ELEMENTAL DIET

INSTRUCTIONS

This handout is an excerpt from Dr. Ruscio’s book. The term “Great-n-8” refers to a self-help guide contained in the book. To all current patients, this term may be disregarded as your current personalized treatment plan is already in play.

HYPOALLERGENIC LIQUID DIETS AS A POWERFUL HEALING TOOL

What is an elemental diet? An elemental diet is a liquid diet that can be both antibacterial, anti-inflammatory and is also reparative and hypoallergenic. It’s similar to the modified fast we discussed earlier but there are also some important differences. In elemental diets the contents are fully digested or broken down into ‘elements’. For example when protein is broken down (aka digested) into its most elemental form you have amino acids. Accordingly, the carbohydrate contained in an elemental diet is also fully digested and thus there essentially no fiber. The low fiber content, as we have discussed, can be helpful for gut inflammation and for bacterial overgrowths in SIBO.

The elemental diet is more well-balanced than the modified fasts and provides a balance of essential proteins (amino acids), carbohydrates, fats and vitamins. Because of this the elemental diet can be used more frequently and/or for longer periods of time, it can be used exclusively for up to 3 weeks in duration. As with the modified fast, the elemental diet can help give your intestines a break, and for many people this break can provide valuable time to heal. For those who have not responded to other therapies the elemental diet can often times be the treatment that makes the difference.

There are a few different versions of the elemental diet available. There is a prescription version as Vivonex Plus. This works well and has been well studied, but the taste is hard for many to get past. There are some commercial versions available that are semi-elemental or polymeric - this makes them more filling, taste better and they still work well. What does semi-elemental or polymeric mean? In being semi-elemental the ingredients are not 100% digested as with the elemental version. This mainly involves how digested or broken down the proteins are. Polymeric has the least broken down thus largest protein molecules, while elemental has the most broken down and smallest protein molecules. See illustration below. Again, these differences do not seem to make much of a difference clinically. [1,2,3]

But the larger molecules in the semi-elemental or polymeric do make the formulas better tasting and more filling. If you are getting a little lost in the molecule size details, don’t worry. We will cover simple recommendation as to how, when and what to use as we work through our Great-in-8 plan. Going forward I will refer to these diets as either elemental or semi-elemental because this is what we will use in our Great-in-8.
Here is a quick recap of elemental/semi-elemental diet key points

- Antibacterial
- Low in fiber and prebiotics
- Gives intestines break
- Anti-inflammatory
- Molecule size varies and impacts taste but not clinical effect
- Hypoallergenic
- Easy to digest

**HOW DOES THIS LIQUID DIET HELP?**

A liquid only diet can be incredibly reparative, antibacterial and anti-inflammatory for your gut. Think of it like this, if you sprained your ankle and had to run 3 miles every day, how long would it take your ankle to heal? This same concept applies for the gut. If you have a gut “injury” and are eating 3 times a day, it can be hard for the gut to heal. Using a liquid diet can give your gut a break and aid in healing the same way avoiding activity can help the ankle sprain heal.

It’s my suspicion that another reason why an elemental diet works so well is because it has an especially favorable impact on the small intestines. Earlier we discussed how the small intestine houses the majority of your immune system and is most prone to damage and leaky gut. The small intestine is very important but underappreciated part of your digestive system. There is some published support for my small intestinal theory.

It has been shown in numerous clinical trials that any type of elemental diet (elemental or semi-elemental) is highly beneficial for small intestinal inflammation and autoimmunity, as seen in Crohn’s disease. (Note: 80% of Crohn’s disease affects the small intestine). Preliminary research has also shown that elemental/semi-elemental diets can decrease bacteria known to cause intestinal inflammation and to **increase diversity of healthy bacteria** in the small intestine and large intestine. [4,5]

So wait, how is it that we can see increased levels of healthy bacteria when using an elemental diet which starves bacteria? Because for these people their ecosystem required an approach that would reduce inflammation. Once the inflammation was reduced the healthy bacteria could grow!

It has also been shown that fasting increases good bacteria in the gut, specifically Faecalibacterium prausnitzii and Akkermansia. [6] Maybe this is an additional reason elemental and semi-elemental diets work so well, because they are liquid only diets and very fast-like. Irrespective of how it’s working, if you haven’t reached the level of improvement you would like yet, now is the time to implement one of the elemental diets.

