

Report Cover

PreCODE Reports™ are generated with a personalized cover page that includes the report date, participant name, practitioner name, and name of the individual who generated the report.

PRE·CODE™

PARTICIPANT REPORT

REPORT DATE: MARCH 15, 2019

PARTICIPANT:

Jane Doe

PHYSICIAN:


Dr. Apollo

APOLLO™
HEALTH

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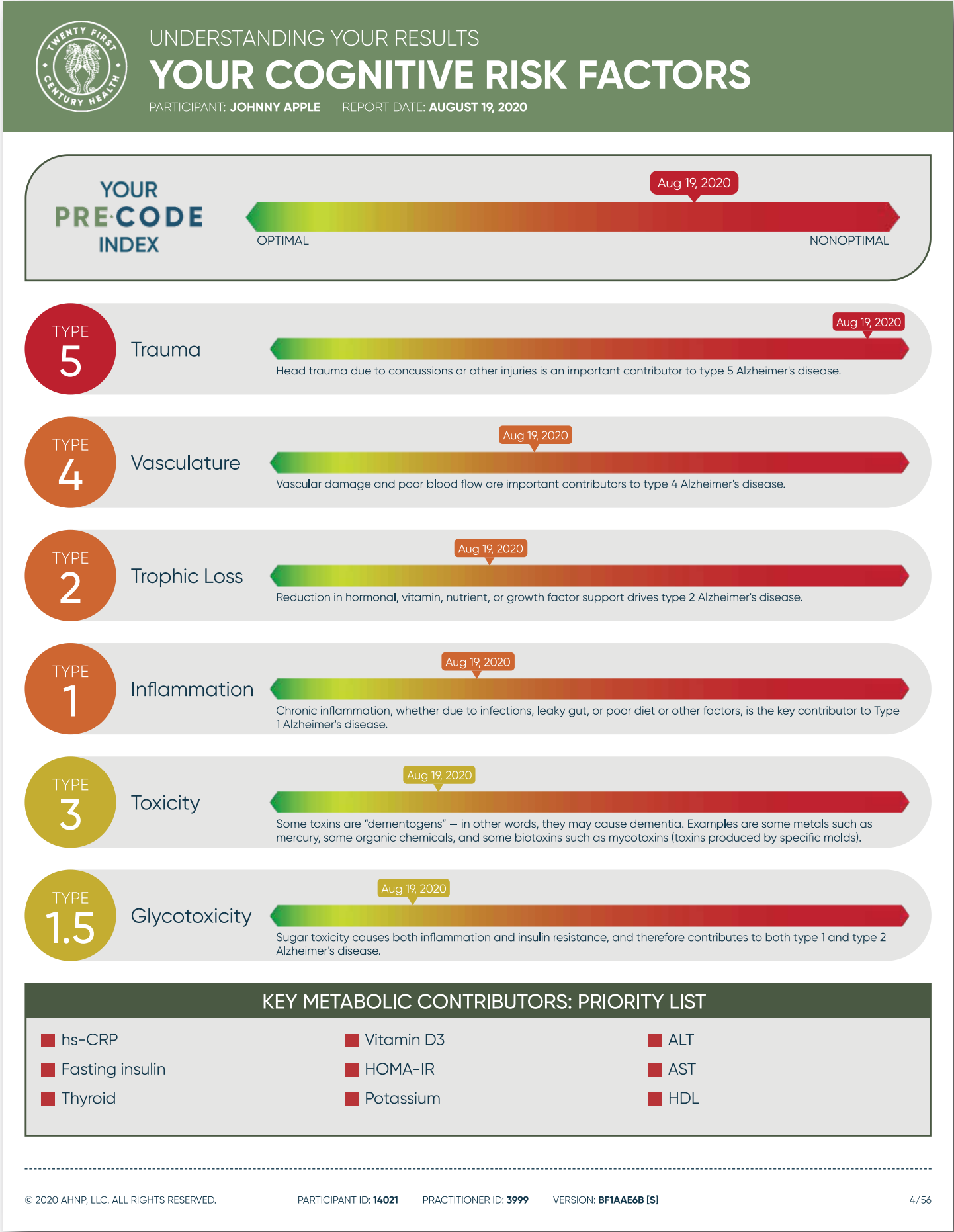
All PreCODE Reports™ include a table of contents that can quickly navigate to specific sections of the report by clicking the page title or page number.

