

Food Allergy Training Guide for Hospital and Food Service Staff

A Comprehensive Program for Training Hospital Staff to Safely Prepare and Serve Food to Patients With Food Allergies



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TO THE READER

This guide was designed to provide a guideline for hospital and food service employees. The Food Allergy & Anaphylaxis Network disclaims any responsibility for any adverse effects resulting from the information presented in this guide. The Food Allergy & Anaphylaxis Network does not warrant or guarantee that following the procedures outlined in this guide will eliminate or prevent allergic reactions to foods.

The food service staff should not rely on the information contained herein as its sole source of information to prevent allergic reactions to foods. The food service staff should make sure that it complies with all local, state, and federal requirements relating to the safe handling of food and other consumable items, in addition to following safe food handling procedures to prevent food contamination.

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Introduction

Overview

The following section provides direction for how to use this guide and what to consider when creating your hospital's policy for dealing with food allergies.



Introduction

Scientists estimate that 11 million Americans suffer from true food allergies. At the present time, there is no cure for food allergy. Avoidance is the only way to prevent an allergic reaction.

Food allergy-induced reactions are often unexpected and move swiftly throughout the body, causing a range of symptoms that can include swelling of the lips, tongue, and throat; difficulty breathing; hives; abdominal cramps; vomiting; and diarrhea.

Potentially life-threatening allergic reactions, called “anaphylaxis,” may also include a drop in blood pressure and loss of consciousness. Food allergy-related reactions account for an estimated 30,000 emergency room visits each year.

Parents whose food-allergic children are hospitalized are often overwhelmed, stressed, and distracted. They need your help to be sure their child does not have a food allergy-induced reaction that will make the hospital visit even more stressful and longer than expected.

Adults and children who have food allergies rely on food service staff to prepare safe meals for them while they are in the hospital. They need accurate information about ingredients, so they can make an informed decision about what is safe for them to eat. Incorrect or incomplete information puts these individuals at risk for an allergic reaction.

Education, cooperation, and teamwork are the keys to safely serving a food-allergic patient.

Education, cooperation, and teamwork are the keys to safely serving a food-allergic patient. All hospital staff — from nurses and dietitians to food service personnel — must become familiar with the issues surrounding food allergies as well as the proper way to answer patients’ questions and concerns. Various systems should be in place to assure proper ordering, handling, and preparation of safe foods for food-allergic patients.

How to Use This Guide

This guide provides general information about food allergy and anaphylaxis. Several sections contain information for

various staff members in a hospital setting and strategies for handling food allergy-related situations they may face.

Some hospitals are managed by an outside contractor, while others are managed internally and include many levels of staff. Take the information presented here and adapt it to your hospital's needs. Be sure to update information as menu items change and make periodic in-service sessions and staff training a top priority. Share appropriate sections with your staff.

Managing food allergies in a hospital setting *can* be done. It requires commitment and partnership among all the parties involved, from the patient to the hospital staff. Working together, all of you will achieve success.

Food Allergy and Anaphylaxis

Overview

- Food allergies affect close to 4% of the general population, or approximately 11 million Americans.
- Milk, eggs, peanuts, tree nuts, fish, shellfish, soy, and wheat account for 90% of all food-allergic reactions.
- There is no cure for food allergy; strict avoidance of the allergy-causing food is the key to preventing allergic reactions.
- Severe or life-threatening reactions are called “anaphylaxis.”
- It is estimated that food allergy-induced reactions cause 30,000 emergency room visits and as many as 150 to 200 deaths each year.
- Minute or trace amounts of a food can cause a reaction in a highly sensitive patient.

Food Allergy and Anaphylaxis

A *food allergy* is an immune system response to a food that the body mistakenly believes is harmful. Once the immune system decides that a particular food is harmful, it creates specific antibodies against it.

The next time the individual eats that food, the immune system releases massive amounts of chemicals, including histamine, in order to protect the body. These chemicals trigger a cascade of allergic symptoms that can affect the respiratory system, gastrointestinal tract, skin, or cardiovascular system.

What foods cause food allergies?

Although an individual could be allergic to any food, such as fruits, vegetables, and meats, the following eight foods account for 90% of all food-allergic reactions:

Peanuts

Tree nuts (*walnuts, pecans, almonds, cashews, hazelnuts / filberts, macadamia nuts, pistachio nuts, etc.*)

Eggs

Soy

Fish (*bass, flounder, cod, etc.*)

Shellfish (*shrimp, crab, lobster, etc.*)

Milk

Wheat

Shellfish and fish commonly cause the most allergic reactions. Peanuts, however, are the leading cause of *severe* allergic reactions, followed by shellfish, fish, tree nuts, and eggs. Some experts recommend that peanut-allergic patients avoid tree nuts, and vice versa, as an extra precaution.

(Although the eight foods above account for the majority of the food-allergic reactions, *any* food can potentially cause an allergic reaction.)

What are the symptoms of an allergic reaction?

