The Nutritional Treatment of Osteoporosis

By

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Introduction

If you have osteoporosis, you are probably told that you will have it for the rest of your life, and the goal is to avoid breaking bones as much as possible. If you accept this prognosis, then you will slip into the life of someone with a "managed" condition. If you do not accept it, you can reverse the condition, but you will have to understand and implement a substantial list of nutritional, environmental, and lifestyle changes.

I frequently give talks on osteoporosis. I always ask if anyone in the class knows anyone who has ever overcome osteoporosis by taking calcium. No hands have ever been raised. Then I ask them if they know of anyone who has ever overcome osteoporosis by taking calcium and vitamin D. Still no hands have ever been raised.

The primary reason why osteoporosis is a frustrating condition is because almost everyone in the medical community looks at the bones and asks – What is missing from this bone ? The answer that is generally agreed upon is that it is - not enough calcium. That generates the common answer that the patient needs to eat more foods that contain calcium and take calcium supplements. This usually helps a little bit, but if you take larger doses, it doesn't appear to help any more, and the higher doses can actually have some negative effects on bone health.

The public health officials started digging a little deeper and realized that vitamin D was part of the puzzle. So they started recommending calcium with vitamin D. The results were a little better, but still didn't reverse the condition. This is about when they declared that osteoporosis was just a part of aging and couldn't be reversed.

Osteoporosis presents several difficult challenging questions:

1. How are bones strengthened ? (or - How is osteoporosis cured ?)
2. Why doesn't calcium and vitamin D cure osteoporosis ?
3. How much vitamin D should I take ?
4. Are bone density tests reliable ?
5. My doctor has recommended some osteoporosis drugs. Should I take them ?

6. How do you know if your osteoporosis has been reversed ?

Chapter 1

Louis Kervran's Biological Transmutation Equations For Building Bones

Magnesium (24) + Oxygen (16) = Calcium (40)

Potassium (39) + Hydrogen (1) = Calcium (40)

Silica (28) + Carbon (12) = Calcium (40)

The most fundamental impediment to understanding how to build bones and recover from osteoporosis/osteopenia is the theory of "Biological Transmutation of Elements" as written down by Louis Kervran [1]. This theory states that an abundance of animals and plants routinely transmute elements. Kervran and his followers state that the process for building bone in humans is either primarily or even exclusively involving transmutation of magnesium, potassium, or silicon into calcium by adding oxygen, hydrogen, or carbon to these elements.

The evidence is indirect and based upon observation of closed system studies. It is not based upon observation of mechanism. This leads to acceptance problems in the scientific arena.

I live in New Mexico, and within a 60 mile radius, I am surrounded by Sandia National Laboratory and Los Alamos National Laboratory. These organizations have gathered one of the largest collections of top-flight PhD physicists in the country. If I was to start asking these physicists if it was possible for the human body to routinely transmute elements, I would probably not just be told "NO". I would probably have my professional/medical friends and associates notified that I needed to start getting psychiatric care.

In the laboratory, the amount of energy required to transmute elements is so great that the consensus among scientists is that it would like cause our bodies to either spontaneously combust or to explode. All this tells me is that the elemental transmutation capabilities of plants and animals are much more sophisticated than those of laboratory physicists.

Kervran's theories are not limited to purely biological transmutations. He also puts forth a theory for the abiotic production of petroleum and explains how some welders have experienced carbon monoxide poisoning in conditions of no obvious source of carbon monoxide.

Kervran was not the first to propose that plants and animals are capable of transmuting elements. Many others before him had hinted at this idea or even proposed it publicly. Kervran's advantage over his predecessors was that he held a prestigious position in French scientific circles, and therefore was not so easily suppressed. Here is an example of the experience of one of the earlier scientists who did such research:

From 1875-1883, von Herzeele conducted 500 analyses which verified an increase in weight in the ashes of plants grown without soil in a controlled medium. He concluded that, "Plants are capable of effecting the transmutation of elements". His publications so outraged the scientific community of the time, they were removed from libraries. His writings were lost for more than 50 years until a collection was found in Berlin by Dr. Hauscka, who subsequently published von Herzeele's findings [2].

The equations at the beginning of this chapter describe the combination of two elements to form calcium. The carbon, oxygen, and hydrogen are of little importance because these are available in abundant quantities from multiple sources. The potassium, magnesium, and silicon are the important parts of the equation along with the resulting calcium. This bears directly on the nutritional implications of Kervran's theory, which are that magnesium, silicon, and potassium are very important mineral inputs in bone growth and are more important than calcium.

Although Kervran's theory, as it relates to bone-building, is sometimes stated multiple ways, it either comes down to either:

1. The calcium in your bones did NOT enter your mouth as calcium, but instead entered your mouth as potassium, magnesium, or silicon, and was transmuted by your body as part of the bone formation process.

2. You could start out the statement in item #1 with "Almost all of".

Chapter 2

A Generic Prescription For Reversing Osteoporosis

Calcium

I want to address calcium first – not because it is the most important part of an osteoporosis prescription, but simply because everybody has been trained for decades to think that it is the most important mineral for bone health.

The major message is that calcium is NOT used to build bones. You do definitely need calcium, and it can impact your bones, but only indirectly. You need calcium to keep your blood and body fluid levels adequate.

Calcium is used to make muscles contract [3], and because your heart is a muscle, this makes calcium very important. And it's not just important to make sure you have enough calcium in the blood, but also to make sure the calcium levels aren't too high. We don't want the heart to contract when it's not supposed to (heart rhythm problems).

The utility of dietary calcium and calcium supplements for preventing/reversing osteoporosis is limited. The observed evidence is that taking calcium supplements helps a little bit, but never cures osteoporosis. Increasing the dose further doesn't appear to increase the benefit. There's a reason for this effect.

Because the blood calcium doesn't actually end up in bone cells, the improvement occurs via the parathyroid glands. Here's the usual sequence of events (Also read the chapter on acid/alkaline foods):

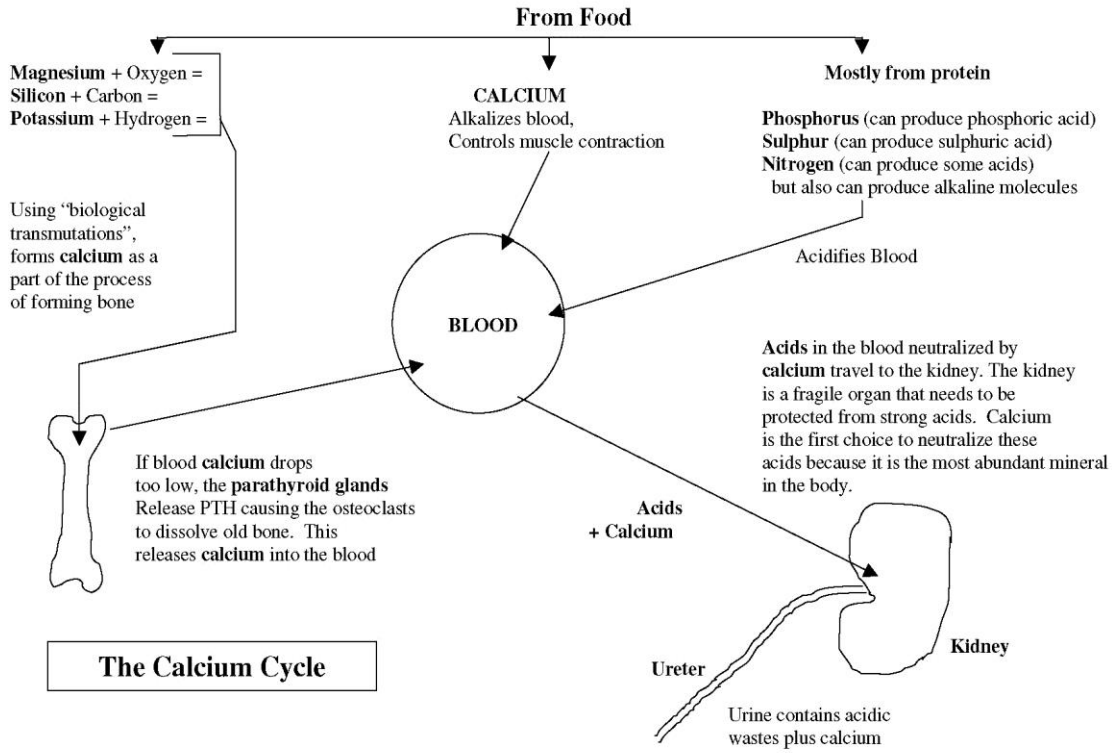
A very acid-forming meal is eaten. For example, this might be a double-cheese and pepperoni pizza with a liter of Coca-Cola. Your blood pH will tip towards the acid end of the tolerable range. To neutralize your blood pH, your parathyroid glands will create a hormone which tells osteoclasts to break down some bone which releases calcium into your blood. This brings the blood pH back to normal.