**VERSIONS OF THE ELEMENTAL DIET & HELPFUL TIPS**

There are a few versions available.
ELEMENTAL

- Homemade elemental diet – see article in the handouts section for how to make your own at home
- Commercial elemental diet - Physicians Elemental by Integrative Therapeutics
- Prescription elemental diet – Vivonex Plus by Nestle

SEMI-ELEMENTAL

- Commercial semi-elemental diet – *Elemental Heal* by Functional Medicine Formulations *my formula
- There are also a few other commercial semi-elemental formulas available, listed below. These are not recommended unless someone has already tried the above versions and not been able to tolerate them. This is because the below formulas usually contain undesired ingredients such as corn, soy or preservatives. Despite this, these formulas work well for some so they are worth a try if you do not tolerate the other formulas.
  - EleCare by Abbott *my favorite of these three
  - TwoCal HN by Ross Nutritional
  - Peptamen by Nestle

A question that naturally arises is, what version is the best – elemental or semi-elemental? As a refresher, the full elemental diet has the most digested and therefore smallest sized protein molecules which make them easier to absorb but can also taste poorly. The semi-elemental proteins are not as fully digested and small so they may be slightly harder to absorb, but they taste better. Many believe you have to do the full elemental diet, which can taste poorly, in order to obtain good results. However this is not what I have seen clinically, *semi-elemental diets seems to work just as well as the full elemental diets*. My observation has been supported by an impressive number of clinical trials.

There have been two Cochrane systematic reviews that have found that a semi-elemental diet works just as well as the full elemental diet. The Cochrane data base does a good job ensure there is no biased in a body of research. [7,8]

This has been reinforced by clinical trials that have compared these diets. [9,10,11]

It has also been shown that the semi-elemental diet may be more filling and better for those who are underweight and need to gain weight. [12]

This does not mean you will gain weight if you are overweight, but this is good news for those with very impaired absorptions and who desperately need to gain weight. Remember what we discussed earlier – if you are overweight the degree to which you heal your gut is the degree to which you can expect fat loss. This is not a guarantee but certainly seems to be true for many.

It has also been shown that both the elemental and semi-elemental diets work equally as well as corticosteroids in treating intestinal inflammation and autoimmunity, as seen in Crohn’s disease. [13,14,15]

So if the version are all equally effective, how do you decide which version is right for you? I would recommend you try them in the order listed below. The order below starts with the easiest, cheapest
and best tasting first. Once you find a version that is palatable and you react well to, use it. Most will do well with first formula listed, the Elemental Heal formula, and not need to try the others. But I will list all the options here just so you have them.

1. **Commercial semi-elemental diet** – *Elemental Heal* by Functional Medicine Formulations *my formula*
   - Elemental Heal uses a whey protein isolate, is lactose free and casein free and hypoallergenic; non-GMO, no corn, no preservative or artificial sweeteners. The carbohydrate is provided by tapioca maltodextrin.

2. **Commercial elemental diet**
   - Physicians Elemental
     - Available in Original and 'Dextrose-Free'. I would recommend starting with the original version unless you are sensitive to carbs, in which case Dextrose-Free may be a better fit, as it contains 10 grams less sugar. This is a subtle difference, so if you need a truly low carb version of the elemental diet, the homemade version may be best.
     - Prescription not needed, but only available through a licensed healthcare provider. Other commercial semi-elemental formulas
       - EleCare by Abbott

3. **Homemade elemental diet** – see appendix section for instructions. This includes two versions; one high carb and one low carb.

4. **Other commercial semi-elemental formulas**
   - TwoCal HN by Ross Nutritional
   - Peptamen by Nestle

5. **Prescription elemental diet** – Vivonex Plus by Nestle *if you have a doctor who is willing to work with you and write this prescription. The taste is hard for many to get past.*

**WHAT ABOUT TASTE?**

Both the homemade and prescription elemental diets taste bad, really bad. However, there is good news, Elemental Heal, is very palatable. This version is my preferences because it’s the perfect balance of being clean and tasting good. The other commercial semi-elemental diets (EleCare, Peptamen, TwoCal HN...) taste good but contain some unfavorable ingredients. The commercial elemental diet (Physicians Elemental) also taste good but you will need a healthcare provider to obtain it.

