constantly subjected to high arterial pressure. Atherosclerosis, plaque buildup on artery walls correlates with hypertension and this is no wonder. As blood flow slows, the velocity with which blood moves through the arteries slows, failing to sweep arterial walls clean of debris that precipitates out of the blood stream. This debris attaches to arterial walls and begins piling up, creating blockages that grow with time. These blockages are the common cause for "cardiac arterial bypass" surgery, wherein surgeons either go in and open up the blocked and damaged cardiac artery or bypass around it, so blood flow to heart muscle can be restored. Dietary changes are highly recommended in these cases, where one is encouraged to avoid high cholesterol foods – cholesterol being the basis of arterial plaque, especially LDL (low density lipoprotein) which is goeey in nature and precipitates out of blood easily, clinging to arterial walls. Plaque buildup is particularly problematic when it occurs in the brain because it results in dementia. A pressing question is, as hypertension and its consequences, including atherosclerosis, progresses over decades what happens to mental function? I wonder if present individual and societal behavior is related to this risk. How many of us are walking around with impaired brain function because of circulatory malfunction? I posit that this is the most pressing question of our time.

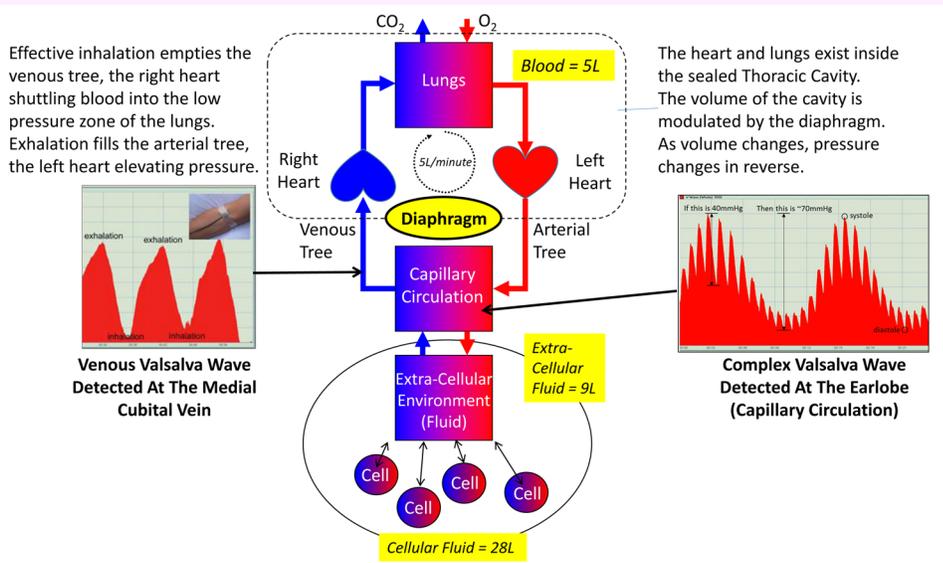


Figure 2: Wave Action In The Circulation As A Function Of Resonant Breathing

Current stats in America are that hypertension affects 33% of adults over age 20, and 65% of adults over age 60. This says that hypertension is also affecting a significant population of young adults below age 20, children growing up with circulatory malfunction, as well as adults between the ages of 20 and 60. How does impaired circulation affect brain development? These are troubling questions but the numbers speak to the pervasive risk. Because the worldwide medical-industrial-complex benefits so greatly from this massive population with hypertension there is no impetus for change, in fact it is just the opposite – reduction in the numbers negatively affects the bottom line.

For this reason, a grass-roots education campaign is necessary, starting at home: 1) move your diaphragm to improve your circulation, 2) teach your children well the critical importance of breathing with depth and regularity, 3) spread the word in your local community including neighbors, schools, churches, and senior centers. Benefits are immediate and self-evident, we feel better, we function better, we sleep better. It is no wonder – everything about our body and mind depends on our circulation. I am developing and teaching a course locally on this subject. Once finalized, I will make a multi-media version available on YouTube. Once available, please share it widely. Health Pros, please use it to educate your clientele.

The impact of breathing slowly, deeply, and rhythmically on essential hypertension is immediately verifiable, and I encourage you to verify it, at home, at work, at your doctor's office. Breathe slowly, deeply and rhythmically when your blood pressure is being assessed, i.e., have it assessed when the blood in your body is flowing as it should. There are 5L of blood in the average adult body. The current medical understanding is that this 5L circulates once per minute. This is in a human population that breathes at an average rate of 17-19 breaths per minute, the heart doing all the work, without significant diaphragm action and no wave in the circulation. Breathe to produce the wave and watch what happens. If you are using a medication for essential hypertension, be sure to consult your physician along the way.

Stephen Elliott, President, COHERENCE

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