

**Please note: Our transcripts are automatically created and may contain errors or omissions.**

Hi, everyone. We're going to talk about the ketogenic diet today, and why some people crash on the ketogenic diet. There's been some requests to discuss that, so here we are. For those of you guys that don't know what the ketogenic diet is, it's basically a diet where 70% of the calories come from fat, 25% comes from proteins, and then 5% comes from carbs. You're basically trying to limit your carbohydrate intake to a very small amount, less than 20 grams of carbohydrates per day. Those are the basic concepts of the ketogenic diet. Obviously, it's very popular today. Lots of people are doing it for various reasons. It's been very popular for people looking for weight loss.

In a clinical setting, in a medical setting, ketogenic diet has traditionally been used for dealing with epilepsy and seizure disorders, and found to be very effective for that. The strong level of medical evidence that it really helps reduce epileptic seizures. For many children that are suffering from various types of seizure disorders, being on a ketogenic diet seems to be very, very effective. When the brain is working off ketones, it tends to stop what are called epileptiform activity, the spontaneous discharges, and it's traditionally been used for that.

Then, as time has gone on, they find that ketogenic diets are very effective for causing weight loss and changing cardiovascular parameters, so now there's a strong level of evidence in the medical literature where ketogenic diets can reverse diabetes; can reduce hypertension; can change cholesterol, where the total cholesterol LDL goes down, HDL goes up, triglycerides go down; significant impacts on vascular health and blood pressure. Part of the reason why those patterns take place, which is kind of contrary to what people used to think where fats would be bad for cardiovascular risk marker, is that when someone's on a ketogenic diet, their insulin levels drop sometimes almost as much as 50% in some studies. So, insulin really seems to be the messenger that causes vascular inflammation and impact different messengers that increase blood pressure and cause hypertension. Insulin is one of the key things that disrupts the cholesterol metabolism.

So, one of the reasons why so many people that go on a ketogenic diet with a high-fat diet do really well is really not because of, let's say, the fats, but when you eat fats, you have a reduced spike of insulin. Whereas sugar and carbohydrates cause a huge spike of insulin, and this is why when people have lots of sugar, lots of carbohydrates, they can gain weight easily. Because when insulin levels are high, it's impossible to burn body fat. For people that go on ketogenic diets, their insulin levels drop. So now, there's an enzyme called hormone sensitive lipase, which burns body fat that is no longer inhibited, and then their body is more efficient in burning body fat.

It's become very popular for weight loss. It's used in the medical field, preventive medicine, diet and nutrition, lifestyle medicine field for diabetes and high blood pressure and abnormal cholesterol and cardiovascular parameters. Then there is some research

that is very, very promising that it comes out more and more each year, that it's very beneficial for reversing cognitive decline and dementia and early Alzheimer's, and can be very, very effective for traumatic brain injuries that helps reduce brain inflammation. And some other studies showing that it's also can be very beneficial. Emerging evidence that it helps with different types of acne.

It also has some research with various cancers. But with all the cancer clinical trials, they're still using chemotherapy or the traditional cancer treatment with ketogenic diets. And there are some of these early stages of finding that it seems to be beneficial when used with a conventional therapy because cancer cells use glucose and ketones change the ability for some forms of cancer cells to not be able to have the fuel. Those are the basic concepts of ketogenic diets. Let's talk about why people crash. Let's talk about what happens when people try to do it, and go through all the steps. Now, I can tell you when people decide like, "Hey, I want to do a ketogenic diet," whatever the reason may be, right? The most common is for people wanting to get more ... lose more body fat, is probably the most common reason, but it's also really, really beneficial for people who have a blood sugar rollercoaster ride all the time, for some people that just have poor brain function.

In my practice, I use a ketogenic diet with my patients with early signs of neuro degeneration that seem to be progressing quickly. I always use it with acute patterns of traumatic brain injury. I use it all the time for patients that are suffering from diabetes, but it's not like the diet that I think everyone should be on. I mean, it's a challenging diet, and for some people, they just don't want to follow those guidelines.

For many people, they don't need to, but for those people that have neurocognitive decline, diabetes, hypertension, or just want to have an efficient way to lose weight, the ketogenic diet can be effective, but there are some things that happen sometimes when people get into ketosis, or try to get into ketosis. Well, first of all, one of the things that happens is, when people start to follow the guidelines of a ketogenic diet, and they increase their fat intake to 70% fat, and 25% protein, 5% carbs, it takes several days to get into actual ketosis, where the body is making energy from ketones.

The key thing is when someone's transitioning, and this is an absolute must, you have to measure to determine if you're getting into ketosis. One of the biggest mistakes people make is they just kind of assume they're following the ketogenic diet, so they should be in ketosis, and that's not how it works. You cannot make any assumptions. You can measure ketones in either urine, or you can measure ketones in blood. If you measure ketones in urine, you just need a ketone urine strip. You can find those on Amazon, online everywhere.

The most important thing you need to know about urinary ketone strips is they have to not be expired. You have to have valid ketones. If you're using ketone strips that are expired, then you're going to get false readings, and you're going to like really be confused about what's happening. So, make sure you get ketone strips that are not

expired. If you're following the ketogenic diet, which you'd expect to see is about the second or third day, you start to show up with urinary ketones.

These ketone strips are like a page piece of paper, and when you start to make ketones, they turn pink, and if you make a lot of ketones, it turns purple. But once a person starts to make some ketones, and those color changes, then the person is technically in ketosis. You can also measure ketones with blood. The only issue with measuring through blood is you have to get a ketone meter, which are not very expensive. I think they're around \$50, but ketone strips that you need for the ketone meters, is really where the cost comes in. They can be, I think, around \$1 or \$2 a strip.

The most popular one being used today in healthcare is the Keto Mojo Meter. You can find those online. You can easily follow the guidelines. They have videos to show you how to use it. You basically do a prick, you get a sample of blood, and then you put it in a ketone meter, and it shows you if you're registering any ketones. Now, most important thing about measuring ketones with blood is there's a lot of information saying you're not really in ketosis, if your levels are at least 1.0 or higher, and that's not necessarily true.

So, even with Keto Mojo's website, they put, like, if your levels of zero to 0.5, that's not necessarily ketosis, and that's not true. If you make any level of ketones, you're in ketosis. Don't worry about having to reach really extremely high level ketone levels to think you're in ketosis. If you're doing serum ketones, and you're above zero, you're in ketosis, and the physiological benefits of ketosis will take place. What happens in this entire field of nutrition, diet, sports nutrition world, is they have everyone try to take exogenous ketones and then measure the ketones, which skews the test, and I'll talk about them in a second here.