**HOW MUCH?**

You can consume as much of the liquid as you desire. It’s best to sip on the solution throughout the day, instead of consuming large amounts in short periods. Sipping throughout the day will help keep a steady supply of nutrients and calories in your system, this helps to prevent hunger and fatigue (it also helps prevent low blood sugar if you have this tendency). Remember, you can consume as much as you like. If you are feeling hungry consume more. During the diet you can engage in normal activity but might want to avoid highly rigorous exercise. Also, make sure to get plenty of rest and to drink water throughout the day.
HOW LONG?

Elemental diets can be used in one of three general ways in terms of length.

SHORT TERM, AS A RESET

Used exclusively, for 2-4 days, this means your only source of calories for two to four days. This can be very helpful to quell a flare.

EXCLUSIVE LIQUID NUTRITION FOR 1 TO 3 WEEKS

This means for one to three weeks your only source of calories or food (other than water) would be the liquid shakes you make. This may sound daunting but many patients tell me

- That they feel so good that they didn’t even miss food
- They were not hungry and had no cravings
- It was actually very convenient not to have to worry about food and to be able to simply sip on their shake throughout the day

This is using the elemental diet as a more formal ‘treatment’. This approach has been shown very helpful as per the research we discussed earlier, however this should be done under the supervision of a doctor.

INTERMITTENT/HYBRID, LONGER TERM

Elemental diets can also be used intermittently as a gut healing tool. The intermittent or hybrid use means that you get some of your calories from an elemental/semi-elemental formula and the rest of your calories from normal food; it’s a combination of normal food plus elemental diet. This could be a daily use with half food and half elemental, or it could be 70:30 food:elemental or vice versa; 30:70 food:elemental. When using the hybrid approach I recommend you experiment to find a method of incorporation that feels best to you – there is no set rule. For example, many patients like using one of these shakes as a meal replacement for breakfast, every day or on most days. Some use the shakes as a meal replacement for breakfast and lunch and then eat a nice big whole food dinner. Or, some patients will perform one full day of exclusive liquid nutrition per week. Others may only use elemental diets on and off occasionally when they feel like their gut is in need of a break. They may do anywhere from 1 to 4 days until things feel like they have subsided – this is more like the reset approach we discussed earlier.
Which approach is best for you?

Again, it’s best to use the elemental diet under a doctor or healthcare provider’s supervision, but here are some guidelines to discuss with them regarding an intermittent or hybrid use of the elemental diet.

Starting with a 2-4 day trial is a good way to start. Depending on how well you do with that 2-4 days you may want to extend for up to 1-3 weeks. How long you perform the diet really depends on the severity.
of your condition and how quickly you respond; as a general rule the greater the severity the longer the duration. Listen to your body and when you feel like you have achieved the maximum benefit then it’s a good time to transition to the hybrid approach. The longer you are on the elemental diet for the more important it is to then transition to a hybrid approach is.

For example, if you performed the elemental diet for 2 days and felt 90% improved, then you can simply transition back to whole foods using the ‘transitioning back to whole foods’ tips we will cover in a moment. However, if you were on the elemental diet for 2 weeks, then you should transition to the hybrid approach. Again, the hybrid approach looks like part of your daily food from whole foods and part from the elemental diet shakes. For example; have a shake for breakfast and lunch and then have a whole foods dinner. Then with time gradually decrease the amount of shakes while increasing the amount of whole foods you eat in a day.

Have elemental/semi-elemental diets been used like this in long term studies? Yes. Studies have shown consuming as much as ½ your calories from a liquid solution can decrease inflammation and autoimmunity in the small intestine, and that this is safe. We will cover this information in a moment when we discuss safety.

*It’s important to mention that you should be continually working toward the minimum use of elemental diets over time.* While these diets are designed to be a complete nutritional source and been shown to be safe when used long term it’s still best to get as much of your nutrition from whole foods as possible.

