Biohacking Training Webinar

Lesson 2

Dynamic pH Balance

Mark Hathaway

Some legal stuff

I understand that Mark Hathaway provides educational assistance, tutoring, consulting and coaching services to help me understand concepts in nutrition, diet, food and other areas deemed important in order to live a fuller and healthier life, and in association with this education to learn specifically of the foods, dietary supplements or more that can assist in balancing my state of health.

I further request and accept the use of any tools of the "health trade," and at my sole discretion under retained right, in whatever form available in a free market that may be provided for my use to further my health education be it software, workshops, testing or health auditing apparatus, clinical or laboratory equipment.

I understand that Mark received certification in Flow Systems technology for health auditing through professional training programs from Biomedx (Chicago), but is neither offering nor providing a service under this agreement under any official government certification and/or license as a health, or diet professional.

I understand that the health coaching services under this agreement does not, cannot, and will not provide any diagnosis, prescription, or treatment options for any medically or otherwise defined health ailment wherein only a licensed professional may be competent to address such issue, and further, should miscommunication result in a perception that such is the case, I acknowledge that I alone bear full responsibility for any actions taken due to the miscommunication. At no time is this coaching service intended as a substitute for regular medical or other licensed care.

I understand that I assume all risks from the use, non-use or misuse of information, materials or opinions provided by Mark Hathaway during my health coaching sessions, trainings or presentations.

Today's Topics

1. The pH Regulatory System of the Body - How people can get into trouble being too alkaline and how acidifying can bring back balance. What? Sound shocking? Confused? You won't be after this session. We take pH concepts to a new level of understanding beyond the simplistic thinking that permeates much of the alternative and natural health field today regarding acid/alkaline balance. pH is a measure of biochemical speed & resistance and also reflects a magnetic factor - and it must be understood that it is only the tail of a much larger biochemical dog.

2. Powerhouse Topic for the webinar - According to the latest statistics one out of every two people you are ever likely to come across or work with will die from cardiovascular disease. Luckily, a very well-known colloidal chemist called Thomas Riddick discovered that urine conductivity readings are a key indicator for cardiovascular and renal risk. During this powerhouse topic I will be introducing you to the Conductivity Meter and showing you how simple it is to assess whether the cardiovascular and renal system are at risk.

   With this knowledge and understanding you will be empowered to such extent that you will have the ability to save the lives of 50% of the people you work with (including yourselves of course).

   You could literally run a renal cardiovascular practice doing little more than what you will be learning here.

3. Discussion / Q & A

Dynamic pH Balance

pH

Potential of Hydrogen

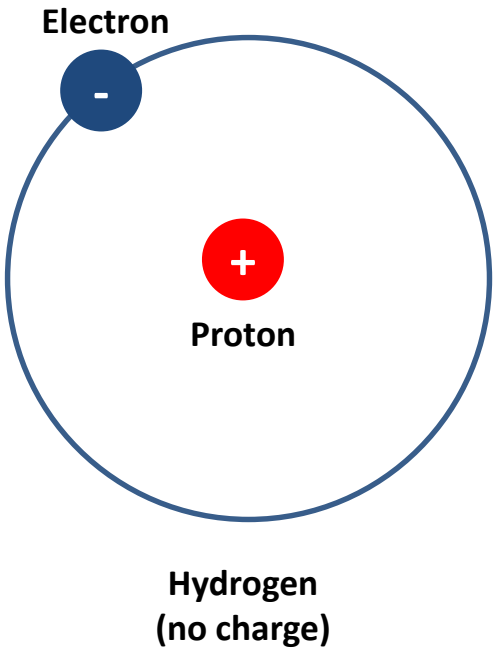
91 % of everything in the physical world we inhabit is made up in association with hydrogen, the most ubiquitous element.

Dynamic pH Balance

pH

Potential of Hydrogen

The Hydrogen Atom, symbol H, has one positively charged proton and one negatively charged electron. By itself is has no charge.



Dynamic pH Balance

pH

Potential of Hydrogen

If hydrogen gives up its electron it can be left as just a proton and then have a positive charge. This is H+. It is then a CATION.

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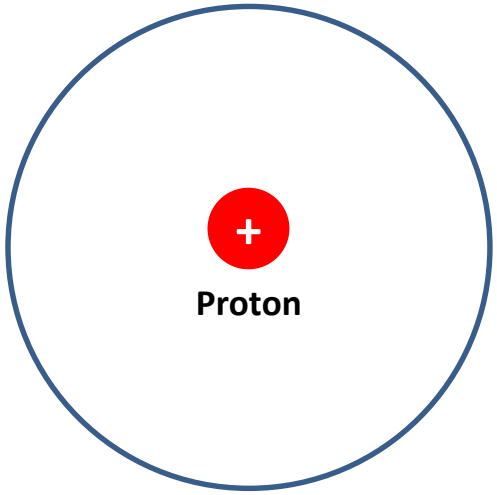


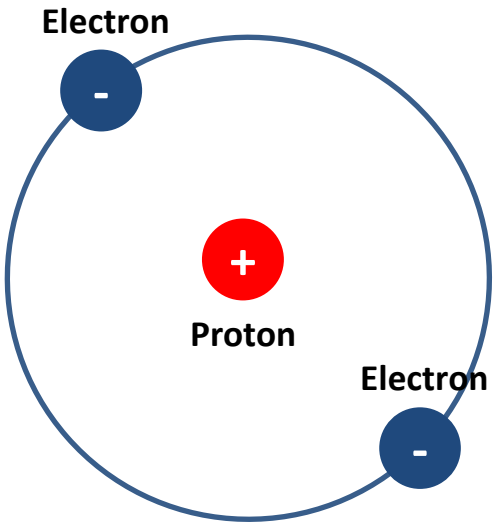
Hydrogen
(Positive Charge - CATION)

Dynamic pH Balance

pH

Potential of Hydrogen

If it gains an electron, it would then have two electrons to its one proton, and it would then have a negative charge. This is H-. It is then an anion. .



Hydrogen
(Negative Charge - ANION)

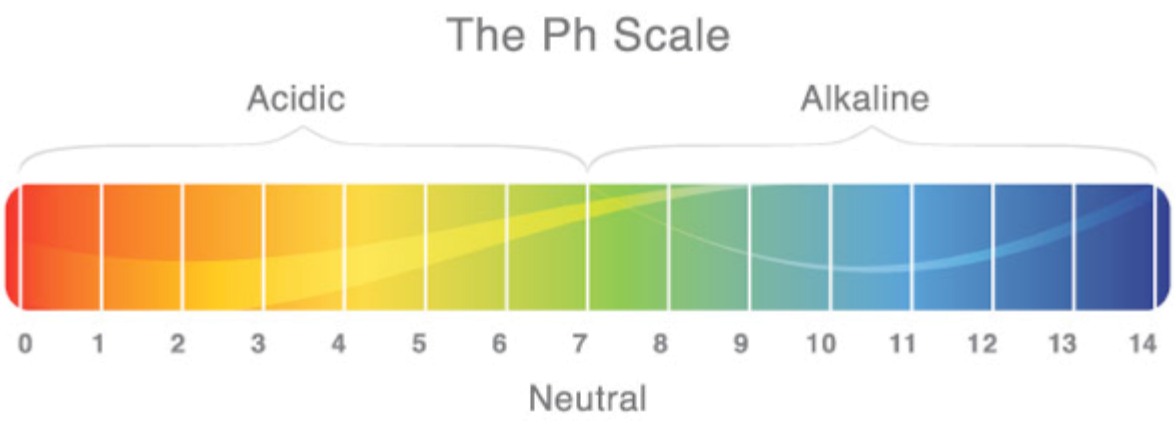
Dynamic pH Balance

pH

Potential of Hydrogen

pH is measured with an electrical probe that can detect the voltage of the primary hydrogen ion.

It is measured on a scale that goes from O to 14. 7 is neutral. Readings below seven are given to have more H+ then H- and are said to be acidic and cationic. Readings above seven are given to have more H- then H + and are said to be alkaline and anionic.



Dynamic pH Balance

pH

Potential of Hydrogen

As more H + (hydrogen without electrons) exists the further below 7 a measurement goes, the solution being measured is more acidic. With ever increasing amounts of H+, the ability to accept more and more electrons exists, consequently, electricity flows faster the more acidic something becomes.

pH = Potential Hydrogen

Degree of concentration of H ions in substance or solution.

Measured on Logarithmic Scale

0	7	14
ACID		**BASE**
H saturation		(Alkaline)

pH controls the *speed* of our body's biochemical reactions.

enzyme reactions/electricity flow

/\ pH = more resistance
\/ pH = less resistance

Acid ph is *hot & fast*

Alkaline pH is *cool & slow*

Dynamic pH Balance

pH

Potential of Hydrogen

As more H- (hydrogen with electrons) exists the further above 7 a measurement goes, the solution being measured is more alkaline. With ever increasing amounts of H-, the ability to deny the acceptance of more electrons grows, and consequently electricity flows slower the more alkaline something becomes.

pH is akin to a measure of the speed of electricity in biochemical solutions.

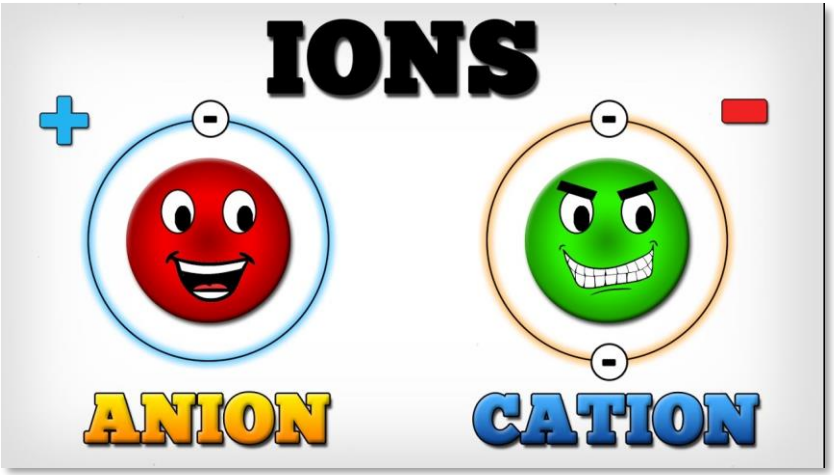
Dynamic pH Balance

ORP

Oxygen
Reduction
Potential

Where a pH probe measure the potential hydrogen concentration, an ORP (oxygen reduction potential) probe measures the sum total of all the anions and cations in a fluid.

ORP is measured in millivolts and it can give a positive or negative millivolt reading.



Dynamic pH Balance

ORP

Oxygen
Reduction
Potential

When atoms meet to form molecules, or molecules meet to form further molecules, they come together through sharing electrons. One side of the equation may lose an electron and the other side will gain an electron. What one side loses the other side gains.

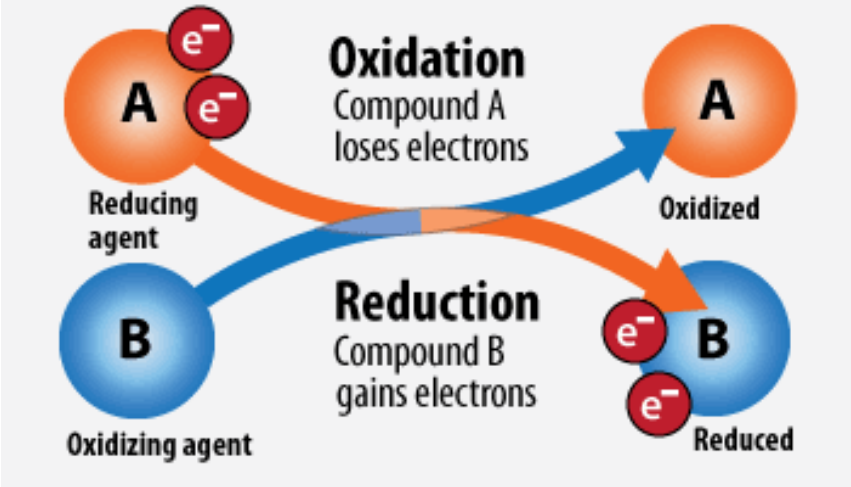
It is the movement of electrons that create the flow of life.