But the key thing is just, if you're going to go into ketosis, avoid the most common mistake many people make, which is, you really want to measure your ketones, either with urine strips or with blood, and confirm that you're actually in ketosis. Now, the number one reason why people don't get into ketosis, even though they're following the diet, is because they're eating too much protein. The key thing is that 70% of calories have to come from fat. So, you really want to make sure that you're eating a high fat diet.

Sometimes people just have like, a big old steak and a little bit of vegetables, and maybe something a little fatty, like a little piece of avocado on top, but the protein content is so high that they're not really getting 70% of the calories from fat. So really, take some time to plan out your meals, and to follow some good recipes, many of them are online, to really make sure that you're in ketosis. The other key thing is that when you're getting into ketosis, is if you're not getting into ketosis, and you're constantly eating too much protein, you actually don't feel good.

You get into ... some people call it the keto flu, where your body doesn't have enough sugar and glucose to function like it needs to, but it's not really using ketones, and then

that can cause some significant problems as well. So, be aware of that. So make sure that, if you're actually going into ketosis, you're not concerned way too much protein, and basically, you got to think of very little carbohydrates. Stick with lots of different vegetables.

Now, some other reasons people crash while they're going into ketosis is that, well, first of all, let's talk about the keto flu a little bit more. One of the things you can do to avoid the keto flu, by the way, if you transition into ketosis, where the body's trying to figure out how to use ketones, but you're not getting enough from a diet, because you can take MCT oil, and medium chain triglycerides, which are basically things like coconut oil. They can immediately get converted to ketones, so more so than any other type of fatty acid, or more so than fish oils or other types of fats, like olive oil or something.

MCTs can immediately convert into ketones. If you're going through the transition from a normal diet into a ketogenic diet, and you're starting to get that keto flu, you can just take some capsules of ... like two or three capsules, one capsule. You can play with the dose you think that works best for you, while you're transitioning into ketosis. Now, some people use exogenous ketones, but the problem with ... and exogenous ketones are supplements you can take.

You can find them on any Amazon, any health food store, beta hydroxyl butyrate, are basically, exogenous ketones. The problem is, if you take an exogenous ketones, your urinary test, and blood tests are going to be skewed. You may think you're actually getting into ketosis, but it's just measuring the high amount of ketones you just took. It's better to use MCT oil, if you're transitioning and wanting to measure your levels accurately to see if you're getting into ketosis, than using exogenous ketones like beta hydroxyl butyrate. That's another key concept.

Get into ketosis. Use MCT oil to avoid the ketogenic flu, to help your body have some fuel energy as you make the transition. Also, on a side point, never use MCT oil if you're not in ketosis. If you're eating a normal diet with high insulin surge, with normal insulin surges, and not in a ketogenic state, MCT oil is going to be a saturated fat. It's going to cause significant inflammation. It's not good for you in non-ketogenic states, if you're still eating carbohydrates, for most people.

So, things like MCT, which are quite popular now for supporting the brain and cognition, really are saturated fats, so you only want to use them when you're actually in ketosis, and the difference being in ketogenic state, is that your insulin levels are not high. The dangerous combination is saturated fat with high insulin levels, so when you're in ketosis, and your insulin levels are dropped, because you're only getting your calories, well, 5% of calories from carbohydrates, 25% proteins, 70% from fat, you don't have those high insulin levels. So, MCT gets converted right away into energy, without causing those oxidative inflammatory responses. Be aware of that.

So, just as review, one of the ways to not crash going into ketosis, is to use things like MCT oil, as you transition, and then make sure you're in ketosis by measuring your

numbers. You should know, if you have not done a ketogenic diet before, the worst part is the first few days. It could be three days. It could be up to five days before you get into ketosis. Once you're in ketosis, you should have really stable energy and you should feel great. The other good thing about research that's been done in ketogenic diets is that it really has been shown to control appetite.

That when you're eating your calories, 70% from fat, you're not really hungry. The compliance rate of ketogenic diets is much higher than, for example, low caloric intake or low carbohydrate intake by its own. So, if you actually are eating a high fat diet to promote ketosis, then usually your appetite shouldn't be an issue. If you're doing the ketogenic diet correctly, as you transition, you should not be hungry doing it. You just may not be ... Now, that's another clue, you're not getting enough fat, if you're doing the ketogenic diet.

You're trying to get into that transition, but you're starving. So, usually people are still ... after first day, second day and third day, are starving, trying to go into ketosis. It's just screaming to them that they are not getting enough fat in their diet. So, whether they take avocado and put olive oil over it and eat it that way, or get some sardines, get some really healthy fat, that's one way to really make sure you're having healthy transition. Okay?

Number one, one of the main reasons why people crash getting into ketosis is their actually getting into ketosis, and again, not getting enough fat. So, they get stuck in that, also called keto flu, where they're not feeling good, and just thinks they feel awful and this doesn't work for them. So, let's talk about some of the reasons. Another reason why people totally crash and have a hard time transitioning to ketosis is because they really go into a high dairy diet. Dairy is very inflammatory. One of the most common things you see, is people get into ketosis, but they're like, "I've never been so inflamed. My body hurts."

Ketones are anti-inflammatory. Ketones should not cause anyone to be inflamed. The only reason you would be inflamed, and your body would hurt and swell, is because something you're eating is driving your immune system. Most common culprit is dairy. So, what happens with a lot of people that go into a ketogenic diet is they try to get their fat from dairy. They put cheese on all their eggs, and they put cheese on everything, and they just constantly have a high dairy intake diet.

They basically get super inflamed, so they can achieve ketosis, but they feel awful because their body's so swollen and so inflamed from all that milk protein, casein being specifically the milk protein part of it. Some people may not notice their sensitivities to [caisson 00:15:47] because they just have it occasionally. It's not that significant, but once they go into ketosis, their levels of milk protein, which is caisson increases, and that causes significant inflammation.

So, if you're going into ketosis, or you're in ketosis, and you feel really inflamed, and your body hurts, and you got brain fog, you can't think, you don't want to move your

muscles because your muscles just feel like they have no energy and feel heavy, that means you're systemically inflamed. Something you're eating is causing that. It may not be milk protein. It could be something else you added recently to your diet, so be aware of that. Okay, so that's another reason why people have a hard time changing into ketosis, because they crash.