Unfortunately, the net result is that you just lost some bone. It wasn't much bone, but if you keep eating meals that are too acid-forming, after a couple of decades, you will have osteoporosis.

Now, let's go through the same scenario, but with one twist. You eat the very same pizza and Coke, but have a high-calcium vegetable side-dish or take a calcium supplement (which is magically in exactly the right dose). The side-dish/calcium citrate decays to an alkaline pH, so the acid-forming effect is neutralized, and there is no resulting bone loss.

Now let's replay that a third way. You eat a smaller portion of pizza and Coke, so that the side-dish/calcium supplement is more calcium that you need. The acid-forming effect is neutralized, and there is no resulting bone loss. The excess calcium isn't used to build bone. If there is only enough extra to remove through urination, then the kidneys will eliminate it, but if there is significantly more than the kidneys can handle, you might end up with the beginnings of a painful calcium deposit.

Here is a diagram that I use in my Anatomy & Physiology classes to describe the important ideas about how calcium moves through the body.



The CDC/NIH recommendations for calcium intake rise to 1000 mg per day at 4 years old, and stay between 1000 mg and 1300 mg per day for both men and women thereafter [4]. I have seen some recommendations for women concerned about osteoporosis of up to 2000 mg per day. These dosages are more a reflection of frustration and lack of understanding of how to prevent osteoporosis than any nutritional need.

An average adult needs about 500 mg / day. You may need more if you consume protein for calories (which generates more acidity in the blood). You are no doubt getting some calcium from your food, but most people do not get all that they need just from their food. So, it is likely that least part of this will have to come from supplementation. If you supplement calcium,

consider about 300 – 400 mg per day. Because minerals are never completely absorbed, this recommendation still presumes that most of your calcium will come from your diet.

Kervran concludes from the evidence that the excessive calcium consumed by many people in their attempts to meet the RDA tends to accumulate in internal organs and joints, where it forms calcium deposits and causes other problems. A catchy mnemonic used in medical schools in the early 1900's to help medical students remember some of the more common symptoms of excessive calcium goes like this: "Moans, Groans, Stones, Fragile Bones, and Psychiatric Overtones." However, most doctors today are so conditioned to recommend high and probably excessive amounts of calcium that they are slow to recognize the symptoms of too much calcium.

How is it that excessive calcium could actually weaken the bones ? It appears possible that if calcium from supplementation or dietary sources frequently raises blood calcium to levels very near or sometimes above the normal range, that the body's response might be to limit the formation of calcitriol – the final functional form of vitamin D. In Earl Staelin's 2006 article, this effect was specifically stated as "excess calcium was found to reduce the level of the active form of vitamin D ($1,25(OH_2)$" [5].

Magnesium

You can't afford to underestimate magnesium in bone health. There are many different ways in which magnesium has its' positive effects. Magnesium is important for conversion of Vit D precursor to final form [7]. Magnesium influences the activities of osteoblasts and osteoclasts 9. There is also some magnesium in bones [6]. The magnesium in bones is important in making hard and strong bones. But most importantly, magnesium is an important part of one of Kervran's equations for the transmutation of magnesium into calcium as part of bone formation.

There is also many statements floating around suggesting that magnesium improves the absorption, blood levels, or usage of calcium and that magnesium "keeps calcium dissolved in the blood". I view these with some suspicion, because these statements are almost all made without an understanding of Kervran's Theory of Biological Transmutations.

I believe that there are more basic biochemical explanations. For example, there is abundant evidence that magnesium is a critical ion for the function of the cellular sodium/potassium pump AND the movement of calcium via active transport [8]. These functions, plus Kervran's magnesium transmutation equation could explain many statements that are correct observationally, but lack an accurate description of mechanism.

Two factors are important in choosing a type of magnesium. Magnesium is usually poorly absorbed and magnesium attracts water in the intestinal tract.

Because absorption rates are an issue, the delivery method is also important. Pills are the worst, because the excipient and tableting aids can dramatically interfere with the breakdown and absorption process. Capsules are next best, because the capsule is usually easier to break down than the tablet. The best form is always pure powder, because there is nothing to hinder absorption.

The form of magnesium is important. Inexpensive magnesium supplements are frequently magnesium oxide. Because this has the poorest absorption rate of all types of magnesium, it is useful to prevent constipation. This is because almost all of it remains in the intestinal tract, which optimizes the drawing of water into the intestines. But, because so little of it is absorbed into the blood, this makes the oxide form a poor choice for someone with osteoporosis.

The glycinate and citrate forms of magnesium a better absorbed, and therefore better choices for bone health. Magnesium malate is another interesting form of magnesium, because it is complexed with malic acid.

Malic acid is valuable for someone who:

Creates calcified gallstones (melts the calcified surface)
Has significant exposure to aluminum (chelates out the aluminum, which is a known neurotoxin)
Has significant exposure to arsenic (chelates out the arsenic)

Therefore, magnesium malate might help you solve more than one problem at a time.

I have frequently recommended magnesium malate because most people have at least some exposure to aluminum and arsenic. The only problem with magnesium malate is that one large pill/capsule only delivers about 125 mg of magnesium, so you end up having to take several large pills/capsules per day.

Magnesium can promote loose stool/diarrhea. People have varying tolerances to this problem. A patient should put themselves in a position to self-adjust the doses of magnesium based upon digestive disturbances. If they do have digestive disturbances, magnesium oil can be substituted for oral magnesium supplements.

Magnesium oil is applied topically and absorbed through the skin, so it has no effect on the digestion. Magnesium "oil" has NO oil content, but it feels like an oil because of its' very high concentration of magnesium chloride. If you are routinely using magnesium oil, you should not apply it to the same skin area every day. If you do, after a few days, you may experience what feels like a mild sunburn at that location. This is because the chloride ions have irritated the skin. Of course, the remedy is to apply the magnesium oil elsewhere.

There are many brands of magnesium oil. Since they are usually not created in a laboratory, they do have some impurities. The purest and therefore the best ones are derived from the "Zechstein" formation in Northern Europe. I always make sure that any magnesium oil that I purchase states on the label that it was derived from this formation.

Almost everyone in industrialized countries who depends completely upon their food for magnesium is deficient in magnesium [10]. Therefore almost everyone should supplement it. Recommended dose: Somewhere between 200 and 800 mg per day. If you experience loose stool or diarrhea that result from the magnesium, you will need to divide the dose into 2 or 3 separate doses per day. You could also self-adjust the dose depending upon your digestive response. If you are taking organic sulfur, you will need to be at the higher end of this range. Take with a meal that contains some fat, because this will improve absorption. Constipation and muscle cramps are indicators of magnesium deficiency, so if you have either or both of these, you probably want to push closer to the upper end of this range.

Potassium

Potassium (K) is part of Louis Kervran's 2nd equation involving the creation of calcium through transmutation. It involves the addition of a hydrogen atom. Unlike magnesium, many people get sufficient potassium from their food. This is because conventional fertilizer (NPK) is nitrogen/phosphorus/potassium, so potassium is found in most foods. Some people do need to supplement, and their needs might easily go as high as 500 mg per day.

Keep in mind that when you supplement potassium to treat osteoporosis, you are not treating a potassium deficiency, you are taking extra potassium that is intended to be transmuted into calcium. Because potassium is a natural diuretic, many potassium deficiency symptoms are related to water retention.

Potassium pills/capsules are typically limited to 99 mg. This is based upon misunderstanding the difference between injectable potassium chloride and potassium taken orally. Oral potassium takes much longer to be absorbed, and so has multiple layers of protection against overdose. Since the RDA for potassium can go as high as 5.1 grams per day (5100 mg) [11], you can see that 500 mg is only a minor contribution to the overall requirement.

Silicon

Silicon (Si) is part of Louis Kervran's 3rd equation involving the creation of calcium through transmutation. It involves the addition of a carbon atom. The best source of silica is horsetail herb – Take at least 500 mg per day, and up to 2 grams (2000 mg) per day. This is a good source of silica and is easily absorbed.

The two potential problems with horsetail are:

1. Since horsetail is a natural diuretic [12], you need to make sure that you do not allow yourself to become dehydrated, because this would place additional stress on the kidneys.

   Since the people most likely to be reading this are people committed to healthy eating, it is important to point out a common mistake relating to keeping hydrated. We have been bombarded in the past decades that we

need to drink more water. Though this is generally true, it can be overdone.

One of the surest way to become dehydrated is to drink too much water ! When you drink water, it goes in pure, and it is urinated out salty. So the overall process of water consumption almost necessarily involves the loss of some electrolytes. It is your electrolytes, most importantly the sodium ions, that allow your body to hold onto water. If you lose too much sodium because of drinking a lot of water, you might experience ever-present thirst, dry mouth and frequent urge to urinate. This means that you have become dehydrated because of loss of electrolytes.

