



RCP

ROOT CAUSE PROTOCOL

RCP Handbook

(Formerly known as the Instruction manual)

Version 10.0 -- Updated October 4, 2021

TO ACHIEVE THE FULL BENEFITS OF THE ROOT CAUSE PROTOCOL, IT'S BEST TO START BY EDUCATING YOURSELF.

THEREFORE, PLEASE READ THIS DOCUMENT IN ITS ENTIRETY BEFORE YOU IMPLEMENT ANY OF THE STEPS.

As updates occur, this document will be updated, so please make sure that you stay subscribed to the RCP mailing list. The RCP Handbook (formerly Instruction manual) is totally FREE, but if you want to share it with a friend, please DO NOT email them a copy of the PDF -- instead, please ask your friend to [download their own copy](#) so that we can ensure EVERYONE receives updates.

Welcome to the Root Cause Protocol!

You are about to embark on a journey, a new approach to health. The RCP is a step-by-step protocol designed to reduce inflammation and oxidative stress at the cellular level. By restoring balance to the key minerals in your body, e.g. magnesium, copper and iron, you can optimize and increase your energy levels and vitality. This Handbook will serve as your guide for the journey.

The Root Cause Protocol (RCP) was developed by [Morley Robbins](#), who transformed a career in the mainstream medical industry into a quest to learn the fundamental components of a healthy metabolism. Since 2009, he has pored over books, manuals, and thousands of scholarly articles in this pursuit. After he realized the powerful role magnesium plays in all metabolic systems, he went on to learn that copper partners with magnesium to produce the energy that gives us life. The RCP is the culmination of his efforts and is revolutionary in its approach to health from a truly holistic perspective, by looking at the whole organism (your body!) and how all the elements work together, rather than limiting the focus to isolated nutrients or conditions.

Restoring balance is a big undertaking, so the goal of this Handbook is to break the protocol down into small and manageable steps. It may look overwhelming at first glance, but taken at your own pace, one step at a time, it soon becomes a lifestyle that you happily integrate because you are feeling better.

When you start the RCP, you are never doing it alone! Help is always available in the [RCP Community/Forum](#), where you will find general discussion on any RCP topic you can think of. The forum is a hive of activity with a diverse range of members. Every month, Morley and Kristan run live Q & A sessions to answer RCP questions for members of the community. If you'd like more personalized 1:1 support, click [here](#).

To read the hundreds of RCP success stories, please check out our [RCP Testimonials](#). If you are a success story and would like to be added to the testimonials, please share it via [our website!](#)

A vôtre santé,

Morley Robbins and the RCP team

RCP KEY PRINCIPLES

1. The RCP works from a perspective of health rather than disease. Oxidative stress stemming from disruptions in mitochondrial energy production is the starting point to disease conditions. Supporting the body's energy creation and flow allows healing to occur at all levels and in all systems.
2. The RCP favors “strengthening the host”, as opposed to “attacking the guest”, in regard to pathogens and toxins of all kinds. A body in optimal health is better able to withstand invaders, and “attack” strategies can deplete the body's resources and undermine its innate immune system.
3. While mainstream practitioners seek to flood the body with isolated, synthetic versions of nutrients that register as “low” on standard lab testing, the RCP looks at why those nutrients are low, and focuses on supplying the building blocks required to balance all elements naturally.
4. As much as possible, the RCP recommends that nutrients come from fresh organic food. Synthetic nutrients lack the enzymes and cofactors that occur naturally in whole foods to aid in their digestion, assimilation and activation in the body.

PREMISE BEHIND the RCP

We are all familiar with the famous formula $E = mc^2$. The overriding focus of the Root Cause Protocol (RCP) is to increase energy. What we've learned is when **E**nergy drops, structure (**m**) and function (**c²**) of the tissue changes, regardless of where it is in the body.

Increasing **E**nergy is made possible by:

- 1) Increasing bioavailable **copper** in order to...
- 2) Decrease unbound **iron** and...
- 3) Decrease the **magnesium** burn rate (MBR) in order to...protect the REDOX (Reduction-Oxidation) reactions that run the homeostasis of the body. When magnesium is not constantly being lost, the body is better able to regulate and preserve oxygen.
- 4) Sustaining cellular mineral balance -- the **root cause** of virtually **all** health challenges

Stated more scientifically, the RCP is designed to support the body's desire to harness the energy of oxygen. This two-fold process will:

- Activate oxygen to create energy in the mitochondria
- Deactivate oxidants (accidents with oxygen) to clear exhaust
 - Ceruloplasmin (Cp) is a copper dependent protein that in a healthy body enables ferroxidase function.
 - Ferroxidase (FOX), the "active" form of ceruloplasmin, is the enzyme that regulates or chaperones iron and prevents it from "rusting" i.e. oxidizing. Ferroxidase is the master antioxidant enzyme that regulates iron status in the body.
 - Dysregulated, unbound, excess iron is the greatest source of oxidative stress and inflammation in the body.

Learn more about these and other key scientific terms in [APPENDIX B](#) of this document.

FOR A DEEPER DIVE INTO THE SCIENCE BEHIND THE RCP

Available for free:

- RCP on social media:



[RCP FB Page](#) [RCP FB Group](#) [RCP on Instagram](#)

- News & Research on rcp123.org which offers:
 - [Monthly webinars](#) with Morley Robbins & Kristan Kershaw, covering a range of protocol topics plus an [archive of past webinars](#)
 - [Media archive](#) of live interviews with Morley Robbins
 - [Videos](#) outlining basic RCP concepts
 - [Over 80 Iron Toxicity Posts](#) explaining the connections between iron, copper, magnesium and other minerals and/or vitamins.

Available with membership to the RCP Premium Community:

- Want to get away from social media? [The RCP Community](#) forum offers a stable, secure and searchable platform that's easy to navigate. RCP Consultants (the RCP experts!) are regular contributors to the community. This is a place for members to share tips & tricks about the RCP, discuss health concerns and get feedback from the community of RCPC's.
- Regular live Q & A sessions are hosted with Morley and Kristan - you can ask questions and discuss them in a live setting, or watch the recordings later if you can't join in live. There is also a significant archive of past Q & A's available for you to watch at your convenience.
- Membership area includes special direct access to past webinars with additional notes and resources, beyond what is available via the free webinar replay sign up.

Available for individual purchase:

- For the ultimate dive, consider a [16-week course at the RCP Institute](#) created and led by Morley Robbins and Kristan Kershaw.
- [RCP 101 videos](#) - a step-by-step guide through the 'stops' and 'starts', with Dr Ben Edwards and Morley Robbins. *Yours to access at any time if you choose to purchase.*
- [The Masterclass Series 2020](#) presents 5 recorded sessions with presentations from Morley Robbins and Q&A's following. The first of these classes is available for free.
- *Coming soon:* Morley's first book! We will update everyone with more details soon!

STOPS and STARTS at-a-glance

(Feel free to print this summary to take along while shopping or keep handy for easy reference!)

The research behind the RCP shows that each of the **STOPS** disrupts the body's ability to create the enzymatic forms of copper that are needed to make energy. Completing the **STOPS** eliminates the interference created by synthetic supplements, processed foods and other factors.

Each of the **STARTS** enhances the effectiveness of bioavailable copper and its singular ability to harness the energy of oxygen. Copper is the **only** element on planet Earth that has that ability. One consistent response that people have to the RCP is an increase in energy production.

STOPS (PHASE 0)

1. **STOP** Taking iron supplements, iron fortified foods, anything with 'added iron'
2. **STOP** Taking vitamin D3 supplements or ANY foods fortified with vitamin D
3. **STOP** Taking calcium supplements
4. **STOP** Taking zinc supplements
5. **STOP** Taking molybdenum supplements
6. **STOP** Taking one-a-day multivitamins, prenatals, etc.
7. **STOP** Taking B vitamins from a bottle (get them from food!)
8. **STOP** Using synthetic forms of ascorbate/ascorbic acid & citrate/citric acid
9. **STOP** Using high-fructose corn syrup (HFCS) & artificial sweeteners
10. **STOP** Using industrialized omega-6 oils (e.g. soybean oil, canola oil, etc.)
11. **STOP** Using fluoride (e.g. in toothpaste, water, etc.)
12. **STOP** Using colloidal silver as an antibiotic
13. **STOP** Eating low-fat, high-carb, processed, refined foods
14. **LIMIT** Exposure to environmental toxins, including unchecked blue light exposure and EMFs from electronic devices (see [Handbook FAQs](#) for more detail)

STARTS (PHASES 1-3 and PHASE X)

PHASE 1: Foundations

1. **START** Taking adrenal cocktails
2. **START** Taking mineral drops or applying transdermal magnesium
3. **START** Taking wholefood vitamin C (WFC) complex
4. **START** Taking magnesium
5. **START** Eating grass-fed organic beef liver

PHASE 2: Supporting Nutrients

6. **START** Eating organic ancestral whole foods and drinking mineralized filtered water
7. **START** Taking Mother Nature's sources for B vitamins
8. **START** Taking wholefood vitamin E complex
9. **START** Taking boron
10. **START** Taking cod liver oil

PHASE 3: Advanced Nutrients

11. **START** Taking taurine
12. **START** Taking silica / diatomaceous earth
13. **START** Taking iodine from food

PHASE X: Deeper Support

14. **START** Donating blood
15. **START** Managing histamine levels/reactions
16. **START** Releasing emotional stress
17. **START** Strengthening the bioenergetic field
18. **START** Getting regular sunlight
19. **START** Doing joyful movement

HOW TO GET STARTED

- Begin by gradually stopping the list of items in **PHASE 0 - STOPS**. Just taking this step is likely to make a positive impact, and it's free! :).
- IMPORTANT: It's best to implement the **STARTS** just one at a time. This allows the body to ease in gently and helps you gauge your body's responses more clearly.
- Always begin with a **small amount** and increase slowly to give your body time to adjust to each new addition. Some may need to allow 5-7 days between additions/changes (or more as needed).
- Move at your own pace through **PHASES 1-3** of the **STARTS**. If your body is giving you signs that it isn't ready for a particular supplement, you can always skip it temporarily and return at a later time. Everyone is unique in their response.
- Some will need the additional support of one or more of the **PHASE X** strategies either before or alongside the **STARTS** in order to facilitate healing.
- The RCP is **self-paced**, with no set timeline. Take your time and listen to your body's response to help guide your progress.
- The **PHASES** are also **cumulative** -- when you begin **PHASE 2**, you should still continue following **PHASE 1**, and so on.
- To reap the most benefit from the RCP, it's important to be as consistent and systematic as possible with each step. A measured approach reduces physiological stress, which in turn, promotes healing.
- Keep in mind that the healing journey is not a straight line, and the timeline for healing varies for everyone. There will be hills, valleys, and curves, but as long as you are moving forward, even slowly, it signals that you're moving in the right direction. Keeping a daily journal can be a great way to chart progress as you go.
- FAQs about the **STOPS** and **STARTS** can be found in [Appendix A](#), and many more can be found by following the links throughout this Handbook.

