

Elimination Diets

Elimination diets remove a food or group of foods from a person's diet for a set period of time. This helps determine whether specific foods or ingredients in foods contribute to symptoms. Diets are individualized based on each patient's history, eating patterns, and overall symptom picture. Examples of common elimination diets include gluten-free and/or dairy-free elimination trials, a low FODMAP diet, and more comprehensive elimination diets.

The process of outlining and then following an elimination diet can take effort and time both for practitioners to explain and for patients to conduct. However, successfully discovering adverse food reactions can potentially alter the courses of several diseases and lead to profound symptom improvements.¹

Defining Adverse Food Reactions

In 2010, the National Institute of Allergy and Infectious Diseases' expert panel of the United States proposed definitions for adverse food reactions (AFRs).² AFRs are classified in two distinct categories, immune-mediated and nonimmune-mediated.

- Immune-mediated AFRs include food allergies; these may be immunoglobulin (Ig) E-mediated, non-IgE mediated, mixed IgE-mediated, or cell-mediated responses.
- Nonimmune-mediated reactions (primarily food intolerances) may be caused by metabolic/enzymatic, pharmacologic, toxic, or infectious agents, or can be structural or psychosocial in origin.

AFRs can also be undefined and idiopathic in nature³ and in this case are often referred to as a food sensitivity.⁴

Testing for Adverse Food Reactions

Food allergies that are IgE-mediated, can be accurately assessed through widely available tests. Anyone with a suspected Ig-E mediated food allergy should work closely with a trained allergist or physician since the reactions can be life-threatening.

Tests are available for some food intolerances, including tests for lactose and fructose intolerance. A doctor can order these tests or coordinate testing with a gastroenterology specialty clinic. People with irritable bowel syndrome (IBS), might have a condition known as small intestinal bacterial overgrowth (SIBO) which causes poor tolerance to fermentable carbohydrates.⁵ If SIBO is present, an elimination or reduction of fermentable carbohydrates can relieve symptoms of IBS. The presence of SIBO can be evaluated with a breath test which is ordered by a doctor or a gastroenterology specialist.

Many private laboratories offer food sensitivity tests focusing on IgG levels. These tests remain controversial given their low accuracy but can be used as a starting point for conducting a food elimination trial. The tool "[Testing to Assess the Gastrointestinal Ecosystem](#)" has more information on the various tests that are available.

The "gold standard" for food allergies and food intolerances remains placebo-controlled food challenges. Four key steps are involved in the process: Plan, Avoid, Challenge, Evaluate and formulate³; PACE is the acronym to help remember the four steps.

Step 1: The Planning Phase

Figuring Out Which Food(s) to Eliminate

Begin by ensuring that an elimination diet is clinically appropriate and something that a patient is both willing and motivated to try. A thorough dietary history, which may include a food journal, can help assure clinicians that food restrictions will not contribute to nutrient deficiencies or inappropriate weight loss. Partnering with a registered dietitian trained in elimination diets is also recommended. A dietitian will do a comprehensive nutrition assessment, nutrition-focused physical exam to assess for malnutrition and nutritional deficiencies, and gather an in-depth understanding of the patients' clinical history, preferences, lifestyle, and social factors that impact food choices.

Information to Gather if Food Intolerance Is Suspected ⁶

The following lists key points to keep in mind when taking a history from people who may have food intolerances.

- **History of present illness**
 - Relation of symptoms to exercise
 - Substance use (caffeine, smoking, alcohol, illicit drugs)
 - Life stressors
- **Past medical history**
 - Respiratory allergies
 - Chronic respiratory congestion
 - Asthma
 - Atopic dermatitis
 - Infant colic
 - Irritable bowels
 - Eating disorders
 - Food allergies
- **Family history**
 - Food intolerance and allergies
 - Irritable bowels
 - Headache
 - Mouth ulcers
- **Lab testing**

Previous allergy tests

Some potential risks to consider:

- Elimination diets may exacerbate an existing or activate a latent eating disorder such as anorexia or bulimia nervosa.
- Do not reintroduce foods known to provoke anaphylactic reactions.
- Be wary if one is already malnourished or is at high risk for nutritional deficiencies. This may include the elderly, autistic (given they often already restrict their diets), and those with very limited food resources.
- Given that foods also heal, be cautious of instilling a fear of food.

Consider having one keep a food-symptom diary for a few weeks as a way to better understand what foods may be leading to bothersome symptoms (refer to [sample food diary](#)). Here are some questions that often illicit problematic foods:

- What foods do you eat most often?
- What foods do you crave?
- What foods do you eat to help you feel better?
- What foods do you think you might have trouble giving up?