**HOW TO MAKE THESE**

It’s actually very simple, just follow the instruction on the bottle. In short, this usually looks like blending one of these powders (they come in powder form) with ice and water to make a shake. You can also add in a source of healthy fat should the label instruct you to do so. Overall, this is very simple. Mix and drink. There are only two exceptions. One, for the homemade elemental diet – just follow the instruction in the appendix of this book. Two, for some of the commercial semi-elemental diets – they come pre-mixed in a can, similar to a slim-fast shake. For these simply open and drink. You may want to dilute these with some water and even blend with water and ice.

Elemental Heal calls for the addition of fat. If you are highly sensitive you may want to try it for a day or two without fat and see how you do, then slowly ad in fat. Udo’s Oil 3, 6, 9 blend is a good option that will work well for most. A MCT oil (medium chain triglyceride oil) can also work well, especially if you are constipated. MCT oil can have a laxative effect so be careful with it if you are diarrhea. You can also try coconut oil, olive oil, cod liver oil or fish oil. Follow the dosing instructions for the oil listed on the Elemental Heal bottle.

**SUPPLEMENTS AND MEDICATIONS DURING AN ELEMENTAL DIET**

During the elemental diet continue any prescribed medications. Also, make sure to speak with your doctor before performing an elemental diet to make sure it is safe for you to do so.

There are no set rules on taking supplements during the elemental diet, but here is what I would recommend. For the first few days don’t take any supplements, this will allow you to isolate for the effects of the elemental diet. Then consider adding in probiotics and antimicrobial herbs and see if you
feel even better with these. Of course, if you had a reaction to a probiotic or an antimicrobial then do not add it back them back in.

**REACTIONS**

Reactions on an elemental diet can occur. The *best* elemental diet is usually the one that causes the *fewest* reactions. That being said it’s also important to give a particular formula a few days to assess how well it works for you. Some patients will notice they don’t feel well until a few days in, so hang in there. If after a few days (2-3) you are not any better then you may want to try a different version. Some common reactions that can occur are white tongue, diarrhea, bloating, gas, constipation, abdominal upset and fatigue.

**TRANSITIONING BACK TO WHOLE FOODS**

When you start eating solid foods again go slow; start with smaller meals rather than large ones. Opt for softer foods like steamed veggies, rice and soups rather than hard foods like raw veggies or charred meats.

When transitioning back to solid foods this is a great time to listen to how your body reacts to certain foods. People will often notice they can pick out a certain foods that do not agree with them after performing the liquid diet – it’s similar to the reintroduction we discussed earlier. To help make this easier it is best to limit the number of new foods you eat at once. For example on your first day of eating foods try to limit it to one or two vegetable and one protein. Eat this food for a day or two, then move to a different vegetable and protein for day two or three. This is done to help you isolate how you react to a certain food. There are no exact rules but the guiding principle is reintroducing just a couple foods each 1 or 2 days so that if you do have a reaction you will know what food it is coming from. Don’t over think this step, just do your best, you are taking huge steps to start feeling better!

If you have been using the elemental diet for a week or longer you may want to consider transitioning into a hybrid approach; part food and part liquid diet. There are no set rules on exactly what the best method is but here is an example. For your first 3 days you have all elemental diet except one whole foods meal. Then, for the next 3 days you have half liquid diet and half whole foods. Then for a few more days you replace breakfast with an elemental diet shake but all your other meals are whole foods. So, big picture, it’s a gradual transition. This is not required but for many this gradual transition works best.

**THREE STEPS FORWARD ONE STEP BACK**

This is a very important concept for us to cover. When on a elemental/semi-elemental diet, you may feel the best you have in a long time, which is great. However, when you transition back to whole foods you may notice you don’t feel as well as when you were on the elemental diet. You will likely feel better than you did before starting the elemental diet, but you feel like you regressed when going back onto whole foods. Patients often think this means ‘it didn’t work’ or ‘they’re broken’ or what have you. This couldn’t be further from the truth. This is a healing process your gut will heal gradually and your symptoms (including food reactivity) will also diminish gradually. So if you feel like you’ve taken three steps forward and one step back - remember that this is good, you are two steps more healed than you were before. Healing can take time, so be patient. As long as you are improving you should be happy.
SAFETY