Our third reason why people will fall apart and have a hard time getting to ketosis is because they get too inflamed from eating too ... not so much from dietary proteins causing an immune response, but just having too much oxidative stress. What I mean by that, is their diet is basically bacon, fried food. You have to realize that fried food actually produces something called glycated end products. Glycated end products drive systemic inflammation.

One of the reasons why people get into ketosis, and again, if you feel swollen, inflamed, your body hurts, and if it's not dairy or milk protein, you just may be eating too much fried food or too much unhealthy fat. The ideal way to get into ketosis is to eat healthy fats. The best healthy fats are all different types of oils, like olive oil, avocado oil. If you can tolerate eggs, the yolk in eggs has high amounts of healthy fats. The other sources would be fishes, fatty fishes, sardines, salmon, really, really high fat intake.

Those would be really ideal sources of getting really healthy fats into your system. Doing things like saturated fats, fried food, fried bacon, fried zucchini, fried whatever, eating a lot of fried foods can really cause inflammation, oxidative stress, especially if you already have low antioxidant status. Some people, when they try to get into ketosis, they just fall apart because they're getting way too much glycated end products from their fried foods, that causes significant inflammation, so be wary of that.

Another reason people have a hard time transitioning into ketosis, into a ketogenic state, as they follow the guidelines, is they don't have enough fiber. You're permitted vegetables on a ketogenic diet. It's not an Atkins diet. Atkins diet, people are eating tons of fat all the time, and not much vegetables. It's not a carnivore diet. Ketogenic diet, you really need to do it with lots of diverse vegetables. So, vegetables that are not underground vegetables, like potatoes and yams, but other types of vegetables that are underground, like kale, like spinach, like cabbage.

All the different things you can use in a great salad. Those don't have high carbohydrate intake. Eating lots of healthy vegetables is critical to help support your micro biome. We know that research on the micro biome really shows that within even one day to three days, the micro biome can change by your diet intake. So, sometimes people, by time they follow a ketogenic diet for three to five days, and follow it, and if they're not eating enough diverse vegetables, they can really throw off their micro biome, and just not feel good.

They can also feel inflamed and not doing well. That's another main reason why people have a hard time crashing, going into ketosis. That was the ... two, three ... third reason, third mechanism. So, fourth mechanism, where people have a hard time getting into

ketosis, is because they have a gallbladder problem. This is something we should talk about just for a few minutes, and then we get into some questions. The key thing, also, to know, is that some people have gallbladder difficulty, gallbladder function difficulty.

What I mean by that is, the gallbladder has a tendency to have its bile become thick, and if the bile becomes thick, it's referred to, in the medical literature, as gallbladder sludge, and that can be picked up on an ultrasound. Then eventually, the sludge forms into a stone, which can be gall stones. Ultimately, what happens when a person's gallbladder starts to become sludgy, and start to form into stones, is that they become inefficient in releasing bile. Bile is essential to break down fat from your diet.

One of the things that will happen, when people have gallbladder issues, is they're typically ... without even knowing it, they tend to avoid fatty foods or fried foods because they feel really bloated and distended, but when they try to go on a ketogenic diet, they just feel awful. Their bowel function changes in a negative way. They get constipated. They can have increased bowel motility. They can have folding stool. They can feel bloated and distended all the time. They just feel kind of ...

Sometimes people say they just feel disgusted in how they feel. They just feel sluggish and weak, and all that. In those scenarios, you really may not be able to do a ketogenic diet. Now, your biggest clue that you may have gallbladder issue, is that when you eat anything that's fatty, has olive oil, or maybe even fried food. Or they had a French fry, or something like that, and you get immediately distended or bloated. Or if you take fish oils, and you get bloated, or if you take fish oils and you keep burping up all the time, those are clues that you may not have a very fit gallbladder.

The other key thing is, that if you feel like, sometimes in the morning, you have a bitter, metallic taste in your mouth, that's some bowel regurgitation that also happened when the gallbladder was not working so well. Be aware of that. If you have gallbladder related issues, we might have to do another talk just on that, because there's a lot of things talked about with that alone, that topic alone, but you may not be able to do well on a ketogenic diet. Be aware of that.

You can absolutely change your gallbladder function over time and then try a ketogenic diet, but if you're feeling really, really bloated, distended, not feel well, and that could be related to a gallbladder problem. So, those are the main mechanisms that cause people to have difficulty transitioning into ketosis. There could be some other ones, as we talk about... Let me just add ... let me also clarify a few things.

Ketogenic diet does not disrupt thyroid function in negative way. Ketogenic diet is not contra indicated in Hashimoto's. This is what we call internet regurgitation of people who don't know how to read research. It's just what it is. People that get into ... there's a few papers that show T3 levels change when people get into a ketogenic diet, because they're having low carbohydrates. That's fine. That is part of normal physiology. When you don't have enough carbohydrates, that doesn't disrupt the thyroid gland function.

Your body metabolizes calories differently when you're on a low carb diet. That's one thing. Secondly, there's actually been a clinical study published that ketogenic diets actually lower thyroid antibodies, and they have major benefits in dampening autoimmunity, because ketones are anti-inflammatory, and they stopped blood sugar spikes, which can tend autoimmunity. So, despite what you have people write about, you have people trying to interpret literature, where they understand low carbohydrate diet.

They understand the concepts of statistical significance, and they understand, I mean, how metabolism changes in a low carbohydrate state with T3. So, if you are in any one of these forums, just know, there's a whole rumor going out there that you can't do ketogenic diet with Hashimoto's, or thyroid problems, and that is absolutely incorrect information. Unfortunately, it's regurgitated on a lot of websites by notable thyroid experts. What can you do? That's one thing that I know is a question that typically comes up all the time.

Alright. So, those are the those are the main things. Now my lovely wife, Dr. Reyes, is here to help me-

Hi. How are you?

... with questions.

[inaudible 00:24:38] and your lovely dog. This is ...

And my lovely dog. Lilly-

Oh my god.

... which you can hear her bark.

You can hear her bark. Sorry. The dog walker couldn't make it today.

[inaudible 00:24:48], thank you everyone for joining in. It's so nice when you guys list where you're coming in from. It's so cool to see people from different countries say hi and let us know where they're from. Thank you for doing that. Okay.

Okay.

The questions. Yeah.

So, yes. I got to tell you quite a few questions about thyroid.

Oh, yeah, sorry. Yeah. I know.

So, I'll have to cross [inaudible 00:25:11]. Really, people get confused.

Yeah.

Okay. So, Tamara asks... Hi, by the way. How are you?

Good.