Why might these foods be problematic? One hypothesis is that problematic foods can both trigger an inflammatory process in the gut as well as cause endorphin release in the brain. Endorphins reduce pain, and because they lead to a sense of well-being, their release may cause continued regular consumption of triggering foods.

Once a list of potential problematic foods is generated, decide which foods to eliminate. An individualized elimination diet should be based on one's intuition (what is my "gut feeling"?), the answers to the above questions, and common provoking foods based on one's disease. An empiric elimination diet is based on population data and prioritizes the most common foods that provoke an undesirable response. Although these data are mostly based on treatment of eosinophilic esophagitis, they may be generalizable to other conditions. Using an empiric approach may be easiest given it contains a relatively small number of foods to avoid and serves as a starting point for individuals uncertain about their dietary triggers.

There are also condition-specific data to consider, as detailed in Table 1.

Table 1. Foods That Often Influence Specific Health Problems⁶

Condition	Foods to consider avoiding
Attention deficit hyperactivity disorder (ADHD)	Apples, artificial colors, aspartame (NutraSweet), butylated hydroxyanisole, butylated hydroxytoluene (in packed cereals), benzoates (chewing gum, margarine, pickles, prunes, tea, raspberries, cinnamon, anise, nutmeg), caffeine, corn, dairy products, nitrate and nitrites (preserved meats, like bacon, frankfurters, pepperoni), oranges, propyl gallate, sulfites (dried fruits, mushrooms, potatoes, baked goods, canned fish, pickles, relishes), peanuts, tomatoes
Atopic dermatitis	Children: dairy, eggs, soy, wheat Adults: pollen-related foods (fruit, nuts, vegetables) Other considerations: artificial colors, benzoates, berries, citrus, currants, fish, legumes, sulfites, tomatoes, beef, chicken, pork
Autism spectrum disorders	Gluten and casein (gluten-free, casein-free diet), food additives, artificial colors
Irritable bowel syndrome	Dairy, eggs, wheat Specific carbohydrate diet (see the " Inflammatory Bowel Disease " tool)
Migraine	Caffeine, monosodium glutamate (MSG), processed meats and fish, dairy, nuts, alcohol, vinegar, certain fruits and vegetables (citrus, onions), yeast-risen baked goods, aspartame (NutraSweet)
Rheumatoid arthritis	Level 3: The Few-Foods Diet Corn, dairy, nightshade vegetables (bell peppers, eggplant, potatoes, tomatoes)
Gastroesophageal reflux disease (GERD)	Alcohol, chocolate, coffee, cow's milk, saturated fat, orange juice, spicy foods, tea, tomato juice, peppermint/spearmint
Inflammatory bowel disease	Dairy, gluten, yeast, some carbohydrates
Serous otitis media	Dairy

PLANNING: a patient and provider collaboration

For successful implementation of the elimination diet, the patient should work closely with a dietitian to create healthy and desirable meal plans, gather recipes, and discuss meal prep tips. Education on reading food labels, grocery shopping, and dining out should also be provided. Nutritional counseling can help the patient overcome barriers encountered at work, school, or social situations that may interfere with implementing diet changes. A dietitian will also make recommendations on foods to include to avoid any nutritional adequacies and evaluate the need for supplements.

Step 2: The Avoidance Phase

Eliminating Foods: Three Levels

The intensity of the elimination diet depends primarily on how many foods are eliminated at a time. An approach, outlined below, begins with the most common offending foods. In the case of eosinophilic esophagitis, eliminating milk, eggs, and wheat leads to about a 50% improvement in symptoms.⁷ To improve adherence and avoid nutritional deficiencies, most individuals should start a low-intensity elimination diet and increase the number of eliminated foods only if indicated.

Low Intensity: A simpler diet that eliminates one or a few foods or Food groups starting with most common food sensitivities: Dairy, eggs, and/OR GLUTEN

- Pros: Better for people at risk of undernutrition or who might have difficulty with adherence
- Cons: Will not help to determine if one is intolerant to a broader group of foods.

Example: Gluten-free, dairy-free elimination diet

Proteins

Allowed: Beef, chicken, lamb, pork, turkey, beans, lentils, nuts, seeds, fish

Eliminated: Dairy products including milk, yogurt, cheese, cottage cheese, ice-cream, pudding, whey, frozen yogurt, , breaded meats, some processed and luncheon meats

Grains and starches

Allowed: Amaranth, arrowroot, buckwheat, corn, millet, oats (certified gluten-free), quinoa, rice, sorghum, sweet potatoes, tapioca, white and red potatoes, yams

Eliminated: Barley, rye, spelt, wheat including all-purpose flour, durum, semolina, couscous, farina, graham flour, seitan, orzo, triticale, faro

Fat and oils

Allowed: Coconut oil, olive oil, canola oil, avocado oil, flax oil, walnut oil, sesame oil

Eliminated: Butter, some margarines and spreads made with dairy, cream, half & half, some coffee creamers

All fruits, vegetables, salt, spices, sweeteners, and vegetable proteins are allowed unless they contain gluten or dairy ingredients.