Typical symptoms of an allergic reaction can include —

Skin:	Hives, eczema, swelling of the lips and face, itching
Eyes:	Swelling, watering, itching
Respiratory Tract:	Swelling of the throat or mouth, difficulty breathing, runny nose, wheezing, and repetitive coughing
Gastrointestinal Tract:	Abdominal cramps, vomiting, diarrhea (GI manifestations are often associated with a more serious reaction)

Symptoms can range from mild to severe and life threatening. Reactions can occur from within minutes up until about two hours after eating an offending food.

What is anaphylaxis?

Severe or life-threatening reactions are called “anaphylaxis.” Note however, that one does not have to have hives to have anaphylaxis. Symptoms can include all of those previously noted, plus —

Cardiovascular System:	Drop in blood pressure, feeling of impending doom, loss of consciousness, death
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It is estimated that as many as 150 to 200 people die each year from food-allergic reactions. Many of these deaths occur as a result of severe swelling in the mouth and throat.

How are reactions treated?

Very mild reactions are often treated with antihistamine. It should be realized, however, that antihistamines do not reverse the symptoms of anaphylaxis. The medication of choice for treating a more significant anaphylactic reaction is **epinephrine**. It is available by prescription in an auto-injector, called EpiPen® or Twinject™ (pictured on right).



EpiPen®



Twinject™

If a patient in your hospital is having an anaphylactic reaction, get help immediately! Call your hospital's emergency code to get help for the patient having a severe allergic reaction. Studies show that quick administration of epinephrine can make the difference between life and death.

How common are food allergies?

An estimated 11 million Americans, or 4% of the general population, suffer from food allergy. A recent study shows that 2.3%, or 6.5 million, are allergic to fish (salmon, cod, flounder, etc.) or shellfish (shrimp, lobster, crab, etc.); 1.1%, or close to 3 million Americans, are believed to be allergic to peanuts or tree nuts (pecans, walnuts, almonds, etc.).

What do food-allergic individuals need from you?

Food-allergic individuals need food service staff to provide them with accurate information about menu choices, so they can make an informed decision about what to order. Incorrect or incomplete information puts these patients at risk for an allergic reaction.

The dietitian should be consulted when patients have food allergies — and especially for infants and children with multiple food allergies — to assure an adequate nutritional intake is available to promote appropriate growth and development.

How can an allergic reaction be avoided?

Strict avoidance of the allergy-causing food is the only way to avoid a reaction. Reading ingredient labels for all foods is the key to maintaining control over the allergy. In a hospital setting, the onus will be on the hospital staff members to identify and inform the appropriate network of individuals about their patients' food allergies and to provide safe food choices to those patients. Most important, hospital staff members must be prepared to quickly intervene in case of an allergic reaction.

Food Allergy and Anaphylaxis Quiz

1. Food-allergic reactions can occur within what time period after ingestion?
 - a) within seconds
 - b) from two minutes to 12 hours
 - c) from within minutes up until about two hours
 - d) within two days
2. Food-allergic reactions are responsible for approximately how many emergency room visits per year?
 - a) 30,000
 - b) 3,000
 - c) 12,000
 - d) 300
3. What body systems can be affected by a food-allergic reaction?
 - a) gastrointestinal tract
 - b) respiratory system
 - c) cardiovascular system
 - d) skin
 - e) all of the above
4. Eight foods — peanuts, tree nuts, fish, shellfish, milk, egg, soy, and wheat — are responsible for what percentage of food-allergic reactions?
 - a) 50%
 - b) 75%
 - c) 100%
 - d) 90%
5. What are the foods that most commonly cause allergic reactions?
 - a) peanuts
 - b) tree nuts
 - c) fish and shellfish
 - d) all of the above
6. What component of a food is responsible for an allergic reaction?
 - a) fat
 - b) protein
 - c) carbohydrate
 - d) trans-fatty acids
7. What medication is used to treat severe allergic reactions?
 - a) antihistamine
 - b) pseudoephedrine
 - c) Sudafed™
 - d) epinephrine

8. Those with food allergies can safely consume the foods that cause allergies —
 - a) if they only eat a small amount
 - b) if they take Benadryl® first
 - c) never
 - d) if they eat the food with a large meal to dilute it

9. Patients with food allergy need to have menus in advance so —
 - a) they can decide what they prefer to eat
 - b) they can rotate foods to which they are allergic
 - c) they can avoid their allergen
 - d) all of the above

10. A registered dietitian should be consulted if a patient has multiple food allergies because —
 - a) menu selection will be limited
 - b) key nutrients must be replaced with other foods
 - c) the dietitian can safely prepare the food for the patient
 - d) infants and toddlers are difficult to feed

***Answers appear on the next page.**

Answers for Food Allergy and Anaphylaxis Quiz

1. **c** — from within minutes up until about two hours
2. **a** — 30,000
3. **e** — all of the above
4. **d** — 90%
5. **d** — all of the above
6. **b** — protein
7. **d** — epinephrine
8. **c** — never
9. **c** — they can avoid their allergen
10. **b** — key nutrients must be replaced with other foods

Guarding Against Allergic Reactions in the Hospital

Overview

- To guard against allergic reactions in the hospital, create a written procedure for handling food allergies for all staff members to follow.
- All patients admitted to the hospital expect to be fed safely during their hospital stay.
- Everyone in the hospital has a role to play in keeping the patients safe.
- It is important that every staff member be taught how to handle requests from patients with food allergies.
- When a patient is identified as having a food allergy, activate your hospital's policy for handling that patient's meals.