Dynamic pH Balance

ORP

Oxygen
Reduction
Potential

In chemistry, when electrons are lost on one side of the equation we say oxidation." as occurred. The side that experienced the electron gain is said to be reduced. What is actually reduced is the electric charge because now with an extra electron that it did not have before, it is going further in the negatively charged direction. Hence, charge reduction.



Dynamic pH Balance

pH

Potential of Hydrogen

WHY DO WE MEASURE URINE/SALIVA pH

Saliva pH tells us what is happening

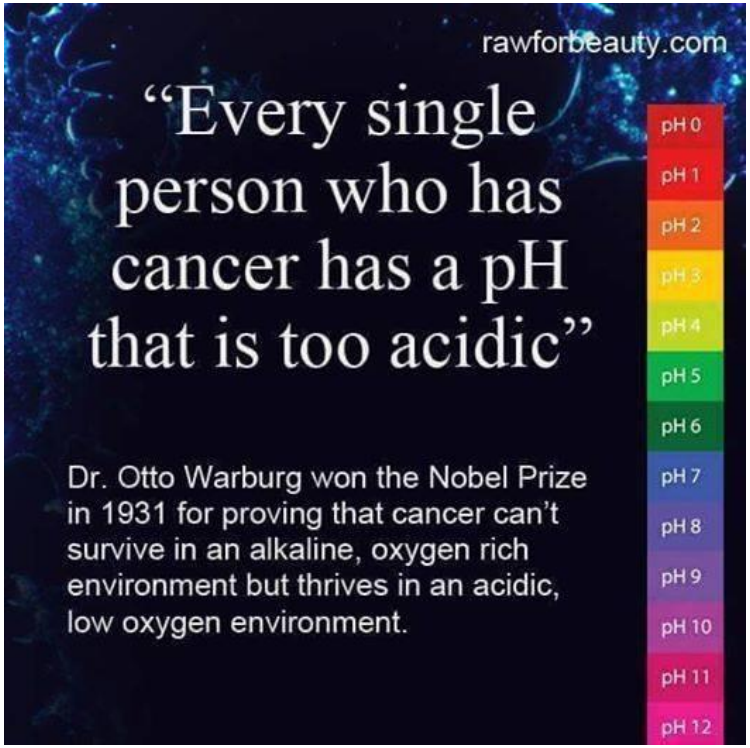
(As food enters and indicates the body's response to diet and the environment.)

Urine pH tells us what happened

(As a result of the digestive process and indicates the status of the environment and its stress on the body.)

The further the total body pH moves from 6.4-6.8, the weaker the digestion.

Be Careful with what you read!



However.....

The wonderful and brilliant Dr. Warburg may have been correct - at the time! But this statement has absolutely no relevance when it comes to the message this image is attempting to portray. I have discovered this first hand through my work and.... oh yeah! Oops, sorry Mr. Warburg but as a very well known Danish physiologist Dr. Christian Bohr discovered a little later through his work with haemoglobin's oxygen binding affinity (the Bohr curve effect) the more alkaline you push your blood the less ability those very 'oxygen rich' blood cells have of actually releasing that oxygen into the tissues and brain. Oops again!

You end up with the same result as having an environment that was too Acid in the first place (blood cells not picking oxygen up). Oops again! As always it's about balance. You cannot have good without having bad somewhere on the opposite end of the same spectrum lurking close by.

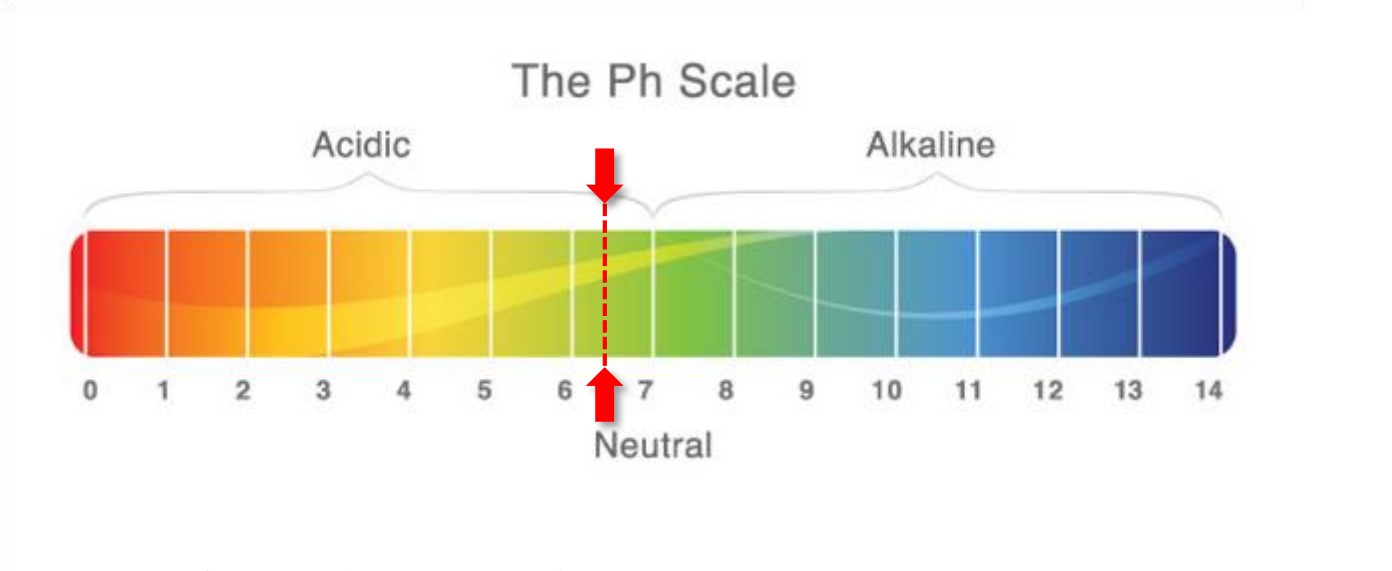
THE IMPORTANCE OF BALANCED pH

Your Body pH Affects EVERYTHING.

Human blood stays in a very narrow pH range right around 7.365. Below or above this range means symptoms and disease will manifest. When pH goes off, microbial looking forms in the blood can change shape, mutate, mirror pathogenicity, and grow.

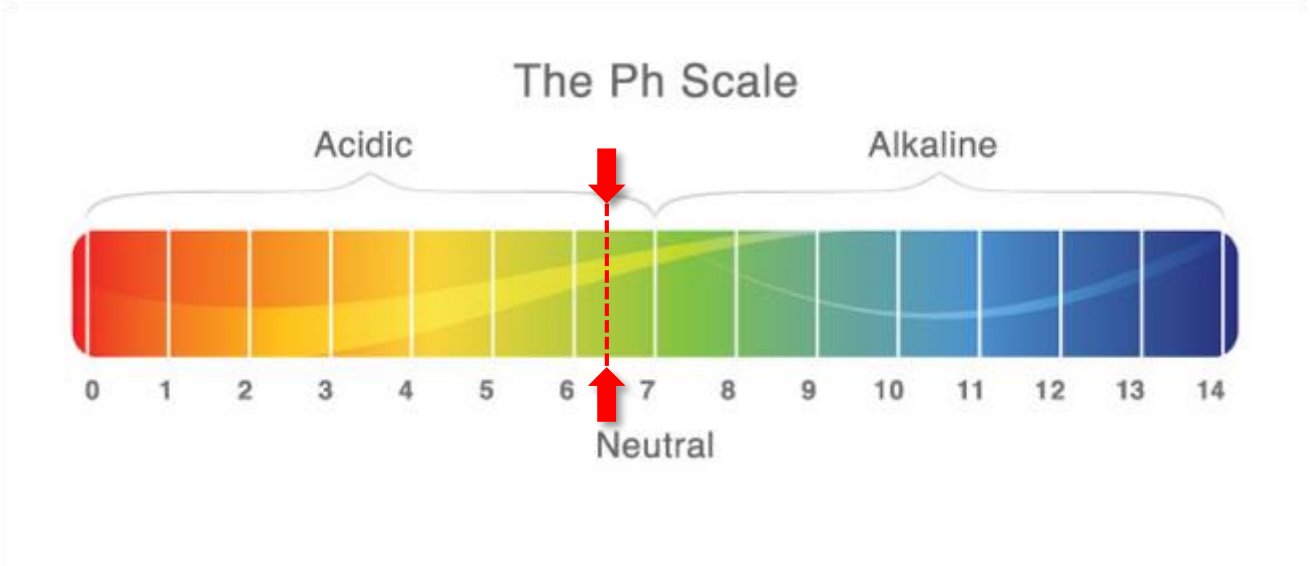
When pH goes off, ENZYMES that are constructive can become destructive. When pH goes off, OXYGEN delivery to cells suffers.

The effects of altered pH



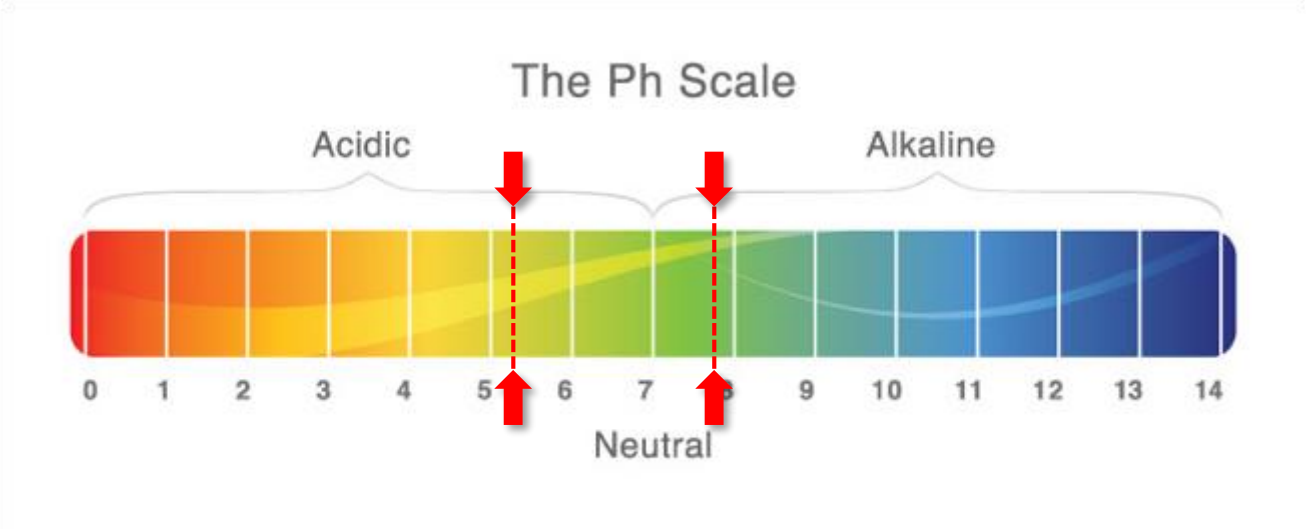
As pH goes low, **electric flow increases,** so does magnetism

The effects of altered pH



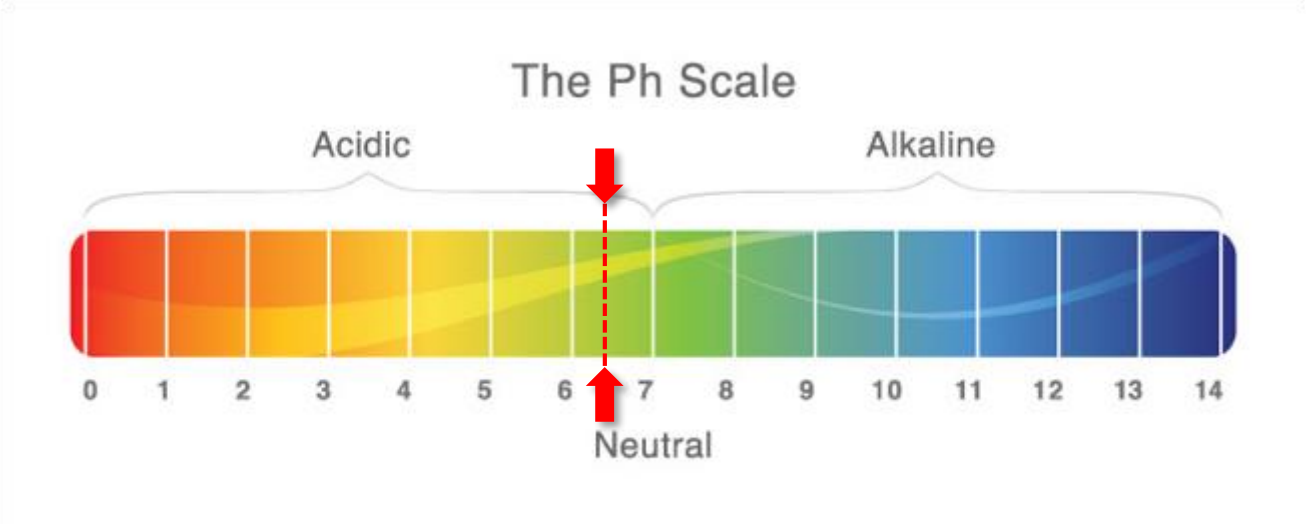
As pH goes high, electric flow decreases, so does **magnetism**