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Your Risk Factors

Your PreCODE index provides a snapshot of the participant’s current state of cognitive decline and provides a summarized index of his/her current metabolic state made of all six Alzheimer’s subtypes. The index provides a visual goal to move each thermometer to an optimal state.

The goal is not simply to normalize metabolic parameters, but rather to optimize them. This personalized list highlights the participant’s primary areas of concern.



The Six Subtypes

The PreCODE Report measures the level or risk and contributors for all six subtypes. Each page provides a description and contributors of each subtype along with a personalized analysis based on genetic and blood results.



UNDERSTANDING YOUR RESULTS

THE SIX TYPES OF ALZHEIMER'S DISEASE

PARTICIPANT: JOHNNY APPLE REPORT DATE: AUGUST 19, 2020

TYPE 1 INFLAMMATION



AUG 19, 2020

Chronic inflammation, whether due to infections, leaky gut, or poor diet or other factors, is the key contributor to Type 1 Alzheimer's disease.

This type is associated with inflammatory markers such as hs-CRP, and the inflammation may be due to infections (often unrecognized) or leaky gut or suboptimal diet or other factors. Risk for type 1 is increased by ApoE4, chronic infections, trans fats, damage to your gut microbiome, and other factors.

Let's see how you are doing with risk for inflammatory Alzheimer's, so that we can minimize this risk.

TYPE 1 Your Results

Your hs-CRP (high-sensitivity C-reactive protein, which is a measure of inflammation) was 1 mg/l, which is borderline—pretty good, but we can help you make it better—the goal is to see it at 0.7 or lower. This is important, because millions of people suffer from chronic inflammation, and this takes a toll, accelerating our aging (which is often called “inflamm-aging” because inflammation is such a common and important feature of aging), increasing risk for Alzheimer's, and increasing risk for other chronic illnesses such as vascular disease, arthritis, and cancer.

The information in the treatment section will help you to bring your inflammation down and keep it low for years to come, thus minimizing your risk for cognitive decline. This includes keeping your gut healthy — avoiding “leaky gut” — keeping your oral health good (pathogens from dental disease, such as *P. gingivalis*, increase risk for Alzheimer's disease), treating pathogens you may get from ticks (such as *Borrelia* or *Ehrlichia*), treating viral outbreaks such as Herpes, and avoiding exposure to inflammatory toxins such as those from specific molds. The “B7” section offers the best approaches for staying healthy and avoiding chronic inflammation and its associated risks.

Although not quite as predictive of inflammation-related disease as hs-CRP, there are other markers that complement hs-CRP, such as A/G ratio (albumin to globulin ratio) and homocysteine. Your A/G ratio was 1.95 : 1, and the goal is to see this at 1.8 or above. High homocysteine may also be associated with inflammation, although it is most reflective of methylation (which is important in many processes, including detoxification pathways). The goal for homocysteine is 7 micromolar or lower. Your homocysteine was 7.1 uM.

In addition to these laboratory tests, your genetics can also influence your risk for Alzheimer's disease. The great news is that, although your genetics may influence your risk, this can be countered very successfully. As an example, regular exercise reduces the risk of the most common genetic risk factor, which is ApoE4, back to normal.

So, let's look at your most important genetic risk factor: ApoE4. Each of us may have 0, 1, or 2 copies of ApoE4, and this is associated with low, moderate, or high risk for Alzheimer's disease. **Please remember that none of these guarantees that you won't get Alzheimer's or that you will, so even if you have 2 copies, being on a prevention program should allow you to live a normal life free of Alzheimer's** — indeed, there is a wonderful site — [ApoE4.info](https://apoE4.info) — at which over 3000 individuals from all over the world, all ApoE4+, share information and share their best practices. Most of these individuals are on some variation of ReCODE or PreCODE.

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Where Do I Start?

PreCODE reports include a personalized starting point for all individuals on the protocol.



UNDERSTANDING YOUR RESULTS

WHERE DO I START?

PARTICIPANT: JOHNNY APPLE REPORT DATE: AUGUST 19, 2020

STEP 1

Achieve insulin sensitivity which will naturally promote mild ketosis.

Your laboratory results indicate that you have insulin resistance, which is one of the most common and important risk factors for cognitive decline. Specifically, your HOMA-IR, which is a measure of insulin resistance and is best at < 1.3, is 1.66. Those who are insulin resistant are typically unable to reach ketosis which can help to fuel your brain. The good news is that this is readily correctable with dietary and lifestyle changes.