Guarding Against Allergic Reactions in the Hospital

The hospital staff is expected to be able to provide safe foods to all patients who are admitted for either elective or emergency reasons. The process in which food allergy information is communicated throughout the hospital to appropriate staff is critical to minimizing errors and keeping all patients safe. A sufficient number of checkpoints should be in place to minimize mistakes in the meals prepared and served to patients who have a food allergy.

Setting up procedures as hospital policy will ensure that all hospital staff will follow the same guidelines in dealing with food allergy-related requests. Reviewing the policies frequently with staff assures the safety of patients with food allergies. The hospital team should determine how often these policies are reviewed, depending on the frequency of admissions of patients with food allergies and the type of special requests. A thorough review of the policies and procedures should be undertaken if an allergic reaction occurs.

Create a policy for hospital staff to follow

The best way to minimize risks to the patients admitted to your hospital is to create a written procedure for handling food allergies for all staff members — from nurses, physicians, and dietitians to the food service staff — to follow.

When creating your plan, consider the following questions:

- Who will be responsible for identifying the allergic patient's needs?
- How will this information be disseminated to the rest of the medical staff, to the food service staff, and to persons visiting the patient?
- What is the hospital's policy to address the food-allergic patient's concerns regarding foods provided during the hospital admission?
- Who will answer the food-allergic patient's questions regarding food choices and menu selections?

- When would a patient be referred to a dietitian to address the patient’s food allergies?
- Who will be responsible for checking the recipes/ingredients used?
- Is there a substitute menu available to be used for the allergic patient?
- What should the food service staff be aware of in order to avoid cross contact with allergen-containing foods?
- Should an allergic reaction occur, who will lead the discussion of what went wrong and what needs to be adjusted?

Having a well-thought-out system to identify, process, and distribute safe meals for your food-allergic patients is a necessity in preventing an allergic reaction. The following are some suggestions for developing your plan.

Develop a staff team

All hospital staff members who have contact with patients should be aware of, and trained in, food-allergy management. The staff team can be comprised of doctors (including fellows, residents, and interns), nurses and dietitians (including the nursing and nutrition students rotating with them), diet technicians, and the unit secretary on the patient floors.

In the Food Service Department, the food-allergy team can include supervisors, diet technicians, cooks, all food service workers, and, especially, the tray checkers. ***All staff should be aware of how to address a food-allergic patient’s needs.***

It is essential that patients with food allergies can trust that the food served to them has gone through a process to assure its safety.

Identify the food-allergic patient

When a patient is identified as having a food allergy, this information should travel through the pertinent hospital staff in a systematic way. The admissions clerk or nurse will probably be one of the first ones to find out about the food allergy while admitting the patient to the hospital. The physician taking the patient’s history or conducting a physical exam may also be one of the first to learn of the food allergy.

“My 4-year old daughter is allergic to peanuts and also has severe asthma. During one of her hospital stays, she was given chocolate ice cream as a treat when she took the horrible-tasting steroid medicine. Unfortunately, the ice cream contained peanuts, and after consuming a small amount, her lips started to swell, she broke out in hives, and she had a terrible time with itching. This did not help her asthma. It never occurred to us to read the ingredient label for food given to her in the hospital.”

— FAAN Member

Note “Patient is allergic to the following foods ...” on the intake form during the intake/admission interview.

The information will either be entered in the paper medical records or electronic medical records of the hospital. This information must be communicated to all floor staff (nurses; dietitian; and, most important, the unit secretary) and food service staff (diet technicians, food service workers, tray line checkers, and food service managers).

Notify the rest of the staff about a patient with food allergy

Allergy information is obtained on admission

In addition to the medical history and physical information obtained by the physician, in most hospitals, the nurses fill out an admission or intake form that also has questions about food and drug allergies. This is a form that is usually checked by all, especially dietitians, to obtain information for their assessment — either for screening as part of Joint Commission on Accreditation of Healthcare Organizations (JCAHO) requirements or for an assessment as a result of a nutrition consultation.

In hospitals using electronic medical records (EMRs), the fields are created specifically to prompt the section on food and drug allergy to be filled in prior to advancing further in the entry.

Information is communicated to the staff

The unit secretary may be the individual to communicate this information to the Food Services Department. In some cases, the physician’s diet orders are communicated electronically. Depending on the hospital’s food-allergy policies, other designations to help identify the food-allergic patient to the remainder of the staff may be used.

Some hospital staff use their patient boards to communicate this information to the rest of the floor staff. A designation of “FA” next to the patient’s initials and the room number would convey this important information to the rest of the staff members on the floor. One hospital puts a yellow sticker on the menus that says “Alert — Food Allergy.” The sticker is put on the menus by the food service staff to alert the tray line that a manager has to double-check the tray before it is delivered to the floor.