A FEW WORDS ABOUT TESTING

Many choose to begin the protocol without baseline testing; however, for those who would like to learn about their personal mineral dynamics and iron status, we suggest working with an RCP Consultant (RCPC), each of whom is trained to interpret the recommended RCP testing in light of your personal history. Benefits include gaining insight into the origins of your symptoms/health challenges, and receiving a personalized approach to making the RCP work for your unique needs. Having a guide for your health journey provides a solid source of support for moving forward.

For your convenience, we offer a [directory of trained Root Cause Protocol Consultants](#). Services are generally offered via online platforms.

For more on our recommended testing, see our [FAQs for lab tests - HTMA and bloods](#).

We have found that the tests are directionally correct, but they are not absolute. The options for obtaining a more definitive measure of iron stored in tissue are expensive and invasive via liver biopsies and/or specialized MRIs. Tests for measuring bioavailable copper are not commercially available and are only accessible to research laboratories.

Due to this lack of resources for measuring definitive bioavailable copper or iron levels, we have found it valuable to “triangulate” from results based on several blood and hair-tissue markers, as well as overall function and symptoms. This approach is directionally correct, and supports the process of restoring nutrient levels and working towards mineral homeostasis.

The RCPCs are trained to use these results within a comprehensive conversation with you, to help you understand how your stressors have influenced your results. The driving purpose of the RCP is to then correct the oxidative stress that has resulted from these imbalances.

STARTS - Recommended products

Recommended products for each of the **STARTS** can be found via this [link](#).

We have carefully vetted the listed products for quality, purity, and nutrient content to best serve your needs. During the selection process, we look for organic ingredients whenever possible, and a minimum of fillers and other artificial ingredients. Processing methods are also important. Vitamins, in particular, are prone to nutrient degradation, as their molecules are sensitive to light and heat, therefore require gentle processing to retain the wholefood nature of the vitamin. This would apply especially to wholefoods C and E, and cod liver oil.

We try to include a variety of brands, and for each product, we've done our best to provide multiple links (Amazon, iHerb, etc.) to make this easy for you. Wherever possible, we've also included international options in our [suggested products directory](#).

Some of the links use an “affiliate code” and by purchasing from that store, you'll be supporting this organization without any additional cost to yourself.

**Be aware that companies do change formulations periodically, so we recommend checking product labels regularly for updated ingredients, nutrient levels, and dosages that would impact desirability or dosing of the product.*

Please note that these products fall under the scope of the [Medical Disclaimer](#), which you agreed to when you signed up to download the RCP Handbook.

There are many products out there from which to choose, and it's impossible for us to research each and every one. If you decide to use products that are not listed in the [suggested products directory](#), it's possible that they may not work as well as those we have vetted. To view some guidelines for off-list product selections, see [Handbook FAQs](#)

If any of the product links are out of date, or if you would like to suggest a product for consideration on this list, please [contact Customer Service](#).

RCP PRODUCT KITS

For your convenience, several companies in various regions have created RCP Product Kits. These kits vary in which supplements they include, so be sure to check against the **STARTS** to see which ones will need to be purchased elsewhere. Please know that you do not HAVE to get a kit in order to get started, and you are welcome to order products individually, from whichever source or sources are available to you. Please note that many of our suggested vendors sell other products that we DO NOT recommend, so we suggest that you stick to the product lines we link to, or make sure it's within the RCP product areas on their websites. If you aren't sure if a product is OK for use with the RCP, please contact the product vendor to confirm before you purchase.

You should also not be starting all items from within a kit at the same time. We recommend implementing just one step at a time, starting with a small amount and slowly increasing towards the full dose, allowing time for the body to adjust in between each addition/increase. For more detail, see [How to Get Started](#).

Kit options may be reviewed [here](#).

The RCP steps - in depth

STOPS (PHASE 0)

Each of the listed **STOPS** has been selected because of its adverse impact on bioavailable copper. Eliminating these factors enables the body to restore, renew and rebuild the level of active ceruloplasmin in order to harness oxygen so energy production can be optimized.

Upon reviewing this list in detail, many will identify multiple items on the **STOPS** list that will need to be stopped, others may already have stopped some or all of them. Just start where you are, and gradually work your way through as you can.

They don't all have to be done in one day!

If you have many items to be stopped, it's best to take it slowly so your body has time to adjust gradually. It's fine to work your way through the **STOPS** while also slowly implementing the **STARTS**. It's a process, not a race, and a gradual reduction may provide a less stressful option. Use your own judgement on timing, as it will be different for everyone.

Once these lifestyle changes are made permanent, the **STOPS** will continue to support your copper metabolism and mineral balance. This will go a long way to help your body meet changing needs and challenges over time.

For more about the **STOPS**, we recommend viewing one or more of our free [webinar replays](#).

STARTS (PHASE 1): FOUNDATIONS

1) **START** Taking adrenal cocktails

Background: The adrenal cocktails (ACs) provide electrolyte support which helps to nourish the adrenal glands. The nourished adrenals support the liver in making more ceruloplasmin (bioavailable copper). Since much of the body's vitamin C is stored in and used by the adrenal glands, wholefood C also plays an important role in the ACs.

For more about adrenal cocktails, we recommend viewing one or more of our free [webinars](#) and/or [FAQs](#).

Where to start: Start slowly with the 'original' recipe listed [here](#) with orange juice, cream of tartar and salt. If you can't use any of those ingredients, there are alternatives listed too. Some who are extra sensitive may wish to start with $\frac{1}{4}$ - $\frac{1}{2}$ recipe to let the body adjust gradually.

Ideally, these should be taken away from food. We suggest aiming for around 10am &/or 2pm, if possible. However, if your schedule makes it difficult to take them at these times, then take them when you can, as it's better to take them with food than not at all. Find what works best for your schedule.

In the long term: Most people start with one AC per day, and eventually work up to two per day after a few weeks or months, depending on how their body responds. Some will experiment and find that they respond well to more than two per day, and others find they don't need them every day. This is a very personal experience, as is finding the recipe that works best for you.

Recommended products: There are some pre-made options which may help you with convenience, but you may find that one of the DIY recipes works perfectly:

- DIY recipe options are within the [RCP website adrenal cocktail FAQ](#)
- Recommended pre-made adrenal cocktails are within the [suggested products directory](#).

****Remember, we suggest adding or adjusting only ONE item at a time to help you more clearly see how your body responds to the new addition.***

To view our recommended products and access links for purchase, see our [suggested products directory](#).

2) **START** Taking mineral drops or applying transdermal magnesium

Background/General information:

Both of these options offer a way to start introducing magnesium and/or other trace elements to your routine.

Go slowly with whichever choice you make, you only need to pick ONE or the other option to begin with, and at a later time, you can consider additional choices. We share both here within this section as these are typically well tolerated and accessible to the majority of people.

Mineral drops are generally derived from dehydrated sea water or salt lakes and are rich in magnesium and smaller quantities of naturally occurring minerals including potassium, sodium, and trace amounts of 70+ other elements. They are an excellent source of chloride, which is one of the main electrolytes. Chloride performs many roles in the body and must be constantly replenished. It combines with hydrogen in the stomach to make hydrochloric acid, a powerful digestive enzyme responsible for the breakdown of proteins, absorption of minerals, and activation of intrinsic factors, which help to absorb vitamin B12. For more detail, sign up for our free [Feb 2021 webinar replay](#).

Where to start: Begin with anywhere from 1 drop to a few drops in a glass of filtered water and slowly increase to ½ - 1 tsp. or more as desired, to drink at convenient intervals. Alternately, add ½ - 1 tsp to 1 quart (or approx 1L) of filtered water to sip on throughout the day. Mineral drops are not temperature sensitive and can be added to soups or other foods and beverages. They are also great for re-mineralizing distilled or RO water; however, once remineralized, additional drops must be added to boost the mineral content of the water to supplemental strength (see product label for suggestions).

In the long term: With time, most people find that ½ - 1 tsp (2.5 - 5mL) in filtered drinking water is a suitable dose, and many will sip throughout the day. Some choose to split their daily amount into portions morning and night (or at other intervals to suit their routine). Find the way that works best for your schedule to get a consistent amount daily.

Recommended products can be found [here](#). Be sure to check product labels to confirm you're getting the right one.

Transdermal magnesium can also be an effective way to absorb magnesium, either by applying directly to the skin, or adding to baths/foot soaks.