Ketosis has several mechanisms to enhance cognitive function and is especially important for ApoE4 carriers who exhibit a decreased ability to effectively use glucose as brain fuel starting as early as age 20. Ketones can effectively provide an alternative fuel source for your brain. The instructions for how to meet this goal are outlined in your overall program and include combining the KetoFLEX 12/3 diet with a long daily fast (14-16 hours) and exercise. You can monitor your progress by measuring your ketone levels to reach a daily goal between 0.5-2.0mM beta hydroxybutyrate. Instructions can be found in [STEP TWO: Tracking Ketones](#). Because you are insulin resistant, it may take several weeks or longer to achieve insulin sensitivity. Consider the short-term use of [Ketone Supplements](#) to assist you in achieving the goal of mild ketosis during this transition.

STEP 2

Resolve ongoing inflammation and prevent new inflammation.

Chronic inflammation is a critical contributor to Alzheimer's disease, and your genetic and biochemical profile is compatible with inflammation as a potential risk factor. Preventing inflammation is important, but first the ongoing chronic inflammation must be resolved. Specialized pro-resolving mediators (SPM) are used for this purpose, followed by inhibitors of new inflammation, such as curcumin and specific anti-inflammatory nutrients. These are included in the synaptic support section of your program.

STEP 3

Enhance methylation to reduce homocysteine.

Homocysteine is an important contributor to Alzheimer's disease and vascular inflammation, and reducing your homocysteine is one of the key goals of your program. This is accomplished with optimal levels of methyl-folate, methyl-B12, and active B6 (called P5P for pyridoxal-5-phosphate). These can be taken as supplements or obtained from your nutrition: foods rich in folate include leafy greens, asparagus, eggs (best are pastured eggs), lentils, peas, beans, beets, citrus fruits, Brussels sprouts, broccoli, nuts and seeds, and others. Foods high in vitamin B12 include eggs (pastured), liver, beef (preferably grass-fed), yogurt, fish, and clams, among others. Foods high in vitamin B6 include fish, eggs, vegetables, and soybeans, among others.

STEP 4

Optimize hormonal support for your brain.

Hormones such as thyroid hormones, estradiol, progesterone, and testosterone play key roles in brain structure, function, and plasticity. Your profile indicates that optimal hormonal support will be key for cognition, and therefore it is recommended that you consult your physician about the ideal hormonal support.

Understanding Your Results: B7



UNDERSTANDING YOUR RESULTS
YOUR PRECODE JOURNEY

PARTICIPANT: JOHNNY APPLE REPORT DATE: AUGUST 19, 2020

The PreCODE Report provides a detailed outline of seven foundational strategies that work together to create neuroplasticity, called the Bredesen Seven or B7.

Introducing the Bredesen 7

The best way to prevent cognitive decline is to combine the personalized aspects of your PreCODE report, which has identified potential future drivers of cognitive decline, with the Bredesen Seven (or B7), the seven foundational strategies that work together to create neuroplasticity – the ability of the brain to heal, grow new neurons and synaptic connections. Each of the strategies alone has the ability to promote neuroplasticity, but when practiced together they create powerful synergy. More extensive information on the B7 can be found in the guides to which you have access on apollohealthco.com.



Nutrition: Nutrition plays a remarkably important role in the prevention and reversal of cognitive decline. The goal is to utilize nutrition to support brain health by creating insulin sensitivity, increasing energy (via ketosis), reducing inflammation, improving vascular health, promoting autophagy, and more.



Exercise: Exercise has many mechanisms by which it supports cognition. It increases your brain-derived-neurotrophic factor (BDNF), increases cerebral blood flow and oxygenation. Additionally, it reduces overall stress, optimizes body mass index (BMI), improves insulin sensitivity, and optimizes overall brain and body physiology in numerous ways.



Sleep: Sleep enhances our ability to focus, learn, and memorize. It is critical that oxygenation be appropriate during sleep (96-98% saturation is optimal) with the overall goal of 7-8 hours of quality restorative sleep each night.



Stress: Stress, especially chronic stress, can be a key contributor to cognitive decline. While stress is unavoidable, you can learn to control your reaction to it by adopting daily stress management practices. Additionally, consider including mindfulness – the ability to be fully present in a non-judgmental manner – to aid in the incorporation of the B7 strategies.



Brain Stimulation: Brain Stimulation becomes even more important as we age to create neuroplasticity – the ability of the brain to grow new neurons and synaptic connections. This remodeling of our brains occurs throughout our lives in response to social and mental stimuli.