Others post a “Food Allergy” sign outside the patient’s door, or with the patient’s or parent’s permission, post a sign at the

One hospital has “multiple food allergies” listed as a nutrition risk criterion on the intake form. A nutrition consultation is electronically generated for the registered dietitian.

patient’s bed with “Do Not Feed” written on it. This is especially useful in cases where infants and children are admitted and cannot necessarily communicate their own needs. Another option is to require the food-allergic patient’s trays to be delivered to the nurse’s station instead of sending them directly to the room.

In most hospitals, a list is sent to the Food Service Department to identify special requests. With electronic medical records, a notice is sent to the dietary department to identify the patient as having food allergies as soon as a food-allergy field is filled in for a patient. Using EMRs, it is possible to scan all patient files and make a list of those who have the food-allergy field filled in. This query can be done at any time, but it may be particularly helpful during tray setup.

It is common practice to have the hostess, diet technician, or sometimes the unit secretary, provide the appropriate menu to the patients. The patients usually fill out the menu on the basis of their preferences by circling their choices. Menus are collected and then sent down to the Food Service Department by a certain time to allow for meals to be prepared and sent up to the patient floors. The diet technician or unit secretary should indicate “Food Allergies” or something more specific, such as “Milk- and Egg-Allergic,” to prompt the food service staff to seek further assistance in filling this menu order. Computerized diet office systems can include multiple food-allergy orders (e.g., no nuts, no milk, no eggs, etc.) to ensure appropriate care.

A nutrition consultation should automatically be generated for any individual identified with food allergies. This allows the dietitian to find out more about the true nature of the patient’s allergies and help identify safe options on the menu.

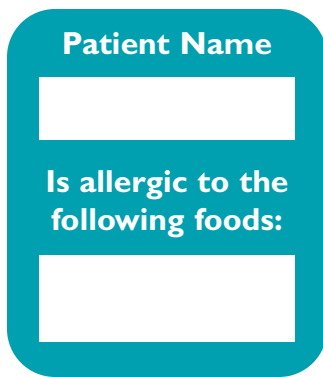
The dietitian can function as the connection between the patient and the Food Service Department to help generate a personalized menu that is based on the patient’s food needs. Additionally, the dietitian can determine if the patient needs more information about managing food allergy and can arrange for further follow-up.

Food Service Department processes the food-allergy order

The diet technician receives the information either from the unit clerk or a printout from the EMR and checks the menus filled out by the patient. A notification system should be in

“We had our IT department create a ‘Food Allergy Report,’ which is sent to Food and Nutrition prior to each meal service (generated from the ‘Allergy’ tab of our electronic medical record).”

Hospital Menu Options Chosen by a Patient With a Milk Allergy	
Mulligatawny Soup	
Grilled Haddock	
Cold Vegetable Flan	
Ham & Coleslaw Sandwich in Brown Bread	
Ham & Coleslaw Sandwich in White Bread	
Side Salad	milk-free
Mashed Potatoes	no butter
Peas	
Brown Bread Roll and Butter	milk-free
White Bread Roll and Butter	
Pear	
Cheese & Biscuits	
Fruit Yogurt	
Diplomat Pudding	



Sample sticker that could be used to identify patients with food allergies.

Provide the family of a food-allergic child with a stack of stickers at the time of admission and ask them to put them on the patient's menus as they fill them out.

place to address the most efficient way to handle these requests from the patient.

Various methods can be used to alert all involved in the Food Service Department to the special request. The menu should be flagged with something very visible, such as a bold red line or a “special instructions label” written at the top of the menu. This will alert the kitchen staff to be aware of the patient’s specific food allergies and any cross-contact issues. It is not sufficient to simply modify the order, such as “no cheese” or “no sour cream” for a milk-allergic patient. Colored stickers to identify food allergies or preprinted labels that can be filled out specifically for the patient are additional strategies to consider.

Standardization of the chosen system is essential to keep the process accurate and to allow staff to quickly identify which trays need to be inspected more closely prior to sending them up to the patients.

Facilitate the preparation of appropriate foods for patients with food allergies

Ideally, all meals served to the food-allergic patient should be prepared from scratch in a separate cooking pan to assure their safety. This will entail that the ingredients used in preparing the food have been checked and are safe to use for that particular patient. Information about label reading can be found on the “How to Read a Label” pages in Appendix 2.

If meals are prepared at a central kitchen (not located at the admitting hospital) and sent to satellite hospitals, a system needs to be generated with the main kitchen to manage special requests. Some hospitals have a small kitchen facility that can be used in case of emergencies, and the supervisors may choose to use this setup for their special food-allergy requests. Some facilities also have specialty kitchens for kosher preparation. Consider expanding the foods prepared in the specialty kitchen to include food allergy meals.

The food service manager/supervisor may elect to generate a safe, multiple-allergy menu that can be prepared on-site and would function as the backup food-allergy menu.

Deliver the allergen-free tray to the patient

A sticker can be placed on the back of the menu to identify what type of tray was sent to the floor (milk-free or milk- and wheat-free, etc.). This will help the tray line checker double-check the order and make sure that the tray was appropriately put together.