Forms of magnesium available for transdermal use. Just pick ONE to start, and more can be added later:

- **Magnesium chloride/magnesium flakes** - often used in magnesium “oil” or in lotions or creams designed to be used on the skin. Great to use in baths or foot soaks for long-term recovery.
- **Epsom Salts/magnesium sulphate** - often touted as a ‘detox’ magnesium. Suitable to support the body’s healing and recovery. The sulphate can help the liver complete metabolic tasks that are not working effectively. Great to use in baths or foot soaks.
- **Magnesium lotions or creams** - generally made with either magnesium chloride or magnesium sulphate. Be especially aware of added ingredients that may not be desirable.

Where to start: Choose ONE of the above options to start. If using a spray, lotion or ‘magnesium oil’ product on the skin, it is suggested to begin with just a small amount each day, and with time, you can slowly increase. Baths/foot soaks may be taken as often as desired, *starting with a partial (¼ to ½) recipe at first*, and letting your body’s response guide the timing and frequency.

Recipes for the baths/foot soaks are available in the [Handbook FAQs](#).

***BONUS:** When preparing a bath or foot soak with either magnesium flakes or Epsom salts, you can add baking soda (sodium bicarbonate) and borax (a source of boron), which are both magnesium cofactors, to enhance absorption and amplify the benefits of the magnesium.

More on Magnesium cofactors can be found in the [Handbook FAQs](#).

In the long term: With time, increase the amount of transdermal magnesium to an amount that feels right to you. Some people only ever use a small amount and some will use it as a way to build up their body’s tolerance to magnesium and then add or switch to oral forms (later in Phase 1).

Recommended products can be found [here](#); however, there are many products world-wide that are suitable. If choosing from other alternatives, check for the following:

- Does it contain any items from the ‘**STOPS**’ list?
- Does it contain added ingredients, such as chemicals, that we wouldn’t want our bodies to absorb?

****Remember, we suggest adding or adjusting only ONE item at a time to help you more clearly see how your body responds to the new addition.***

To view our recommended products and access links for purchase, see our [suggested products directory](#).

3) **START** Taking wholefood vitamin C (WFC) complex

Background: The wholefood vitamin C (WFC) complex provides the tyrosinase enzyme at the core and two copper atoms inside that. This is the complete, bioavailable form of vitamin C that our body is designed to run on. The copper and bioflavonoids work synergistically to provide the functions of the wholefood vitamin C complex, which offers antioxidant properties and plays a key role in iron management.

For more about wholefood vitamin C's role in the body, sign up for the [June 2021 free webinar replay](#). There are additional webinars relating to vitamin C, including why we don't recommend ascorbic acid in the webinar archive [here](#).

Learn more about the common types of vitamin C in our **FAQs [here](#) - including the difference between 'wholefood vitamin C' and the majority of vitamin C products available for purchase.*

Where to start: Start with a small amount of ONE option, and increase slowly. Most people begin with no more than 400mg per day; if you are sensitive to changes, you may wish to start at 100mg or less per day.

Wholefood C may be taken at any time of day either with or without food. It is fine to combine your daily WFC intake with your adrenal cocktails. The Jigsaw Health adrenal cocktail option already provides 400mg of WFC per cocktail, so taking more separately is optional.

In the long term: Most people eventually build up to between 400mg - 800mg per day of wholefood vitamin C. This increase may be done over weeks or, more likely, months, depending on how your body responds. There's no need to rush.

Recommended products can be found [here](#). Be sure to check product labels to confirm you're getting the right one. Since the wholefood C complex is easily degraded into ascorbic acid, it's important to stick with vetted products that use gentle processing methods to retain the integrity of the whole vitamin molecule.

You may find that the first product you try may not be your 'perfect' match, but it's ok to just start with one and try others later if needed. This is something you can experiment with over time. A slow and steady approach works best in finding the right fit.

***Remember, we suggest adding or adjusting only ONE item at a time to help you more clearly see how your body responds to the new addition.**

To view our recommended products and access links for purchase, see our [suggested products directory](#).

4) **START** Taking magnesium

Background: Magnesium is a foundational mineral that is required for thousands of enzyme reactions, and is essential for a healthy metabolism. It is naturally calming and plays an important role in digestion, blood sugar management, cardiac health, and much more. It also partners with copper to create cellular energy and manage iron. With all of the body's demands, magnesium is rapidly depleted, especially during times of stress, and must be replenished daily.

To learn more about the importance of magnesium, sign up for the free [April 2021 webinar replay](#). There are additional webinars relating to magnesium in the archive [here](#).

**Please note that it is optimal to be supporting the body with adrenal cocktails (ACs) before adding magnesium to your routine.* Most people who start the RCP have experienced sufficient stress to put a strain on the adrenal glands, which are the body's stress response organs. This impacts the sodium/potassium balance in the cells, which may not be apparent via standard blood testing but is better reflected in the HTMA. Adding magnesium without the adrenal cocktails can amplify the cellular electrolyte imbalance and create further fatigue. The ACs ensure that the adrenal glands receive the nourishment they need to prepare for the energizing impact of magnesium.

There are three co-factors, bicarbonate, B6 and boron, that promote absorption and utilization of magnesium. Learn more about magnesium cofactors in the [Handbook FAQs](#).

Where to start: Start with a small amount of ONE option, and increase slowly. Over time, you can likely add in multiple types of magnesium. You may need to build up to the optimal dose over the course of several months, based upon bowel tolerance and overall response.

Many people find magnesium supplements are best taken around food. This is likely because digestive enzymes secreted by the body while eating can help to break down magnesium tablets/capsules along with food. There's no hard-and-fast rule here that you MUST have it with food, and some feel fine with it taken whenever they can fit it in. The exception is magnesium bicarbonate water (aka mag water), which is generally suggested to be consumed away from food, due to its alkaline nature.

Magnesium glycinate tends to be relaxing so the recommendation is to take it in the evening, while magnesium malate is energizing, so it's better in the morning; however, for some the opposite is true. It is suggested that you trial different magnesium types to see how your body responds to the different forms at different times of day.

Dose: The optimal dose is ~5mg of “elemental” magnesium per pound of body weight, per day (or ~10mg of magnesium per kilogram of body weight, per day). This dosing formula was originally created by Mildred Seelig, PhD. Some need more magnesium than this, at least for a time, so you can experiment to find the amount that works best for you. For more about how much elemental magnesium is in your product, see the [Handbook FAQs](#).

In the long term: Using the above dosing guideline, if you weigh ~200lbs (or ~90kg), your eventual goal is 1,000mg per day using any combination of magnesium rich foods, oral magnesium supplements and transdermal magnesium.

Forms of Magnesium:

Most forms of magnesium are of value to the body, but not all forms work well for everyone. The important thing is to find the form (or forms) that work well for you. This may require a careful, systematic trial of several types, starting with a small amount to test for compatibility before increasing slowly to your ideal dose (see above).

We encourage taking multiple forms of magnesium to take advantage of the varying benefits of each. **Magnesium malate** and **magnesium glycinate** are listed here due to their high absorbability and because they contain higher levels of elemental magnesium than other chelated forms. They are also well-tolerated by most. Magnesium water (**magnesium bicarbonate**) is a very bioavailable form, and provides bicarbonate, a cofactor to aid in magnesium absorption ([see Handbook FAQs](#)).

*We suggest not starting out with a magnesium chelate complex that contains multiple forms of mag. It's best to sample just one form at a time until you learn which ones work well for you. Learn more about the forms of magnesium within our [General FAQs](#).

Caution: Magnesium citrate (also listed as magnesium carbonate with citric acid) is NOT a recommended form of magnesium due to the interference of citric acid on the action of ceruloplasmin. Ascorbate, aspartate and glutamate are also not recommended. See [General FAQs](#).

Recommended products can be found [here](#). Be sure to check product labels to confirm you're getting the right one. If choosing from other alternatives, be sure there are no **STOPS** in the ingredients list.

Foods rich in magnesium include pumpkin and sunflower seeds, stabilized rice bran, fatty fish, seaweed, a variety of nuts, legumes and whole grains, dark, leafy greens and dark chocolate. For those seeking to repair a calcium-magnesium imbalance, see the [Handbook FAQs](#).

****Remember, we suggest adding or adjusting only ONE item at a time to help you more clearly see how your body responds to the new addition.***

To view our recommended products and access links for purchase, see our [suggested products directory](#).

5) **START Eating grass-fed organic beef liver**

Background: Beef liver provides a balance of copper and iron that is closest to that found in the human liver and is an excellent source of retinol. Both copper and retinol are essential for regulating iron in the body. Beef liver also provides the ideal ratio of copper to zinc and is a good source of B vitamins, especially B12. Grass-fed beef liver is also a source of intrinsic factor to help with B12 absorption. The emphasis on organically raised, grass-fed, pastured animals is due to the advantage of eating grasses from sun-drenched copper-rich soils that are not depleted due to chemicals. The copper is then passed on to the animal, and eventually, to the consumer. More about beef liver can be found [here](#). Sign up for our beef liver webinar from August 2021 [here](#)

Where to Start: Begin with a small amount of fresh, organic, pasture-raised and/or grass-fed beef liver, and gradually increase to one 4 - 6 oz. portion per week. Fresh beef liver is considered a superfood due to the concentration of nutrients it contains. Eating it fresh is the optimal means of accessing all the good that this food offers. If beef liver is not available to you, or if you find it too powerful at first, you may start with a small amount of a desiccated beef liver supplement and raise slowly to the full dose described below, until your body has adjusted to that, at which time switching to fresh liver is preferred.

Dose: One 4 - 6 oz. (~110-170g) serving of fresh beef liver per week. Since fresh liver can be energizing, we suggest taking it earlier in the day, preferably alongside a fatty meal for optimal nutrient absorption, but it's fine to choose whatever time works best for you.

If starting with a desiccated beef liver product, you will need to slowly work up to enough capsules (or powder) to reach a dosage of 4,000-6,000 mg to approximate the nutrient value in a 4-6 ounce serving of fresh beef liver. The dosage suggested on the product label (typically 3,000 mg) will not be sufficient to achieve this goal, so the number of capsules will need to be increased accordingly. Your daily dose may be spread out between 2-3 meals.