The effects of altered pH



Too high or too **low pH means** too little or too much magnetism for **liver to pick** up minerals **and structure** the enzymes

The effects of altered pH



All **biological life** has best pH (urine and saliva) at **6.4**
This results in **best magnetism** *(Dr. Carey Reams)*

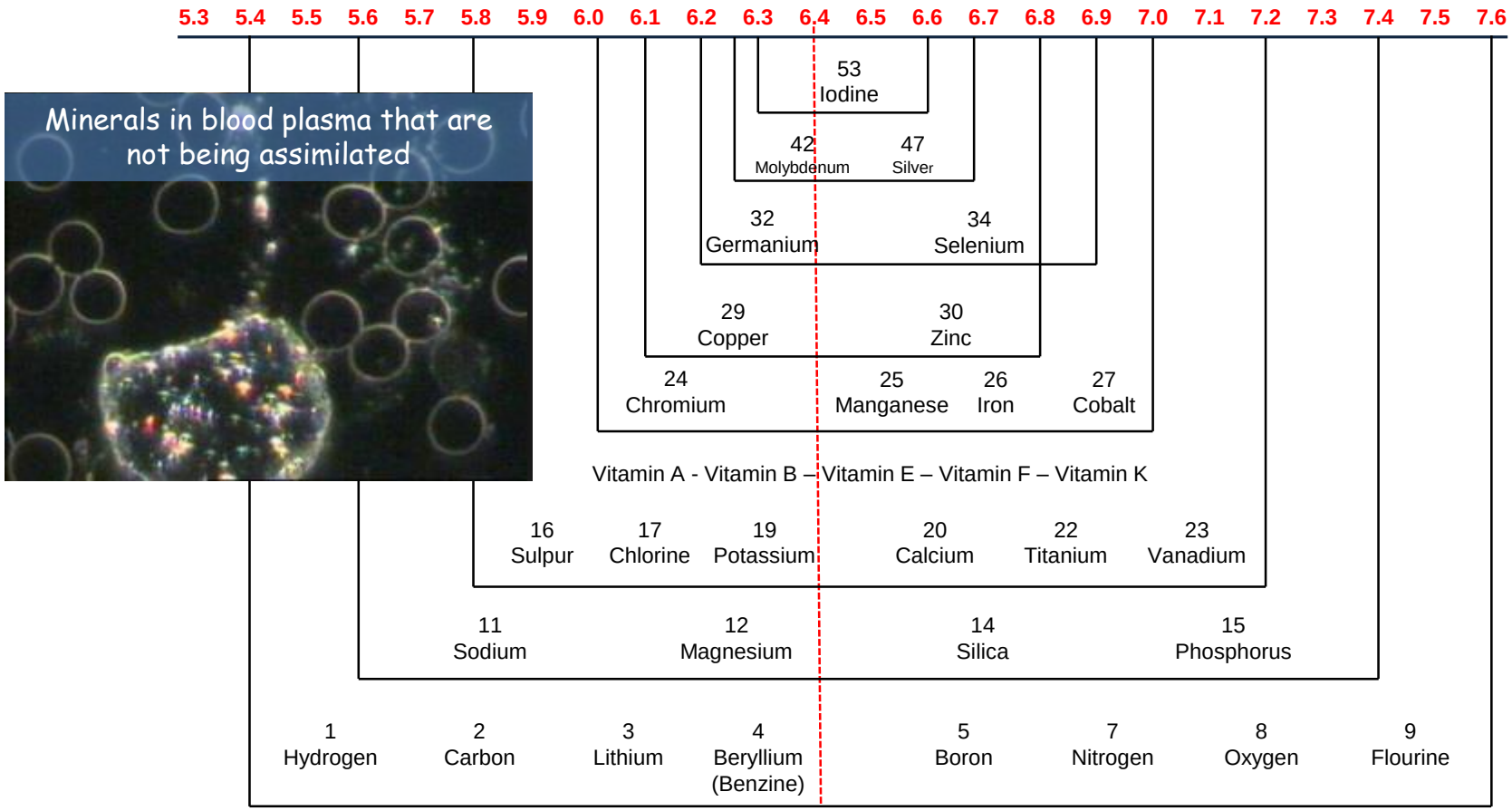
URINE & SALVIA (Perfect Total Body pH = 6.4)

Total Body pH: ((2 x SpH) + UpH) / 3

This chart details the pH range necessary for the cells of the body to be able to extract the nutrients from the blood. If you are out of these ranges, you will not utilize the nutrient

Source: Dr. Carey Reams (Reams Biological Theory of Ionization)

RANGE OF ACCEPTANCE



Dynamic pH Balance

I would like to first clear up some rapidly spreading misinformation regarding pH balance. It has become a popular health fad to promote the idea that alkalinity is somehow "better" than acidity. To this, I would like to respond by siting the astute words of the brilliant Dr. Guy Schenker, D.C.:

"In truth, excess alkalinity is just as harmful as excess acidity. To clear the confusion, all physiological systems are maintained through a negative feedback mechanism that operates in a dualistic manner. Dualistic means that for every normal condition, there are 2 abnormals – abnormally high and abnormally low. To say that there is only one abnormal with respect to pH balance is to display total ignorance of the most basic fundamentals of physiology."-'An Analytical System of Clinical Nutrition', -Guy Schenker, DC, 1989-2010

Dynamic pH Balance

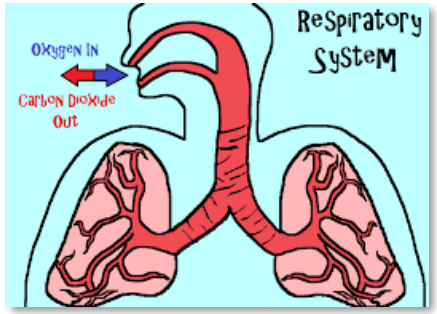
The reality is this….

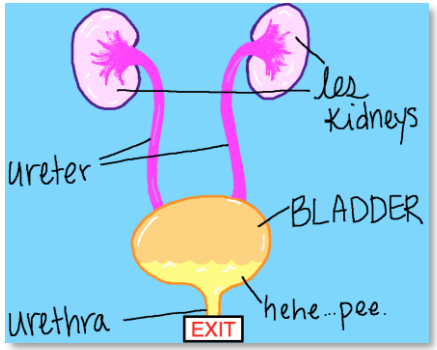
There are numerous kinds of acid/alkaline balances in the body:

- Respiratory alkalosis
- Potassium depletion alkalosis
- Metabolic alkalosis
- Metabolic acidosis
- Potassium excess acidosis
- Respiratory acidosis

Your blood pH is reflected in your personality, or as I like to say your behaviour range

Dynamic pH Balance





To understand how the urine or saliva pH can vary either with or against the pH imbalance of the body requires that you know the simple clinical facts of life with respect to Acidosis and Alkalosis:

- **Acid/ Alkaline Imbalances always involve respiratory function**
- **Acid/ Alkaline Imbalances always involve renal function**

The respiratory and renal involvement in an Acidosis or Alkalosis may be either part of the cause of, or part of the compensation for the Acidosis or Alkalosis.

Dynamic pH Balance

The urine pH and saliva pH help you identify the type of Acidosis or Alkalosis, but do not indicate the presence of an Acidosis or Alkalosis - only the respiratory rate and the breath hold do that.

In other words, no matter how outrageously high or low your or your clients' pH's are, you will only treat an Acid/Alkaline Imbalance if these pH's are accompanied by an abnormal respiratory rate and/or breath hold time. If respiratory parameters are within normal limits, then the high or low pH is due to something other than an Acidosis or an Alkalosis.

Dynamic pH Balance

Failure to maintain normal pH may be associated with one or more of seven causative factors.

They are:

1) Water/Electrolyte Imbalance
2) Anabolic/Catabolic Imbalance
3) Fast Oxidiser/Slow Oxidiser Imbalance
4) Sympathetic/Parasympathetic Imbalance
5) Endocrine Insufficiencies
    a) Kidney
    b) Adrenal
    c) Testosterone, Estrogen, Progesterone
    d) Thyroid
    e) Posterior Pituitary
    f) Parathyroid
6) Chronic dietary imbalance with respect to the acid/alkaline character of foods
7) Respiratory Dysfunction

Dynamic pH Balance

Acid/Alkaline Imbalance Associated With Water/Electrolyte Imbalance

Acid/Alkaline and Water/Electrolyte Imbalances are related to the extent that any type of Acidosis involves a tendency to dehydration, and any type of Alkalosis involves a decrease in extracellular fluid volume. Any imbalance, therefore, requires an increase in water intake, usually along with certain selected electrolytes.

A major problem in all your Electrolyte Stress and your Electrolyte Insufficiency clients is the inability to control fluid and electrolyte movement between the various extracellular and intracellular fluid compartments. This water/electrolyte problem is always associated with some loss of pH control in one or more of the body fluid compartments. Many of the dispersing agents and electrolytes you use for your Electrolyte Stress and Electrolyte Insufficiency clients' are the same as the buffers used for your Acid and Alkaline patients.

Understand that anytime you correct a client's Electrolyte Imbalance you have also corrected a pH imbalance. (In fact, in most cases you will have corrected more than one pH imbalance).

Dynamic pH Balance

Acid/Alkaline Imbalance Associated With Anabolic/Catabolic Imbalance

There are tissue pH changes associated with Anabolic/Catabolic imbalance. Truthfully, the tissue pH changes associated with Acid/Alkaline imbalance are of much less clinical significance, both in terms of severity and frequency, than are the acid/alkaline changes associated with Anabolic/Catabolic Imbalance.

In other words, you will most often be influencing tissue pH abnormalities by dealing with Anabolic/Catabolic Imbalance rather than with Acid/Alkaline Imbalance per se.

Anabolic Imbalances are accompanied by a metabolic alkalosis in conjunction with a tissue acidosis. At the tissue level (and especially in lesioned tissue) there is anabolic energy metabolism (fermentation). There is thus an accumulation of lactic acid in the interstitial fluid.

Dynamic pH Balance

Acid/Alkaline Imbalance Associated With Anabolic/Catabolic Imbalance (cont'd)

Catabolic Imbalances are typified by a metabolic acidosis concurrent with a tissue alkalosis. At the tissue level (and especially in lesioned tissue) there is catabolic oxygen metabolism which results in excess conjugated FA and increased fixation of chloride ions as they bind the FA double bonds. This excess cellular chloride fixation allows sodium to remain free in the interstitial fluid. The excess sodium combines with carbonate ions, forming alkaline compounds.

Never lose sight of the fact that aberrant oxidative metabolism (i.e., Anabolic/Catabolic Imbalance) is the most important cause of tissue acidosis/alkalosis.

Dynamic pH Balance

Acid/Alkaline Imbalance Associated With Fast/Slow Oxidiser Balance

Both Fast and Slow Oxidiser Imbalances are typified by abnormal carbon dioxide and bicarbonate levels. Carbon dioxide and bicarbonate levels are at the root cause of many Acid/Alkaline Imbalances. Your clients' with Fast Oxidiser / Slow Oxidiser Imbalances are continuously struggling to adapt to their abnormal carbon dioxide and bicarbonate levels, and thus have a tendency to deplete their buffering system reserves. Your Fast Oxidiser clients' tend to be relatively acid at the systemic level, while your Slow Oxidiser clients' are excessively alkaline.

The only way to correct the acid or alkaline conditions of these people is to normalize their oxidative energy metabolism by reversing their Fast Oxidiser or Slow Oxidiser Imbalance such that normal levels of carbon dioxide are produced.