The sticker should be initialed by the tray checker prior to sending it up to the floor. The initialed sticker will also allow the nurse checking the tray on the patient's floor to be sure that the specific order was followed prior to handing it to the food-allergic patient.

To avoid cross contact with other foods during delivery, the tray should be covered or wrapped and placed on the top shelf of the meal delivery cart or in a designated space for special orders.

Review the training process regularly

Food allergy training is a process that requires regular review. Provide in-service training for staff about food allergies and review recipes and check vendors frequently to assure the availability of safe menu choices for food-allergic patients. Be sure new employees understand your food-allergy policy.

Listen carefully to complaints

If patients notify the floor or the Food Service Department that allergy-causing food has been delivered to them or that they have had an allergic reaction, listen carefully. Stay focused on, and committed to, getting all the facts — not denying the reaction or defending your policy and procedures.

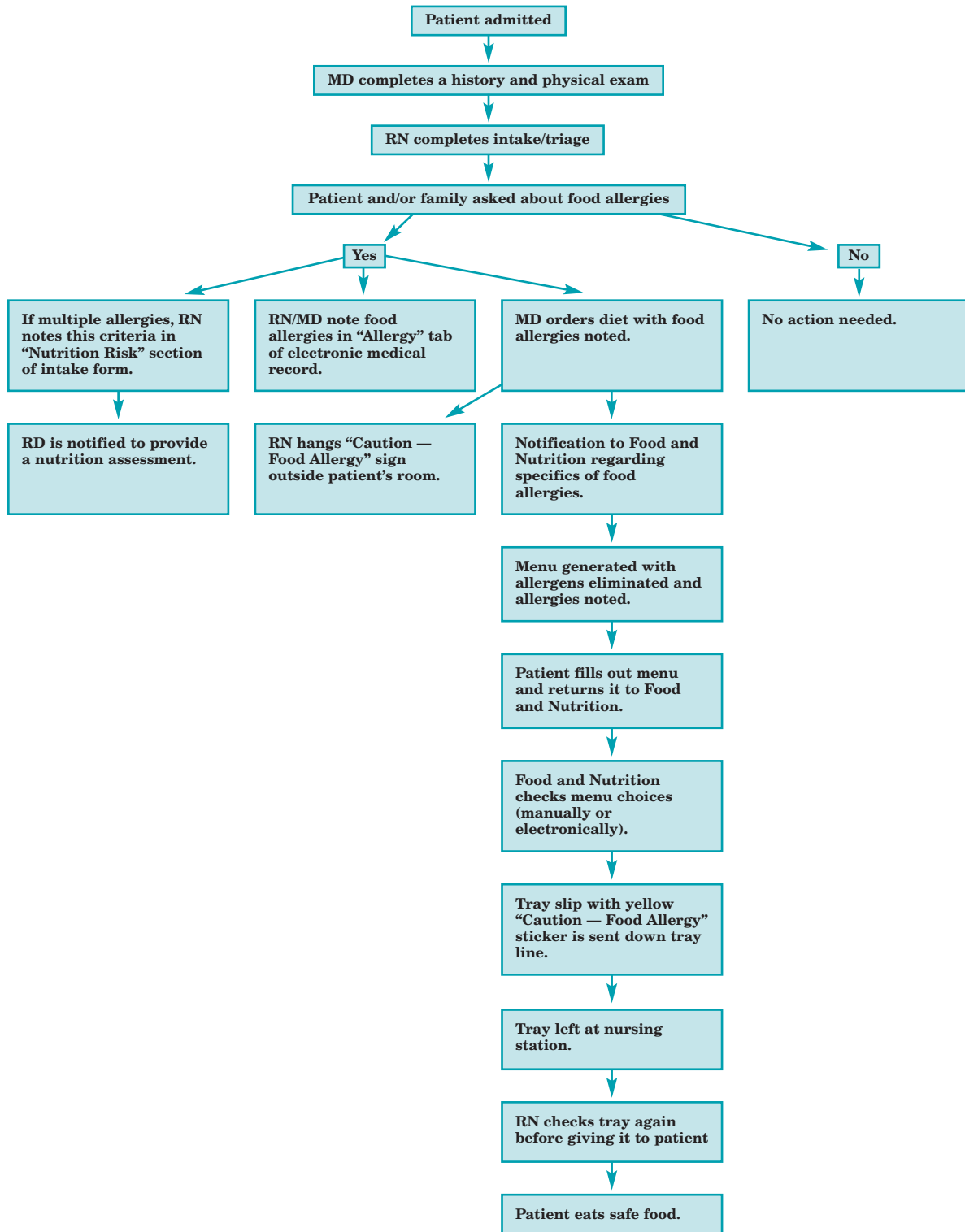
View any reported allergic reaction as an opportunity to re-evaluate your food-allergy management plan and to pinpoint areas that need work.