Recommended products: Check local grocers, meat markets, or farmers markets to source the best quality organic, pasture-raised, grass-fed beef liver you can find. There are also companies found online that can ship to your door. Suggestions can be found in the [Handbook FAQs](#).

Our desiccated beef liver product recommendations can be found [here](#). Be sure to check product labels to confirm you're getting the right one. If choosing from other alternatives, it's important to choose those that are undefatted, organic, pasture-raised and/or grass-fed, and either freeze-dried or low-temp processed to retain the nutrient value.

****Remember, we suggest adding or adjusting only ONE item at a time to help you more clearly see how your body responds to the new addition.***

To view our recommended products and access links for purchase, see our [suggested products directory](#).

STARTS (PHASE 2): SUPPORTING NUTRIENTS

6) START Eating organic ancestral whole foods

The goal with this step is to start being more aware of what you eat. It's important to understand that processed food by virtue of its preservatives and synthetic ingredients has known properties of creating advanced glycation end products (AGEs). These byproducts of food processing are highly inflammatory and destabilize the digestive system. Furthermore, AGEs are known to block the doorway that allows for copper uptake. This is rarely documented in dietary research circles. AGEs are a metabolic gateway to all forms of chronic disease.

In general, we advocate a nutrient-dense ancestral diet, with a mix of **high** fat, **moderate** protein, and **low** carb* and includes all food groups. This would include traditional foods such as bone broths, fermented foods, organ meats and nose-to-tail eating, whole grains, and raw dairy, using preparation methods which are designed to increase digestibility and maximize nutrient value. It also utilizes unrefined sea/rock salts, which provide a full spectrum of minerals rather than processed, iodized table salt that consists of isolated sodium.

**Low carb is intended here to mean low in refined carbohydrates. Fruits, vegetables and whole grains are all fine, traditional options.*

For more about salt, see [Handbook FAQs](#).

As a whole, instead of processed and packaged, aim for fresh, local, organic, seasonal, grass-fed, pasture-raised, wild-caught, etc. Where possible, buy your food at a local farmers market and/or shop only on the outside aisles of the supermarket.

In making food choices, be aware that only animal-sourced foods rich in fat can provide the preformed Vitamin A as retinol that we need to load copper into the Ceruloplasmin protein. The richest sources of retinol are beef liver and other organs plus cod liver oil, as well as eggs, butter, cream, meats and fatty fish. Animal-based retinol is the active form of Vitamin A and is the easiest form for our bodies to assimilate. Plant foods do contain provitamin A as beta carotene, but it must be converted to retinol in a complex process in order to be utilized by the body, and is considered to be the weakest form of Vitamin A.

- For more detail, see [14 Differences Between Retinol and B-carotene](#)
- To learn more about retinol's role in the body, you can view our [May 2021 webinar](#), and access our webinar archive [here](#).
- Start the transition away from processed foods by swapping out one item at a time. Read the ingredient list on the product labels:

- Are there any **STOPS** on the list?
- Are there any items you can't pronounce or don't recognize? If the ingredients on a label don't read like an ingredient list on a recipe, then it's likely more processed than you realize.
- Numbers on labels often represent preservatives, colours or other stabilising additives which may contribute to AGEs. There are plenty of resources online to learn more about labels - now is a great time to find them.
- For more about transitioning to an ancestral whole foods diet, watch our ["Make the Switch" webinar](#) and other [webinars in the archive](#) which connect to diet.

Don't think about this as a "diet", or get hung-up on trying to eat perfectly! Start slowly with any changes and remember, the RCP is about **direction**, not **perfection**.

Resources for learning more about nutrient-dense ancestral eating:

- The [Weston A Price Foundation](#) for articles relating to the Wise Traditions diet
- The [Nourishing Traditions](#) blog
- [The Ancestral Diet, Eat Your Way to Health](#) facebook page
- Cate Shanahan's [Deep Nutrition](#).
- For tips on where to find ancestral whole foods, see the [Handbook FAQs](#).

7) **START** Taking Mother Nature's sources for B vitamins

Background: B vitamins are essential components in most major metabolic reactions. We recommend wholefood sources for obtaining B vitamins. Synthetic B's do not perform the same as Mother Nature's rich B vitamin foods, and lack the enzymes and co-nutrients that help with assimilation. The most important of these is copper, which is required for B vitamin activation. (For the best source of B12, beef liver is offered in [Start # 5](#))

Where to start: Our recommendations for B vitamin foods are **bee pollen, stabilized rice bran and non-fortified nutritional yeast**. Start with just ONE option and add the others one at a time. Ideally, you'll eventually add in all 3 sources.

Bee pollen - provides B vitamins and a variety of other micronutrients, including bioavailable copper, in a form that's very biologically active and easy for the body to use. It's also a source of quercetin, a natural iron chelator, and exhibits antifungal, antimicrobial, antiviral and anti-inflammatory activity.

Dose: Start with a small amount and slowly build up to ½ - 1 tsp daily. If concerned about compatibility/allergies, start with just one granule and slowly increase to let the body adjust gradually. Bee pollen can be energizing, so we suggest taking it in the early part of the day, either with or without food.

Recommended products can be found [here](#) for those without local resources. However, using bee pollen from a local source is preferred, and a call to your local bee keeper or visit to a local farmers market may turn up something suitable.

**By the way, a bee makes ½ tsp of bee pollen in 6 weeks and the lifespan of a bee is 6 weeks. So be grateful for the bees!*

Stabilized Rice Bran (SRB) is the nutrient-dense outer husk of the rice grain, and a good source of magnesium, potassium and several B vitamins. It has undergone a stabilizing process to help maintain its freshness. SRB (as well as most nuts, seeds, legumes and grains) contains high levels of phytic acid, which can bind to minerals in the digestive tract and make them unavailable to the body. Phytic acid has been isolated into a supplement known as IP6, which has documented iron-binding abilities. While SRB does have some iron binding capacity, we are mainly interested here in its offering of B vitamins and other nutrients. For more intensive iron binding, see the [Handbook FAQs](#).

Dose: - Start with ¼ tsp and slowly increase over time to 1-2 tsp daily, taken either with food for the B vitamin benefit or away from food for both the B vitamins and some iron binding. Some like to mix into filtered water and drink.

Recommended products can be found via [this link](#). Be sure to check product labels to confirm you're getting the right one.

Nutritional Yeast is a dried, deactivated form of *Saccharomyces cerevisiae* that naturally contains many B-complex nutrients. We want to avoid those products that have been fortified with synthetic B vitamins.

Dose: Start with ¼ tsp and work up slowly to approximately 1T daily; some choose to take more at their own discretion. Can be used as a condiment or in recipes.

Recommended products can be found [here](#). Be sure to check product labels to confirm you're getting the right one. If choosing from other alternatives, be sure to use only NON-fortified products, as described above.

****Remember, we suggest adding or adjusting only ONE item at a time to help you more clearly see how your body responds to the new addition.***

To view our recommended products and access links for purchase, see our [suggested products directory](#).

8) **START** Taking wholefood vitamin E complex

Background: Vitamin E is a fat-soluble vitamin and potent antioxidant that helps prevent damage to cells and tissues caused by free radicals. The wholefood vitamin E complex includes 4 tocopherols, 4 tocotrienols and selenium at its core. Wholefood molecules are easily degraded by processing, which is why we prefer to get this from foods. Wheat germ oil and red palm oil are considered top sources of wholefood E.

*Please note that wholefood vitamin E is designed to support regulation of blood viscosity.

Dose: Take 1 serving daily. Dosages vary between products, but the goal is to ensure you're getting *some* wholefood vitamin E each day; the specific amount is not important. Wholefood E should ideally be taken with a fatty meal for optimal absorption.

Recommended products can be found via [here](#). Be sure to check product labels to confirm you're getting the right one. If choosing from other alternatives, always check with the manufacturer to be sure that the product is in its wholefood form and contains the 4 tocopherols, 4 tocotrienols and selenium that make up the wholefood E complex.

****Remember, we suggest adding or adjusting only ONE item at a time to help you more clearly see how your body responds to the new addition.***

To view our recommended products and access links for purchase, see our [suggested products directory](#).

9) **START** Taking boron

Background: Boron is an important trace mineral that plays a key role in enhancing liver function. It helps to keep copper and iron in proper balance, and is a co-factor for magnesium absorption (See more about co-factors in the [Handbook FAQs](#)). Boron also provides antioxidant and antifungal benefits, and supports bone and joint health along with hormone balance.

Where to start: Start slowly! A small amount goes a long way towards your body's response. Be aware that oral supplementation with boron can elicit a detox reaction for some.

Dose: 1-3 mg per day. Boron can be taken at any time of day, either with or without food.

Three options for supplementing, just pick ONE!

- Choose ONE boron supplement from the [suggested products directory](#) and follow instructions on the product label to provide 1-3mg of boron per day.
- Take a magnesium bath or foot soak which includes boron in the recipe. Start slow and let your body's response guide the frequency.

See more on mag baths and recipes in [START # 2](#).

- Using only a tech-grade brand of borax to ensure quality and purity such as [this](#) one. A concentrated solution may be made by dissolving 1 rounded teaspoon tech-grade borax to 1 liter of water. One teaspoon of the borax/water solution provides approximately 3mg boron.

Recommended products can be found [here](#). Be sure to check product labels to confirm you're getting the right one. If choosing from other alternatives, check to be sure there are no **STOPS** on the ingredient list.

Food sources of boron include: prunes, raisins, dates, apples, pears, avocados, almonds, peanuts and other legumes.

****Remember, we suggest adding or adjusting only ONE item at a time to help you more clearly see how your body responds to the new addition.***

To view our recommended products and access links for purchase, see our [suggested products directory](#).