Dynamic pH Balance

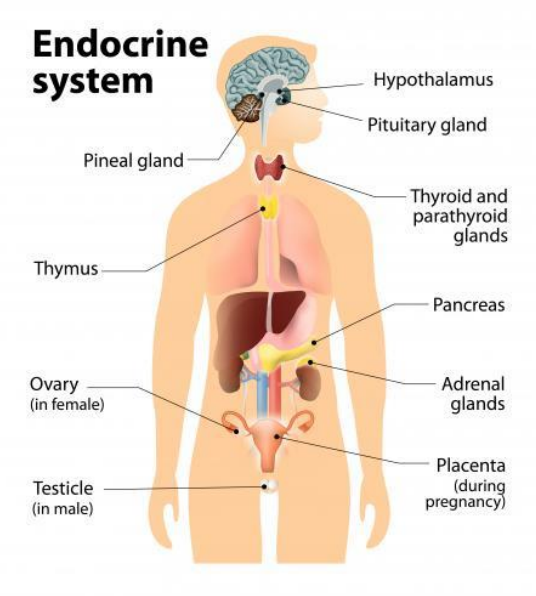
Acid/ Alkaline Imbalance Associated With Sympathetic/Parasympathetic Imbalance

A Sympathetic Imbalance can influence Acid/ Alkaline Imbalances in two ways. First, the Sympathetic person will tend to show an over-stimulated respiratory system. Second, the Sympathetic client is typified by renal vaso constriction. Both of these tendencies can lead to several different types of Acidosis or Alkalosis.

Your Parasympathetic clients can also easily have an acid or alkaline tendency.

The parasympathetic client will be typified by an inhibition of the respiratory system, as well as by bronchial constriction (as is found when there is an asthmatic condition).

Dynamic pH Balance

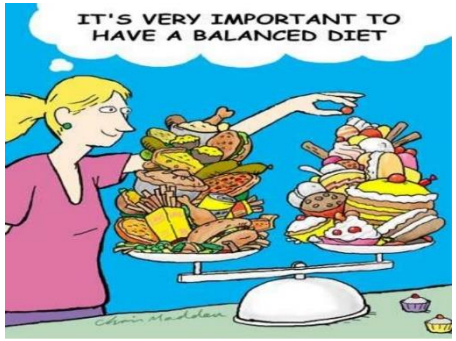


Acid/Alkaline Imbalance Associated With Endocrine Dysfunction

Acid/ Alkaline Imbalances can also be associated with endocrine dysfunction, as the endocrines control the movement of mineral elements. The control of sodium, potassium and chloride levels is associated with kidney, adrenal, sex hormone, and posterior pituitary function.

The control of calcium, phosphorous and magnesium is associated with the kidneys, adrenals, thyroid, and parathyroids.

Dynamic pH Balance



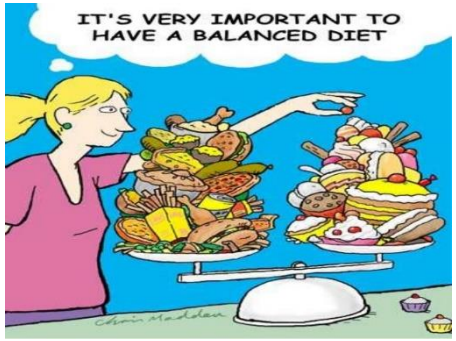
Acid/Alkaline Imbalance Associated With Dietary Imbalance

Another prevalent misconception among clinical nutritionists concerns acid forming and alkaline forming diets. Acid ash foods (high in phosphorous, sulfur or chloride, or, low in potassium, magnesium or calcium) and alkaline ash foods (high in potassium, magnesium or calcium, or, low in phosphorous, sulfur or chloride) are widely believed to be the major factor influencing Acid/Alkaline Balance.

The truth, as you have just learned, is that acid forming foods and alkaline forming foods are only one of many factors influencing pH balance.

And, in fact, the acid/alkaline character of the diet is one of the least significant of these factors - yet it forms the entire basis of many other practitioner and doctors' evaluation of pH.

Dynamic pH Balance

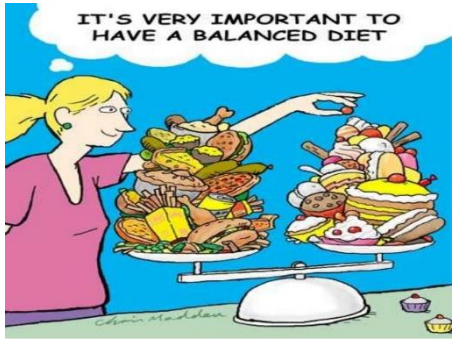


Acid/Alkaline Imbalance Associated With Dietary Imbalance (cont'd)

A diet high in "alkaline minerals" such as potassium, as many others recommend, will not only not correct most forms of Acidosis - it can actually create a Potassium Excess Acidosis by interfering with the kidney's ability to eliminate acids, thus allowing acids to accumulate in the body.

Furthermore, a diet low in potassium will not only not cause an Acidosis, as many people believe - it can actually cause a Potassium Depletion Alkalosis by causing the kidneys to lose excess hydrogen ions, thus leaving the body too alkaline.

Dynamic pH Balance



Acid/Alkaline Imbalance Associated With Dietary Imbalance (cont'd)

A summary of the dietary factors influencing Acid/Alkaline Balance is impossible because each person responds differently to a particular food based upon what metabolic imbalances exist in that person.

This variability is yet another example of the key concept of biological individuality.

To illustrate: fruit will make an Alkalosis person more alkaline, yet will make an Acidosis patient more acid Fruit (in moderation) will make a Catabolic client less acid at the systemic level and less alkaline at the tissue level. An Anabolic perspon responds to fruit by becoming more acid at the tissue level, yet more alkaline at the systemic level.

Dynamic pH Balance

Acid/Alkaline Imbalance and Respiratory Dysfunction

The lungs exert an influence on pH via their control of carbon dioxide, and thus the levels of carbonic acid and bicarbonate in the body.

The respiratory system is always associated with an Acidosis or Alkalosis.

The respiratory system may be the primary cause of the imbalance, or, it may be the primary defence in compensation for the imbalance. But whether as cause or effect, the respiratory system is always part of the clinical picture **Respiratory Dysfunction**

Dynamic pH Balance

Acid/Alkaline Imbalance and Respiratory Dysfunction (cont'd)

The respiratory system is causative in a Respiratory Acidosis or Alkalosis. A Respiratory Alkalosis is caused by hyperventilation (CO_2 is blown off faster than it is metabolically produced). The decreased CO_2 means decreased carbonic acid - thus the Alkalosis.

A Respiratory Acidosis is caused by hypoventilation (metabolically produced CO_2 is produced faster than it can be blown off). The increased CO_2 retention means increased carbonic acid - thus the Acidosis.

The respiratory system is an essential part of the compensation for the various types of Metabolic Acidosis or Alkalosis. In an Alkalosis, respiratory activity is suppressed so that CO_2 (and thus carbonic acid) can be retained to decrease the Alkalosis. In an Acidosis, respiratory activity is stimulated to blow off CO_2 and lower carbonic acid levels.

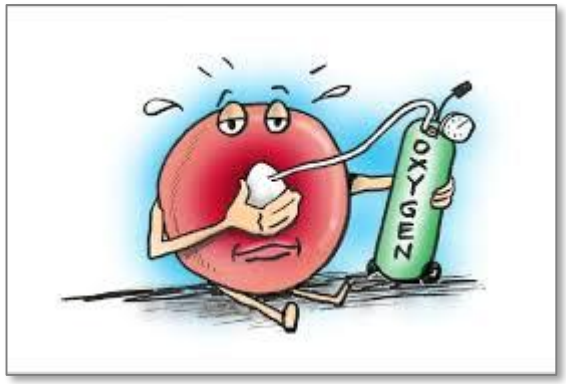
Dynamic pH Balance

Acid/Alkaline Imbalance and Respiratory Dysfunction (cont'd)

Do you see how easy it is to spot an Acid/ Alkaline Imbalance once you know the pH - respiration connection?

The respiratory rate will either be increased or decreased, depending whether C02 is being blown off or retained; and, the breath holding time will be increased or decreased, depending on whether C02 levels are low or high. So, your Biohacking test procedures do not even consider Acid/ Alkaline Imbalances if the respiratory rate and breath hold are normal.

Dynamic pH Balance



Acid/Alkaline Imbalance and Respiratory Dysfunction (cont'd)

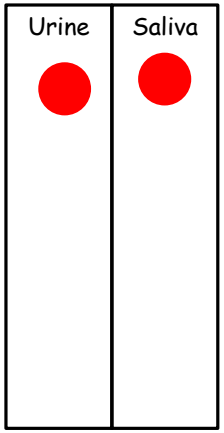
The kidneys will always be doing what they can to compensate - excreting acid urine in an acidosis, or alkaline urine in an alkalosis, unless - they are hampered by either potassium excess or potassium depletion, which impede the ability to excrete or to retain acid, respectively.

So, we can see that the urine pH helps you identify the type of Acidosis or Alkalosis, but does not indicate the presence of an Acidosis or Alkalosis - only the respiratory rate and breath hold do that.

Once again, do not go tilting at windmills when you or your client has high or low urine or saliva pH. No matter how outrageously high or low pHs are, you will only treat an Acid/ Alkaline Imbalance if these pHs are accompanied by an abnormal respiratory rate and/or breath hold time. If respiratory parameters are within normal limits, then the high or low pH is due to an Imbalance other than an Acidosis or Alkalosis.

Dynamic pH Balance

Respiratory Alkalosis pH Pattern



Irregular Breath Rate

Respiratory Alkalosis

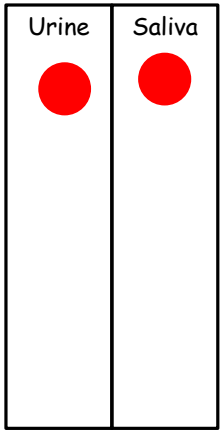
There is an Alkalosis pattern and an Acidosis pattern in which the lungs play the primary role. These are a Respiratory Alkalosis and a Respiratory Acidosis.

In a Respiratory Alkalosis we have a low H+ concentration or high pH of the extracellular fluid due to a loss of CO2. (CO2 can only be decreased by hyperventilation, i.e., CO2 being blown off faster than it is metabolically produced.)

The loss of CO2, of course, decreases carbonic acid, resulting in an Alkalosis. The kidneys will compensate by excreting bicarbonate, sodium and potassium, and by retaining H+, ammonia and chloride. The respiratory rate is irregular, i.e., may be increased or decreased.

Dynamic pH Balance

Respiratory Alkalosis pH Pattern



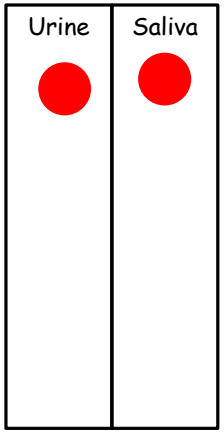
Irregular Breath Rate

Causative factors in a Respiratory Alkalosis include:

1. Hyperventilation associated with chronic or acute anxiety
    1. (Fear increases the respiratory rate faster than it increases the pulse)
2. Hyperventilation associated with low blood pressure
    1. When the mean blood pressure is less than 85, blood flow through the aortic and carotid bodies decreases. This decreases the aortic and carotid partial pressure of oxygen, thus stimulating chemoreceptors to increase the respiratory rate.
    2. You must consider the cause of the low blood pressure (Electrolyte Insufficiency, Catabolic Imbalance, Parasympathetic Imbalance, etc.).
3. Hyperventilation in compensation for a Metabolic Acidosis
4. Hyperventilation associated with salicylates
5. Hypoxemia (due to abnormal pulmonary gas exchange)
6. Fever
7. Liver cirrhosis (or hepatic coma)
8. Primary CNS disorders

Dynamic pH Balance

Respiratory Alkalosis pH Pattern



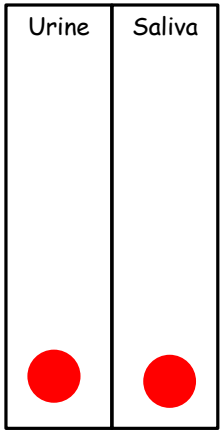
Irregular Breath Rate

Recommended supplementation for a Respiratory Alkalosis:

1. H20
2. Carbonated water
3. Phosphoric acid
4. Di-K Phosphate and/or Sodium Glycerophosphate
5. Hydrochloride
6. Glutamine, Tyrosine
7. Mg and/or Ca Aspartate (especially if there are ketones in the urine)
8. Correct Anabolic/Catabolic Imbalance
9. Correct Fast/Slow Oxidiser Imbalance
10. Correct Sympathetic/Parasympathetic Imbalance
11. Consider anxiety as a causative factor
12. Consider fever/infection
13. (During a crisis) re-breath expired CO2 from a paper bag

Dynamic pH Balance

Potassium Depletion Alkalosis pH Pattern



Pulse < 67
Sympathetic
Imbalance

Potassium Depletion Alkalosis

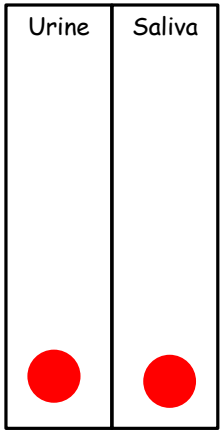
This is actually a form of Metabolic Alkalosis (in other words low H+, high bicarbonate, high pH and high associated with depletion or chronic deficiency of potassium). In the normal kidney there is an on-going attempt to retain sodium; but for every sodium ion the kidney wants to keep it has to exchange either a potassium or hydrogen ion. Normally about equal numbers of potassium and hydrogen ions are exchanged.