Moderate Intensity: A stricter diet that eliminates several food groups

- Pros: High rates of success in determining all kinds of adverse food reactions (AFRs) without significant nutritional risks.
- Cons: Requires significant planning, recording, and time.

There are several different approaches to a moderate-level elimination diet. One of the most commonly used is from The Institute for Functional Medicine, known as the Comprehensive Elimination Diet. What is allowed or should be eliminated are listed in the table below.

Table 2. The Institute for Functional Medicine

Food Category	Allowed	Eliminated
Proteins	Fish (halibut, mackerel, salmon, sardines, tuna, etc.) Meats: all wild game, buffalo, elk, lamb, venison Poultry (skinless): chicken, Cornish hen, turkey Nuts and Seeds: (except peanuts) Legumes: Beans, lentils and green peas (except soybeans and soybean products)	Beef/veal, canned meats, cold cuts, eggs, frankfurters, pork, shellfish, whey, soy, peanuts
Dairy	Kefir: coconut (plain); nondairy beverages: almond, coconut, hemp, cashew	Butter, cheese, cottage cheese, cream, frozen yogurt, ice cream, milk, nondairy creamer, soy milk, yogurt (dairy and soy), whey
Fats and Oils	Avocado, coconut milk, ghee/clarified butter, olives, Cooking oils: avocado, coconut, grapeseed, extra virgin olive oil, sesame oil. Salad oils: almond, avocado, flaxseed, grapeseed, hempseed, olive, safflower, sunflower, sesame, walnut, prepared salad dressing with acceptable oils	Butter, corn oil, cottonseed oil, margarine/spreads, mayonnaise, peanut oil, shortening, soybean oil, vegetable oil
Vegetables	All except corn or those prepared with foods eliminated.	Corn
Fruit	All	Citrus fruits are sometimes eliminated
Grains	Gluten-free whole grains: amaranth, brown rice, buckwheat, millet, gluten-free oats, quinoa, teff, sorghum, amaranth	Barley, corn, farro, kamut, rye, spelt, wheat, triticale

Food Category	Allowed	Eliminated
Beverages, Spices, Condiments	filtered water, sparkling/mineral water, unsweetened coconut water, green tea, fresh juiced fruits/vegetables, all herbs and spices, mustard, vinegar	

High Intensity: A few-foods diet eliminates all but a few foods

This might be used if one has a long list of potential intolerances and wants to “wipe the slate clean.” There are many variations on what foods to allow on the Few Foods diet but they should include foods that consistently prove to be low allergens in the majority of the population. This diet should be carefully individualized for each person, selecting foods to allow based on patients report of no reactivity.

Duration of this diet is usually shorter, 10-14 days, as it is not nutritionally adequate. During the first 5 days symptoms may get worse. Rest and lots of water should be recommended.⁸

- Pros: Highest chance for symptom improvement.
- Cons: Greatest potential risks for malnutrition or orthorexia (a “fear of food”).
- Requires significant time for the reintroduction process (Reference “Step 3: The Challenge Phase,” below).

Although there are variations on this diet, below are foods known to have the least reactivity in most of the population and can be trialed for inclusion in the diet:

Protein: Lamb and turkey if tolerated; if not, perch, sea bass, and red snapper might be options

Grains: Rice, tapioca, millet

Vegetables: Squash of all kinds, parsnips, sweet potatoes, yams, lettuce (note: iceberg is least tolerated)