If you are drinking a lot of water, you need to remember to replace your electrolytes.

2. Because horsetail contains an enzyme that degrades Thiamine (vitamin B1) [12], whan you take horsetail, you should also be taking daily doses of B1 or a B-complex.

Of course, the importance of both of these points increase as the dosage increases.

Vitamin D3

Vitamin D3 is the most important non-mineral part of the therapeutic formula. The dosage will vary by the darkness/fairness of skin, body weight, latitude and altitude of residence, how much time you spend in the sun, whether you use sunscreen, diet, season, immune challenges, and state of bones and teeth. Almost everybody needs more vitamin D3 in the winter months than in the summer months. If you want to arbitrarily pick a dosage, without experimentation that will probably not cause problems, an average-sized adult might pick 1000 IU/day in the summer, and 2000 IU/day in the winter.

But this is a gross oversimplification of the question of dosing D3.
This still could cause overdose symptoms, but more importantly, you might need more, and the only way to find out for sure is blood tests, or experimentation with different doses. Always be suspicious of “new and unexplained pains”, because they could be a calcium deposit indicating

vitamin D overdose. In the summer months, always try to get some of your vitamin D from sunlight in the middle of the day – 15 minutes is often enough. Also, try to get some sunlight into your uncovered eyes (no glasses).

Dosing vitamin D is probably the most perplexing of all nutritional problems. In an effort to explain why, one of the later chapters will be devoted entirely to this subject.

Boron

Boron has no official "essential nutrient" status, and no specific RDA. This is because it is a poorly studied mineral and is present in enough commonly consumed foods that it never got much attention.

However, the limited studies that have been done clearly indicate that boron is a critical nutrient for bones and joints, and is important to prevent arthritis [13]. Building bones requires boron. Boron supplementation is associated with mental clarity. Boron supplements are commonly 3 mg. Take one per day. If your osteoporosis is severe, for a month or two, you might take 6 mg (usually 2 capsules) per day.

Vitamin K

Theoretically this is found in abundance in leafy green vegetables, but I have seen cases where people with plenty of leafy greens in their diet were still deficient in vitamin K. This is probably an absorption problem.

Vitamin K is necessary for new bone building and blood clotting [14]. I have seen people get all stirred up about the differences between K1 and K2 and which is the best one to supplement. My advice is to save yourself a couple weekends of internet research and get a supplement that would provide you with between 100 and 200 of both per day.

There are Vitamin K supplements that provide between 2 and 5 mg in a single tablet. These are not intended for normal supplementation. They are intended for use by people who are taking warfarin (AKA coumadin) as an anticoagulant, and the high dose of vitamin k, which opposes the warfarin because it promotes clotting, is intended to create a more stable end result.

So, unless you are taking Coumadin/warfarin, these higher doses are not for you.

Manganese

You will need approximately 5 mg per day. It is valuable for formation of bone and cartilage. If you routinely eat avocados, you won't need to supplement this.

Do You Also Have Heart Disease ?

If you have heart disease, this indicates a deficiency of the nutrients needed to form collagen. A collagen matrix is required to be used as a framework for the bones. In this case, you should also be taking 3 grams of vitamin C per day, some animal gelatin, copper, zinc, and a full-spectrum vitamin E.

Chapter 3

Major Dietary Factors

A diet that keeps your bones strong is all about building the bones up just as fast as they get torn down. If you already have osteoporosis, it becomes about building them up a bit faster than they are getting torn down. The bone-building and tearing-down cycle is called "remodeling". Cells called osteoclasts break down old brittle bone, and cells called osteoblasts create new strong bone, frequently in the places where the osteoclasts just broke down bone. The remodeling process can never be stopped (at least not to your advantage), but it can be adjusted to meet your needs.

Proteins

Avoid "high-protein" diets. These will prevent you from making any improvement with your osteoporosis. Proteins are necessary for building tissues and making enzymes, but you should use carbohydrates and fats for energy. When food is used for energy the "ash" is the parts of the food that are left over after all the energy is taken out.

The most important element, for an acid-producing discussion, would be carbon, sulphur, nitrogen, and phosphorus. Carbon is easy to get rid of. It turns to carbonic acid in your blood, and you breathe it out as carbon dioxide. The sulphur, nitrogen and phosphorus are where the problems lie. Each of these elements form acids (think of nitric acid, sulphuric acid, phosphoric acid) that need to be taken out of the blood through the kidneys.

Two factors are important here. The first is that eliminating these acid wastes through the kidneys is a much slower process than eliminating the carbonic acid wastes through the lungs. The second is that our body's tolerance for pH changes in the blood is VERY small and VERY important.

If we run a 100 meter sprint, and increase the pH of our blood out of the normal range by putting a lot of carbonic acid into it. At the end of the race, we can take 20 or so big breaths and bring our pH quickly back to the tolerable range. If, on the other hand, we eat a meal that generates a large amount of acidic waste from nitrogen, sulfur, and/or phosphorus, the kidneys do not have the equivalent of "20 quick breaths" to bring the pH back to normal. It will take the kidneys a couple of hours to remove that, and in

between, you might be adding still more acidic waste. Because we have so little tolerance for changes in pH, we need another system to normalize pH when the source is nitrogen, sulfur, and/or phosphorus.

The system to normalize pH from sources other than carbonic acid is to dissolve some bone, and release calcium into the blood. When the pH gets too acidic (too low), the parathyroid glands will release parathyroid hormone into the blood. This causes the osteoclasts to break down some bone until enough calcium is released into the blood to normalize the pH.

The amount of bone that is broken down is very small, so that no one meal makes much difference in bone health. But, if someone's diet contains very frequent meals with lots of nitrogen/sulfur/phosphorus, then this could get to be a problem over a longer period of time.

Acid/Alkaline Foods

Of course, the rate at which bone is broken down needs to be balanced against the rate at which bone is rebuilt. If the full range of nutrients required to rebuild bone are almost always available in abundance, the rate at which bone breaks down will seldom matter. This, in part relates back to the supplement prescription, but the nutrients required to build bone can also come from food.

When I was describing the problem with proteins, I was describing foods that decay to an acid ash. Foods that decay to an alkaline ash will help you prevent bone loss. These foods are mostly fruits and vegetables. They have average amounts of what a chemist would call metals – calcium, magnesium, sodium, potassium, iron, copper manganese, chromium, vanadium, molybdenum, boron, selenium, zinc for example. They have no more metals than the high protein foods, but since they are very low in nitrogen, sulfur, and phosphorus, the effect on blood pH is alkalizing.

Not all of these "metals" are actually used in building bone, but all of them are capable of neutralizing the acidifying effect of the sulfur/nitrogen/phosphorus in proteins. For this reason the breakdown of existing bone to neutralize acidity occurs less when there is an abundance of fruits and vegetables in the diet.

Dairy Products for Strong Bones ??

One of the most misleading statements you are likely to come across about bone health is that you need dairy products to build/keep strong bones. This is not only wrong, it is backwards.

First, from Kervran's equations and related statements, you can see that calcium is used to build bones either seldom or possibly never. The purpose of dietary calcium is to provide calcium for blood and body fluid calcium levels and to neutralize the acidifying effects of some foods. So, yes consumed calcium does have an effect on bone health, but it is a surprisingly small effect.

The more important factor for why dairy products are not useful for building bones is that they contain a large amount of phosphorus. This, of course has an acidifying effect (think "phosphoric acid"). Therefore, in most cases milk and cheese, contribute to breaking bones down much more than they contribute to building bones.

But it gets worse from there, because the best chance to get calcium from dairy products come from unpasteurized milk. The pasteurization process makes the metals in milk less absorbable. One theory states that the phosphorus, on the other hand is more easily absorbed, even in pasteurized milk. Therefore, if the milk/cheese that you consume is pasteurized there will be an even greater acidifying effect on the blood and a greater potential for resulting bone loss from using bone to neutralize acidity.

This theory is not well supported, and often disputed. But one related idea is uncontested. Consumption of dairy products are strongly associated with osteoporosis [15]. I take the point of view that this means that the phosphorus is not as effected by pasteurization as the alkalizing metals in milk, such as calcium, magnesium, etc.

The exception to this idea is detailed in Weston A. Price DDS's book Nutrition and Physical Degeneration. In some locations where the water supply is principally derived from melting glaciers and the dairy products are consumed without pasteurization, then there will be enough mineral content in the dairy products to actually build bones. This is because the water from melting glaciers (AKA glacier "milk") contains such high mineral content that it appears "milky".

The bottom line is that the dairy products that are commonly available almost always make bones weaker.