But this person is low in potassium, so that there is no potassium available to exchange for sodium? Now, the only way for the kidney to perform its job of retaining sodium is to exchange hydrogen for it; there is no alternative.

So, as all the body's H+ is being dumped into the urine, what happens to the pH of the body fluids? As the H+ levels drop lower and lower, the extracellular fluids become more and more alkaline; Potassium Depletion Alkalosis.

Dynamic pH Balance

Potassium Depletion Alkalosis pH Pattern



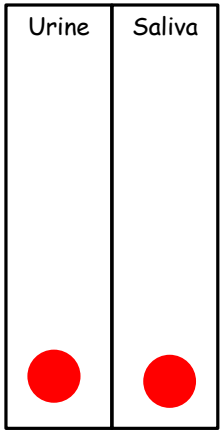
Pulse < 67
Sympathetic Imbalance

Causative factors in a Potassium Depletion Alkalosis include:

1. Chronic dietary potassium deficiency
2. Use of diuretics that cause potassium and chloride depletion.
3. Anterior pituitary stress (ACTH), glucocorticoid stress, or steroid therapy, which result in urinary potassium loss.
4. Mineralocorticoid (steroid hormone) stress resulting in decreased potassium retention, and increased sodium retention.

Dynamic pH Balance

Potassium Depletion Alkalosis pH Pattern



Pulse < 67
Sympathetic Imbalance

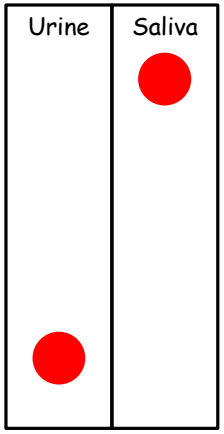
Recommended supplementation for a Potassium Depletion Alkalosis:

1. H20
2. Di-Potassium Phosphate
3. Potassium chloride
4. Hydrochloride
5. Phosphoric acid
6. Magnesium Chloride
7. Phosphatase enzyme (Bone)
8. (Reduce any excess intake of bicarbonate, carboxylate, lactate, citrate, acetate, etc.)
9. Reduce salt intake
10. Correct Anabolic/Catabolic Imbalance
11. Correct Fast/Slow Oxidiser Imbalance .

Dynamic pH Balance

Metabolic Acidosis imbalance

Metabolic Acidosis
pH Pattern



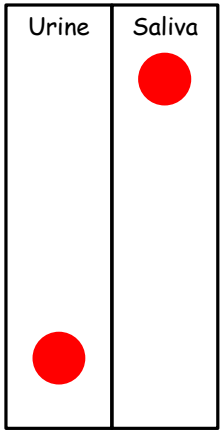
Pulse > 75
Resting to standing
pulse increases

The physiology in a person with Acidosis problems expresses too much acid (or H+) in the bloodstream. One cause can be an imbalance in potassium, or an inability of the kidneys to properly excrete the acid and balance is lost. The breath rate in these individuals becomes accelerated because the kidneys, being unable to easily control the acid level in the bloodstream, can be helped by the lungs huffing off C02, because C02 acidifies the bloodstream.

These individuals will normally have a short breath-holding time and a rapid breathing rate, exposing the fact that the kidneys are not having an easy time controlling the pH of the blood.

Dynamic pH Balance

Metabolic Acidosis
pH Pattern



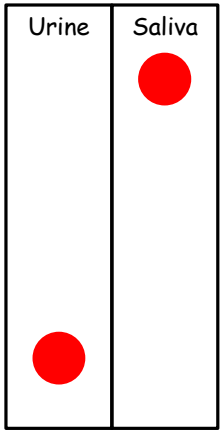
Pulse > 75
Resting to standing
pulse increases

Metabolic Acidosis imbalance (cont'd)

This can be remedied (depending on the cause) by assisting the system to buffer the acids more effectively and excreting them. But this is not just a failure to excrete acids, it's a failure to buffer them. This helps us to understand why using foods or supplements in an effort to "alkalise" an individual can be so beneficial. This is how a pH guru can hit home runs with some people who will then think he is so brilliant. These people with the overly acid issues can really benefit by increasing the nutrients that can be used to buffer these acids.

Dynamic pH Balance

Metabolic Acidosis
pH Pattern



Pulse > 75
Resting to standing
pulse increases

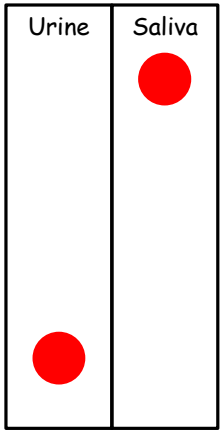
Metabolic Acidosis imbalance (cont'd)

An inability to properly digest protein can often be an issue in these cases since the biggest buffer of acids in the body is protein.

Obviously, it is more profitable for the industry to sell green drinks and alkalising supplements than it is to help people better digest their protein. Yet, in some cases, simply improving protein digestion can be a great step toward giving the body the tools it needs to buffer those acids on its own.

Dynamic pH Balance

Metabolic Acidosis pH Pattern



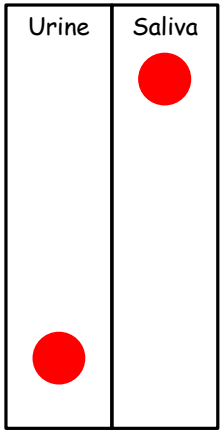
Pulse > 75
Resting to standing pulse increases

Causative Factors in a Metabolic Acidosis include:

1. Diarrhoea = loss of bicarbonate, sodium and other alkali, and H20
2. Deep vomiting = loss of bicarbonate, sodium and other alkali, and H20
3. Renal loss of bicarbonate, potassium, and sodium
4. Excess endogenous production of organic acids, which may lead to depletion of alkaline cations excreted with the acid anions
    1. Diabetic keto-acidosis
        1. Diabetic = increased fat metabolism = increased liver formation of acetoacetic acid in quantities greater than can be oxidized by other tissues. This acid must be excreted in the urine. Only about 1/4 to 1/3 of the acetoacetic acid can be excreted by the kidney as acid. Therefore, the remaining 2/3 to 3/4 takes cations such as Na+ and K + with it. This cation depletion is a significant factor in diabetics.

Dynamic pH Balance

Metabolic Acidosis
pH Pattern



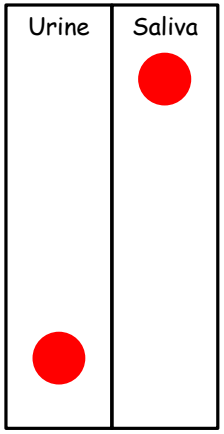
Pulse > 75
Resting to standing
pulse increases

Causative Factors in a Metabolic Acidosis include (cont'd)

2. Lactic acidosis associated with diminished tissue oxygenation
3. Fatty acids
4. Carbonic acid
5. Excess chloride intake, if it cannot be combined with ammonia for excretion, will cause an increase in sodium, potassium and bicarbonate lost in the urine
6. Excess dietary intake of organic acids which may cause a depletion of alkaline cations excreted in combination with these acids
7. Carbonic anhydrase inhibitors
8. Failure of renal acid excretion (e.g., renal insufficiency or adrenal insufficiency)
9. Excess dietary potassium, which causes decreased H+ secretion and decreased bicarbonate re-absorption

Dynamic pH Balance

Metabolic Acidosis
pH Pattern



Pulse > 75
Resting to standing
pulse increases

Recommended supplementation for a Metabolic Acidosis includes:

1)H20

2) Na or K Bicarbonate

3) Di-K Phosphate and/or Sodium Glycerophosphate

4) Na or K Citrate

5)NaC1 + H20

6) Magnesium Citrate

7) Lysine, Arginine, Histidine, Hydroxyglycine, Glutamine

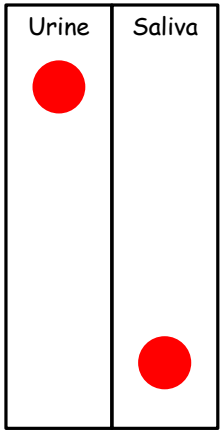
8) Reduce any excess intake of organic acids (juices, fruit, acid amino acids, etc.

9) Correct Fast/Slow Oxidiser Imbalance

10) Correct Sympathetic/Parasympathetic Imbalance

Dynamic pH Balance

Metabolic Alkalosis
pH Pattern



Pulse < 67

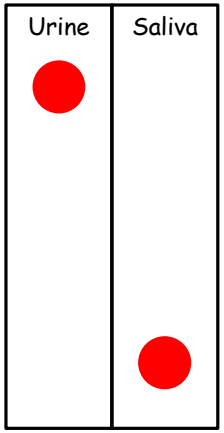
Metabolic Alkalosis imbalance

In a Metabolic Alkalosis we find in the extracellular fluids a low hydrogen ion (H+) concentration and high bicarbonate, which gives us a high, or alkaline, pH. To compensate for this alkaline condition two things will happen. First, there will be a compensatory suppression of the respiratory center in an attempt to retain carbon dioxide, which leads to increased carbonic acid (H2C03), and an acid saliva. The respiratory compensation is not alone capable of restoring normal pH. A 50-75% compensation is achieved, with the kidneys performing the rest of the compensation.

Note that saliva pH depends largely on the relative concentrations of free C02 and combined C02. High C02 means high carbonic acid and an acid saliva. Low C02, conversely, means an alkaline saliva.

Dynamic pH Balance

Metabolic Alkalosis
pH Pattern



Pulse < 67

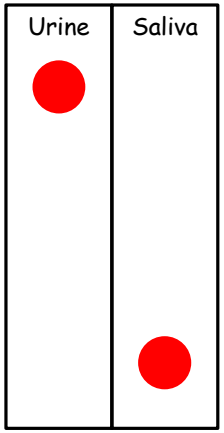
Metabolic Alkalosis imbalance (cont'd)

The kidneys, meanwhile, also compensate. We must pause here for a few words about kidney function. Since the natural diet is a very low sodium diet, our kidneys are designed with the capacity to retain sodium to protect us from sodium depletion.

The kidneys, in order to retain sodium, must exchange for each sodium ion retained either a potassium ion or a hydrogen ion. In a person on a natural diet, therefore, **the kidneys will be seen to retain sodium and excrete potassium and/or hydrogen**.

Dynamic pH Balance

Metabolic Alkalosis
pH Pattern



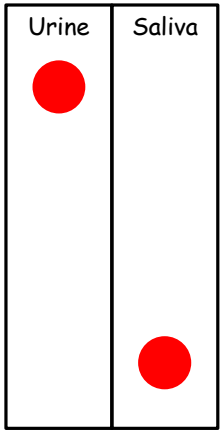
Pulse < 67

Metabolic Alkalosis imbalance (cont'd)

This brings us then to the means by which the kidneys compensate for a Metabolic Alkalosis. In a Metabolic Alkalosis there will be a compensatory renal tubal decrease in sodium-hydrogen exchange. There will be an increase in sodium-potassium exchange. In other words, the kidneys will dump potassium, and eventually even dump sodium, as they retain as much hydrogen as they possibly can. Along with the increased retention of acid there is an increased retention of ammonia, mostly in the form of ammonium chloride.