**Some individuals are allergic to latex. In a hospital setting, the use of latex-free gloves is recommended.*

Last month my 2-year-old son was hospitalized for eight days with pneumonia. He is highly allergic to milk, eggs, and peanuts. I had notified the nurse and the dietitian of this and had signs hung on his door and crib. I spoke to the dietitian three times and the food staff several times. During his stay, my son was delivered unsafe foods up until the day before he left the hospital. He was given a peanut butter and jelly sandwich. Had I not been there, he could have become ill or worse.

— FAAN Member

Flow chart for how a food allergy order might travel through the hospital



Guarding Against Allergic Reactions in the Hospital Quiz

1. The process in which food-allergy information is communicated throughout the hospital to appropriate staff is —
 - a) well-known without being stated or practiced
 - b) not important to those who do not work in the Food Service Department
 - c) critical to minimizing errors and keeping all patients safe
 - d) none of the above
2. When creating a written procedure for handling food allergies in the hospital, which of the following should be noted?
 - a) who is responsible for identifying the food-allergic patient's needs
 - b) how information about the food-allergic patient will be disseminated to hospital staff members
 - c) who is responsible for answering the food-allergic patient's questions about food choices and menu selections
 - d) all of the above
3. In the Food Service Department, the food-allergy team can include —
 - a) supervisors, diet technicians, cooks, janitors, and tray checkers
 - b) supervisors, diet technicians, cooks, food service workers, and tray checkers
 - c) diet technicians, cooks, food service workers, electricians, and tray checkers
 - d) supervisors, cooks, food service workers, electricians, and janitors
4. Which of the following steps are taken to notify the hospital staff about a patient with food allergies?
 - a) allergy information is obtained when patient is admitted
 - b) unit secretary communicates information to necessary staff
 - c) diet technician or diet clerk receives notification of the allergy
 - d) all of the above
5. Some methods used by hospitals to designate patients with food allergies are —
 - a) an indication of "FA" along with the patient's name on patient boards
 - b) special stickers added to the patient's menus
 - c) "food allergy" signs on the patient's door or by the bed
 - d) all of the above
6. Who acts as the connection between the patient and the Food Service Department to generate a personalized menu that is based on the patient's food needs?
 - a) surgeon
 - b) dietitian
 - c) nurse
 - d) pharmacist

7. Which of the following precautions should be taken to facilitate the preparation of appropriate foods for patients with food allergies?
 - a) meals should be ordered from a neighborhood restaurant
 - b) the patient should be asked to bring allergen-free food from home
 - c) all meals should be prepared from scratch in a separate cooking pan to assure their safety
 - d) none of the above

8. Who is the last person to check a food-allergic patient's tray before it is delivered to the patient's room?
 - a) doctor
 - b) diet technician
 - c) tray checker
 - d) nurse

9. Which of the following steps should be taken if a patient reports receiving an allergen-containing food or having a food-allergic reaction in the hospital?
 - a) listen carefully
 - b) get all the facts
 - c) re-evaluate the food-allergy management plan and pinpoint areas that need work
 - d) all of the above

10. A flow chart indicating how a food allergy order travels through a hospital —
 - a) begins when the patient is admitted and ends when the patient eats safe food
 - b) begins after the patient suffers a food-allergy reaction and ends when epinephrine is administered.
 - c) begins when the patient receives a hospital menu and ends when the food is chosen
 - d) all of the above

***Answers appear on the next page.**

Answers for Guarding Against Allergic Reactions in the Hospital Quiz

1. **c** — critical to minimizing errors and keeping all patients safe
2. **d** — all of the above
3. **b** — supervisors, diet technicians, cooks, food service workers, and tray checkers
4. **d** — all of the above
5. **d** — all of the above
6. **b** — dietitian
7. **c** — all meals should be prepared from scratch in a separate cooking pan to assure their safety
8. **d** — nurse
9. **d** — all of the above
10. **a** — begins when the patient is admitted and ends when the patient eats safe food

Managing Food Allergies in the Food Service Department

Overview

- The Food Service Department supervisor/manager may be selected as the point person for food-allergy questions from food service staff, the dietitian, or unit secretary.
- The supervisor/manager should set up food-allergy procedures for the staff and conduct in-service training. New employees should receive food-allergy training **before** they have contact with *any* patients. Periodic in-service training sessions on the topic are recommended.
- Procedures should clearly define how to handle menu selections, meal preparations, serving methods, and special requests made by the patients.
- Written instructions for foods to be avoided for particular food allergies should be available to food service staff.
- Food allergy menus and/or lists with alternate meal choices should be generated and reviewed periodically.

Managing Food Allergies in the Food Service Department

The only way to avoid an allergic reaction is to avoid the allergy-causing items. A food-allergic patient will not have the opportunity to know about the ingredients used in selected menu items. Therefore, the patient relies on the hospital staff to provide safe foods.

It is crucial for the Food Service Department supervisor or manager to be aware of any ingredients that are used in unexpected places, such as crushed nuts in a piecrust. Sometimes ingredients are added to prepared foods that may not necessarily be obvious (e.g., ingredients in marinades and salad dressings as well as ingredients that are added for flavor, such as butter to frozen vegetables). Prepared foods that are purchased or prepared at a main kitchen cause the most concern.