Chapter 4

Building Bones Through Exercise – The Piezo-Electric Effect

Whenever a crystalline structure is stressed to the point that it is very slightly deformed, it gives off a very weak electric current. In physics terms, this is referred to as piezo-electricity. Your bones are a crystalline structure, and they too will give off this weak electric current when they are stressed. Your body is then alerted that the bone is weak right where the electric current was produced, and responds by building a stronger bone right at that location[16].

When you go to exercise, remember that the types of exercise that tell your body to build bone are those types of exercises that threaten to break bones. Fortunately, there is a large margin of error, and you don't need to get very close at all to the amount of mechanical stress that would actually break the bone before your body responds by making the bone stronger.

Experts often state that the correct type of exercise for bone-building is "weight-bearing". Although I agree generally, I think that there is a much better description available. To build bones, think of exercises that are "striking, pounding, twisting, or weight-bearing". All of these have the potential to subtly deform the crystalline structure of the bone.

For example, instead of lifting a 2 lb weight 100 times, consider lifting a 25 lb weight 8 times. Depending upon your muscle and bone strength, you might also change that to a 50 lb weight 4 times or a 100 lb weight 2 times. In each case, you would be lifting a total of 200 lbs. The lower weight/higher repetitions options are a better cardio-vascular workout. The higher weight/lower repetitions are better for building bone. The key idea here is to get just over the threshold where your bone generates a piezo-electric current, but still not very close to where the bone might actually break.

One additional very important idea is that the piezo-electric current is merely the "instruction" for the body to build a stronger bone at a particular location. This can only happen if the nutrients needed to do so are in the blood. So, even the best weight-bearing, striking, twisting, pounding exercises will do no good if your diet/supplements combination leave you devoid of the nutrients required to "follow" this instruction.

Exercise without proper bone nutrition case has a negative effect on the health of the bones. The shocks to the bones that generate the piezo-electricity are the same types of stresses that create "micro-fractures". This is the primary mechanism for how an area of bone will become old and brittle and in need of "remodeling". When enough of these micro-fractures occur in a given area of bone, the strength of that bone tissue declines, and becomes targeted for remodeling. But, if remodeling cannot occur, because the nutrients for replacing old bone are not available, the percentage of old brittle bone will simply increase beyond healthy limits. Thus, strenuous exercise in the absence of a complete collection of bone nutrients will simply speed up the process through which bones become weak.

You should probably not even do these types of exercises if your bones are very weak. Wait until your bones have improved some, and then use these exercises to keep your bones strong. Also, remember that the exercise will do no good whatsoever unless you keep the bone-building nutrients in abundant supply in your bloodstream.

Chapter 5

Bone Drugs

The following discussion of bone drugs is based upon an article on bone drugs that can be found at the following link:
http://www.doctorsaredangerous.com/articles/bonedrugs.htm

The pharmaceutical industry has come up with a variety of drugs to address osteoporosis. All of them are dangerous and, when discussing uncomplicated osteoporosis (i.e. no Paget's disease, no bone cancer) all of them are a disaster compared to a well thought-out nutritional approach to bone health.

Here are the various classes of drugs with their related side effects detailed:

Bisphosphonates:

- Fosomax
- Alendronate (Binosto)
- Actonel
- Boniva (Ibandronate)
- Zometa (Zoledronic Acid) (Aclasta) (Reclast)
- Atelvia
- Risedronate
- Didronel, Etidronate

Because bisphosphonates were the first big class of bone drug, there was a time when they were virtually the only drug being prescribed. Bisphosphonates have a lot of problems, and instead of spending an hour trying to convince patients/students not to take them, I would tell them to read and article by Byron Richard – The Delusion of Bone Drugs. I would give them the internet link. If they actually read the article, it was almost 100% effective at preventing them from ever starting or ever taking another dose of one of these drugs. Here is that link:
https://www.newswithviews.com/Richards/byron46.htm

For the benefit of those who do not want to read this wonderful article, I will try to summarize the problems of bisphosphonates.

Bisphosphonates are caustic and highly inflammatory chemicals. They can produce inflammation in any tissue they come in contact with. The instructions for the oral versions of these drugs tell you not to take them if you have difficulty sitting or standing because if you chose to lay down for a couple hours after taking an oral dose, the drug might pool in an area of your digestive tract and cause very serious damage in one area. Moving around limits the damage in any given area because it spreads the inflammatory effect around to a lot more tissues.

Bisphosphonates can cause atrial fibrillation, digestive disturbances, the near-total destruction of the jawbone, and severe bone pain. When atrial fibrillation occurs as a result of bisphosphonates, warfarin is often prescribed to prevent blood clots from forming in the heart. Unfortunately, the "Catch-22" is that one of the side effects of warfarin is bone fractures !

The way that bisphosphonates work is by killing osteoclasts, which are a necessary part of the "bone remodeling" process. The osteoclasts are the cells that break down and remove old brittle bone. Normally this is to make way for the osteoblasts to build new strong bone in the same location.

Keep in mind that the osteoclasts are also part of the blood calcium regulation system, so when most of the osteoclasts are killed off, the normal response to low blood calcium is compromised and this may have consequences for muscular strength and heart rhythm.

A person taking bisphosphonates will initially have stronger and more dense bones. This is because even old brittle bone still has some strength left in it, and not tearing it down will, at first keep the bones a bit stronger. But that old, brittle bone continues to get more micro-fractures, and oxidative damage, so the longer it sticks around, the weaker it gets.

There are two reasons why reports of increased bone density are common in conjunction with bisphosphonate treatment, but in neither case does this result in stronger bones. The first is that because the osteoclasts are being killed off, there will be an increasing amount of old brittle bone. Yes, this means increased bone density, but does little or nothing for bone strength. The second reason is the inflammatory effect on tissues. The inflammatory effect also applies to bones, and it causes the bones to become swollen. On an X-Ray, a doctor might look and point out how the bone is larger than before the beginning of treatment. This is a pure pathology, will not

increase the strength of bones and certainly is diametrically opposed to the desire for "bone health".

In the beginning, the osteoblasts might have other locations where they could build new strong bone, but eventually, in the absence of pockets of old brittle bone being cleared out, there are no good new sites to build new strong bone. Meanwhile, the percentage of old brittle bone is increasing because it is not being removed. Also the chaotic nature of how new bone is added while taking this category of drug results in some new strong bone interspersed with many areas of old brittle bone. Keep in mind that a chain always breaks at its' weakest link.

At some point the percentage of weak bone gets high enough that even though bone density is much better than at the beginning of the treatment, bone strength is worse than before the drug treatment was begun. The time frame for this is variable from patient to patient, but a good guess is somewhere between 1 to 4 years. From there it can only go downhill. Because the bisphosphonate drugs persist in the body up to 10 years, even if the patient stops taking the drug, it will be several years before normal levels bone remodeling activity can resume, so the high percentage of old brittle bone gradually rises, and there is very little that can be done about it. Broken bones are often the result. Jawbones, hips and vertebrae are the most common bones to fail.

Monoclonal Anitbody/ RANKL Inhibitor

Prolia (Denosumab)

Prolia interferes with the ability of the body to create osteoclasts. The result is that there are a lot fewer osteoclasts to break down bone.

Blood calcium levels are tightly regulated to be within a very narrow range. A major part of that regulatory system is the osteoclasts, because when they break down bone, the calcium is released into the blood. Prolia, because it disables part of this regulatory system has several side effects related to the poor regulation of low calcium levels. It has other side effects directly related to the presence of the drug. A generalized list of side effects would include:

Pain (muscle or bone)

Irritated inflamed skin
Infections
Confusion
Convulsions
Fast or irregular heartbeat
Frequent urination

Because Prolia partially disables normal bone remodeling, it generates the same kind of short-term strengthening/long-term weakening of all bones as has been described with bisphosphonates. This can result in the destruction of the jawbone and the breaking of bones that would have never broken without the drug treatment.

Estrogen-like drugs

Premarin
Prempro, Premphase
Climara
Estradiol (Alora) (Minivelle) (Estraderm), Estradiol Patch, Menostar
Vivelle-Dot, Vivelle
Conjugated Estrogens, Cenestin, Enjuvia
Duavee, Conjugated Estrogens/Bazedoxifene
Mesest, Esterified Estrogens
Ortho-Est, Estropipate, Ogen
Evista (Raloxifene)

Estrogen is the hormone that tells a woman's body to over-engineer their bone structure because they have to be prepared to support an extra 40 lbs. in a hurry in the case of pregnancy. After menopause, the estrogen levels drop off and the over-engineering of the bone structure does too. Estrogen will prompt the bones to re-enter that over-engineered state (build stronger bones), but at a cost. Estrogen promotes cancer and more estrogen promotes more cancer. This can be mitigated to some degree by opposing the estrogen with progesterone.