Dynamic pH Balance

Metabolic Alkalosis
pH Pattern



Pulse < 67

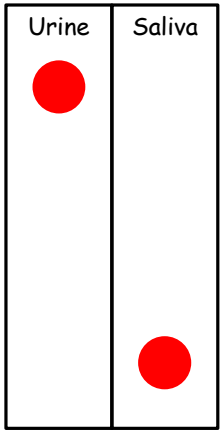
Metabolic Alkalosis imbalance (cont'd)

In addition to the retention of acid, the kidneys compensate in a second way. They increase the secretion of bicarbonate. Since the bicarbonate concentration is elevated in a Metabolic Alkalosis, the amount entering the glomerular filtrate is greater than that which can be reabsorbed by the renal tubules. Therefore, bicarbonate passes into the urine and the urine pH increases. In order to maintain electric neutrality, each of the bicarbonate anions is matched by a cation (the potassium and sodium described above) in the urine.

Dynamic pH Balance

Metabolic Alkalosis imbalance (cont'd)

Metabolic Alkalosis
pH Pattern

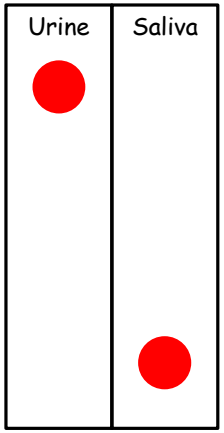


Pulse < 67

There is a reciprocal relationship between the amount of bicarbonate and the amount of chloride excreted in the urine. Since the compensation for a Metabolic Alkalosis involves an increased bicarbonate excretion, the urine chloride concentration is decreased. This chloride retention allows the concentration of chloride in the body to increase. The net effect of renal compensation is to decrease the body pH toward normal, to decrease the bicarbonate concentration toward normal, a decrease in the body's concentration of potassium and sodium, and an increase in the chloride level in the body.

Dynamic pH Balance

Metabolic Alkalosis
pH Pattern



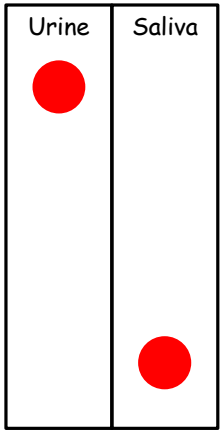
Pulse < 67

Causative factors of a Metabolic Alkalosis include the following:

1. Loss of acid (excluding H2C03)
    1. a) Loss of gastric juice (vomiting)
    2. b) Poor urinary retention of H+ with its associated anions (Cl, P, S, N)
2. Excess consumption of bicarbonate, Na, or other alkaline salts, which causes a decreased H+ activity of the extracellular fluid; antacids
3. Use of diuretics, which cause water, cation, and chloride depletion, while bicarbonate is retained
    1. Loss of H+, K+, and Mg -H- and buffers exceeds the loss of Na+ = can result in potassium depletion. and magnesium deficiency

Dynamic pH Balance

Metabolic Alkalosis
pH Pattern



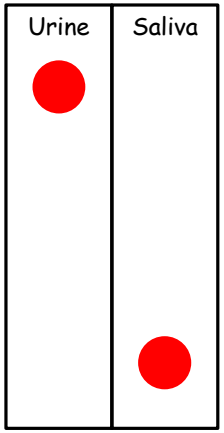
Pulse < 67

Causative factors of a Metabolic Alkalosis include the following (cont'd):

4. Cl depletion
5. Potassium depletion, causing an increased exchange of H+ for Na+ in the kidneys, allowing H+ to be excreted and bicarbonate to be retained.
6. Adrenal aldosterone excess, causing increased sodium retention, and urinary loss of buffers, H+, K +, and Cl-
7. Excess consumption of lactate, citrate, acetate, carboxylate, etc.
8. Decreased extracellular fluid and NaCl
    1. Deficient production of acid (excluding carbonic) Liver insufficiency (e.g., secondary to cirrhosis)
9. May occur post ventilator therapy for Respiratory Acidosis

Dynamic pH Balance

Metabolic Alkalosis
pH Pattern



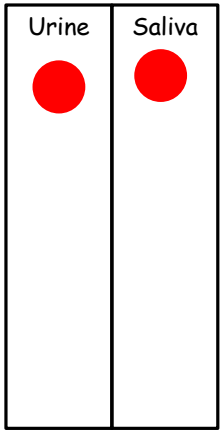
Pulse < 67

Recommended supplementation for a Metabolic Alkalosis:

1. H20
2. Phosphoric Acid (phos drops)
3. Sodium Glycerophosphate
4. Hydrochloride (use only if associated with chloride loss, (as in vomiting, diuretics, etc.) or, if urine pH is> 6.5)
5. Ammonia Phosphate
6. Aspartic acid
7. (If diuretics) then magnesium aspartate or magnesium chloride
8. (Reduce any excess intake of bicarbonate, citrate, carboxylate, lactate, acetate, etc.)
9. Sodium chloride (use salt freely if blood pressure is low, as long as there is no problem with fluid retention)
10. Correct Fast/slow Oxidiser Imbalance
11. Correct Sympathetic/Parasympathetic Imbalance

Dynamic pH Balance

Potassium Excess Acidosis pH Pattern



Resting to standing pulse increases

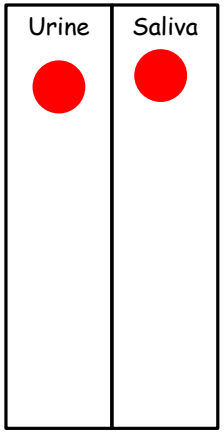
Renal/Potassium Excess Acidosis:

Another pattern of Acid Imbalance is a Renal or Potassium Excess Acidosis. This is a type of Metabolic Acidosis (in other words high H+, low bicarbonate. low pH and low associated with excess kidney retention of acid. It can be a renal problem, in which case we need to consider once again the exchange in the kidneys of potassium and hydrogen for sodium. If there is excess potassium, more potassium and less hydrogen is exchanged for sodium. This means a decrease in urine H+ which means an increase in urine pH. And as this H+ is being retained instead of excreted, what happens to the body fluids? Obviously, they become progressively more acid.

If the potassium excess is associated with excess intake, then potassium retention is decreased, in other words, urinary potassium is increased. If the potassium excess or the renal insufficiency is associated with adrenal insufficiency, the potassium retention will be increased, i.e., the urine potassium is decreased. In this case, sodium and chloride retention will be decreased.

Dynamic pH Balance

Potassium Excess Acidosis pH Pattern



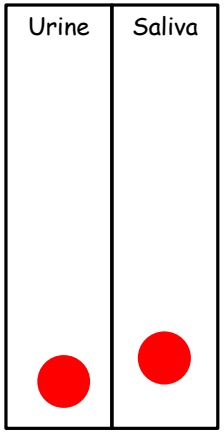
Resting to standing pulse increases

Recommended supplementation for a Renal/Potassium Excess Acidosis:

1. H2O
2. Na Bicarbonate (may make saliva more acid)
3. Sodium Glycerophosphate
4. Na Citrate
5. Ca and/or Mg Citrate
6. Phenylalanine
7. (Reduce any excess intake of organic acids: juice, fruit, acid amino acids, etc.)
8. Fix Digestion
9. Correct Anabolic/Catabolic Imbalance
10. Correct Fast/Slow Oxidiser Imbalance .

Dynamic pH Balance

Respiratory Acidosis
pH Pattern



Pulse > 75
Resting to standing pulse increases

Respiratory Acidosis

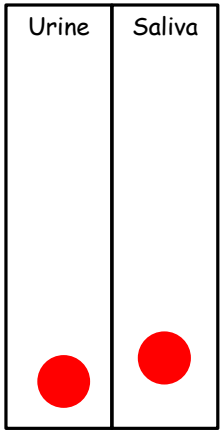
In a Respiratory Acidosis we have a high H+ and a low pH of the extracellular fluid due to a decreased excretion of CO2 through the lungs. (Hypoventilation, i.e., CO2 being blown off at a slower rate than it is metabolically produced, is the sole cause of a Respiratory Acidosis.) A classic example of an acute Respiratory Acidosis is the asthma patient. A classic example of a chronic Respiratory Acidosis is the emphysema patient. Toe inability to blow off the carbonic acid level, thus the Acidosis. The kidney responds to the Acidosis by decreasing retention of hydrogen, chloride, ammonia, phosphoric acid, and, if the adrenals are weak, sodium. The kidney increases retention of bicarbonate, potassium, and, if the adrenals are strong, sodium.

An interesting phenomenon can now occur. The kidney retention of bicarbonate further increases the CO2 and carbonic acid levels, which can actually perpetuate the imbalance. The kidney dumps even more acid, and before the thing is finished, the body is depleted of acid and chloride. What has happened is that the person has traded a Respiratory Acidosis for a Metabolic Alkalosis.

Dynamic pH Balance

Respiratory Acidosis (cont'd)

Respiratory Acidosis pH Pattern



Pulse > 75
Resting to standing pulse increases

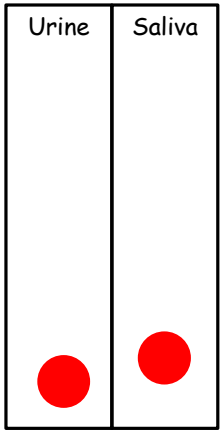
This vacillation between a Respiratory Acidosis and a Metabolic Alkalosis is typical of many patients, and the asthmatic is a classic example. The Metabolic Alkalosis over-stimulates the parasympathetic nervous system (see Sympathetic/Parasympathetic Balance), including the vagus nerve, which causes bronchial spasms, which precipitates the CO2 retention of the asthma attack, which puts the patient into a Respiratory Acidosis, which stimulates the kidneys to dump acid, which swings the patient back into a Metabolic Alkalosis, and the cycle begins all over again.

Treating the Respiratory Acidosis that you observe during the asthma attack frequently aggravates the problem by pushing the patient even more quickly and deeply into a Metabolic Alkalosis, thus stimulating more vagus irritability. Over the long term, the key to effective therapy is Lo treat the pattern of Parasympathetic Stress, plus whatever other patterns of metabolic imbalance are involved. .

Dynamic pH Balance

Respiratory Acidosis (cont'd)

Respiratory Acidosis pH Pattern



Pulse > 75
Resting to standing pulse increases

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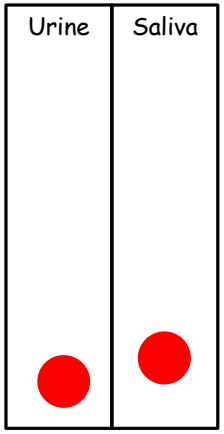
Treating the Respiratory Acidosis that you observe during the asthma attack frequently aggravates the problem by pushing the patient even more quickly and deeply into a Metabolic Alkalosis, thus stimulating more vagus irritability. Over the long term, the key to effective therapy is to treat the pattern of Parasympathetic Stress, plus whatever other patterns of metabolic imbalance are involved.

Another clinically significant consequence of Respiratory Acidosis is the loss of chloride due to the kidney's compensatory response. The decreased chloride retention can result in a gastric hydrochloric acid insufficiency.