Detox: Detox is a multi-step process that involves avoiding “dementogens,” chemical agents that contribute to Alzheimer’s disease, as well as identifying and addressing current exposures while optimizing detoxification pathways to create resilience.



Supplements: Supplements can support numerous mechanisms to optimize your biochemistry. While they are “supplemental” to the overall program, they can be an important contributor to healing if you’re suffering from a specific nutritional deficiency that affects your cognitive health.



Your Suggested Plan: Supplements & Personalized Alternatives

Each report includes a personalized list of recommended supplements by LifeSeasons. For individuals who would like to take their preferred brand of supplements or do not have access to the LifeSeasons formulation may purchase the supplements listed in the Personalized Supplement Alternatives.

YOUR SUGGESTED PLAN

PARTICIPANT: JOHNNY APPLE
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7. SUPPLEMENTS

The goal of all of the 7 parts of the "B7" is to create the very neurochemistry that supports the production and maintenance of synapses, the critical connections in our brains. If we optimize the various parameters in the B7, we should be able to make and maintain these synapses for decades to come. As you've already read, diet, exercise, sleep, stress management, brain stimulation, and detoxification are all important and powerful. Adding to these is supplementation, and while the effective use of supplements is critical to best outcomes, please remember these are, by definition, supplementary. Thus they are meant to be used with the other members of the B7, and in such a setting, they provide effective synaptic support.

In order to keep pill and capsule numbers to a minimum, we have worked with LifeSeasons to combine 6 core ingredients into 2 capsules; these 6 ingredients combine effects to reduce inflammation, increase trophic support for the brain, bind and remove amyloid, support detoxification, increase focus and attention, and improve vascular support. Beyond these effects, which are helpful for all of us, if there are reduced factors such as vitamin D, then these will be included in your personalized protocol (below).

NeuroQ

The 6 core ingredients are included in NeuroQ:

- Whole coffee fruit extract (NeuroFactor™) 100mg has been shown to increase the levels of BDNF (brain-derived neurotrophic factor), which supports synaptic formation and maintenance.
- Turmeric, 250mg with 95% curcuminoids, is a powerful anti-inflammatory, and the curcumin binds both amyloid and tau.
- Propolis (from Yamada Bee, an outstanding source) 75mg, has both anti-microbial and anti-inflammatory properties, as well as immune support. This triad of effects is perfect for supporting cognition and preventing decline.
- Gotu kola 250mg has a wonderful effect to improve focus, attention, and memory formation and recall.
- Phosphatidylserine 100mg supports nerve cell membranes and communication, providing support for memory and overall cognitive function.
- Ginkgo biloba extract 120mg provides both flavonoids and terpenoids to improve blood flow to the brain, as well as anti-oxidant protection.

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YOUR SUGGESTED PLAN

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Additional Recommended Supplements

These 6 core factors provide the neurochemistry of healthy cognition and prevention of decline. In addition, we recommend omega-3 fats, which you can take as fish oil – such as ReCODE omega-3 or Nordic Naturals DHA Xtra – or krill oil (you also get omega-3 fats in your diet, for example from fish, chia seeds, and other foods). The goal is to get at least 1 gram of the omega-3 called DHA (docosahexaenoic acid), since DHA is highly supportive of synapses. Finally, we recommend citicoline 250 mg twice per day and a good multivitamin such as the ReCODE multivitamin from LifeSeasons.

Based on Your Blood Tests You Should Also Consider

- Your hs-CRP of 1 mg/l indicates inflammation, and this should be reduced with the PreCODE protocol. However, if this does not come back to the normal target of < 0.9 within 6 months, then please consider talking to your practitioner about the possibility of adding anti-inflammatories such as resolvins or pregnenolone or others.
- Your HOMA-IR of 1.66 indicates some insulin resistance, and the PreCODE protocol should return insulin sensitivity. If this does not occur within 6 months, then you may wish to talk with your practitioner about additional support for returning insulin sensitivity, such as berberine or cinnamon or alpha-lipoic acid or other supplements.
- Your hemoglobin A1c of 5.4% indicates suboptimal glucose control. This should become optimized with the PreCODE protocol. However, if this does not return to the 4.0–5.3% range within 6 months, you may wish to talk with your practitioner to reduce this, using a supplement such as berberine or N-acetylcysteine or zinc picolinate.
- Your vitamin D of 19 ng/ml may be suboptimal for best long-term cognitive health. We typically target 50–80, and therefore we suggest that you consider taking vitamin D at 5000 IU per day, along with vitamin K2 100mcg.
- Your homocysteine of 7.1 uM may be suboptimal for prevention of cognitive decline. This can be brought back to the optimal level of <7.0 fairly easily: the most effective way to do this is to take vitamin B12 at 1 mg (half from methyl-B12 and half from adenosyl-B12—note that in rare cases, B12 may cause anxiety, in which case you can simply switch to 1 mg of hydroxocobalamin), and methyl-folate at 0.8 mg or 1 mg per day with vitamin B6 as P5P – pyridoxal 5-phosphate – which is the active form of vitamin B6, at a dose of 20 mg per day.