Fruits: Pears, cranberries

Oils: Canola, safflower

Condiments: Sea salt

Beverages: Distilled water, pear juice, vegetable juice

Table 3. Another Challenge: How to Know Which Foods to Avoid⁶

If You Are Avoiding	Also Avoid
Dairy	Caramel candy, carob candies, casein and caseinates, custard, curds, lactalbumin, goat's milk, milk chocolate, nougat, protein hydrolysate, semisweet chocolate, yogurt, pudding, whey. Also beware of brown sugar flavoring, butter flavoring, caramel flavoring, coconut cream flavoring, "natural flavoring," and Simplese.
Peanut	Egg rolls, "high-protein food," hydrolyzed plant protein, hydrolyzed vegetable protein, marzipan, nougat, candy, cheesecake crust, chili, chocolates, pet feed, sauces.
Eggs	Albumin, apovitellin, avidin, béarnaise sauce, eggnog, egg white, flavoprotein, globulin, hollandaise sauce, imitation egg products, livetin, lysozyme, mayonnaise, meringue, ovalbumin, ovoglycoprotein, ovomucin, ovomucoid, ovomuxoid, Simplese.
Soy	Chee-fan, ketjab, metiauzza, miso, natto, soy flour, soy protein concentrates, soy protein shakes, soy sauce, soybean hydrolysates, soby sprouts, textured vegetable, protein, tofu, whey-soy drink. Also beware of hydrolyzed plant protein, hydrolyzed soy protein, hydrolyzed vegetable protein, natural flavoring, vegetable broth, vegetable gum, and vegetable starch.
Wheat	Atta, bal ahar, bread flour, bulgur, cake flour, cereal extract, couscous, cracked wheat, durum flour, farina, gluten, graham, flour, high-gluten flour, high-protein flour, kamut flour, laubina, leche alim, malted cereals, Minchin, multigrain produces, puffed wheat, red wheat flakes, rolled wheat, semolina, shredded wheat soft wheat flour, spelt, superamine, triticale, vital gluten, vitalia macaroni, wheat protein powder, wheat starch, wheat tempeh, white flour, whole-wheat berries. Also beware of gelatinized starch, hydrolyzed vegetable protein, modified food starch, starch vegetable, gum, and vegetable starch.

Step 3: The Challenge Phase

Reintroducing the Eliminated Foods

Rule of 3s:

- 3 weeks of elimination
- Then challenge during all 3 meals of 1 day
- Then wait 3 days before another rechallenge

Symptoms will often worsen for a few days before they improve.

Given the subtleties of how food intolerances manifest, eliminating a food is not enough to determine if it might be a problem. Reintroducing the food will provide yet another way to

assess an association between foods and symptoms, given the waxing and waning course of most diseases. On the single day of a food or food group's reintroduction, one should eat increasing quantities with each meal. Starting low is important, in case a serious adverse reaction occurs with an exposure to even a small amount of food. Because it can take several days for symptoms to reappear, a 3-day waiting period after reintroduction is recommended. Regardless of what occurs, that food should then be eliminated again. A new food is reintroduced, and the cycle starts again. The section below summarizes the timing for a typical elimination diet process.

Elimination Diet Timing

Begin Elimination Diet...

- **Week 1:** Symptoms may worsen
- **Week 2 and 3:** Symptoms may improve
- **Reintroduction Day (Food #1):** Reintroduce one eliminated food, in increasing amounts, at all three meals for just 1 day
- **Watching and waiting for 3 days:** Symptoms may worsen or not; then continue to eliminate selected food after 1-day reintroduction
- **Reintroduction Day (Food #2):** Reintroduce a different eliminated food, in increasing amounts, at all three meals for just 1 day
- **Watching and waiting for 3 days:** Symptoms may worsen or not; then continue to eliminate selected food after 1-day reintroduction
- **Reintroduction Day (Food #3):** Reintroduce a different eliminated food, in increasing amounts, at all three meals for just 1 day

...and the cycle continues until all foods have been evaluated

Step 4: EVALUATE and FORMULATE: the Maintenance Phase

The Beginning of a New Diet (And a better life!)

After the elimination diet has been completed, a new diet should emerge that removes specific foods or food groups long-term. If it is not found to be beneficial, another elimination diet could be instituted at a later time.

If one is avoiding specific food groups that are associated with higher levels of specific vitamins or nutrients, other foods that are tolerated might need to be eaten in higher amounts to make up for these deficits (e.g. increasing leafy green intake if one is avoiding dairy foods). Dietitians can be valuable team members for assisting with these issues.

Foods that cause an IgE-mediated food allergy should NOT be reintroduced

Given that the removal of problematic foods or food groups can allow the body to heal, one may be able to reintroduce eliminated foods (using the every-3-days process described above) in 3-12 months. In this way, elimination diets not only may *alleviate symptoms* but also may *treat disease*. Ideally, the dietitian and/or other clinicians will work with the individual to improve the

ecosystem of the GI tract, reduce intestinal permeability, and enhance tolerance so that formerly problematic foods can eventually be reintroduced.

Reference Links

- [Testing to Assess the Gastrointestinal Ecosystem:](https://www.fammed.wisc.edu/files/webfm-uploads/documents/outreach/im/tool-testing-to-assess-GI) <https://www.fammed.wisc.edu/files/webfm-uploads/documents/outreach/im/tool-testing-to-assess-GI>
- [Sample Food Diary:](http://www.personal-nutrition-guide.com/support-files/free_food_diary.pdf) http://www.personal-nutrition-guide.com/support-files/free_food_diary.pdf
- [Inflammatory Bowel Disease:](https://www.fammed.wisc.edu/files/webfm-uploads/documents/outreach/im/tool-ibd) <https://www.fammed.wisc.edu/files/webfm-uploads/documents/outreach/im/tool-ibd>

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