**Good. Okay. Tamara asks, what about improving endurance training? Thank you.**

Yes. Ketogenic diet can really make a big impact on endurance training. If you look at muscles, your fast twitch muscles, and then you have slow twitch muscles, and slow twitch muscles are for an endurance. Actually, what they find is that when people do long endurance activities like running, they actually can switch the expression of some of these muscle fibers and how they use energy. Being able to switch to ketosis is actually critical for people to be able to do long term exercise. Normally, you should also know that humans by design, have always been in states of ketosis in between hunting and gathering food.

It isn't till the development of modern civilization where people had to have three meals per day, and three large meals per day, with lots of carbohydrates, refined carbohydrates, then everything started to go south, and lots of chronic diseases started to develop. Many, many long term athletes actually are very efficient in their ketogenic states, and the longer a body stays in ketosis, and the longer you have the long endurance pathways, the pathways that activate ketones for energy become much, much more efficient.

It's no problem for endurance activity. Now, you may notice, as you transition from regular blood sugar physiology to ketosis, and that keto food transition in that first week, you may not be as efficient, but once you finally get into ketosis, and especially if you adapt within a couple weeks, and your body is using ketones very effectively, you may be able to go longer with your endurance exercise than you've ever had before.

**Okay. So, Catherine and a few other people are asking, would you please clarify, when you say we can use MCT oil as we transition into ketosis, does this mean use it during those three to five days, when first starting to eat ketogenic, but not yet producing ketones?**

Yes. Remember, MCT is not actually ketone, so that's not going to throw off your actual urinary test or your blood test. So, if you're actually not eating sugar and saturated carbohydrates, and your body shifts into ketosis, you can, in a sense, not have enough glucose metabolism, and your body's still trying to use ketones, but it's not very efficient breaking down your own body fat for ketones, so having some MCT, it really allows you to function. So, just like people can become hypoglycemic, people can become hypo ketone-emic, in a sense.

Their ketone levels can be too low, so, be aware of that. So, if you're transitioning to ketosis, there could be times your body just isn't efficient making ketones, and you don't want to throw yourself out of ketosis. So, you can take some MCT oil, and still get accurate results with your urinary test and blood test to determine if you're in ketosis. It's the most efficient way to raise your most efficient food source to immediately go into ketones. That isn't actually ketones, so your body will use them as it needs to during that transition.

Yeah. Lots of hypothyroid questions.

Yeah, by the way, all the thyroid people that are here, please tell people that stop the rumors. I mean, let's see.

Any [crosstalk 00:28:47] research you can point them to or [inaudible 00:28:48]?

The research, just go to the medical literature. It's all there. People that are listening in ... I don't know what to say. Maybe we'll do a talk on that separately one day. Go ahead.

**Okay. Lisa asks, would you suggest doing keto with a patient who has MS? That also has a problem ... and she's saying bile, but I think she's ... It's B-I-A-L [inaudible 00:29:12]. I think she means bile, like gallbladder.**

Gallbladder issues. Yeah.

Okay. Yes.

So, you can never really ... it's always going to be difficult for someone to do a ketogenic diet if they have gallbladder issues. That's its own issue. Also, just to point out, because I know this question is going to come up, if you've had your gallbladder removed, what happens is, your gallbladder, there's this duct called the cystic duct that then goes into the gallbladder, when they cut the gallbladder out, the cystic duct pooches out and kind of becomes like a new stubby little gallbladder.

So, you can still have all the symptoms of gallbladder issue and still have gall bile sludge in your new cystic duct pouch of your replacement for your gallbladder. So, you still need to do the dietary lifestyle strategies to impact gallbladder function, which is basically reducing fat and thinning out bile, is the basic concept. Now, if they have MS, you would hope to get them there. There's two clinical trials, two clinical studies not published where they used ketogenic diets and it really helped with recovery of multiple sclerosis. [inaudible 00:30:12] thing about ketones, and ketones are not just fuel sources. Ketones are actually anti-inflammatory messenger and mediator of compounds.

Ketones have a profound impact in dampening microglia. These are immune cells in the brain pathways for inflammation. They do help recovery. In my practice, remember, I ... when I work with neurodegenerative, neurological autoimmune disease, like MS, or even traumatic brain injuries, they do much, much, much better getting into ketosis than if they're not. You definitely want to consider with MS patients, but if they have a gallbladder issue, you're not going to be able to do it. You're going to have to get the gallbladder under control and then jump into it.

**Okay. Then, I know you mentioned this, but a lot of people are asking, is the keto diet beneficial for hypoglycemics?**

Yes. By the way, if I didn't mention this, if you are struggling with hypoglycemia, like you just can't get your blood sugar levels stable, and you're crashing, and you have to eat

every two hours, and no matter ... even if you need high protein, you just can't get your blood sugar stable. One of the ways to give your adrenal glands and your blood sugar regulating systems a break is to shift into ketosis. What happens with many people that are hypoglycemic ... and let me just define what that means. Some people have what's called a functional hypoglycemia.

Their lab tests may still look normal when they measure the fasting glucose, because they're using a range of 65, usually to 99, with most labs, but their glucose levels could be below the 85 range. The key thing with them is that they have symptoms of shakiness, lightheaded, irritability between meals. They eat, they feel better. They usually crash in the afternoon, and they typically have a hard time sleeping through the night. They wake up the middle of night into a nocturnal hypoglycemia response, but with those patients that have hypoglycemia patterns, for sure, what's happened is, they've lost the resiliency in order to get their blood sugar levels back up.

When your blood sugar levels drop, your pancreatic alpha cells have to release glucagon to get it back up, and then your adrenal glands have to release catecholamines and cortisol to get blood sugar levels back up. For some people, they've been hyperglycemic for 10, 20 ... their whole teenage, adult life. Their pathways just become depleted and they have this tendency to be hyperglycemic ongoing, even though they don't have a disease. So, for them, sometimes just getting into ketosis for a few months can really help those alpha cells, the pancreas, and adrenal glands recover, and they feel a lot better afterwards. Ketogenic diets are absolutely a good idea for people that are constantly struggling with hypoglycemia.

**Okay, George asks, when will you recommend the AIP diet versus the standard keto diet?**

Well, I mean, if you have an autoimmune disease, the guidelines of an autoimmune Paleo Diet still have to be incorporated into a ketogenic diet. I mean, the autoimmune Paleo diet, you basically have to go off gluten and grains, which are already keto. Then you got to be concerned with lectins and nightshades, especially if you have auto-immunity, and especially if you have auto-immunities where you have agglutination, things like rheumatoid arthritis.