10) **START** Taking cod liver oil

Background: Cod liver oil (CLO) is a valuable source of naturally occurring vitamin A (as retinol), which is crucial in activating bioavailable copper. The omega-3s in CLO are also beneficial, but the naturally occurring vitamin A is what we're really seeking to get. You also get retinol from beef liver and other foods in the ancestral diet.

Where to start: Using the chart below, start with a small amount and slowly build up to the full dose. Cod liver oil should ideally be taken with a meal for best absorption, but if that doesn't work with your schedule, it's OK to take it separately.

When assessing the starting dose for children, use your judgement as to your child's size and needs. Start small and build up - if they like it and ask for more, they may benefit from steadily increasing. Children are naturally intuitive and will often ask for more when their body likes a nutrient.

Dose:

See FAQ for more details.	Suggested eventual cod liver oil intake (1 IU retinol = 0.3 mcg RAE)	Suggested dosing (based on product values as of Aug 2021)
Adults ▼ (Upper limit across all dietary sources 3000mcg / 10,000 IU of vitamin A)	Work up to 900mcg / 3,000 IU of vitamin A per day.	<ul style="list-style-type: none"> • ~3/4 tsp (3.75 mL) of Rosita's liquid • ~7 x Rositas softgels • 4 x Jigsaw Health softgels • ~4/5 tsp (4 mL) Jigsaw Health liquid
Kids ▼ (Upper limit across all dietary sources between 600 µg/day or 2000 IU/day (1-2 year olds) through to 2,800 µg/day or 9334 IU/day (14-18 year olds)	Begins at 400mcg / 1,333 IU (for 1-2 year olds) and increases to 900mcg / 3,000 IU as they age. <i>See note in 'where to start', above, and FAQ for more details.</i>	<ul style="list-style-type: none"> • 1 mL Rosita's liquid is 234 mcg/ 780 IU • 1 x Rositas softgel is 126 mcg /420 IU • 1 x Jigsaw Health softgel is 266 mcg / 889 IU • 1 mL Jigsaw Health liquid is 220 mcg/ 730 IU
Lactating women ▼ (Upper limit across all dietary sources 3000mcg / 10,000 IU of vitamin A) <i>See also CLO caution notes below for pregnant women</i>	Based on RDI, could build up to 1,300mcg / 4,333IU	<ul style="list-style-type: none"> • 1 tsp (5mL) of Rosita's liquid • ~10 x Rositas softgels • ~5 x Jigsaw Health softgels • ~6 mL Jigsaw Health liquid

▼ See the [US Vitamin A Fact sheets \(inc RDAs\)](#) or the [Australian and New Zealand Reference Values](#) for more information on measuring retinol, references, etc.

Caution:

- Not all cod liver oils are equal, and processing methods are especially important to consider when selecting a cod liver oil. Ancient traditional practices for purifying cod liver oil for consumption used gentle filtration methods to retain the maximum nutrient value of the oil. Many manufacturers today process their cod liver oil using high temperatures and aggressive purification methods, which degrade the retinol content. They then add in synthetic A & D in order to restore nutrients that were lost during processing. This results in an inferior product that is no longer a whole food. Our recommended brands are vetted to confirm the gentle processing methods that retain the maximum nutrient value of the oil. The ratio of A to D is also important and should ideally be a minimum of 10 to 1 in favor of retinol.
- Be aware that cod liver oil may have a natural propensity to thin the blood.
- Some women opt to stop CLO around two weeks prior to delivery. It may be worth discussing with your healthcare provider or RCPC.

For more on cod liver oil, see [Handbook FAQs](#). For more about retinol, sign up to view our free [“Reflection on Retinol” webinar](#). Other webinars may be found in our [webinar archive](#).

Recommended products can be found [here](#). All have been vetted for quality and nutritional integrity. Be sure to check product labels to confirm you’re getting the right one. Since retinol and vitamin D are easily degraded by aggressive processing, it’s important to stick with vetted CLO products that use gentle filtration methods to retain the naturally occurring vitamins.

****Remember, we suggest adding or adjusting only ONE item at a time to help you more clearly see how your body responds to the new addition.***

To view our recommended products and access links for purchase, see our [suggested products directory](#).

STARTS (PHASE 3): ADVANCED NUTRIENTS

11) **START** Taking taurine

Background: Taurine is a sulfur amino acid that supports liver copper metabolism. It is critical for the synthesis of bile/bile salts, which aid in the digestion of fatty acids and support retinol absorption. Retinol, in turn, optimizes ceruloplasmin. Taurine also calms the stress response by facilitating the production of the neurotransmitter GABA. In ideal situations, we make at least some of our own taurine, but a body lacking key minerals may not produce enough, and children require it as they grow.

Taurine is diverse in how it supports our bodies. If you would like to read more, studies such as [‘Effects and Mechanisms of Taurine as a Therapeutic Agent’, Schaffer and Kim, 2018](#) are a great starting point.

We recommend getting taurine from foods as much as possible. It is highest in seafood, red meats and organ meats, and the dark meat of chicken and turkey, with smaller amounts in dairy. We can also consume cysteine in foods like eggs, which we then use to make taurine. Those who take magnesium taurate are already getting a source of taurine.

Dose: For those who would like additional taurine, supplemental options are listed below. Start with a small amount, and work up slowly to 500mg per day. Taurine can be taken at any time of day, either with or without food.

Caution: Taurine supplements are not generally recommended for those who are sulfur-sensitive.

Recommended products can be found [here](#). Be sure to check product labels to confirm you’re getting the right one. If choosing from other alternatives, be sure to check that there are no **STOPS** on the ingredient list.

****Remember, we suggest adding or adjusting only ONE item at a time to help you more clearly see how your body responds to the new addition.***

To view our recommended products and access links for purchase, see our [suggested products directory](#).

12) **START Taking silica / diatomaceous earth**

Background: Diatomaceous earth (DE) is a natural product mined from the earth, consisting of fossilized remains of tiny, aquatic organisms called diatoms, and is composed of 80-90% amorphous silica. Benefits of DE include serving as a parasite desiccant and digestive tract cleanser, stimulating collagen to provide support for bone, joint and connective tissue, helping to bond to metals such as aluminum, and serving as a catalyst for the activity of copper. Each of these benefits lowers oxidative stress and reduces the demands on ceruloplasmin, ultimately allowing copper to improve iron transport and recycling. See [Handbook FAQs](#) for more about DE.

**Diatomaceous earth is for those who are well-established on the RCP. Since it can serve to bind minerals, the user should have a solid mineral foundation before using. There may be mild detoxification symptoms when starting.*

Where to start: Start with a small amount (e.g. 1/8 tsp), taken away from food (at least 1 hour before or 2 hours after) with plenty of fluids, and increase slowly.

Dose: Over time, build up to 1 tsp, or more as tolerated. Take daily in the morning or at night, away from food, medications and other supplements.

Cautions:

- Taking periodic breaks is suggested but not required. Listen to your body for guidance
- Be mindful when using DE not to breathe it in, as it can irritate the nasal passages and/or lungs. The dust can also be irritating to the eyes.
- DE should not be used while pregnant or breastfeeding, as the resulting toxins may be transferred to the baby. We also don't want to interfere with any nutrient downloads to the fetus during this time.

Recommended products can be found [here](#). If not using the suggested brands, aim for food-grade products you may be able to source locally.

***A note on silica:** While silica in foods or in supplement form can impart some of the benefits listed above, it does not share DE's gift for removing parasites, which are a major drain on copper. For those who feel they are not yet ready for DE or who wish to employ the benefits of silica without taking DE, whole grains and the herb horsetail offer the highest levels, although DE is by far the greatest source and would have the largest impact.

****Remember, we suggest adding or adjusting only ONE item at a time to help you more clearly see how your body responds to the new addition.***

To view our recommended products and access links for purchase, see our [suggested products directory](#).

13) **START** Taking iodine from food

Background: Iodine is a trace mineral that supports thyroid function. A liver that's loaded with excess unbound iron cannot make the conversion from T4 to T3 well. The body's built-in plan to keep iron in circulation requires the action of copper via ceruloplasmin and its ferroxidase enzyme function. The conversion of iodide to iodine is also copper dependent.

Iodine serves a beneficial role in a body lacking bioavailable copper. The reason iodine works is because of its ability to mimic ceruloplasmin's function of converting ferrous (reactive) iron to ferric iron so it can be bound to proteins. However, this is merely a coping strategy for a body that is low in functional copper. Because this is not the intended function of iodine, it has downstream ramifications:

- It masks the lack of functional copper, which is the body's natural iron manager.
- It creates a constant need for more iodine over and above the body's needs.
- As long as copper is deficient, iodine will remain low as well.

The RCP takes a deeper approach by supplying the body with retinol and wholefood C as well as other key nutrients needed to raise ceruloplasmin, so iron can be moved out of the liver, the conversion of thyroid hormones can take place as needed, and iodine levels can be restored naturally through diet. See [Handbook FAQs](#) for more about iodine.

Prerequisite: It is preferred that iodine come from foods only, as supplementation can force detox, which many lack the energy to handle. Please focus on adding iodine rich foods to your diet, such as kelp, seaweed, scallops, cod, eggs and cranberries (from iodine rich growing areas).

Where to Start: *Just a small amount needed - 15-20mcg - the bulk of it is used for thyroid. We don't need to eat much, in order to get enough.*

Dose: 1 serving per day of an iodine rich food. Dosages vary between each suggested food, but the goal is to ensure you are getting *some* amount of iodine from a wholefood source each day as a part of your ancestral diet; the specific amount is not particularly important. Seaweed can be taken at any time of day, either with or without food.

Recommended products can be found [here](#). Be sure to confirm you're getting the right one. You may also try seeking local options for clean sources of sea vegetables.

****Remember, we suggest adding or adjusting only ONE item at a time to help you more clearly see how your body responds to the new addition.***

To view our recommended products and access links for purchase, see our [suggested products directory](#).

