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CHOOSING A BALANCED GLUTEN FREE DIET

Nutritional Concerns of a Gluten Free Diet

Eating a balanced, nutritious diet can seem like a challenge when you follow a gluten free diet. In order to stay healthy, you need to give up all gluten-containing foods, many of which provide important nutrients. Those newly diagnosed with Celiac Disease are also at an increased risk of nutritional deficiencies because they may be unable to absorb key nutrients until their intestinal tract heals. By understanding and addressing the specific nutritional concerns that you are at an increased risk of developing due to Celiac Disease or gluten intolerance, you can take steps to achieve optimal health for life.

Anemia

Anemia is a general term for a deficiency in the size or number of red blood cells or the amount of hemoglobin they contain. You are probably most familiar with iron-deficiency anemia, but anemia can also be caused by a deficiency of folate or vitamin B12. The symptoms of the various types of anemia include:

Iron-deficiency Anemia	Extreme fatigue, weakness, brittle nails, decreased appetite
Folate-deficiency Anemia	Similar to iron-deficiency symptoms, in addition to ringing in the ears, cracked lips, sore tongue, irregular heartbeat, chest pains
Vitamin B12-deficiency Anemia	Develops slowly, as your body stores vitamin B12. Symptoms of deficiency are similar to folate deficiency, but can also include depression, numbness or tingling in the hands and feet, muscle weakness, lack of coordination, and balance problems

If you suspect anemia, consult with your doctor. You may require supplements if deficiency is severe, especially right after being diagnosed with Celiac Disease. It is important to consult with a medical professional before beginning supplements.

After initiating a gluten free diet, it is important to choose foods that provide sufficient iron, folate, and vitamin B12 to prevent deficiency in the future.

Iron

It is important to note that there are two types of iron in foods, heme and non-heme. Heme iron is more readily absorbed and utilized by your body, and it is only found in red meat, fish, and poultry. Non-heme iron is found in plant foods (fruits, vegetables, grains) and eggs, and is not nearly as well-absorbed as heme iron. One way to increase your absorption of non-heme iron is to consume foods rich in vitamin C at the same meal. High vitamin C foods include: ***citrus fruits, kiwi, strawberries, cantaloupe, broccoli, tomatoes, potatoes, green and red bell peppers, and cabbage.***

Examples of combining non-heme iron and vitamin C-rich foods include:

- Spinach salad with strawberries or mandarin oranges
- Eggs with orange juice
- Beans with bell peppers and tomatoes, like in a stir-fry

Gluten Free Sources of Iron

- Red meat, fish, and poultry
- Flour made from soybeans, chickpeas (garbanzo beans), or buckwheat
- Quinoa, amaranth, or teff
- Lentils, chickpeas, kidney beans, lima beans
- Pumpkin seeds, sesame seeds, cashew, almonds
- Dark leafy greens (spinach, Swiss chard, broccoli)
- GF pasta, cereal, or bread fortified with iron (like DeBoles corn or rice pasta)

Folate

Folate, or folic acid, is a B vitamin that plays an important role in DNA production and formation of red blood cells. Adequate folate intake is especially important for women of child-bearing age to reduce the risk of neural tube birth defects. Refined wheat products, like flour and cereals, are mandated by law to be enriched with folic acid and other B vitamins. Many refined gluten free products are not currently enriched with important B vitamins.

Gluten Free Sources of Folate

- Garbanzo bean (chickpea) or corn flour
- Chickpeas, pinto beans, lentils, great northern beans, kidney beans
- Soy beans (edamame)
- Asparagus, beets, broccoli, Brussels sprouts
- Bananas, oranges



Vitamin B12

Vitamin B12 is necessary for the formation of red blood cells and synthesis of DNA, and is important for the health of the nervous system. Vitamin B12 is only found in foods from animal products.

Gluten Free Sources of Vitamin B12

- **Red meat, chicken, and fish**
- **Yogurt**
- **Cheese**
- **Eggs**

Bone Disease

Many nutrients play an important role in bone health, especially calcium and vitamin D. Many Americans, even those without Celiac Disease, fall short on both of these nutrients. You are at an even greater risk of calcium and vitamin D deficiency if you have extensive damage to your intestinal tract from Celiac Disease. It is important to consult with your doctor about possibly supplementing these nutrients, especially if you went undiagnosed with Celiac Disease for a long time.

Vitamin D

Vitamin D is necessary for optimal calcium absorption and bone health. Your skin is able to naturally produce vitamin D with exposure to the sun, but it is difficult to meet vitamin D requirements through sun exposure alone given Utah's northern latitude. A vitamin D supplement is often necessary to meet needs, especially if you are currently deficient, because very few foods contain significant amounts of vitamin D.

Gluten Free Sources of Vitamin D

- **Cod liver oil**
- **Fatty fish** (mackerel, salmon, tuna, sardines)
- **Milk or soy milk fortified with vitamin D**
- **Orange Juice fortified with vitamin D**

Calcium

Calcium is needed for a number of different functions in the body in addition to bone health—muscle contraction, nerve transmission, regulation of heartbeat, and blood clotting to name a few. Milk and milk products are an important source of calcium, but those newly diagnosed with Celiac Disease often also experience lactose intolerance. Luckily, this lactose intolerance often subsides as the intestinal lining heals. If you do experience lactose intolerance, try 100% lactose-free milk or fortified gluten free soy, hemp, nut, or rice milk initially.



Gluten Free Sources of Calcium

- **Milk** (including lactose-reduced or lactose-free)
- **Yogurt or calcium-fortified soy yogurt**
- **Cheese** (especially hard cheese, like parmesan, cheddar, or romano)
- **Calcium-fortified juice** (like orange juice)

Dietary Fiber

Dietary fiber is important for digestive health and can play a role in the prevention of some chronic diseases, such as heart disease, diabetes, and colon cancer. Once your intestinal tract heals after initiating a gluten free diet, any diarrhea you experienced before diagnosis should subside. You may then experience constipation because gluten free foods are often made with refined flours that are low in dietary fiber. It is important to incorporate good sources of fiber into your diet—fruits, vegetables, and gluten free whole grains.

Gluten Free Whole Grains and Legumes

- **Amaranth**
- **Buckwheat**
- **Brown Rice**
- **Corn**
- **Flax seed**
- **Millet**
- **Air-popped popcorn**
- **Quinoa**
- **Teff**
- **Wild Rice**
- **Black beans**
- **Lentils**
- **Peas**
- **Lima beans**
- **Kidney beans**
- **Chickpeas**
- **Edamame**

Tips for Increasing Fiber

- Gradually increase your intake of fiber to decrease gas and bloating.
- Add beans to salads and casseroles for a boost of fiber and protein.
- Choose whole fruits and vegetables instead of juices.
- Choose pasta and baked goods made with whole grain gluten free flour.
- Choose high fiber snacks, like fresh or dried fruit, fresh vegetables, hummus, nuts, seeds, and popcorn.
- Choose whole grain crackers, like Mary's Gone Crackers.

Gluten Free Resources used for this handout:

Case, S. *Gluten-Free Diet: A Comprehensive Resource*. Case Nutrition Consulting Inc, 2010.

Dennis, M and Leffler, D. *Real Life with Celiac Disease: Troubleshooting and Thriving Gluten Free*. AGA Press, 2010.