Not all auto-immune disease patients are sensitive to lectins and nightshades, but many are. You basically, if you have autoimmunity, you follow the same this restrictions of an autoimmune Paleo diet, which is no gluten, no dairy, no grains, no nightshades, and it's really falls right in place with being in a ketogenic diet. You just eat the vegetables that are not nightshades or lectins in the ketogenic diet, and you eat healthy amounts of fats, and no problem for someone to follow both guidelines.

Okay. Arlene from Paris.

Paris. Bonjour.

Bonjour, bonsoir, Arlene.

Our favorite city.

Paris [inaudible 00:33:57].

Yes, question.

[foreign language 00:34:00] Isn't it night there? I'm trying to [inaudible 00:34:03] my French.

Nice.

**I started ketosis because I suffered from chronic insomnia, and had adrenal HPA axis dysfunction. Can keto help with HPA axis dysfunction and adrenal problems?**

Absolutely. Ketogenic diet is also another great reason to ... another thing to consider if you're constantly dealing with these HPA axis adrenal functional issues, because once you get into ketosis, that whole blood sugar rollercoaster ride, and that constant stress on the adrenal glands to get blood sugar levels back up, it's gone. It's no longer a factor.

It gets a chance to rebuild. It's much more effective than ... Some people have adrenal related functional imbalances, and then try to take adaptogens and B vitamins, and all these adrenal gland supplements. With very limited effects. The most effective thing you can actually do to give your glands a break, especially if you're having nocturnal hypoglycemia, is to just get into ketosis.

Okay.

**I will also mention another question comes up quite ... How long do you have to be in ketosis? Can you take breaks?**

That was my next question.

Oh, really?

Yeah, go ahead.

The key thing is, when you first start, you want to go and get into ketosis, and stay in it for as long as you can, so your body can get adapted to it. Once you struggle for three to five days to get in ketosis, last thing you want to do is break it, and then start all over again. That's what I would say. Once you get into ketosis, try to go as long as you can. The longer you're in it, the more efficient your body becomes using the metabolic pathways to use ketones ... to process and make ketones, and to use ketones for energy.

Then at some point, you should take a break. For some people, it's maybe three weeks into it, or a month into it. For some people, it's a special occasion, but you should take a break, and then you should, maybe ... It depends what your clinical goals are. I mean, if you have seizures, you may not be able to take a break, because if you take a break,

you'll have the seizure flare up, and it can be a problem, but if your goal is just for, let's say, some adrenal gland recovery, or just to control the autoimmunity, or just to control your diabetes, or whatever, or even weight loss, whatever your goals are.

It is important to take a break, and then once you take a break, it shouldn't be as hard to get back into it. Now, some people have been doing ketogenic diets for 10 years, many, many, many years. They all occasionally still take breaks and get out of ketosis, and maybe celebrate and go to a wedding, and have champagne have wedding cake, and whatever they want to do. Then they transition back into it. The more adapted their body is to being in ketosis, the faster they can get back into it once they break it.

Okay. There's a lot of gallbladder questions, so I'm going to summarize, please.

Okay. Sure.

**Leah says, I love the keto positive effects. However, would you suggest it to clients who have sluggish slash sludgy gallbladder, who struggle with dietary fats?**

No.

**There's a couple of add ons to that. Beyond enzymes, what do you recommend?**

Right. So, people who have gallbladder issues, we'll have to do a talk, but basically, the easiest things you can do with people who have gallbladder issues is get them to stop eating fats. That's number one. Lots of research shows, actually, coffee does help, so if they're drinking coffee, that's useful. Dandelion root is a herb that helps them bile. That's just getting used to the basics. Dandelion is something that helps them bile. That can be used. If you really have to get rid of stones, and it's really thick, then just what are called bile salts, ox bile salts can be very effective, and they help thin bile.

The problem with ox bile salts is that they also activate what are called FXR receptors in the gastrointestinal tract, which increase motility. For some people, they take it until they have watery bowel movements and totally fall apart in front people, They can tolerate a small dosage of it, but not long term. There's been a couple published studies in the literature, where they show pre and post gallbladder change with that, and I have one I'm trying to summarize to publish then, too, on that, but those are the basics.

**Okay. Then the follow up of that is, do you endorse a gallbladder flush?**

Do I endorse a gallbladder flush?

Yeah.

Well, I don't know. I can't endorse anything. I don't want to endorse anything. I don't know what that really means. Gallbladder flushes have some controversial issues in the actual medical literature. There was a paper published, I believe it was the Lancet, where they showed people that did gallbladder flushes have these, basically, just fat.

These round stones are nothing more than fat and bacteria, that they're not actually gall stones. So, other people have argued that.

The key thing is, if you do gall bladder flush, basically, if you see all these little round things in there, those are not gall stones. That's just what happens when you follow the gallbladder flush, where you basically take Epsom salt and olive oil, and drink that, and mind your side. Then you have this crazy bowel movement because of the Epsom salt impacting ... adding magnesium and causing that gallbladder contraction with the high amount of fat, like in some olive oil. But for some people, is that a bad idea? I don't know. For some people, they feel a lot better. I mean, I've had patients that they do that occasionally and they feel a lot better.

It may be getting rid of some sludge in the gallbladder. It's just, I think the problem becomes controversial when people make the assumption that they're actually getting rid of gallstones. Is that possible that it could happen? Yes, but absolutely, the little round things that come up in the stool after they do the flush are usually just bad bacteria. As long as you know that, those are the key things. I'm definitely not against it, but I would say the caution, so we start out there. IF someone has some gall stones, do you cause gall stone obstruction if you do it, which is always the medical concern?

**Right. Okay. Connie's asking, is it important to transition off of keto diet? She says she's going on the diet for four weeks, then she's going on vacation for a week in Puerto Vallarta. Lucky.**

Lucky.

For a week, and then she's going to do it on return. Should she transition off it before she goes her vacation or ... do you know what I mean?

Well, I would think, you probably want to be in ketosis on your flight. I'm sure there's not good food and it's easier to stay statue, just to have energy, and hungry if you're not it. Typically, no matter what, the first meal you eat after ketosis is going to be a little bit of a rush. You may not want to go with the highest carbohydrate intake. You may want to go with high fiber. If you're going to eat a little bit carbohydrates, make sure it's really high in fiber, like a piece of fruit or something. Versus, I don't know-

Cake.

... a Martini, sugar filled Martini or something like that. Or just a glass of red wine or something. I would say transition to some fiber with some sugar intake and having fiber will slow down your glucose surge when you eat. So, try to have some fiber, food high in fiber as your first meal.