If a food does not have a label, or if you are unsure about the ingredients, do not guess. Suggest a menu item for which the ingredient information is available.

Train Food Service Department staff

Food service staff must be informed that food allergies are allergic disorders, and for some people, they can be quite serious. Food Service Department staff members should be provided with written information detailing how to manage a food-allergy request and be able to go to the supervisor or manager on duty when they have any questions regarding the choices circled by the patient on the menu provided by the hospital.

Take mistakes in meal preparation seriously

Mistakes are bound to occur. If, despite everyone's best efforts, a mistake is made on an order for a food-allergic patient, the only acceptable correction is to remake the order. Do not simply remove the offending ingredient, such as

removing cheese cubes off the top of a salad. There may be trace amount of milk protein remaining, which still is enough to cause an allergic reaction for a milk-allergic patient.

If the meal cannot be sent up at the same time as the other meals, deliver it separately as soon as possible. Afterward, review what went wrong and determine what steps can be taken to avoid similar mistakes in the future.

Identify allergens

Common foods can contain allergens. For example, mayonnaise and meringue contain eggs; cheese, yogurt, and many brands of “nondairy”-labeled products contain milk; mashed potatoes, a common hospital menu item, are often prepared with milk and butter; marzipan is a paste made with almonds that may be used in bakery items.

Common foods often have scientific and technical terms. For example, “albumin” is derived from egg, and “whey” is derived from milk. These ingredients must be avoided by egg- and milk-allergic individuals, respectively. See the ***How to Read a Label*** pages in Appendix 2 for help in identifying these common allergy-causing foods.

Look for allergens in unexpected places

The following are examples of why it is important to read all food labels very carefully.

- **Worcestershire sauce.** This sauce contains anchovies and/or sardines; both are fish.
- **Barbecue sauce.** At least one brand of barbecue sauce contains pecans, which are listed on the label.
- **Imitation butter flavor.** This ingredient often contains milk protein. It could be listed on the ingredient statement as either “artificial” or “natural butter flavor.”
- **Sweet and sour sauce.** Some brands of sweet and sour sauce contain wheat and soy.
- **Egg substitutes.** Most brands of commercial egg substitutes contain egg white.

- **Tuna.** Some brands contain casein (a milk protein) or soy protein as a natural flavoring.
- **Eggs.** Eggs may be used on frozen soft pretzels as an egg-wash.
- **Peanut butter.** Peanut butter has been used to thicken chili, salsa, spaghetti sauce, and brown gravy. It has been used as the “glue” to hold egg rolls together. It has also been used to add crunch and texture to piecrusts and cheesecakes and has even been used in brownies and hot chocolate. If your hospital purchases any of these items and does not prepare them in-house, it is wise to avoid them for patients with peanut or tree-nut allergies.

Know the causes of reactions

Studies have shown that reactions often occur from unexpected ingestion of the food allergen. Foods such as peanuts or tree nuts (walnuts, almonds, pecans, etc.) are often “hidden” in sauces, dressings, or desserts.

In one study of peanut and tree nut reactions, the majority of the subjects did not identify themselves as being food-allergic. They relied on the menu to provide ingredient information. Consider posting a sign in the admissions area that prompts food-allergic patients to be sure to advise the medical staff of their allergies.

Personal anecdotes cited in this book also point out how easily patients with food allergies — especially children — can receive allergen-containing food in the hospital. Be sure to alert the food service staff about the seriousness of anaphylactic reactions. Train all those who prepare and serve food to patients with food allergies to read the ingredient labels on all packaged food a patient is given and to pay special attention to signs on the bed and notes on menus that indicate that the person is unable to consume certain foods.

Provide food allergy-friendly menus

Review your current menu and provide as much information as possible about ingredients directly on the menu itself. This will allow patients and staff to quickly determine if an item selected and circled (by patients) and prepared and sent to the

Consider posting a sign in the admissions area that prompts food-allergic patients to be sure to advise the medical staff of their allergies.

floor (by food service) is food-allergy friendly. The following are some examples.

Instead of	Describe as
Apple Cake	Apple-Walnut Cake
Blue Cheese Dressing	Blue Cheese and Walnut Dressing
Monterey Pasta Salad	Monterey Pasta Salad With Almonds
Chicken Stir-Fry	Chicken Cashew Stir-Fry
Asian Noodles and Vegetables	Asian Noodles and Vegetables with Peanuts
Pasta with Pesto Sauce	Pasta with Walnut Pesto Sauce
Vegetarian Lasagna	Three Cheese Vegetarian Lasagna
Oatmeal Cookie	Oatmeal Cookie with Walnuts and Raisins
Mixed Green Salad	Mixed Green Salad with Croutons and Slivered Almonds

A patient may request milk-free mashed potatoes. Preparation of milk-free mashed potato is simple enough that some hospitals actually provide it on their alternate menu.

If you are not 100% sure about the ingredients in a menu item, say so. The patient will appreciate your honesty. Guide the patient to other choices on the menu or use the backup allergy-safe menu generated specifically by your hospital.