This combination of B12, folate, and P5P brings the homocysteine back down to 7.0 or lower in the majority of people. However, if you find after a few months that your homocysteine is still >7.0, you can add trimethylglycine at 500 mg twice or three times per day.

- Your TSH of 2.1 uIU/ml suggests that you should talk to your practitioner about your thyroid status, especially if you have symptoms such as feeling cold or weight gain or constipation or depression, which may suggest low thyroid activity. Your practitioner may want to perform further tests or talk to you about thyroid supplementation.
- Your TG:HDL ratio (triglyceride to HDL ratio) is 2.05, which is optimal at or near 1.0. The Bredesen 7 should improve this ratio. If you do not see improvement in the next 6 months, you may wish to talk to your practitioner about improving lipid control.
- Your LDL is 101 mg/dl, which is suboptimal. You may wish to talk with your practitioner about checking LDL particle number, which is a specialized test to determine whether your LDL is the "benign" LDL or the more concerning LDL.

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Your Suggested Plan: Recommended Reading

Dr. Bredesen and the Apollo Health medical team have curated a specific list of books that can be a valuable reference to support cognition.

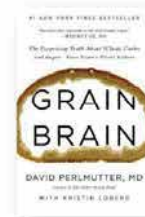
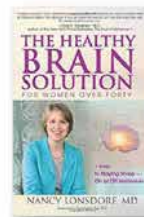
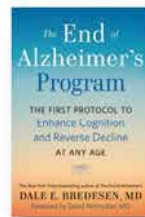
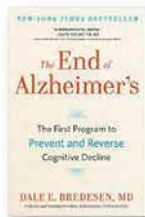


YOUR SUGGESTED PLAN

PARTICIPANT: JOHNNY APPLE
REPORT DATE: AUGUST 19, 2020

RECOMMENDED READING

Preventing cognitive decline is now possible – it is happening in thousands of people every day – and this goes hand in hand with optimizing cognition. A finely tuned brain will bring you all sorts of dividends for many years to come, and this simply means getting several different systems to work together as a network – from nutrition to exercise to sleep to growth factors to brain training, and so on. The books listed here are excellent, readable references to support cognition for decades to come. In addition to general references for cognition, we list specific titles for those who are at risk for a specific subtype of cognitive decline, such as toxic (type 3) or vascular (type 4).




- [The End of Alzheimer's](#) by Dr. Dale Bredesen
- [The End of Alzheimer's Program](#) by Dr. Dale Bredesen (with Julie Gregory and Dr. Aida Lasheen Bredesen)
- [The UltraMind Solution](#) by Dr. Mark Hyman
- [FOOD: What the Heck Should I Eat?](#) by Dr. Mark Hyman
- [FOOD: What the Heck Should I Cook?](#) by Dr. Mark Hyman
- [Grain Brain](#) by Dr. David Perlmutter
- [Brain Maker](#) by Dr. David Perlmutter
- [The Brain Body Diet](#) by Dr. Sara Gottfried
- [The Healthy Brain Solution for Women Over Forty](#) by Dr. Nancy Lonsdorf
- [Fat for Fuel](#) by Dr. Joseph Mercola
- [KetoFast](#) by Dr. Joseph Mercola
- [The Longevity Diet](#) by Dr. Valter Longo (Keep the overall concept of KetoFLEX 12/3 in mind.)
- [Ketotarian](#) by Dr. Will Cole
- [31-Day Food Revolution](#) by Ocean Robbins (Keep the overall concept of KetoFLEX 12/3 in mind.)
- [How Not to Die](#) by Michael Greger (Keep the overall concept of KetoFLEX 12/3 in mind.)
- [Super Immunity](#) by Joel Fuhrman (Keep the overall concept of KetoFLEX 12/3 in mind.)