Dynamic pH Balance

Respiratory Acidosis pH Pattern



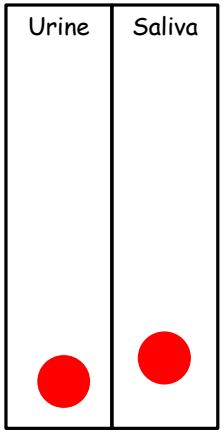
Pulse > 75
Resting to standing pulse increases

Causative factors in a Respiratory Acidosis include:

1. Hypoventilation (may be increased respiratory rate, but breathing is shallow or congested) associated with the airway obstruction of respiratory infections, or with the bronchial constriction of asthma, or with the decreased pulmonary surface area of emphysema
2. Hypoventilation in compensation for a Metabolic Alkalosis
3. Hypoventilation associated with high blood pressure
    1. When the mean blood pressure is greater than 115, blood flow through the aortic and carotid bodies increases. This increases the aortic and carotid partial pressure of oxygen such that there is stimulation of chemoreceptors to decrease the respiratory rate. This hypoventilation can lead to a Respiratory Acidosis.
4. You must consider the cause of the elevated blood pressure (Electrolyte Stress, Anabolic Imbalance, Sympathetic Imbalance, etc.)
5. Hypoventilation associated with brain stem damage, which decreases breathing

Dynamic pH Balance

Respiratory Acidosis pH Pattern



Pulse > 75
Resting to standing pulse increases

Recommended supplementation for a Respiratory Acidosis:

1. H20
2. Sodium or Potassium Citrate
3. Di-Potassium Phosphate and/or Sodium Glycerophosphate
4. NaCl (Unless blood pressure elevated)
5. Magnesium chloride
6. Correct Anabolic/Catabolic Imbalance
7. Correct Fast/Slow Oxidiser Imbalance
8. Correct Sympathetic/Parasympathetic Imbalance

Ideal (resting) Breath Rate Ranges

First year: 25-35 respirations per minute

At puberty: 20-25 respirations per minute

Adult: 14-18 respirations per minute

Dynamic pH Balance

pH

Potential of Hydrogen

Measuring Urine & Saliva pH

NOTE: It is best if you don't test your urine pH right when you wake up. The first morning urine test, while being a valid test, takes greater discretion to sort out the results because you are unloading the previous day's "metabolic debt," those acids you accumulated through the previous day. Testing your urine and saliva pH either just before lunch or just before dinner (ideally at least two hours after you have eaten any food and 30 minutes after drinking anything) will be an easier test to discern what the numbers are showing.

Dynamic pH Balance

pH

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Urine pH

Hold the test strip in your urine stream for a second and read the result against the colour chart found on the packaging. If the chart reads in half-point increments, and your reading is between two colours, make an estimate for your reading. For example, if the colour on your pH strip falls between 6 and 6.5, make a guess and say 6.3 or wherever you think it lands. Just pick a number and don't say "really green" or "very yellow," because that is too subjective. Pick a number; you are simply looking for a range. If the actual reading is off by a little bit, that's okay. You won't be using NASA equipment here and you're not going to get an exact reading.

You just want to be able to see, "Is it high or is it low? How high or low is it?" So, don't drive yourself nuts and think that you have to pull out the magnifying glass and read the strip under indoor lighting that mimics the sun at high noon. Just look at the pee on the strip and mark it down. Ideally we are looking for a urine pH of between 5.5 and 6.0 (this is not Total Body pH)

Dynamic pH Balance

pH

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Saliva pH

Try not to drink or have anything in your mouth for 30 minutes before testing, and ideally you want to wait approximately two hours after eating. Testing your saliva at the same time as your urine will keep everything simple. Don't use the same strip for both! Bring up a little saliva between your lips and run the test strip across your lips and through the saliva. Read against the chart right away. Timing is important. The CO2 in your saliva will out-gas into the atmosphere. The reading will often rise the longer you wait to read it. Because of this, it is best to read the saliva as soon as you moisten the strip or you will have a less accurate reading. With urine, it is not as important to read against the chart right away.

Ideally we are looking for a saliva pH of between 6.5 and 7.0 (This is not Total Body pH)

Dynamic pH Balance

pH

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Doing a Breath Rate and Breath Hold Test

NOTES:

- If breath hold result does not correspond with breath rate result, go with breath rate.
- Take these readings during the day (away from heavy exercise of course).

Breath Rate Test

This is hard to test on yourself when you're conscious of what you're doing because you might adjust your breathing.

Anytime you can, get someone else to test this for you so you can let your mind wonder to other things and just breathe normally. It will probably be a more accurate reading.

1. Lie down and relax. Try to think of other things so that you breathe normally. Start your timer and count the number of times you inhale for 30 seconds. Double that number for the amount of breaths per minute. I like to continue for the entire minute to see if I get the same number the second 30 seconds as I did the first. If not, I may average the two.

Dynamic pH Balance

pH

Potential of Hydrogen

Doing a Breath Rate and Breath Hold Test

TIP: Placing an item on your tummy when doing this test can help the person doing the measuring see each inhale clearly.

We're looking for an ideal breath rate of between 16-18 breaths per minute. Less than 16 BPM and your blood is moving too alkaline (body holding on to CO2). More than 18 BPM and your blood is moving too acidic (body getting rid of CO2).

Breath Hold Test

Sit comfortably. Take 3 full, deep breaths in and out. On the 4th inhale, start your stopwatch or timer at the end of the inhale and hold your breath as long as you can. Don't pass out or make this like it's a contest you have to win (boys will be boys lol). But do hold your breath as long as you comfortably can.

It's best not to look at the stop watch while you're holding your breath. If you do, you may be inclined to turn it into a competition and hold your breath longer than you normally would. We're looking or an ideal breath rate of approximately 45 seconds. Less than 45 seconds and your blood is moving too acidic. More than 45 seconds and your blood is moving too alkaline.

Dynamic pH Balance

pH

Potential of Hydrogen

pH Ranges (cont'd)

Now above we are talking about the 6.4 level for urine and saliva that is "averaged". We show this formula in the section dealing with "Moving pH" which is as follows:

(Urine pH _____ + (Saliva pH X 2 ___)) / Divided by 3 = _____.

For the measurement of urine and saliva by themselves, in general, you want pH of urine to be below 6.4 and saliva to be above 6.5. From my experience in the clinic with healthy individuals, ideally we would say around 5.5-6.0 would be good for urine (shows the body can get rid of metabolic acids), and 6.5-7.0 would be good for saliva. This gives a split of about 1 pH. Those would be nice numbers mid-morning/afternoon.

Inverted numbers, or too high or too low for either means something is up. In regards to urine, it is designed to be able to go all the way down to 4.5 which means if you are way down there, well the body is appearing to be able to handle metabolic loads (and it usually is much better than a high pH) but the question becomes what else is going on.

Dynamic pH Balance

pH

Potential of Hydrogen

pH Ranges (cont'd)

(The work of Dr. Emanuel Revici which we cover in other areas states that ideal urine pH will oscillate around a value of 6.2. Oscillating above that is indicative of an anabolic/anaerobic disposition, and oscillating below that is indicative of a catabolic/dysaerobic disposition.)

Important note: High urine pH is not good from any perspective and all the information floating around saying it is so is from the "alkalize alkalize alkalize" people - possibly because what they are selling - and key word is selling - will push urine pH to those extremes and they can say - "see how good our products work!" And of course if a person stays at those high levels too long they start having issues and the fallback becomes "you are detoxing, stick with the program". It is all a bunch of hooey. For physiologic health, you do not want to see urine above 6.5. It should always be able to get down into the 5 range - this is a reflection of adaptive capacity and it shows metabolic acids can and are being removed from the system.

Dynamic pH Balance

pH

Potential of Hydrogen

pH Ranges (cont'd)

Read the above paragraph again. You want your urine able to move acid, and to essentially be acid when appropriate. If you are keeping urine above 6.5 and day to day are into neutral pH (7) or above numbers, this is not good.

The testing that follows are a series of tests to illustrate where your pH lies and will give you insights to the degree of balance (or not) within your body.

We will follow this up with a few guidelines and simple mineral and calcium rules that can help an individual re-balance the pH.

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Dynamic pH Balance

pH

Potential of Hydrogen

Alkaline Meal Test

Here you are going to eat an alkalizing evening meal. Basically all vegetables. Green leafy veggies, broccoli, lima beans, carrots, etc. Next morning check your first urine pH.

If the pH range is 4.5 to 5.5 you can consider it a too acid response. It means your body has a lot of excess acidity stored and you need to keep up those alkaline evening meals until the numbers come up.

If you have a pH range from 5.5 to 6.8 it could be considered that you have a better level of alkaline reserves, but key to that assumption would be how you feel. If you feel healthy this range is ok. If you have symptoms of problems, you may need to dig more into the situation.

If the pH range is 6.8 to 8.5 again it could mean all is very well IF you are perfectly healthy. However, if you were experiencing serious symptoms of ill health, this alkaline response could be an indication that your cells are too toxic to use the alkaline reserves and instead are being dumped.

Dynamic pH Balance

pH

Potential of Hydrogen

Alkaline Meal Test (cont'd)

It should be mentioned here that there can be times when someone consumes many vegetables and alkaline minerals and their pH readings average far above 6.4. They believe this to be healthy but it actually is reflecting an underlying imbalance. Instead of using the minerals they are being dumped. Further testing will many times show an anabolic/catabolic imbalance - some clinicians also refer to this as an anaerobic/dysaerobic imbalance. This is related to the mix of fatty acids and sterols on cell membrane walls. If these fatty acids and sterols go askew it will affect cell membrane permeability so what goes in does not necessarily get assimilated the way it should.

Dynamic pH Balance

pH

Potential of Hydrogen

Acid Meal Test

Here you are going to eat an acid forming food evening meal. Meat, pasta, beans, bread, nuts, fish, no vegetables. Next morning, check your first urine pH. The meal the previous evening was too acid, but the body needs to be getting rid of this acid, so the urine should reflect this. Best situation would be wake up urine from 4.5 up to 5.8 or so. This would be a reflection of your body having enough alkaline reserves that it was buffering the acid and the adrenals and kidneys had appropriate energy to get rid of it. It is a healthy response.

Wake up urine after the acid evening meal between 5.8 and 6.8 is a reflection that the body is barely compensating, and the higher the pH the worse the situation.

Dynamic pH Balance

pH

Potential of Hydrogen

Acid Meal Test (cont'd)

Wake up urine after the acid evening meal of 6.8 or higher is not good. It is a possible indication that the body is dumping bicarbonate ions and may be in the ammonia cycle of the liver to help deal with the acid. This situation probably means depleted alkaline reserves and possible exhausted adrenal glands as well as probable digestive problems.

If the above situation or an alkaline morning urine is accompanied by an acid saliva less then 5.8, the situation is getting worse, and the further apart the numbers, the worse it is. Definite remedial action for alkaline reserve build up is critical.

Dynamic pH Balance

pH

Potential of Hydrogen

Acid Meal Test (cont'd)

As a point of reference, have you ever been to a nursing home and smelled an ammonia odor? Did you think that was because the nursing home was doing a good job of house cleaning? Well that is not the case. What is happening is you are smelling the urine of very sick people in their last days. Their bodies are in a give up state, they are likely dumping any alkaline buffers they have and the body is in last ditch mode trying to maintain sufficient blood pH for life to hang on by converting the acid in their systems to ammonia. The single biggest thing those individuals need is more water for hydration and a lot of alkalizing minerals. I would venture to guess that if this were to occur in nursing homes around the country a lot of their patients would be getting better and going home.

Dynamic pH Balance

pH

Potential of Hydrogen

Salivating Test

You sit down to eat, you get the aroma of your favourite mealtime dish, you are ready to chow down and something begins to happen in your mouth. You begin to salivate. This is a reflection of the enzyme amylase kicking in for the starch digestion process. This enzyme needs a range of pH ideally around 7.2 pH. So if you have adequate alkaline reserves in your body, testing your saliva pH as you salivate before a meal should give you a pH reading of around 7.2. If your pH is not getting up to at least 7.0, you can assume there is stress in your alkaline reserves and the further below 7 it goes, the more depleted are those reserves. You could also suspect digestion all around is not doing so well. This typically indicates a longer term problem and more serious effort needs to be applied to help restore overall health.

Dynamic pH Balance

pH

Potential of Hydrogen

Wake Up Test

First thing in the morning, your eyes open up, you roll over and test your saliva pH. In a best situation, your pH reads 6.4. Individuals with either chronic degenerative diseases or those setting themselves up for such will see their wake up saliva from 5.5 or lower with concurrent urine pH as low as 4.5. These values represent a long term acid stress on the body. Generally this means that an individuals alkaline reserves are very low to depleted. In general you do not want to see a wake up saliva pH below 6.1. Seeing a low saliva pH and a higher urine pH is not where you want to be. You need to correct that.

Dynamic pH Balance

pH

Potential of Hydrogen

Daily Cycles

This is an on-going test over several days to even a couple of weeks to determine how your pH swings during the day under different circumstances and food consumption habits.