The combination of Premarin (pregnant mare's urine – horse estrogen) and Prempro (a synthetic progesterone) was the combination that caused the famous warning that HRT (hormone replacement therapy) should be avoided because it causes a lot of cancers.

Parathyroid Inhibitors

Microzide (Hydrochlorothiazide) (Aquazide H) (Esidrix)
Forteo (Teriparatide)

The parathyroid gland releases parathyroid hormone (PTH) in response to low blood calcium levels or high blood pH. This instructs the osteoclasts to break down bone to increase the blood calcium levels which also increases the blood pH. When a drug meddles with blood calcium regulation, problems related to low blood calcium are the inevitable side effects, so all the side effects of Prolia/bisphosphonates are back in play here. The 4 drugs in the Hydrochlorithiazide line are all relatively weak inhibitors which produce weak benefits to osteoporosis and weak side effects. Forteo is stronger in this regard, so it can have a stronger positive effect on osteoporosis. I have seen the list of side effects and it is about 4 pages long and includes cancer.

Vitamin D-like drugs

Calcitonin (Miacalcin)
Fortical

These are both the final-form version of vitamin D (calcitriol). They are very difficult to dose correctly and are prone to quickly produce vitamin D overdose effects when slight overdoses are taken.

Chapter 6

Misdirection in Bone Density Tests

The main problem with bone density tests is that they test something that is not very important – density. What really matters is bone strength. We presume that higher bone density translates to higher bone strength, and in a general way averaged over a million test subjects, it probably does. But was matters is patient by patient, what is the bone strength, and possibly how closely does bone density relate to bone strength. There are several ways in which bone strength and bone density can diverge, and you should be aware of what they are.

Susan Ott at the University of Washington conducted an interesting study indicating the problems with accuracy of DEXA bone density measurements. Two readings were taken for each patient – one when the arrived, and another after they walked around the room a couple of times. There was up to a 7% difference between the two readings. Sometimes the 2nd reading was higher, sometimes lower. Obviously, because the readings were taken within minutes of each other, they were expected to be within the published error range of the machine, which was 2%. But instead many readings showed dramatic enough differences to claim either an osteoporosis "cure" or a reason to initiate osteoporosis treatment. Dr. Ott's message is that anything up to a 6% may be just a machine or technician error, and it should take more to prompt the physician to start treatment [17].

But let's assume for the moment that bone density tests can be accurate. The next question is – Do they provide reliable information. Here is an example of bone density being irrelevant to bone health:

> The authors noted that all of the women in three of the five counties consumed no dairy products and therefore consumed amounts of calcium well below even the Chinese standard of 800 mg/day, and virtually all of them over 50 had bone mineral densities (BMD) <0.325 g/cm^2, which the authors thought would place them at high risk of fracture. But they found that these women were healthy and had virtually no signs of osteoporosis [18].

Of course, this demonstrates that bone density doesn't necessarily equate to bone strength. Although equating bone density to bone strength can be useful in people who have built their bones in "natural" ways through the

food that they consume, there are some other more important ways in which bone density and bone strength can be made to diverge.

Strontium Supplements

About 20 years ago, I first noticed strontium supplements at a health-food store. They were all 1-2 mg per tablet. I had read that locations where strontium appeared naturally in tap water as a trace mineral, that "perfect teeth" were far more prevalent. Of course, the implication was that a small amount of strontium could improve teeth and bones.

In the periodic table of elements, calcium and strontium are in the same column. Strontium is one row down from calcium. This means two things: First, where calcium is designed to be, strontium can easily be substituted. Second, if strontium is substituted for calcium in bones, because the atomic weight for strontium is much higher (87 for strontium vs. 40 for calcium), the bones density will rise to the degree that strontium has been substituted.

When this substitution occurs, it is unlikely to result in bones that are any stronger. In fact, the greater weight of the resulting bones would mean that the bones would be functionally just a little weaker because of their own additional weight.

Now let's advance to a common technique for quickly evaluating bone density - looking at a bone on an x-ray. Bone that is more dense is brighter than a bone that is less dense. A bone with more strontium will shine brighter than a bone without, but the difference will have nothing to do with strength.

In today's health-food stores there are still strontium supplements, but they are no longer 1-2 mg. Now they are commonly at least 200 mg and as much as 600 mg per recommended daily dose. The only rationale for such supplements is that the manufacturer knows that the bones will "shine" in an x-ray. The only rationale for buying such supplements is that the purchaser doesn't understand that all they are really doing is contributing to a divergence of bone density and bone strength.

Osteoclast-Suppressing Drugs

As I have previously pointed out, all bone drugs that suppress the function of or kill off osteoclasts will result in denser bones. These bones will actually be stronger as a result of the use of the bones drug for a brief period of time. But, because the denser bone is actually the result of a higher and higher percentage of increasingly weak and brittle bone, the bone soon becomes weaker than it would have been if the bone drug had never been taken. Yet the density continues to increase ! This is a second example of bone density being made to diverge from bone strength.

Bisphosponates have one more effect that will cause bone density and bone strength to diverge. Because bisphosphonates are highly inflammatory, they result in bones that are full of inflammation. These bones are larger just like your sprained ankle is often larger than the ankle that you didn't sprain. The look larger, they contain more minerals, blood, and nutrients, but they are actually weaker than "normal" bone.

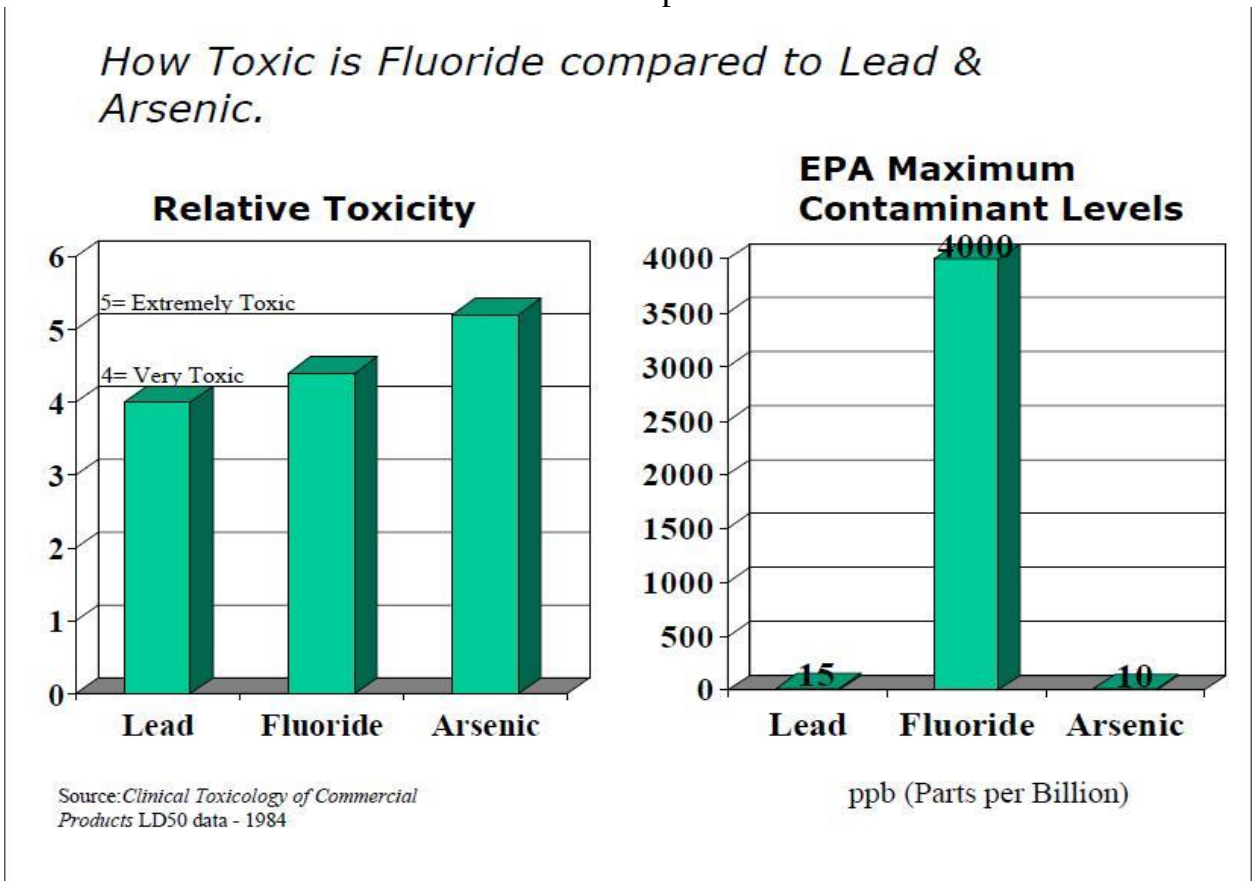
Chapter 7

Fluoride

Fluoride should require a book unto itself. For this purpose, I will refer you to the Fluoride Action Network website - http://fluoridealert.org/ and to Christopher Bryson's video "The Fluoride Deception" – http://articles.mercola.com/sites/articles/archive/2014/12/13/fluoride-deception.aspx

I will only summarize what is most important for the understanding fluoride's effect on osteoporosis.