STARTS (PHASE X): DEEPER SUPPORT

These “X-Factors” are non-nutritional strategies that are just as important as the nutritional ones. They are tools for allowing the body to open up towards its optimal healing potential, and can be of special value for those who are feeling “stuck” in their progress. These include both intervention strategies and lifestyle changes that can be introduced whenever you feel ready. They don’t need to be done in any order, and you needn’t do all of them. They are there to offer potential missing pieces to your overall health goals. Do what feels right to you at the time, and revisit the rest later.

14) **START** Donating blood

When magnesium and bioavailable copper are lacking, iron is not properly recycled into new red blood cells to circulate oxygen throughout the body. Instead, the excess iron gets stored in tissues. This dysregulation causes systemic oxidative stress, inflammation and symptoms of dis-ease. Implementing regular blood donations is the most efficient way to relieve the burden of the excess, unbound iron and “jumpstart” the body’s “iron recycling system”. For men and post-menopausal women, every 3 months is recommended; for women still cycling, twice a year. You’ll be donating “whole blood”, not platelets, plasma, or “power-red” donations. Some may feel ready to start donating immediately, even before beginning Phase 1. Others will implement most or all of Phases 1 - 3 first.

**Please consider your situation before choosing to donate; if feeling ill or experiencing significant adrenal fatigue, it may be best to wait until the body feels stronger before donating. If uncertain, discuss this with your RCP Consultant during a review of your situation as part of a consultation.*

For those who are unable to access or qualify for blood donations, ask your doctor to prescribe “therapeutic phlebotomies”. Alternatively, look for a private phlebotomist in your area or enlist a friend or family member who is trained in phlebotomy. Additional suggestions can be found in the [Handbook FAQs](#). If these options are not unavailable to you, please also see the [Handbook FAQs](#) for suggestions on gentle RCP-approved iron binders.

15) **START** Managing histamine levels/reactions

While histamine activation is part of the body's natural immune response, overactive histamine activity is not uncommon in a body under chronic stress. This can lead to the development of reactions to food and/or environmental triggers. Excess unbound iron is a major source of ongoing stress that activates the histamine response and depletes magnesium and copper. One of the functions of ceruloplasmin is to create histaminase enzymes (such as DAO) which break down histamines, hence excess iron and low functional copper contribute to a lack of histamine-degrading enzymes.

Moderating the histamine response occurs naturally when excess unbound iron is reduced and magnesium and copper are raised to healthy levels. Sometimes additional therapies, such as those listed below, are needed to give an assist in moderating histamine reactions while the RCP supports restoration of the mineral deficiencies.

- AllergyTx - ([AAT - Advanced Allergy Therapeutics](#), computer-based system) - typically available in North America.
- NAET ([Nambudripad's Allergy Elimination Technique](#), applied Kinesiology) - available in most countries worldwide.
- [Natural Allergy Treatment](#) - available in Australia.

In the interim, here are a few strategies that can be used alongside the RCP to help moderate the histamine response:

- Nature's Sunshine Histablock
- Desiccated kidney products, such as beef kidney, are a good source of DAO
- Use digestive support with food (e.g. digestive bitters or enzymes, betaine HCL)
- Increase food sources of bioavailable copper (wholefood C, bee pollen, beef liver)
- Take a magnesium/bicarb/borax bath or foot soak ([see here for recipe](#))
- Use techniques such as EFT to reduce the body's "emergency response system", so your copper is not diverted elsewhere - this leaves more copper for making natural antihistamines. (See [START #16](#) for more on EFT)

16) **START** Releasing emotional stress

The mind, body and emotions are so closely intertwined that stress in one dimension can impact the entire organism. The body can be in a heightened emotional state without it reaching our conscious mind, yet it can have a significant impact on our metabolic health. Unresolved emotions trigger the creation of “fears”, which create a relentless “Magnesium Burn Rate”, as the body uses up magnesium to manage stress and feelings of anxiety. This undercurrent of emotional stress can also keep the body in a state of fight-or-flight, which blocks the body’s natural healing channels.

The fight-or-flight state causes the body to divert resources to mitigate stress which increases the burden on our minerals and impedes the body’s ability to regain balance nutritionally. Releasing emotional stress allows the body to engage the “rest and recovery” mode so healing can begin.

While meditation, breathing exercises, gratitude practices and the like can be useful for getting the body out of fight-flight in general, there are other modalities that allow us to dig deeper using focused techniques. Emotional Freedom Technique (EFT) is one such modality which utilizes meridian points to help release emotions/fears. This process helps to remove energy blockages so the mineral balancing process can unfold. Working with a practitioner is highly recommended. Many incorporate this practice into their daily routine for continued support.

Other modalities that allow deeper release at the subconscious level include Emotion Code, Psych-K and EMDR (Eye Movement Desensitization & Reprocessing), among others. Each has a slightly different focus, but the shared impact is to release energetic blocks so the body can activate the innate healing mechanisms. It’s important to find one that resonates with you to get the most benefit.

For more on emotional release and the mind/body/emotion connection, see the [Handbook FAQs](#).

17) **START** Strengthening the bioenergetic field

Pathogenic infection can play a significant role in chronic health conditions. Not only do pathogens live, replicate and thrive in low-pH conditions created by excess iron, they also create a drain on bioavailable copper, which reduces the immune system’s ability to keep them in check. In keeping with a focus on strengthening the host rather than attacking the guest, biomagnetism is our current recommendation for addressing this issue. This non-invasive therapy supports the body by using pairs of magnets to balance the pH in tissues to help the body reduce the pathogenic load naturally.

For more detail, begin with the home page of founder [Dr. Isaac Goiz](#).

18) **START** Getting regular sunlight

We are “light beings” -- and sunlight has a multitude of benefits: it catalyzes the breakdown of vitamin A into its many retinoids which include hormones and nuclear receptors, stimulates the synthesis of natural vitamin D (aka “Hormone D”), resets the circadian rhythm for better sleep, and more. The best times to benefit are early morning and early evening to take advantage of the full-spectrum rays on the skin and eyes, especially without the interference of sunglasses, which alter the spectrum that reaches the eyes.

Our ability to access sunlight varies greatly by location, time of year, weather, etc. Just do the best you can to take advantage of what’s available to you. Some may like to use near Infrared light at times of low sun or if wanting an option for additional support.

19) **START** Doing joyful movement

Joyful movement is an approach to exercise that emphasizes pleasure. This does not need to be formal exercise and can be simple, spontaneous, and ever-changing. Walking, dancing, gardening and gentle stretching as well as yoga and Tai chi are but a few of many options. Exercise releases neurotransmitters and endorphins that elevate mood and impart a sense of well-being, and helps balance stress hormones. It encourages the flow of lymph to help remove cellular waste from the body, and increases the heart rate, which stimulates blood flow to the brain and exposes the brain to more oxygen and nutrients. Being active gives us more energy during the day and helps us sleep better at night.

Taking joyful movement outdoors in a meditative, conscious way fosters a connection to the natural world and its cycles. This can be a powerful healing force, especially when combined with skin-to-ground contact to tap into the subtle electrical charge of the earth’s surface, ideally in open spaces or natural areas and away from industrial areas, high-voltage power lines and cell phone towers. Exposure to direct sunlight brings additional benefits (see [START #18](#)). To the degree that you are able, look for opportunities to incorporate joyful movement into your daily routine.

THE FOUR ROADBLOCKS THAT OFTEN IMPEDE PROGRESS ON THE RCP

Chronic metabolic stressors require a constant energy expenditure, which can create ongoing oxidative stress and put an energetic block on healing channels. While the **STOPS** and **STARTS** detailed in the RCP get the body started on the path to homeostasis, there are certain situations that may require additional attention before deeper healing can begin. The following present the most common of these challenges, and strategies for addressing each one are described in [Phase X](#) of this Handbook. The practices presented there are supportive measures that work with the body rather than aggressive approaches that tax the body's resources. These are important factors to consider if you find yourself struggling to make progress on the protocol. If any of the following resonate with you, please consider the strategies presented in [Phase X](#).

Unresolved emotions

Unresolved emotional issues can be a source of stress in the body. There is a dynamic interplay between the body, mind, and emotions. Chemicals released from the brain during the emotional response to stressful or traumatic events create an undercurrent of stress in the body. This leads to ongoing magnesium loss and puts the body into a fight-or-flight state that exhausts the body's resources and impedes the natural healing channels. Physical symptoms and dis-ease can be very real indicators of disruptions in this triad.

Histamines

Unresolved histamine issues can be a source of stress in the body. Histamine formation is a part of the body's natural defense processes, and is generated by mast cells in response to stress conditions, including the ongoing oxidative stress created by excess iron. Magnesium and copper are needed to create enzymes (DAO) to break down histamines, but they are easily depleted due to stress. Over time, increased food and/or environmental triggers can

become established. When iron is high, and magnesium and copper are low, the histamine response is more easily triggered and less easily downgraded.

Excess iron

Unresolved iron dysregulation can be a source of stress in the body. Since iron is vital to life by carrying oxygen via red blood cells, the body is designed to recycle iron stores in the event of a dietary shortage. Copper, in the form of the ferroxidase enzyme, is the designated escort to get iron to and from where it needs to go to support this process. However, in mammals there are no controlled mechanisms for the excretion of iron. Excess iron intake over and above the body's needs and/or a lack of bioavailable copper to keep iron recycling forces the body to store the excess in cellular iron pools. Over time, these iron stores build beyond the body's ability to manage them, and create cellular dysfunction that disrupts energy flow and depletes magnesium, copper and other key minerals. This also means less iron is available to carry oxygen, leading to oxidative stress, inflammation, reduced energy, and dis-ease.