Okay. It is safe to be on keto, if you are celiac.

Yes. There's no contraindications for being on a ketogenic diet if you're celiac. As a matter of fact, I can tell you from working with lots of celiac disease patients, many of them feel a lot better in ketosis. The issue, the thing about ketosis is that it ... again,

ketones have an anti-inflammatory effect. The key thing is that they're just eating healthy fats and not eating unhealthy fats. So, no problem for any kind of autoimmune disease, being in ketosis.

And the other key thing is that ketones have been shown to dampen and heal neuro inflammatory responses in many patients that actually have celiac disease, which is an exaggerated immune response to gluten ... an exaggerated T cell response to gluten, genetically. Their gut gets really, really inflamed, is that they actually get injury to the nerve Plexus of their gut. Many times, being in ketosis helps them heal that gut issue and they notice a big difference over a period of a couple months in their motility and their gut function, as they can dampen the fire their gut from ketones.

**Okay. A lot of people are asking about, you can recommend meal plans, or things ... I know.**

I know. I can't recommend meal plans. I cannot. I think we have some articles, maybe in our website for it.

Yeah. Yes.

There's a lot of information out there. I don't play chef. I don't play that stuff. All I can just share with you is clinical research information. There's lots of great people, much more qualified than me that have great recipes and menus, and follow keto lifestyles, and I would suggest you follow them.

**Right. Okay. Ashley's asking, what type of protein powder do you recommend on ketosis, if any? She likes her shakes and can't figure out if it's right to use protein powders and what kind?**

Every protein powder is a problem. It's just that simple. I mean, promote ... well, let me take it back. If you have a chronic inflammatory condition or a chronic disease, you should not be even playing this protein powder game. Protein powders, proteins get hydrolyzed. They become metabolized and there are different proteins that are very antigenic, especially things like whey protein, even some of the vegetable proteins. I mean, just eat real food. The problem with the way that process proteins to make it to a powder, is that they become very, very reactive.

It's better not to use any powders, if you use, especially if you have a chronic inflammatory condition, and so forth. In general, I'm not a big fan of protein powders, if you have a chronic illness, which is most of my patients that I work with, but if you don't have a chronic illness, if you want to use a protein powder, and then that's fine. I don't know what the best ones are, because in the world I live in, we're trying to constantly deal with inflammation, autoimmunity and stuff. So, I don't have a lot of knowledge of what the best ones are, if you don't have a chronic inflammatory condition.

Okay. Amy's asking, it's kind of one question. I checked my ...

Oh, one last thing. If you're getting into ketosis, they do make ketone powder drinks. You can use those. You just know your laboratory results are not normal, so they do have a beta hydroxyl butyrate. There's a lot of ketone powder drinks out there, if you need energy while you're in ketosis, and they also contain electrolytes. That can be very helpful, because also when you're in ketosis, you can get your sodium and potassium levels, and your essential mineral levels depleted pretty quickly when you're in ketosis, especially if you've been in for more than a week or so.

If you go to Amazon or any online store, and you go into ketosis, instead of using a ketone powder, you can just use beta hydroxyl butyrate powders. You got to be careful when you read them because some of them use a high amount ... have sugars like stevia, and they can make you have sugar cravings. Even though stevia technically is not a sugar, it still causes sugar cravings with people. You got to be aware of those. Then also, some of the protein ... the ketone powders out there are loaded with caffeine, because many people using these for weight loss, so you may want to find one that isn't loaded with a lot of stevia and a lot of caffeine, if you're just wanting to use it throughout the day for some energy.

**Okay. This is Amy saying, I checked via blood ketone strips. I've never heard of the keto flu because of too much protein. I always thought ... her, was told, it was a metabolic shift and transition of electrolyte balance. Thus, people feel better after supplementation with appropriate electrolytes.**

Yeah, it's not related to protein. The reason people have a keto flu is because the body doesn't know how to use ketones efficiently yet. You do make a good point. You can use electrolytes, especially potassium, to help when you're transitioning into it. Using things like, just like a general mineral, potassium, some salt can help as well. Some people get keto flush because their body is inefficient, and some people just get low in electrolytes, but it's not the high protein content. That's another good point. Thank you for bringing that up. If you are having a hard time changing the ketones, you may also want to start taking some basic supplemental electrolytes to help you, that can help you with your energy levels and your transition.

**Okay. Meredith is asking, are you including collagen powder as a protein powder that is not recommended, if you have chronic inflammatory condition?**

Yes. Well, collagen powder, I don't use that often. Again, people who have autoimmunity, again, the process of taking proteins and converting it to a powder, the hydralization of proteins makes them more inflammatory and more antigenic for most people. So, that's just in general, but as far as regular proteins go, if you don't have an inflammatory disease, you can use collagen powder. That seems to be a lot of benefits for the collagen powder, helping the gut heal and providing a good source of protein as well.

**Okay. Why does fasting glucose often increase for those in ketosis?**

It doesn't. Fasting glucose does not elevate people in ketosis. If it does, that's something unusual. You actually don't see that. I don't know why that's happening, but that's not a common response. It would be atypical. You would, go what happened? And you would be concerned about lab error if you saw that. You typically don't see fasting glucose on [crosstalk 00:47:35].

If they're truly in ketosis.

Yeah.

**Okay. Susan, can you please speak about ketosis and vegetarianism?**

Ketosis and vegetarianism? See, yeah, you can absolutely do it. You're just going to have to get ... just, you can eat lots of healthy fats. You should be able to do it. Probably going to need to eat cheese. I believe, for some of the vegan cheeses can be better options, made with coconut milk, so you don't get that high animal caisson content, so you do avoid some of the inflammatory responses, but can absolutely be done. You have to put a lot of olive oil and fats on all your veggies and salads. You may want to also mix oils. You want to have a mixture of olive oil and avocado oil, and flaxseed oil and-

Coconut oil.

... coconut oil, and different types of things you can mix into your salads and veggies.

**Okay. While on ketosis, are there supplements to take to support your adrenals HPA axis thyroid, et cetera.**

You can take all the regular supplements for adrenal glands that are out there, to give you some additional support, but there's nothing unique or special. Most common thing people use there are what are called herbal adaptogens and basically, B vitamins, is really what most adrenal products supports are.

**Okay. Todd is saying ... I don't know if it's a question or he's making a statement. Why can't the people with gallbladder issues take bile salts to help them emulsify fats?**

They can. That's one of the things we talked about. People can take bile salts. If you take too much of them, you can get a watery bowel movement. Then also, the other thing to add in, if you have gallbladder issues, that I didn't mention, is you can take lipase as a digestive enzyme. So, people who have gallbladder issues, they can take and lipase to help digest their fats as well.