If I may be a bit candid for a moment. Whenever a fasting or liquid fasting type intervention hits the mainstream there always appears to be some credentialed nutritionist who warns against it because of the risk for nutrient deficiencies. There are a few important pieces that are left out of this nutrient-centered way of thinking. Food, and the nutrients contained in it, are only good for you if you have a digestive track that is working properly. This is why those with severe intestinal disorders can become very underweight even when eating a normal diet because they can’t absorb the nutrients in their food. An intervention, like liquid fasting, can aid in healing so that one can improve their ability to absorb nutrients from their diet. It’s also important to mention that the elemental formulas (elemental, semi-elemental) are designed to provide all essential nutrients. Yes, a man made liquid diet likely won’t have the same depth of nutrients that a healthy and diverse whole foods diet will. But, if you can’t tolerate a healthy diverse whole foods diet, an elemental diet is your best option because it provides nutrients and aids with healing.

What does the science say regarding safety? The bulk of the research has been done for those with inflammation and autoimmunity of the small intestine, as seen in Crohn’s disease. A Cochrane systematic review examined long term use of elemental diets and found them to improve these patient’s health. The patients examined used the elemental/semi-elemental diet interchangeably with whole foods and obtain anywhere from 30-50% of their calories from an elemental diet, over a period as long as 3 years [16]. So we certainly have support showing elemental diets are safe and can be used longer term when people need to heal their gut.

Up until the research for this book I was unaware of the studies showing long term use of elemental diets were safe, but I had been doing this with some patients for a well over a year. I had been doing this because it clearly helped patients and appeared very safe. The question I pondered here was - if a patient feels sick from eating 2-3 meals a day, but feels fine when eating 1 liquid meal and 2 regular meals, do you force them to eat 3 meals because it’s what we are told we should do? It was nice to see I was not the only one who came to the conclusion that longer term hybrid use was justifiable, and that it had been supported by science.

Coming back to the science, another randomized control trial again looked at this ‘hybrid’ approach of mixing food with the elemental diet in the long term. [17]

Over a three year period patients with Crohn’s disease were divided into two groups. One group that ate a normal diet. The other group got half their calories form an elemental diet and half from normal foods – hybrid. Those on the hybrid diet cut their risk for digestive flares in half! Specifically there was a 64% relapse rate in the food only group compared to a 34% relapse rate in the hybrid group. Importantly, there were no adverse events reported – which illustrates the safety of this approach.

Other similar studies have reinforced this hybrid approach as being helpful and safe. One study showed those doing this half-n-half approach had an improved quality of life. [18]

And other studies have even showed that those who consumed more of the elemental liquid diet solution did better than those who consumed less, when being tracked over 2-4 years. [19,20]

But again please remember to be on the safe side it’s best to have your doctor monitor you when using an elemental diet.
Here are the markers your doctor may want to monitor if you are using an elemental diet long term. I should mention that none of the long term studies found any lab markers were consistently negatively affected, so lab monitoring may not be needed. [21,22,23,24,25,26,27]

- Your vital signs
  - weight, blood pressure and pulse rate
- Two simple and cheap blood tests
  - comprehensive metabolic panel
  - complete blood count, with differential
- A few others tests that are not essential but he or she may want to consider
  - Iron panel
  - Lipids
  - Vitamin: A, D, E, B12.
  - Serum Magnesium, Zinc, Selenium, Copper, Manganese

This takes us to the end of our antimicrobial options which remove and reduce infections or overgrowths. In recap, they are:

- Herbal antimicrobials
- Herbal antimicrobials plus anti-inflammatory, protozoal and anti-biofilm agents
- Liquid elemental dieting

When we start into Step 3 we will check in along the way and guide you through exactly what to do and what to use during this step. By this point in our action plan you will have taken massive steps toward improving your gut health and the process become easier from here on out. The next step involves taking steps to ensure any unwanted imbalances do not return after ridding ourselves of them.