Report Data


If recommended tests are incomplete, missing tests will be itemized and suggested.

Each report will be provided with the next suggested testing interval.




REPORT DATA

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You and your practitioner may also wish to consider the following tests:

- Platelet Count
- Vitamin B6 Plasma



REMINDER

YOUR NEXT LAB TESTS SHOULD BE COMPLETED AFTER SIX MONTHS

2021-01-22

The following pages include all of your lab results, genetic results, and assessments utilized to generate your PreCODE Report. If available, each result will include a color code indicating whether the result is within the PreCODE Target range, the raw value with units, reported date of the result, and the source of the result.

Target ranges are color coded Green, Gold, and Red. Green results meet the PreCODE Target range, Gold results are within the normal reference range defined by the Apollo Health lab, and Red results are outside of normal range. Please note, these ranges and values may not match your preferred lab's reference ranges. If you are not using the Apollo Health lab and the lab test is significantly different, the ranges and PreCODE algorithm may be inaccurate, so it is important to make sure that compatible lab tests are used.

Please note that best outcomes require bringing lab values not simply to the minimum "normal" levels, but to optimal functional levels—this is well documented, for example, with homocysteine and B12. Please consult with a trained ReCODE Practitioner as these defined ranges are set as guidelines.

Your results may be sourced from various data sources, which may include Apollo Health's partnered lab, trained ReCODE Practitioners, or conducted assessments. Each result will be labeled with a data source, if available.

MEDICAL ADVICE, DIAGNOSIS AND TREATMENT BASED ON ANY REPORTED TARGET RANGES AND VALUES ARE AT THE SOLE DISCRETION OF A TRAINED RECODE PRACTITIONER OR YOUR PHYSICIAN.

Please consult with your trained ReCODE Practitioner regarding retesting procedures.

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Raw Results

The Raw Results section lists and categorizes all of the individual’s lab results, genetic tests, and health questionnaire responses. Each result will include the value, protocol recommended range, the date the result was recorded, and the source of the result. In addition, each result will be highlighted with a colored indicator identifying optimal, suboptimal, or abnormal results.

RAW RESULTS		PARTICIPANT: JOHNNY APPLE REPORT DATE: AUGUST 19, 2020		CONSULT YOUR PHYSICIAN WITH ANY QUESTIONS	
		LEGEND:		OPTIMAL FOR PRECODE - SUBOPTIMAL - ABNORMAL	
TEST	REPORT VALUE	TARGET RANGES	DATE	SOURCE	
General Health					
Age	31				
Sex	Male		2019-02-12		
Basal Body Temperature	102 deg. F		2019-12-05	Avatar	
BMI	25	18 - 25	2019-07-10	Avatar	
Systolic Blood Pressure	125		2019-04-12	Avatar	
Diastolic Blood Pressure	80		2019-02-12		
Assessments					
AQ-21 score	24		2019-02-12		
MoCA score	24	28 - 30	2019-02-12		
Personal History					
Family History of Dementia	No		2019-02-12		
Diabetes	No		2019-02-12		
Simple Carbohydrates in Diet	No		2019-02-12		
Depression	Yes		2019-12-05	Avatar	
Episodes of Aggressive Behavior	Yes		2019-12-05	Avatar	
History of Concussions	Yes		2019-12-05	Avatar	
History of Head Trauma	No		2019-02-12		
Vomiting After Head Trauma	Yes		2019-12-05	Avatar	
Loss of Consciousness	No		2019-02-12		
Alcohol Related Withdrawal or Seizures	No		2019-02-12		
Illicit Drug Use	Yes		2019-12-05	Avatar	
Anti-Testosterone Medication	No		2019-02-12		
History of Heart Attack or Angina	Yes		2019-04-12	self-reported	
History of Hypertension	No		2019-02-12		
History of Peripheral Vascular Disease	Yes		2019-12-05	Avatar	
Hysterectomy Before 41	No		2019-02-12		
Hysterectomy Before 52	Yes		2019-12-05	Avatar	
History of Lyme Disease or Tick Bite	No		2019-02-12		
Meningitis	No		2019-02-12		
Personal History of Cancer	No		2019-02-12		
Other Risk Factors					
Rapid Cognitive Decline	No		2019-02-12		
Gluten Sensitivity	No		2019-02-12		
Consumption of Seed Oils	No		2019-02-12		
Constipation	Yes		2019-12-05	Avatar	
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