Take a sheet of paper and make 5 columns headed "time", "consumption", "saliva pH", "urine pH", "feel" (you can use your coalition, however, paper might be easier in this instance though)

You will record your urine and saliva pH every time you go to the bathroom. When you wake up in the morning record the time and your pH values and how you feel. When you eat breakfast, record the time. Next time you go to the bathroom record the time, your pH values and how you feel. Next time you eat, record the time and what you ate. Next time you go to the bathroom record the time, pH values and how you feel. Do this throughout the whole day and over many days.

Here you will start to track what you eat, how that makes your pH sway, and how you feel during the process. It can be an invaluable tool to begin to make associations like; every time I eat x food, my pH a few hours later goes to y value, and I feel like…. You may start to notice patterns that are either for your benefit or perhaps not. Do it for a long enough period and you will start to see cause and effect. You are on the road to taking real charge of your health.

Dynamic pH Balance

pH

Potential of Hydrogen

pH Ranges

For our purposes we will be measuring urine and saliva. In a perfect world, with all other health parameters in place, the "averaged" pH of both urine and saliva will be right around the 6.4 level - and this would be at just about any time of day when tested - though the best times to track and test for a baseline reading would be about 90 minutes after breakfast or lunch.

NOTE: We'll talk more of what "averaged" means a bit later and awareness of this is important so the 6.4 pH we are talking about here has to be put into proper context related to the formula discussed later.

Understand that pH can move all over the place. This is so because most individuals "total alkalinity" is not very strong. So two hours after a meal for instance, you may find the urine going acid as it is a reflection of the meals acid components pushing the pH. But as "total alkalinity" increases in an individual, this swaying urine pH starts to lock in and with the saliva pH factored in, the averaged will settle around the 6.4 level. This takes time to accomplish.

Dynamic pH Balance

pH

Potential of Hydrogen

pH Ranges (cont'd)

The question may arise as to why the averaged urine and saliva should be in the 6.4 area, and the answer lies most specifically in this regard to Dr. Carey Reams. In our own clinical work with the research of Reams, Vincent, Revici and others, we would concur with the 6.4 averaged level for urine and saliva.

The reason 6.4 seems to be ideal is for specific ionization principles to be carried out in the body. Anytime we talk about the human body and biological terrain, we can relate it to stories of farming and soil terrain for there is common ground in both areas. After all, we do come from the dust of the earth and it is the dust of the earth from which we will return (our bodies at least). pH is but one parameter that quantifies the nature of the terrain.

Dynamic pH Balance

pH

Potential of Hydrogen

pH Ranges (cont'd)

When a plant grows, it draws up from the cationic earth and reaches towards the anionic sky. As one force of the plant spirals up, another energetic force spirals down. The plant uptakes the water and minerals from the soil and ionizes, changes and incorporates those substances into the fibers and matrix of the plant. In order for the plant to reach its optimum and most healthy state (and nutritious when talking about edible plants) the soil terrain must be within an ideal range of parameters.

When we eat the plant, the process is reversed and the plant substance is broken down through the pressure and resistance of digestion and the soil of the liver transforms, stores and dispenses components of the life processes which are further acted on by the soil of the cells and glands throughout the body. It is the circle of life; highly charged, electric, and magnetic, some might say electromagnetic or electrostatic.

Dynamic pH Balance

pH

Potential of Hydrogen

pH Ranges (cont'd)

The food you consume stores the flame of the sun. The more perfect your body's biological terrain, the more capacity you will have to extract every ounce of the flame to give you vibrant health and dynamic energy. The food you consume is met with the resistance of digestion, and it is this resistance which causes a friction and a release of energy in the form of amino acids and mineral ions, colloids, heat and electricity.

Visualize a hydraulic press. That press sits between your saliva pH and your urine pH. At that pH level the press has maximum force and effect to extract all the energy food has to give. But if the saliva pH that is above the press or the urine pH that is below the press shifts outside of their good ranges, the efficiency of the press begins to fall. Hence, metabolic efficiency begins to go askew, imbalance sets in, and over time problems can develop.

Dynamic pH Balance

pH

Potential of Hydrogen

Moving pH

To get a quick "average" pH, you can measure yourself ninety minutes to two hours after breakfast and/or ninety minutes to two hours after lunch. Do this over a period of days and get your average numbers. Then use this formula:

(Urine pH _____ + (Saliva pH X 2 ___)) / Divided by 3 = _____

Average pH Between 6 and 7

Some practitioners suggest that if your average pH is between 6 and 7, you can just use the neutral calciums of gluconate and orotate to build up your total alkalinity along with other minerals and trace minerals.

Average pH Above 7

If your pH is above 7, it is possible that vitamin C (ascorbic acid) can be useful. Clinicians have found about 1000mg twice a day of C is good, and the higher above pH 7 you go (especially if this is the urine #), the more vitamin C you can take.

Dynamic pH Balance

pH

Potential of Hydrogen

Moving pH (cont'd)

Vitamin D is contraindicated.

NOTE: You should note that it is entirely possible to be too alkaline. Many go around and say alkalise, alkalise, alkalie, but they fail to point out that there is a flip side to everything. Being too alkaline presents its own set of clinical manifestations and needs to be equally addressed.

Average pH Below 6

If your pH is below 6, some clinicians will add calcium citrate or calcium carbonate (something like coral calcium is the carbonate form). With pH 5.6 to 6 clinicians have found that adding 1000 IU of vitamin D once or twice a day is beneficial and pH from 5.2 to 5.6 up to 5000 IU of vitamin D is good, while pH below 5.0 up to 50000 IU of vitamin D once or twice a day would be ok as little vitamin D is being absorbed in the acid terrain. It is possible to use vitamin D to help push the pH up. Stop the calcium citrate and carbonate when you come into pH range 6 to 7. Pull back on vitamin D and go to cod liver oil for vitamin D requirements. Do not take vitamin C.

Dynamic pH Balance

pH

Potential of Hydrogen

Moving pH (cont'd)

IMPORTANT: pH issues and what you do about them must ALWAYS be seen in the light of a person's breath rate and breath hold time. The lungs are initiated to regulate pH on a moment to moment basis. A normal average breath rate is 16 breaths per minute. If a person for instance has a resting breath rate of 9 breaths per minute, that individual has a potential alkalosis issue. (We breathe to blow off acid--high breath rate, blood leans towards the acid side of normal; low breath rate and the blood leans towards the alkaline side of normal.)

What does this mean? It means that if a person with the low breath rate were seen as having an acidosis problem simply because they had a really low pH (urine or saliva), and a protocol giving vitamin D and certain forms of calcium to raise pH were elected to be done, it absolutely would be the wrong thing to do. So anything that was said above about moving pH needs much more understanding about physiology than what I can cover here at the moment.

pH RANGE CHART

Note: You should not use the indicated calciums outside of their pH operating range or you can push pH in the wrong direction. The exception are the neutral calciums of gluconate, orotate and aspartate which don't move pH. Research has shown orotate is more specific to bone building as well as organic silica due to biological transmutation effect.

	URINE	SALIVA	
	Pushes urine pH V Calcium lactate (this does not really push pH down but it is a very ionizable form of calcium and calcium is said to help battle viruses which thrive in an anabolic states noted by high urine pH—so if you are fighting a virus this may be beneficial) Calcium glycerolphosphate & Vit D[1] Organ Meats Phos Food (The Standard Process Co.) Phos Drops (phosphoric acid)[2] Use Vitamin B6 if saliva pH is lower than urine pH Ascorbic Acid if saliva pH is higher than urine pH	Pushes saliva pH V Yogurt, Sauerkraut Real pickle in lactic acid Sanum Pleo Sanivus, Digestive enzymes, Betaine HCL Iron (cherry juice, blackstrap molasses) Cayenne Pepper Capsules Lemon in water Olive oil 1-2 tbl per day—helps loosen bowel	Tending to constipation, poor digestion, electrolyte insufficiency.
7.0 Insulin Strong Hypo Glycemic		Good Range^	
6.5	Calcium Gluconate / Orotate / Aspartate		
	Good Range^	Vitamin B12 Digestive Enzymes Probiotics CoQ10 Cottage Cheese Fresh Cabbage Baked beans Corn meal Hominy Red & green cabbage Lima beans Sweet corn Fresh green peas Buckwheat Millet Banana Pumpkin Squash Alka Seltzer Gold	
6.0	OK Range If Breath Rate is < 16 BPM		
5.5 Insulin Weak Hyper Glycemic	Potassium bicarbonate Calcium citrate[3, 6] Calcium carbonate[4, 6] Vitamin D3[6] Lime Water[5, 6] Cal II Supreme[5, 6] Pushes urine pH Λ	Pushes Saliva pH Λ	

[1] Very small amount of vit. D could be helpful whigh urine pH. We have also seen it helpful with low urine pH. The lower urine pH goes, the more Vitamin D3 individuals seem to be able to take.

[2] This and phos food for use under professional guidance. A mere 3-5 drops can push blood acid.

[3] Citrate should not be used when thyroid is underactive as it will decrease ability to metabolize fats thus lowering blood sugar and increasing myxedema and weight gain.

[4] Calcium carbonate is listed here because of its action to push pH up.

[5] These are calcium products of Daily Manufacturing.

[6] If low breath rate, blood pH may be high with high free calcium so D3 and calcium contraindicated.

[A] The ranges shown are relative meaning this would be a general healthy range 2 or 3 hours after a meal mid-morning and mid-afternoon. Clinical ideals might be 5.8pH for urine and 6.8pH for saliva. This illustrates that the body is getting rid of its acids through urine (which is a good thing) and the saliva is not indicating an overly stressed system through abnormally high pH readings which would be numbers beyond 7pH. You will also note that 5.8 urine and 6.8 saliva gives a 1 point pH spread which is about ideal.

Powerhouse Topic – Monitoring Urine Conductivity

Resistance as a measure, is a reflection of the ability of electricity to resist movement or to resist flow.

Resistance is measured in a unit called ohm.

The reciprocal (opposite) of resistance is conductance. A measure of the ability of electricity to achieve movement or flow.

Conductance is measured in a unit called mho, which is also called siemens or millisiemens (mS)

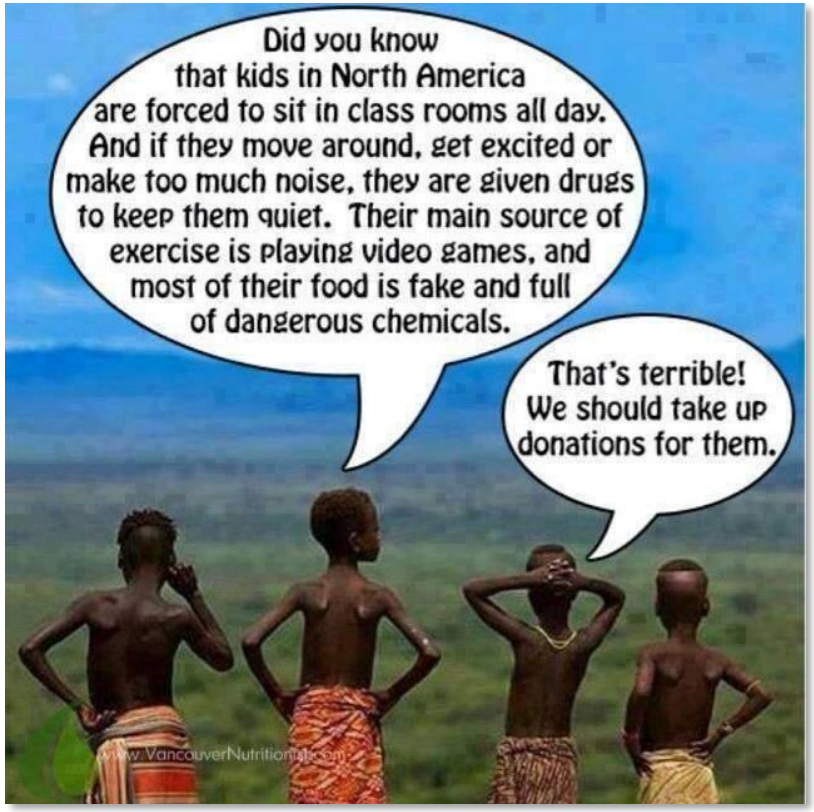
Ideal Ranges

Urine – 5 mS to 15 mS. Ideal 12mS

Saliva – 4.5 mS to 5.5 mS

mS = millisiemens

Question Time!



Thank you for allowing me to share my passion with you today. I look forward to joining you for Lesson 3 on Sunday 17th September (same times)

Mark Hathaway

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