Here are two graphs. Graph #1 shows relative toxicity. Graph #2 shows the maximum allowable contaminant levels for potable water.



This "relative toxicity" graph is based upon LD50 data, which means "lethal dose for 50% of the population". This is a convenient method for toxicologists to compare the toxicity of various chemicals.

You can see that one “maximum contaminant levels (MCL)” is way out of line when compared to the relative toxicity. It appears the expected MCL for fluoride would be somewhere around 13 parts per billion (ppb). The actual MCL of 4000 is about 330 times higher. This is a 10-year-old chart, and since then, the MCL has been reduced to 2000 ppb. Even the latest federally-recommended levels of .7 parts per million (ppm) for municipal water supplies is the same as 700 ppb, which is still about 56 times the level you would expect from the graphs.

You might wonder – if fluoride is more toxic than lead and almost as toxic as arsenic, what problems does it cause ? The major problems with fluoride are that it is a potent carcinogen (causes cancer), reduces mental function, damages the kidneys, collects in the pineal gland – producing sleep problems, and damages bones and teeth.

When fluoride is topically applied to growing teeth, it can limit tooth decay but still cause some problems. At least if the fluoride is not swallowed, those problems are minimized. But when fluoride is added to municipal water supplies, and that water is routinely used for cooking drinking, and bathing, fluoride accumulates in the body and the long-term effects can be anywhere between mildly damaging and life-threatening.

I do want to point out that when fluoride is applied to water supplies, the percentage of fluoride that is topically applied to growing teeth (typically grammar-school aged children) is an extremely small percentage of the fluoride ingested by all people served by that municipal water supply. So, 97%+ of all that fluoride is doing damage with no redeeming purpose.

The following is an excerpt form a published discussion of dental fluorosis:

> Dental fluorosis (also termed mottled enamel) is an extremely common disorder, characterized by hypomineralization of tooth enamel caused by ingestion of excessive fluoride during enamel formation.
>
> It appears as a range of visual changes in enamel causing degrees of intrinsic tooth discoloration, and, in some cases, physical damage to the teeth. The severity of the condition is dependent on the dose, duration and age of the individual during the exposure. The "very mild" (and most common) form of fluorosis, is characterized by small, opaque, "paper" white areas scattered irregularly over the tooth, covering less than 25% of the tooth surface. In the "mild" form of the

> disease, these mottled patches can involve up to half of the surface area of the teeth. When fluorosis is moderate, all of the surfaces of the teeth are mottled and teeth may be ground down and brown stains frequently "disfigure" the teeth. Severe fluorosis is characterized by brown discoloration and discrete or confluent pitting; brown stains are widespread and teeth often present a corroded-looking appearance [19].

Dental fluorosis is the "poster child" for fluoride disease. This is because you can see it in the teeth. If you continue to expose the teeth to even higher levels of fluoride (even though this is unlikely), the teeth will exhibit more brown stains and finally get so weakened that they just fall apart.

What is important about dental fluorosis is that the teeth are the "window" into the health of the bones. When fluorosis is present in the teeth, it is also present in the bones. This is called skeletal fluorosis.

Here is an excerpt from an article on skeletal fluorosis:

> Skeletal fluorosis causes increased bone density but decreased bone strength.
>
> Symptoms are mainly promoted in the bone structure. Due to a high fluorine concentration in the body, the bone is hardened and thus less elastic, resulting in an increased frequency of fractures. Other symptoms include thickening of the bone structure and accumulation of bone tissue, which both contribute to impaired joint mobility. Ligaments and cartilage can become ossified. Most patients suffering from skeletal fluorosis show side effects from the high fluorine dose such as ruptures of the stomach lining and nausea. Fluorine can also damage the parathyroid glands, leading to hyperparathyroidism, the uncontrolled secretion of parathyroid hormones. These hormones regulate calcium concentration in the body. An elevated parathyroid hormone concentration results in a depletion of calcium in bone structures and thus a higher calcium concentration in the blood. As a result, bone flexibility decreases making the bone more amenable to fractures.
>
> As of now, there are no established treatments for skeletal fluorosis patients. However, it is reversible in some cases, depending on the progression of the disease. If fluorine intake is stopped, the fluorine existing in bone structures will deplete and be excreted via urine. However, it is a very slow process to eliminate the fluorine from the body completely. Minimal results are seen in patients. Treatment of side effects is also very difficult. For example, a patient with a bone fracture cannot be treated according to standard procedures, because the bone is very brittle. In this case, recovery will take a very long time and a pristine healing cannot be guaranteed [20].

Chapter 8

Fear of Breaking A Hip

There have been many articles and much discussion about older people breaking their hip, and then frequently dying with a year. Without any other explanation, this tends to make the retiree generation very fearful of osteoporosis because this problem has been posed without a possible solution. What this discussion needs is a clearer description of the problem, which will also point to a solution.

Looking back to the previous discussion of how osteoporosis could be caused, a diet too high in protein and too low in alkalizing fruits and vegetables are important here. This kind of diet pulls metals into the blood to keep the blood pH within range, gradually wearing down the bones and reserves of other metals.

Our bodies prefer to protect the blood pH by using calcium from the bones, because we have so much calcium stored in the bones. Other metals could also serve to neutralize a low pH (overacidity) of the blood, but the problem is that the other metals occur in such small quantities that they would soon become deficient if they were used for pH neutralization.

If, over many decades, the bones become weak enough from having calcium removed from them to neutralize blood pH so that continuing to take more calcium from the bones will possibly make them break, then a person's body needs to shift gears. At that point, some of the other minerals can be used to neutralize the blood pH. But since the other minerals are not found in nearly the same quantity, they get close to the point of causing deficiency symptoms very quickly.

In the absence of a change of dietary habits, eventually the calcium in the bones and all other alkalizing metals are brought to the edge of adverse effects. At this point, no matter what metal the body uses to neutralize the blood pH, something bad will happen. Using more iron will reduce energy, using more magnesium might destabilize heart rhythm, and taking more selenium might allow more viral infections, etc. Because the pelvis supports the entire upper body, and therefore has considerably more mechanical stress than other bones, it is likely to be the first to fail.

If you break your hip because you fell down 2 flights of stairs, then you probably have nothing to worry about. Such a serious fall can easily break even healthy bones. On the other hand, if you broke your hip when you bent over to pick up a pencil, then you might be in the category of people who broke bones because the bones were very weak. It is important to notice that in this second case, it is also very likely that you are generally mineral deficient, and prone to all sorts of continuing problems unless those mineral deficiencies are addressed.

So the bottom line here is the need to maintain your mineral reserve throughout your life. But, if you have failed to do this and you have broken your hip at an advanced age by doing something as mundane as walking or picking up the morning newspaper, then you need to pay a lot of attention to making sure you get optimal amounts of all alkalizing minerals (such as calcium, magnesium, potassium, sodium, iron, copper, manganese, chromium, vanadium, molybdenum, boron, zinc, selenium, etc.).

Chapter 9

An Alternate Method for Determining Optimal Vitamin D Levels

In the past 10-15 years, there has been an explosion in research and articles about vitamin D. Many of the early articles just pointed out that low serum vitamin D levels correlate with various disease conditions, and higher serum vitamin D levels correlate with improved health. When the conventional medical community got on board, vitamin D blood testing became much more common, and secondary questions were raised – What is the "normal" or "optimal" range of vitamin D levels in the blood ? There is a lot of disagreement here. The purpose of this article is to discuss why that agreement has been lacking and what might be done about it, especially if someone wants to optimize their D levels very aggressively.

Here are a few examples of that disagreement:

Normal Range of Maternal Serum Vitamin D as 11-13 Weeks Gestation [4] was a study done in the UK on 1000 pregnant women. The boldest statement made in their paper was that maybe the bottom of the "normal" range should be 30 ng/ml.