Pathogens

Unresolved issues with pathogens can be a source of stress in the body. Pathogens have been a part of life for millions of years, and there are many ways we come into contact with them, starting with an inheritance from mother and father at conception, and during pregnancy and birth. Pathogenic infection can play a significant role in chronic health conditions. A healthy immune system will be able to neutralize their impact to the body, but that requires sufficient levels of bioavailable copper, which is depleted by pathogenic activity. Pathogens are also drawn to iron, which creates the conditions that allow them to flourish, so when the body is iron-toxic and bioavailable copper is lacking, the immune system is unable to do its job.

RCP suggested daily schedule

This is a **SUGGESTED** schedule only, and can be easily adapted for varying mealtimes and dietary practices. The dosages listed in this chart represent what people will gradually work up to, NOT where they should typically start.

Quick tips for getting started:

- Print this daily schedule, laminate if desired, and place in a prominent spot where it's easy to see for ready reference until you get the hang of things.
- Please begin by adding just ONE supplement to your routine at a time, gradually adding the others according to suggestions found [in the How to Get Started section](#).
- Keep all RCP supps together in a visible spot as a reminder while building the habit of adding them to your daily routine.
- Set a timer, if need be, to give you the nudge to take your supps.
- Preparation is key: consider using pill pouches, baggies or organizers to separate supps by day or time of day.
- Use the links provided in the "RCP START #" column to skip directly to the desired Handbook section for suggestions about dosage, preferred time of day and whether to take with or without food. However, allow yourself flexibility to make adjustments to the recommendations to fit your needs and schedule.
- Be patient with yourself if your timing isn't perfect – life happens, so just do your best under your current circumstances. Don't stress it!
- Keep a daily journal for tracking your current progress, including dosage changes, reactions to supplements, and changes in your health/symptoms. This is helpful for both current and future reference.

Tips for adapting the Daily Schedule to varying meal schedules, e.g. fasting or intermittent fasting:

- Just because a supplement is shown on the schedule to take at mealtime doesn't mean that it **MUST** be taken with food.
- Beef liver, cod liver oil and wholefood E are fat-soluble and for best absorption should ideally be consumed with a fatty meal; however, it's better to take them when you can than not at all.
- Adrenal cocktails should also ideally be taken away from food, but better to fit them in when you can than not take them at all.
- Diatomaceous earth should be taken away from food.
- Magnesium bicarbonate water can be taken all at once or added to drinking water used throughout the day, but avoid excessive amounts near meal times.
- *Taking daily supps according to your schedule, whatever it may be, will give you best success.*

**Keep in mind that the guidelines offered here in the Handbook regarding when and how best to take each supplement are merely ideals, not hard-and-fast rules.*

Product/food	APPROXIMATE Dosages	RCP START #
With Breakfast		
Trace Mineral Drops	See dosage notes - ideally included throughout day	Start #2
Wholefood Vitamin C (WFC)	~400mg, see dosage notes. if not combined with ACs	Start #3
Magnesium Malate	~200mg, see dosage notes	Start #4
Cod Liver Oil	~900mcg / 3,000 IU, see dosage notes	Start #10
Bee Pollen	~1/8-1 tsp, see dosage notes	Start #7
Beef Liver (see dosage notes)	Fresh: 4-6 oz (once or spread over the week)	Start #5
	Capsules: 4-6 capsules (spreading intake between all meals)	Start #5
Boron	~1 - 3mg	Start #9
Iodine From Food	1 serving, see dosage notes	Start #13
Mid-Morning (ideally away from food)		
Adrenal Cocktail (WFC can be included)	1 serving, see dosage notes	Start #1
With Lunch		
Magnesium Malate	~200mg, see dosage notes	Start #4
Wholefood Vitamin E Complex	1 serving, see dosage notes. Could be with breakfast if you prefer.	Start #8
Beef Liver (see dosage notes)	Fresh: 4-6 oz (once or spread over the week)	Start #5
	Capsules: 4-6 capsules (spreading intake between all meals)	Start #5
Mid-Afternoon (ideally away from food)		
Adrenal Cocktail (WFC can be included)	1 serving, see dosage notes	Start #1
Evening		
Wholefood Vitamin C (WFC)	~400mg, see dosage notes. if not combined with ACs	Start #3
Taurine (suggest with dinner)	~500mg, see dosage notes	Start #11
Magnesium Glycinate	~200mg, see dosage notes	Start #4
Beef Liver (see dosage notes)	Fresh: 4-6 oz (once or spread over the week)	Start #5
	Capsules: 4-6 capsules (spreading intake between all meals)	Start #5
Right before bed, or first thing in the morning (away from food)		
Stabilized rice bran	1/4-2 tsp daily, see dosage notes	Start #7
Diatomaceous Earth	~1/8-1 tsp, see dosage notes	Start #12

APPENDIX A - FAQs to get you started

There are a number of recurring questions which come up from time to time, so we have created a list of FAQs to help clarify aspects of the RCP for our members. In order to make these easily available to read, update and add to as needed, we have housed them on our website. The master index can be found [here](#).

We have provided a few of the basic how-to questions below to help you get started on your RCP journey.

“Do I need to follow ALL the **STARTS** EXACTLY for this to work?”

Many people see the word “protocol”, and they start envisioning an airplane pilot going through a pre-flight checklist with *exact* steps and *exact* sequences. The Root Cause Protocol is intended to be different -- it’s about pursuing the right *direction*, not attaining *perfection*. (Please read that again and let it sink in!!!)

You do NOT have to do every **START** in the exact right in order and dose to begin repairing cellular dysfunction. (In fact, just quitting the **STOPS** alone has a notable positive impact.) This is a *process*, not a *recipe*, so relax and know that every step forward is a step towards health. That said, **Phase I** is your foundation phase, which preps and supports the body for subsequent additions and many do best starting there.

“When should I begin each PHASE?”

The answer is ‘it depends’ because it’s based on how your body reacts to each nutrient. Some are able to implement all of the **STARTS** in just a couple of weeks. Then there are others who’ve taken 18 months (or longer) to implement these **STARTS** because their bodies needed that much time to detox and acclimate. Your speed of introduction will vary depending on many variables - it’s best to listen to your body rather than a set schedule or expected timeline.

A suggestion for those who are sensitive, and a good rule of thumb in general: it’s important to work with just one **START** at a time, starting with a small dose, and working up gradually. This gives the body a chance to adjust to each new nutrient and makes it easier to connect to any reaction it may give. Once you’re established on one **START**, then move to the next one. Let your body guide you as to when it’s ready.

“How long do I need to follow the RCP?”

The Root Cause Protocol is a *lifestyle* change -- your body will *always* need minerals like magnesium and wholefood vitamin complexes like A, C, E, etc.

The **STOPS** and **STARTS** are designed to be followed indefinitely as they are the key nutrients missing in the modern diet today, laden with refined and processed foods. The Phases are also additive -- when you begin Phase 2, you should still continue following Phase 1, and so on.

Please understand that The Root Cause Protocol is ultimately about *education* and *empowerment* -- our desire is to help you understand the *root cause* of your health challenges so that you can implement these steps and take greater control of your health.

How can I get help? This feels overwhelming for my special circumstance...

Do you have questions beyond the FAQs about how to best implement certain steps as they relate to yourself or a loved one? Get personalized help from an expert so that you can understand how to apply the RCP for your situation, history and understanding. [Work with an RCP Consultant](#).

“I LOVE what RCP has done for me, how can I support this cause?”

Please [contact RCP Customer Service](#) and share your success story with us so that we may add you to the ever-growing list of [Root Cause Protocol Testimonials](#).

APPENDIX B - Glossary of key scientific terms

There are terms used in this document that will be unfamiliar to many of you. We created this glossary to give you some insight into the mineral dynamics that form the basis for the RCP. We hope this glossary helps you gain some understanding of why iron regulation is so important for our health, and who the key players are for keeping iron functional in the body. We've also tried to draw the connections between the various elements so you can learn how they all work together to keep the body running at its best. You'll also see descriptions of the tests included in the Full Monty iron panel and even a bit of cellular biology as it relates to iron metabolism. With this knowledge in mind, you'll be better able to understand the importance of the **STOPS** and **STARTS** in creating the conditions needed for a healthy metabolism.

This glossary is sorted loosely by subject matter -- starting with the "problem" and then working its way towards the "solution" -- so that you can read these key terms from top to bottom in context of their "neighboring" key terms.

Anemia - Often thought of as "Iron Deficiency," but in 1855, Dr. Theophilus Thompson (in London) published the first known article about curing Anemia using Cod Liver Oil. And in 1934, Drs. Whipple, Minot, and Murphy shared the Nobel Prize for curing "Anemia," and "Pernicious Anemia" (aka. "Iron Deficiency caused by lack of Vitamin B12") with one product: Beef Liver! Hmm... While Beef Liver does have some Iron, the KEY to these solutions lies in the naturally occurring Vitamin A (aka. **Retinol**), and its ability to make Copper "bioavailable." A well-established, but often overlooked fact, is that Inflammation CAUSES Iron to present low in Iron blood tests. (Roy, Andrews, 2005; Wessling-Resnick, 2010).

Iron (Fe) - 80% of the Iron in our body is used to carry oxygen to our cells (70% in **Hemoglobin** and 10% in Myoglobin). As such, Iron is a vital nutrient. But it **REQUIRES Bioavailable Copper** to regulate its usability, otherwise Iron runs around like a 4-year old with a hammer -- wreaking havoc inside our cells, causing **Oxidative Stress** and **Inflammation**, which affects MANY metabolic pathways.

Males have about 4,000mg of Iron in their body; females about 3,500mg; children about 3,000mg or less. A **KEY** dimension to Iron is the fact that it is “recycled” each and every day. (See **The Reticuloendothelial System**.)

The Reticuloendothelial System (RES) - The "Iron Recycling System" inside our body provides 95% of our daily Iron needs. In total, we use ~25mg of Iron per day to make new Red Blood Cells and other Iron-based proteins, such as **Heme**. So 24mg out of 25mg come from the Iron in our body already thanks to this “recycling system” (RES). Which means, we **ONLY** need to intake ~1mg per day from food to balance the ~1mg we excrete in our feces each day.