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**ELEMENTAL AND SEMI-ELEMENTAL LIQUID DIET**

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**ADDITIONAL INFORMATION**

**THE ELEMENTAL DIET FOR SPECIFIC CONDITIONS**

**SIBO, IBS AND THE ELEMENTAL DIET**

A 2004 study examined the effect of the elemental diet (as Vivonex Plus) on 93 patients who had SIBO and also had IBS symptoms. After 2 weeks on the elemental diet 80% of subjects saw their SIBO breath test normalize and 65% experience an improvement in their IBS symptoms. [28]
There is also a large amount of observational data from clinicians using any type of elemental or semi-elemental diet for SIBO and IBS. There seems to be general agreement that this is a highly effective treatment option. We do have to be careful here because observational data is not high quality. However, it’s my feeling that this is an area where the clinical science is ahead of the published science. With this in mind our office is taking steps to publish another clinical trial using a formula we are developing in the treatment of SIBO and IBS.

IEB (ULCERATIVE COLITIS & CROHN’S) AND THE ELEMENTAL DIET

The elemental diet is arguably the most well researched regarding its effect on intestinal inflammation and autoimmunity as seen in IBD. It has been shown to be an effective treatment in numerous clinical trials. There are several studies showing that in the treatment of IBD any type of elemental diet (elemental, semi-elemental) is as effective as anti-inflammatory corticosteroid drugs like Prednisone or Cortef.

Because this is a non-drug treatment and because the corticosteroid drugs can carry substantial side effects, many researchers and clinicians feel an elemental diet should be used before steroids for IBD.

It has also been shown that using any type of elemental diet can help prevent relapse of IBD, meaning it doesn’t matter if its technically elemental or semi-elemental.

This hints at a way in which we can incorporate elemental diets into your care plan. We can use periodic short courses of an elemental diet to help you maintain your improvements – for any gut condition. Again, we will cover guidelines as we work through our Great-in-8.

This all being said, there are some studies showing an elemental diet is not as effective as steroids.

So then, what to do? Remember this doesn’t have to be an either or situation. It seems reasonable to start with an elemental diet and if this does not allow for desired improvement then steroids are a consideration if this is something your doctor has suggested. This brings us to another principle;

It’s not either or - you don’t have to choose between natural medicine or conventional medicine.

WEIGHT LOSS AND THE ELEMENTAL DIET

To my knowledge elemental diets have not been studies as a treatment for weight loss, but here is what I have observed clinically. People who are overweight and have gut problems tend to lose weight to the degree to which the elemental or semi-elemental diet heals their gut. People who are underweight, and need to gain weight, tend to gain weight to the degree to which the elemental diet heals their gut. In some underweight patients there is a small amount of weight loss before weight gain. This can be minimized if one drinks ample amount of the solution. I have also noticed the semi-elemental versions tend to be better at preventing weight loss (or aiding in weight regain) in those who are underweight, one clinical trial has shown the same. Remember if you are underweight your weight might get a little worse before it gets better. I know this can be had to hear for those who are underweight, it’s a bit of a leap of faith, but you will get there.
CELIAC AND THE ELEMENTAL DIET

An elemental diet has been shown to help repair intestinal damage, reduce intestinal inflammation and improve symptoms in those with celiac who did not respond fully to a gluten free diet – according to 1 clinical trial. [45] Perhaps the improvements seen here were because of the anti-inflammatory and intestinal reparative nature of elemental diets? Or perhaps the improvements were due to treating underlying SIBO? Remember one of the common reasons why celiac patients do not respond fully to a gluten free diet is SIBO.

AUTOIMMUNITY AND THE ELEMENTAL DIET

Rheumatoid arthritis is an autoimmune condition resulting in joint inflammation and pain. A clinical trial has shown that an elemental diet was as effective as the anti-inflammatory steroid drug prednisone. [46]

Elemental diets as a treatment for autoimmunity has not been well researched. However I hope it’s clear at this point that your gut has a very strong influence on your immune system and thus anything you do to improve your gut health might help with an autoimmune condition. This is not a guarantee, but it’s certainly worth a shot. My thinking is to the degree to which an elemental diet improves your gut health it may improve an autoimmune condition.

MOOD, FATIGUE, SLEEP, MENTAL CLARITY AND THE ELEMENTAL DIET

Again, there is little or no research looking directly at an elemental diet as a treatment for these problems. Fortunately these symptoms often improve, sometimes quite dramatically, when one improves the health of their gut.