**Okay. Sorry. Thank you, Dr. Kane and team. Can you please go over, what's the best way to test for convenient ketosis? Is it urine, breath, blood? Which do you prefer?**

Yeah, breath testing isn't reliable yet. I don't think the equipment and machines are there, as potential, but I don't think what's available in the market right now is reliable. Blood is going to be the best way to measure, and then urine would be ... it's okay, too. It's definitely the cheapest, because you can buy a bunch of ketone strips and you don't have to prick yourself to get the measurements, but blood is the best measurement.

**Okay. What do you think about bulletproof coffee, or coffee with MCT oil and butter?**

That's great. That's a common strategy a lot of people use in ketosis. They follow the bulletproof, I guess they call it lifestyle now, where they wake up in the morning, have coffee. Caffeine also helps you get into ketosis. Caffeine stimulates catecholamines, [inaudible 00:50:30] and lipase, which is the path we use to break down triglycerides to ketones. Some people will wake up the morning and for the first meal, they'll have coffee, and they'll put some kind of fat in there, either oil or butter, coconut or, or ghee, or some kind of butter. If they can tolerate the protein, it seems to be a really good way for them to have sustained energy throughout the day, and works great with many people while they're following a ketogenic diet.

**Okay. Shawn is asking, how does the reference range change for thyroid hormones on a ketogenic diet? Does it look like low T3 syndrome or ESS? I don't believe this is addressed in your thyroid book.**

It's not a consistent pattern. There's just a paper that ... when someone gets into a low carbohydrate state, the body doesn't need as much T3 to metabolize fuel. T3 levels go down from baseline. You may not even see anything wrong with your lab test. This is, again, where we have a problem with interpretation of published studies and real practice, and real life.

You would probably never see any actual change in someone's thyroid panel in any way, when someone's in a ketogenic diet. When they do studies and they compare a baseline to the effect of a low carbohydrate over time, they can see some change in T3. Of one of those papers, it was very slight, and the other paper, it was not even statistically significant, meaning that could have just been due to chance. It's not really a factor in a way. You won't see any changes on your lab test.

**Okay. Go ahead. Sorry? Oh. Cathy is asking, is a ketogenic diet possible for someone with SIBO? Or is Paleo better?**

Is a ketogenic diet better for someone with-

Possible-

... possible with SIBO?

... for someone with SIBO, or is Paleo better?

I don't know. The word better, it depends what your goals are. Obviously, with SIBO, you have to follow the FODMAP restrictions, you get bloating and distension. I know we have a talk on SIBO plan is one on our list, because there's been a requests for that, but if your goal is to try to ... If your goal is to try to increase ketones because it has benefits for your brain, it has anti-inflammatory effect, and it can really speed up weight loss, since insulin levels drop, then that would be a better approach than, let's say ... what was the other option? Paleo?

Sure.

Paleo. [crosstalk 00:52:51] Most people do Paleo because they're trying to get their antigenic load down, so those are the things to think about.

**Okay, another thyroid question. Can your thyroid meds become more absorbed and overdosed on the keto diet?**

Well certainly, anytime you do a drastic change in your diet, there's individually uniqueness to thyroid replacement and thyroid hormones, but it's not common. Most people that go in ketosis don't necessarily feel that the dose they're taking causes them to get wired and hypersensitive, and so forth, but especially if they're eating enough fiber. If they're eating plenty of fiber on the ketogenic diet, then those things don't typically happen. If people were just avoiding fiber and just eating nothing, but fat and meat, that's more likely to happen, but still very rare. It's possible, but it's not common.

**Okay. [unintelligible 00:53:49] is saying, I am insulin resistant. Why do I typically want to have a bit of sweet after a meal?**

Because you're insulin resistant.

Because you just answered yourself.

Well, if you're insulin resistant, what happens, you can't get glucose into the cells, so there's a messenger sent to your ... appetite sends your hypothalamus that you need more sugar. One of the most effective ways published in the literature to completely reverse insulin resistance, even diabetes is this ketosis, because insulin levels drop, and when insulin levels drop, then those receptors stop becoming resistant to it. A lot of people will do a ketogenic diet just for a month or something and they have a tremendous reversal and change in their insulin resistance.

**Okay, [Laz 00:54:31] is asking what time of day is best to test for ketones?**

Your ketone levels are going to fluctuate and change, they're going to be lowest in the morning, just know that that's a possible thing because your body has been using ketones all night. Sometimes ketone levels are low, not because you're not in ketosis, but your body has been using them. And also, right after you workout, your ketone levels maybe a little bit low, so it's not necessarily the time of the day but it's like what's happened to your body. If your body is put into a physiological state where it has to have these ketones. So typically, when you're asleep and wake up, they're a little below,

and typically when you exercise, they're going to be a little bit low because your body has used those ketones for those workout.

Just be aware of that as you measure your ketones. Then the rest of the time, you can just check them and see how they are. Your best time to really check to see if your ketosis is have a meal, and then maybe like, half an hour, an hour after the meal, just confirm you're actually in ketosis.

**Okay, Elaine, is asking any possible connection between failing the alpha-Ketoglutaric acid challenge in your brain book, and severe insomnia on keto, despite following it perfectly for all your specks? It's affecting two family members. Any possible connection with-**

I don't know of any possible connection, so I'm going to say no. But I have the option to think about that more and change.

I'll write it down so you can think about it later.

Right. I don't think so.

Okay.

Okay.

**How long will it take to correct insulin resistance with a keto diet?**

It depends how severe the insulin resistance is. If the insulin resistance is the point where they're diabetic, and have [inaudible 00:56:15] it would take longer than if they didn't have that and just had a little bit of postprandial insulin release or so forth. Most people will notice a dramatic change in their insulin function, even after they stop ketogenic diet, even as short as one week or two weeks into ketosis.

**Okay. Lisa, will a small amount of sugar one to two teaspoons prevent ketosis?**

It's possible. I'm not sure what the dosage is. But simple sugars will just throw off metabolism, how long that lasts, I'm not sure. I would say the immediate response is it's going to throw someone off ketosis. How long that lasts, and whether they can go back to ketosis, I really can't give you an accurate answer because I don't know if that's ever been published. But typically it will cause an immediate shifting in metabolism right out of ketosis, how long that lasts, I don't know. But you'd have to kind of make ... that's why it's important to check your own ketone levels, and see how you respond and how do. I would guess if you have a couple teaspoons of sugar, if you'd let your ketones like within the first half hour, you're not going to be in ketosis, and then you can measure how long it takes for you to get back into ketosis, and that would be your best way to know for your own body how it impacts you.