RES is dependent upon **Bioavailable Copper** to ensure proper Iron “recycling.” There are three key cells involved in RES:

- 1) **Enterocytes** - digestive cells in our intestines
- 2) **Hepatocytes** - the main cells in our liver
- 3) **Macrophages** - the **KEY** “Pac Men” that serve as first responders and recyclers

Hepcidin - Regarded as the “Iron Hormone”, it’s also known as the “Inflammation Hormone.” Hepcidin acts as a key cellular agent -- it allows Iron to be absorbed & released in the **Enterocytes** and then put into the circulatory system. When there is too little Iron, Hepcidin prevents Iron from exiting the Enterocyte. Hepcidin also allows Iron to be released from the **Macrophages**. Low Hepcidin is not necessarily an indication that the body is deficient in Iron.

Ferroportin - A copper-dependant protein that acts as the “doorman” and allows Iron to exit the cell. It is facilitated by **Ferroxidase**, and blocked by **Hepcidin**.

Hephaestin - Similar to Ferroportin, the “doorman” in our gut that allows Iron to be released from the cell into the circulatory system. When this “doorman” is properly loaded with Bioavailable Copper, it works correctly, and Iron can exit the cell and complete its Circulation around the body. When Copper is NOT Bioavailable, Iron builds up in the cells/tissue, which generates **Oxidative Stress**.

Heme - A prevalent protein throughout the body that has Iron at its core. If you can’t make heme, the body isn’t going to function properly. Four Heme are “knit” together to create **Hemoglobin**.

Hemoglobin - The protein responsible for transporting Oxygen. Also, from 1862 - 1972, it was the most typical blood measurement of Iron status. But it’s not a particularly useful measurement as this is the “dipstick” way of measuring Iron -- it’s like measuring the amount of oil in your car, but what we should really be measuring is **Serum Iron**, which is like measuring Miles Per Gallon.

Serum Iron - Measures “efficiency” of the **Iron REcycling System (RES)**; similar to how we measure Miles Per Gallon (MPG) in our cars. (Wessling-Resnick & Knutson, 2010) As opposed to the simplistic “dipstick” measurement of Iron (**Hemoglobin**, which was replaced by **Ferritin**), measuring Serum Iron is a much more effective measurement of Iron Homeostasis, as it implies the movement, functionality and REcycling of Iron around the body. ([See Ideal Lab Values here...](#))

Ferritin - The protein that stores Iron in the tissues. There are TWO forms of Ferritin -- “Heavy chain” and “Light chain” -- but the standard blood tests do NOT distinguish this KEY feature, and therefore **Serum Ferritin** blood tests are invalid markers of Iron status. When

Iron is NOT being loaded into Ferritin (for LACK of “bioavailable” Copper) it is being loaded into **Hemosiderin**, which is NEVER measured in standard blood tests. The Serum Ferritin test should NEVER be used alone to assess Iron status and homeostasis. ([See Ideal Lab Values here...](#)) Ferritin serves NO active physiological role in the body, and REQUIRES Ferroxidase enzyme function to load Iron into this protein.

Hemosiderin - An Iron storage "complex" found primarily inside of the Macrophage cells, as opposed to circulating in the blood. If the body cannot make adequate levels of **Ferroxidase** in order to load Iron into **Ferritin**, the body is forced to store the excess Iron in Hemosiderin. It is NOT routinely measured in humans, which leaves us in the dark about how prevalent and significant Hemosiderin levels are as a source of excess, unbound Iron.

Transferrin - The key “transport” protein that moves / “recycles” Iron from tissue back into the bloodstream and back to the Bone Marrow where it gets used to make NEW Red Blood Cells. This protein is dependent on optimal levels of Vitamin A (aka. **Retinol**). (Use **Serum Transferrin** blood test to measure the amount. [See Ideal Lab Values here...](#))

Total Iron-binding Capacity (TIBC) - Measures how many “docking stations” are available for Iron. This is a derivative of the **Transferrin** status and reveals systemwide capacity to bind up Iron. ([See Ideal Lab Values here...](#))

Oxidation / Oxidative Stress - “Accidents” with Oxygen that naturally occur in the body’s metabolism are called “Oxidants.” Another term is “Reactive Oxygen Species” (ROS). Over time, this causes “Rust”, which is Ferric Oxide, a combination of Iron & Oxygen. Excess, unbound Iron, causes “Rust”, which causes **Inflammation**.

Inflammation - Inflammation is not a disease, but rather, damaged tissue that cannot function correctly. Inflammation is caused by excess, unbound Iron, or **Oxidative Stress**. Inflammation is the result of Hydrogen Peroxide (H₂O₂) not being cleared by an antioxidant

enzymes (such as **Catalase** and **Glutathione Peroxidase**) that are powered by **Bioavailable Copper**. Classic clinical indicators of Inflammation are LOW **Magnesium**, LOW **Bioavailable Copper**, and LOW **Retinol**, each of which are routinely overlooked in standard blood tests.

Bioavailable Copper - Copper has profound functions in the body, principally focused on creating energy (Cytochrome c Oxidase) and clearing exhaust (Integrated Antioxidant System). But the Copper must be “bioavailable”, which means Copper needs to be “complexed” in a network of proteins and enzymes. And this doesn’t happen magically.

Retinol is an essential nutrient for loading Copper into **Ceruloplasmin**. 95% of Copper in the blood is “complexed” in **Ceruloplasmin**. Unfortunately, taking Copper dietary supplements will not increase the amount of bioavailable Copper inside the body.

Ceruloplasmin (Cp) - Considered the MASTER “Multi-Copper Protein.” Cp has an “active” & “inactive” state, or an “enzyme activity” & “immunoreactive protein” state. In its “active” state, Cp contains up to 8 Copper atoms surrounding a molecule of Oxygen (O₂). But unfortunately, only the “inactive” state is measured by commercial labs using the **Serum Ceruloplasmin** blood test; there are no commercial labs that measure the “active” state. ([See Ideal Lab Values here...](#)) This protein was discovered in the early 1940s by Swedish Physiologists, Carl G.Holmberg & C.B. Laurell, and first described in their article published in 1947.

Ferroxidase (FOX) - The “active” (or “enzyme”) form of Ceruloplasmin. FOX regulates Iron and prevents it from causing **Oxidative Stress**, (aka. rust). FOX is the MASTER antioxidant *enzyme* in the human body. Ferroxidase has the highest amount of activity in the Liver and the Brain; and has notable activity in the Intestine (called Hephaestin) and in the Placenta (called Zyklopen). Without optimal Ferroxidase enzyme activity, Iron starts to build in our tissues, especially our Liver cells and Endocrine glands. As we age, this chronic build-up of Iron leads to decreased energy production in the cells, and increased **Inflammation** in our tissues and organs.

How do we increase the amount of Ceruloplasmin (Cp) protein and the activity of Ferroxidase (FOX) enzyme? This is THE PRIORITY focus of the steps in The Root Cause Protocol. By increasing Cp & FOX, we decrease Iron dysfunction, and we stop the chronic loss of **Magnesium**.

Magnesium - A key mineral connected to 3,751 enzyme functions in the body. Among its many functions is to regulate Calcium homeostasis through the activity of 3 key Calcitropic hormones: Calcitonin, Parathyroid Hormone, and Vitamin D. Magnesium's presence in the energy molecule (Mg-ATP) is an absolute requirement for its recognition and use in the body. Magnesium is the "Conductor of the Mineral Orchestra" inside the body.

Magnesium Burn Rate (MBR) - Under *any* form of stress to the body (physical, emotional, nutritional, electrical, etc.), Magnesium is lost as a metabolic response. Because when the body is under stress, it makes energy (aka. "Mg-ATP") as a response. Under extreme and/or sustained stress -- and failure to properly re-mineralize -- the body loses its natural ability to respond to stress, and **Oxidative Stress** (aka. "rust") builds up throughout the body. Magnesium deficiency (low Magnesium RBC) is the recognized precursor to inflammation. When the body is expressing optimal **Ferroxidase** activity, the MBR will be at a minimum.

Retinol - Naturally occurring, wholefood Vitamin A found in Cod Liver Oil, Beef Liver, Grassfed Butter, and other animal-based foods. Retinol is vital for "loading" Copper into **Ceruloplasmin**, which makes Copper become bioavailable (aka. "increasing Ferroxidase" activity) so that it can then "regulate" Iron as needed across and around the body, and stop **Oxidative Stress** (aka. "rust").

Glutathione - A particularly important protein for lowering **Oxidative Stress** (aka. "rust"). Glutathione binds Copper which prevents it from becoming "reactive" inside the cells. Glutathione also plays a critical role inside the cell, transporting Copper to ensure proper

distribution to critical proteins and enzymes. Glutathione's "copper top battery" is **Glutathione Peroxidase**, enabling it to be reused over and over. Glutathione Peroxidase is vital because it turns 2 molecules of H₂O₂ (Hydrogen Peroxide) into 2 molecules of H₂O (Water) and one molecule of O₂ (Oxygen). Synthesis of Glutathione involves two metabolic steps that require **Magnesium**.

Catalase - Another important Copper-dependent antioxidant enzyme that, similar to **Glutathione**, reduces H₂O₂ (Hydrogen Peroxide), principally in our blood, reducing **Oxidative Stress** (aka. "rust"). When there is sufficient Catalase in our blood stream, there can be proper production of **Hemoglobin**. Too much Hydrogen Peroxide (H₂O₂) will prevent optimal **Hemoglobin** production. Therefore, a lack of Catalase can be a KEY cause of "Low" Iron levels in blood tests. (aka. Having a low **Hemoglobin** blood test score.) But this has NO relation to the actual level of Iron inside the body as a whole.