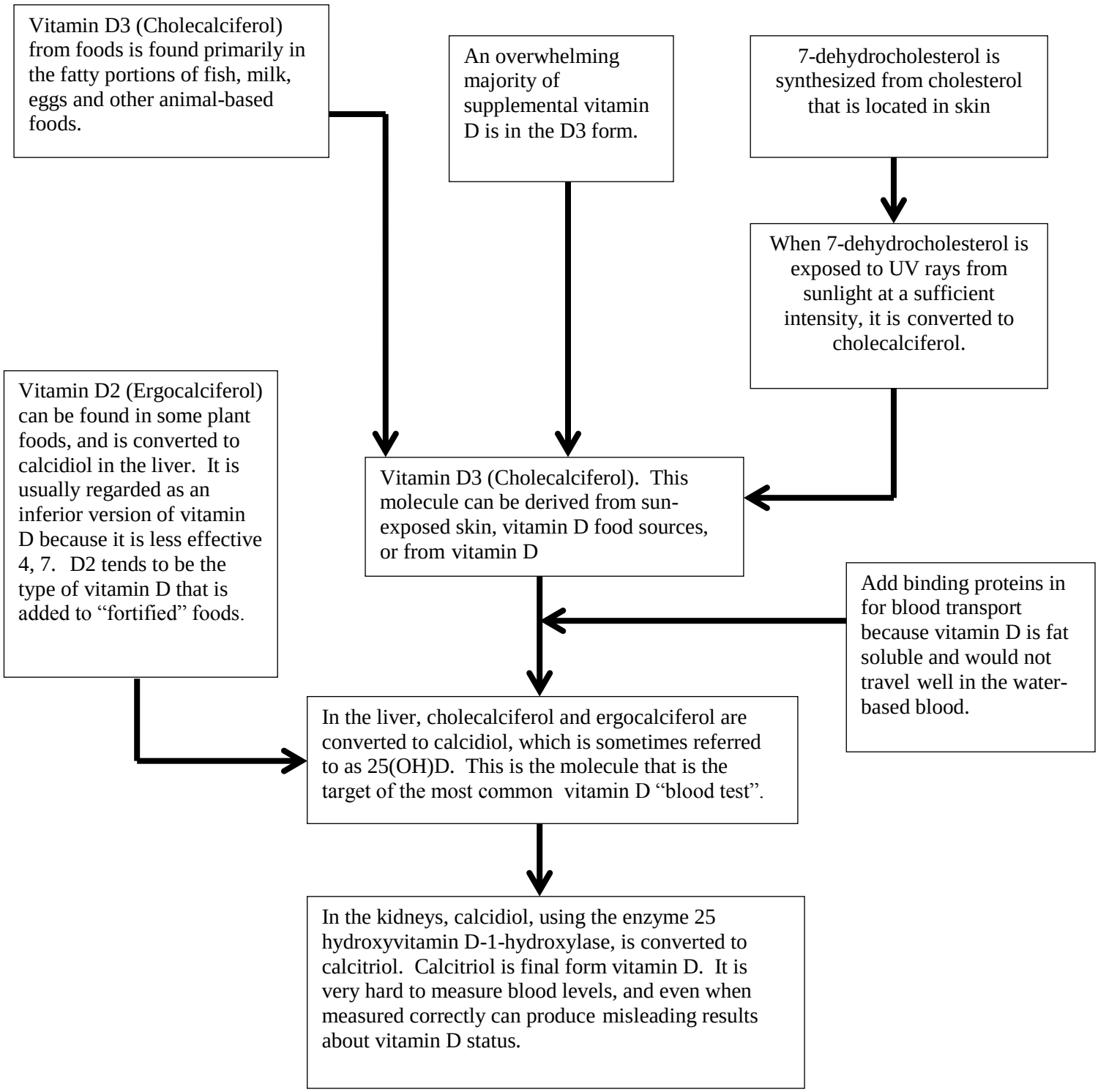
The University of Washington webpage on Vitamin D [5] makes the interesting statement that "However, many laboratories currently have listed their 'sufficient' range as 32-150 ng/ml." They also bring up the ongoing discussion as to whether the bottom level of sufficiency should be 20 ng/ml or 30 ng/ml.

In the July 2009 American Association for Clinical Chemistry article titled "Vitamin D Testing – What's the Right Answer ?" [6], ranges for deficiency, insufficiency, sufficiency, and possible toxicity seemed like darts on a dartboard. For example, various quoted ranges for deficiency in ng/ml) ranged from 8 to 20 to 32. Ranges for insufficiency, sufficiency, and possible toxicity were equally scattered.

I am not intending to give any argument for the "correct blood level" of vitamin D. Instead, what I want to point out is that there is an "elephant sitting in the corner" that no one is noticing.

First, I need to give you a flow-chart of the various stages that vitamin D goes through in our bodies.

Steps In Vitamin D Creation



Even the identity of vitamin D is not entirely agreed upon. Many publications do not refer to the different chemical stages specifically and do not make a distinction between them. According to the Vitamin D Council website, the vitamin D name includes all of the chemical precursors to calcitriol, and refers to vitamin D as a "prehormone". They call calcitriol "the most potent steroid hormone in the human body", but no longer refer to it as vitamin D. [8, 13] Though I am inclined to defer to the expertise of the Vitamin D Council, I tend to think of naming conventions as arbitrary distinctions as long as the biological functions are described accurately.

As you can see, the most of the functions of vitamin D don't come into play until the last stage (calcitriol). All of the other forms are not much more than highly valued precursors. Notice that what is measured when you get a blood test is calcidiol, which is the final precursor to calcitriol. The "elephant setting in the corner" is that the molecule that is measured when "serum vitamin D" is measured is the last precursor – NOT the molecule that delivers the effects that we are all searching for.

There are built-in inaccuracies in any estimation of "normal levels" whenever the molecule being measured is a precursor. The most obvious questions revolve around how easily and appropriately the kidneys do the final conversion to calcitriol. For example, even if a person has very high levels of calcidiol in their blood (possibly 80 ng/ml), they still might be experiencing deficiency symptoms if the kidneys do not convert enough calcitriol to meet the body's needs.

The kidney conversion problem is well known to nephrologists treating patients with advanced kidney diseases. A patient with such kidney problems is likely to get a prescription for Calcitriol if it is deduced that the kidney's ability to convert calcidiol to calcitriol is limited or absent. [9, 10] My contention is that we should be addressing the issue of individual differences in the conversion of calcidiol to calcitriol, even in the absence of any kidney disease. Given that there are individual differences in every other measure of bodily function, I believe that individual variations in this conversion would be no exception.

The next question is – why isn't vitamin D status measured as calcitriol ? Calcitriol, in vitamin D terms, is the "trickster". It is almost impossible to

determine functional vitamin D status by measuring calcitriol. Calcitriol has a very short half-life, and a significant decrease in blood levels is observed only when deficiency is severe. [12] Instead, to monitor the effects of calcitriol supplementation, lab testing is recommended to track serum calcium, serum phosphorus, parathyroid function, and aluminum toxicity. Putting together an interpretation based upon all of these tests still requires extensive expertise. [11]

The medical testing question then becomes, how can a "standard" for levels of vitamin D be set if we are limited to measuring a precursor ? Here, I would argue for two major points: (1) This is why it is almost impossible to agree on what blood levels of vitamin D should be, and (2) Observing a combination of deficiency/overdose symptoms is a possible alternative path to understand the true vitamin D status.

There are a couple of built-in advantages and disadvantages to the "observation" approach to measuring vitamin D status. The first obvious advantage is that observation reduces or eliminates the cost of repetitive blood tests. Another advantage is that it accounts for individual differences in rates of absorption and all conversions. The major disadvantage is that someone – either a health-care professional or yourself needs to understand these deficiency/overdose symptoms and be able to both sense that they might be occurring and adjust dosage in a timely manner.

If someone wanted to approach understanding the deficiency/overdose symptoms of vitamin D thoroughly, the topic might become overwhelming. Already vitamin D is known to interact with around 30 percent of your DNA, which means that it is responsible for triggering the creation of a very large number of the enzymes that control cellular functions. Also, vitamin D continues to be the subject of a large number of studies, so that there is an ever-enlarging body of knowledge to keep up with.

I have many times joked that a good after-dinner game for human physiology PhD's would be to try to name a disease or physical condition where vitamin D doesn't contribute to either prevention or treatment. Vitamin D is most commonly known for, in conjunction with adequate levels of other co-nutrients, keeping bones and teeth from becoming weak from osteoporosis. However, the reason why I am most enthused about keeping my vitamin D levels optimal is the immune system effects. Vitamin D (also in conjunction with other co-nutrients) will not only keep me free of

colds/flu/other minor infections (only two instances in the past 7 years), but vitamin D is very possibly the most important nutrient for the prevention/treatment of a wide variety of cancers.

Because it has so many positive effects, I want to position my vitamin D levels "just below the overdose level". Inevitably, my levels will occasionally wander above the overdose level, and I have on about 10-15 occasions in the past 7 years experienced overdose symptoms.

Overdose symptoms include calcification (including kidney stones), muscle problems, vomiting, nausea, weight loss, etc. etc. Fortunately for myself, some of my patients, and for many people who might want to take this approach, calcification is the by far most likely "first" symptom.