**Okay, can you address keto and intermittent fasting?**

Yeah, so actually, when people do intermittent fasting, if let's say, for example, the most common type of intermittent fasting would be like a time restricted fasting, where they fast for 18 hours and have a feeding window of six hours. They're actually in ketosis. People [inaudible 00:57:51] intermittent fasting, they get into ketosis. When people do alternate day fasting fast for a day they get into ketosis. The reason some people have a hard time doing it is because their body doesn't have ketogenic efficiency. Their body doesn't know how to use ketones, so they try to do intermittent fasting, and they totally crash and fall apart. But once people get into ketosis and the body gets used to using ketones, then for them to get into intermittent fasting, whichever type they do is much, much easier.

I think we did a talk previously on intermittent fasting, we said one of the ways to transition into that without really having all the side effects and falling apart and crashing is make sure your body has some ketogenic adaption by falling ketosis for a while, and then it's much much easier.

Yeah. It's a ... two weeks ago [inaudible 00:58:37].

Yep.

**Okay. Chris is asking, how do thin people keep from losing too much weight on a ketogenic diet? If say they're going on it because they're still insulin resistant, like skinny fat?**

Skinny fat is still a problem because this visceral adipose tissue is highly inflammatory and leads to serious diseases. Skinny fat people, which means they don't have much muscle mass, and they look skinny, but when they actually do body composition tests, they're actually very fat. They really need to get muscle. Ketogenic diets and even intermittent fasting has been shown to not cause any muscle depletion. Long term fasting will definitely deplete muscles. A ketogenic diet is there. The most important thing for people who are skinny fat is they have to build muscle. Their health will have serious problems if they don't build muscle.

There's some degree of muscle mass you need to have to be healthy for lots of different reasons, but their fat isn't as big of an issue is that they're completely deprived of muscle. So they need to get some degree of physical fitness in so they can build muscle. That's more important than losing that. This [inaudible 00:59:53]. If they're in ketosis, they can definitely build muscle. They're having enough calories to be able to build muscle so it's no problem.

**Okay, Michelle is asking what's the best alcohol drink? Is white wine okay? Because [crosstalk 01:00:08].**

The best alcohol drink is vodka.

Is a martini.

Preferably-

With a nice steak.

... olive oil, or with extra virgin, Dirty Martini-

There you go.

... not the sugar martinis, but it's still going to throw you out of ketosis for a period of time, but it's going to be much faster for you to get back in. If you're already in ketosis and you want to have a drink vodka would be the easiest type of alcohol to have to be able to then get back into ketosis. Wine and beer will definitely completely throw you off and be hard to get back in. But-

It's too much sugar.

Yeah, the sugar content. Vodka, without any sugary things added to it is the way to go.

Olives.

Okay, one last question-

Sure.

... or we're good.

**I can. Someone's asking about, what about nuts and seeds on a ketogenic diet [crosstalk 01:01:04].**

Yes, nuts and seeds are permitted on a ketogenic diet, just, they're also very high protein. So you got to be careful, you're not eating so much nuts and seeds that you're eating too much protein versus fat. Nuts and seeds are definitely permitted as long as you don't react to them, as many people have autoimmunity have some reactions to nuts. But if you're not reacting to nuts, it's definitely something you can do in the ketogenic diet to help you have snacks throughout the day, and so forth.

Okay, this is being asked a lot.

Oh really?

**What is happening when LDL is going up high on keto? People are saying, "I see this a lot. I see this a lot." LDL up high on keto. What's going on [crosstalk 01:01:46]?**

Yeah, I've seen that happen, too and I don't have a good answer for that. There are some people who metabolize fats differently. We know there's what are called hyperlipoproteinemia. There's five different types. With some of the types, types one through one, two, and three and five, you can have fats that actually increase levels like LDL, especially types one and two. I would only guess that there's some sub variations of some gene uniqueness's, that they may not have a full blown type one or two

hyperlipoproteinemia. But they have some inefficiency in metabolizing fat, so their LDL levels go up.

With those individuals, you want to be maybe a little bit concerned, especially if the oxidized LDL goes up. LDL by itself, going up is not as big of a factor unless it's oxidized. If they really wanted ... that was really concerned for them, you may want to measure oxidized LDL, and oxidized LDL really leads to plaquing and so forth. But also with all these people that do have some of their cluster levels go up, if you actually look at their traditional cholesterol risk markers, like the total cholesterol HDL ratio, LDL, HDL ratio, they don't actually have increased risk despite the numbers went a little bit up.

I think with some individuals that have that, they have some gene uniqueness's that make them process fats differently than most people. If you [inaudible 01:03:04] concerned measure oxidized LDL, and then actually look at the ratios to see if they have any significant risk.

### **Can you please mention your website?**

Yes. Thank you, Elaine Susan for reminding me. Yes, please check out our website. Dr. K News, D-R-K-N-E-W-S.com. We have articles on there. We have a couple online programs, one for the brain, one for immune tolerance. We're hoping to get some new programs available early next year. We also if you can follow us on this Facebook page, that would be great, then we can get information to you when we do these talks and the topics all the time. Those are the main states.

Yeah, I was just going to say, awesome.

Oh, and then if you're a healthcare professional, we have the Kharrazian Institute, which provides postgraduate education. We have all the previous courses on demand, so you can access them whenever you want. And we have an upcoming course on infertility next month.

Yeah. If people want information on certain topics, when you go to Dr. K News, if you go to the search bar on the top, you can type in a word like-

Right.

... [inaudible 01:04:11] or something and it pops up, because the website [inaudible 01:04:14].

Right. That's a good point Adrian, [crosstalk 01:04:19] saying that.

I just figured-

[crosstalk 01:04:23] If you go to Dr. K News, and if you have specific topic like ketogenic diet or intermittent fasting, or paleo autoimmune or Hashimoto's, you can just do a search on our website, and you can see all the articles we've written on it.

Yeah, it's nice.

**DrKNews.com**

**Title: Keto without crashing**

**Transcript: Facebook Live October 1, 2020**

Thank you for joining us, and really appreciate everyone's comments, and thank you for everyone's positive messages as well. I can see them all the time I just can't respond because I'm trying to, give you information. But thank you, I do read them and I really do appreciate them. Thank you everyone.