Almost all calcifications eventually will cause pain. Calcification is typically experienced as "new pain without injury". So, whenever I experience a pain that I can't explain, I stop the vitamin D for several days and see if the pain goes away. If it does go away, then I make a mental note of the type and location and guess that it is probably one of the locations where calcification pain might occur. I then resume normal supplementation. If I experience the same pain later, and once again, it goes away after I stop taking vitamin D for a few days, then I think of it as a calcification pain due to vitamin D overdose with a high degree of certainty.

It is not my purpose to convince people that blood tests for calcidiol are useless. I believe that those tests have delivered tremendous benefits for millions of people. What I want to do is to throw some light onto the discussion of how to interpret those vitamin D tests. I am suggesting that there never will be a neat and tidy range of blood values for calcidiol like we have come to trust for calcium, potassium, pH, etc. because the measurement of precursors gives us a built-in inaccuracy. Whereas symptom-based evaluation of D levels has at least a few built-in advantages, it is not for everyone. But, for those few individuals who are very aware of and are capable of evaluating their own physical condition, I am hoping to point to an alternate path to determine the optimal vitamin D levels.

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Chapter 10

How Do You Know if Your Osteoporosis Has Been Reversed ?

With many diseases, you will know very quickly whether or not the treatment is working. Sometimes it only takes a day or two, sometimes a couple weeks or months. But with osteoporosis, the only indication that the therapy MIGHT be working is that the patient hasn't broken any bones yet. Is going one year without breaking any bones enough to "prove" that your bones are no longer weak - probably not. Five years might give you a hopeful feeling, but is certainly not conclusive. A few people might be convinced by a ten year span with no broken bones, but some would hold out for twenty years.

Most MD's will try to show "improvements" in bone density tests from one year to the next, but in a previous chapter, I have shown multiple ways in which bone density does not translate to bone strength. Even if you are willing to place some faith in bone density, the bone density tests are themselves not all that reliable (also from previous chapter).

There are some related conditions, such as slow-healing or non-healing fractures with accompanying pain where feedback is more immediate, but the majority of the patients are plain osteoporosis. So, the challenge is – even if you have broken no bones over a significant time period, how do you know the therapy is really working ?

Here I have a very strange answer – ramp up the therapy until it starts to cause problems from "over-mineralizing" the body, and then back off a bit.

Here is my procedure to "test" my bones:
Take vitamin D3 in increasing dosages
Take my minerals with "structured" water
    Structured water will increase the absorption of minerals
Take organic unrefined coconut oil with the minerals
    All fats/oils will increase absorption of minerals. Coconut oil does this considerably better than most oils.

At this point, I roughly parallel what I have suggested for symptom-based vitamin D3 dosing.

Sooner or later, I will get some symptoms. By far the most common symptom is to experience "new pain without injury". Here is an example:

Let's assume that 40 years ago, when you were 10 years old, you fell off your bicycle and injured your knee. You got a few stiches, and limped around for a week or two. Then the knee healed, and you haven't had a bit of problem with it for decades. After gradually increasing the dose of vitamin D3 and optimizing the absorption of minerals with structured water and coconut oil for a period of time, you start to feel pain in that same knee. You might ask yourself – Did I fall down and hit that knee on something ? (No), Did I overwork my knee or lift something that was too heavy ? (No) Did I do anything that could have caused my knee to be injured ? (No).

In this case this could be an indication that you have "filled up" your bones and the "overflow" calcification is now being directed to sites of old injuries. To test this idea, you stop all the bone supplements, coconut oil and structured water for a few days. If the pain goes away, it probably was a calcium deposit from "over-mineralization". The simple answer is then to resume the supplementation, but at reduced dosages. The more scientific among you might want to start up at the same dosages and see if it comes back, which would give you even more confirmation (followed of course by stopping for a few days until the pain disappears).

Once you are back to normal, you might be able to conclude that your bones are "filled up". If you can also honestly say that you have avoided all the methods to increase bone density without improving bone strength (high-dose strontium supplements, bone drugs, any method to suppress or eliminate osteoclasts, bone inflammation, and exposure to significant amounts of fluoride), then you can reasonably guess that your bones are currently as strong as you can make them.

Of course it works best in people who are very aware of how their bodies feel and have little or no pain, because it may be difficult to distinguish one pain from another. This is not a perfect system, and it might be suitable for only 1-5% of the people reading this article, but I have chosen to present it with a suitable warning.

Chapter 11

Earl Staelin

I want to acknowledge one more person, without whom I would not be writing this book. I will weave his introduction into one of my personal stories. I had a lot of dental problems in my earlier years.

In 2005-2006 I was experiencing a type of dental problem typically referred to as jawbone cavitations. These can release a toxin called thio-ethers into the blood that can have adverse effects on internal organs. I had noticed that I had all the symptoms, and that I needed to do something about it sometime soon. I found a dentist in the next state over who was known for treating jawbone cavitations, and set up an appointment. This treatment is bloody and brutal and takes about a week. I didn't like the description of the treatment, but I didn't know what else to do.

My first appt was scheduled for 1:00 PM on a Monday. I flew in several hours early to make sure that I would not be late, and consequently, I had the opportunity to spend 20-30 minutes with the dentist during the morning. After that short discussion, I could see that the dentist's personality was well matched to this treatment (bloody and brutal). I thought it over for half an hour, and walked away from my appointment, and headed right back to the airport.

I was feeling like I had just tossed away my only good chance to resolve my jawbone issue, so now I was obligated to figure out how to fix it myself. When I got on the airplane, I realized that I had some reading material. Because the treatment was going to last for several days, and I would have to stay in a motel room, I had brought some health-related magazines. One of them was an issue of Well Being Journal. I opened it up and there was the first installment of a 3-article series by Earl Staelin on bone health.

I had read the whole article before I got off the plane, and I was full of enthusiasm because I thought that I might have found the answer to my jawbone problem.

It was in this article that I was first exposed to Louis Kervran and his theory of biological transmutations. This article also pointed out many of the absurd nutritional myths that surround bone health and osteoporosis.

Using information from this article and a few other nutritional ideas, I was able to fix my jawbone problem in three months. I never once took a calcium supplement, but relied entirely on my diet for my calcium.

Earl Staelin, a trial attorney, began in 1976 asserting his clients' rights to alternative health care. He was a pioneer in the use of nutritional and environmental approaches for defense and rehabilitation/treatment in cases involving crime and delinquency, child abuse, and mental commitments. He graduated from Yale University in 1962 and from the University of Michigan School of Law in 1966. In 1986, his outline for a dissertation on calcium absorption, in his doctoral work in nutrition consulting, was approved, although the school closed before he could complete the dissertation. Since then, he has made numerous presentations on nutrition, environmental illness, health and light, and the legal right to alternative health care.

I have obtained permission to include as an appendix, the unedited documents that were sent to me as a result of a phone conversation with Earl Staelin.

A Note About Footnotes

Medical books have always relied heavily upon citing other publications to support their statements. There has also been a hierarchy that rates the value of a given citation. At the top of the heap is usually a reference to a placebo-controlled peer-reviewed study published in a prestigious medical journal.

But there have been increasing problems here. The number one problem is that medicine has become a huge business, and the financial interests are doing their very best to make these influential publications favor their financial well-being - at the expense of scientific accuracy.

Before I present my own citations, I want to present my 2 favorite "citations about citations".

> From a commentary by Dr. Richard Horton published in The Lancet:
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> The case against science is straightforward: much of the scientific literature, perhaps half, may simply be untrue. Afflicted by studies with small sample sizes, tiny effects, invalid exploratory analyses, and flagrant conflicts of interest, together with an obsession for pursuing fashionable trends of dubious importance, science has taken a turn towards darkness.
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> http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736%2815%2960696-1.pdf
>
> In her 2009 article "Drug Companies & Doctors: A Story of Corruption", Marcia Angell, MD wrote :
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> ...Similar conflicts of interest and biases exist in virtually every field of medicine, particularly those that rely heavily on drugs or devices. It is simply no longer possible to believe much of the clinical research that is published, or to rely on the judgment of trusted physicians or authoritative medical guidelines. I take no pleasure in this conclusion, which I reached slowly and reluctantly over my two decades as an editor of The New England Journal of Medicine .

I don't think that anyone should stop citing medical journals, but they clearly can no longer be blindly accepted. Any author should first consider the financial and political conflicts of interest and carefully examine whether these conclusions agree or disagree with observable patterns found outside this study.

Accordingly, I put forth the idea that the opinions of keen observers, even though they might not have a traditional scientific "stamp of approval", are at least on a par with the New England Journal of Medicine, JAMA, and the Lancet.

In this corrupt modern world, you bear the obligation to think everything through for yourself.

I have found internet links for most of my citations because this will make it much easier for the average reader to check and evaluate my sources.

Footnotes:

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