Use safe cooking oil

Studies have shown that *highly refined* peanut oil and soy oil have been safely fed to individuals who are allergic to those foods. However, some physicians restrict peanut oil for their peanut-allergic patients or soy oil for their soy-allergic patients as an extra precaution.

If an oil has previously been used to fry food that contains an allergen, other foods cooked in that oil will contain protein and may cause an allergic reaction. This occurs because,

during cooking, protein, which is the part of the food that causes the allergy, is released into the oil.

Cold-pressed, expelled, or extruded oils (sometimes represented as gourmet oils) from foods such as peanuts, sesame, or walnuts contain protein and, therefore, are not safe for someone with an allergy to those foods.

If a food does not have a label, or if you are unsure about the ingredients, do not guess. Offer another menu selection for which you have ingredient information.

Be wary of high-risk menu choices

- **Fried foods** are high-risk foods because the cooking oil is often used for many foods. Unless there is a designated fryer, or a separate pan can be used specifically to prepare the food, do not offer fried foods to food-allergic patients.
- **Desserts** have caused a number of allergic reactions because ingredients, such as nuts, often appear in unexpected places. Food-allergic individuals generally are safest avoiding desserts and selecting fresh fruit without any toppings or sauces.
- **Sauces** can be used in entrées or desserts. Unless you are absolutely sure about the ingredients used, prepare the food for the food-allergic patient without sauces.
- **Entrées** encased in a pastry covering or items such as burritos prevent the individual from making a visual inspection of the food, a precaution that is important for anyone with a food allergy. This type of food may not be a good choice for patients with food allergies.
- **Combination foods**, such as pot pies, contain many ingredients, some of which can be difficult to see. To be on the safe side, do not offer these types of dishes to food-allergic patients.

Avoid cross contact

Cross contact occurs when the proteins from two or more foods mix — for example, during cooking or while serving the foods. The protein is the part of the food that causes the food allergy. Even a tiny amount of an allergy-causing food is enough to cause an allergic reaction in some people. Therefore, precautions must be taken to avoid cross contact from foods to which a patient is allergic.

Sources of Cross Contact

- Using cooking utensils, such as spatulas, cookie sheets, or prep stations, for both allergen-containing and non-allergen-containing products without washing them in between uses.
- Reusing frying oil for multiple products. For example, frying milk-containing products and non-milk-containing products in the same cooking oil.

Case Review

A 4-year-old boy was admitted to the hospital for asthma exacerbation. His parents made sure the hospital staff knew about their son's allergies to peanuts and milk. They ordered a plain hamburger without bun, since they could not guarantee that the bun was milk-free. When it was served, they inspected the meat to make sure that it did not contain cheese.

After it passed the parents' inspection, their son started to eat his hamburger. They soon noticed traces of cheese on the bottom of the meat. The little boy suffered an allergic reaction.

How did this happen?

Someone in the kitchen made a mistake with the order and, instead of making a new hamburger, peeled the cheese off and turned the meat upside down.

How could you prevent this from happening?

If a mistake is made, remake the order.

Read ingredient statements carefully for all food before using it to prepare a meal for a patient with food allergies. Institutional-size products often have different ingredients from their regular-size versions. Do not rely on lists of "safe"

foods provided by the patients or their families. Read all product labels carefully.

Be aware of cross-contact risks when preparing food for the food-allergic patient. Often, serving utensils are used for several dishes or small bits of food from one dish may wind up in another. For example, shredded cheese placed next to a milk-free food may wind up in the milk-free food.

Cross contact difficulties can also occur when you are serving food to patients with food allergies. The following are two of the most common examples of cross-contact problems.

- **Unclean hands or gloves.** Wash hands thoroughly and put on a fresh pair of gloves before preparing an allergy-free meal.
- **Splashed or spilled food.** It is very easy to accidentally contaminate a patient's food, drinks, or utensils when carrying them on a tray with other items. Ingredients from other foods can splash or spill onto something that is otherwise "allergy-free."

Ideally, the allergen-free meal should be wrapped and/or covered and preferably placed above all other foods in the meal delivery cart or carried by itself directly from the kitchen to the patient.

- **Trays.** As an extra precaution, trays used to carry allergy-free meals should first be cleaned thoroughly with hot, soapy water, not just wiped down.
- **Garnishes.** In order to minimize the chance for mistakes, only the Food Service Department supervisor, manager, or other designated staff member should decide how to garnish the plate.

Shredded cheese can become mixed with prepped vegetables or other ingredients. If this occurs, do not simply pick the allergen out — start over and assemble a plate from scratch using ingredients obtained from the backup supply.

If there is a question, choose no garnish and send the meal without additional toppings.

Case Review

Before eating an omelet, the milk-allergic patient was assured that the meal did not contain milk. After taking a few bites, the patient quickly developed an allergic reaction.

How did this happen?

The kitchen staff added butter to the frying pan before cooking the omelet.

How could you prevent this from happening?

Be sure to verify all ingredients of a meal and remind staff members that even trace amounts of an allergy-causing food can trigger a reaction.

Find out what others have done

To encourage food-allergic patients to work with the staff, some hospitals have generated a computer program that includes all their menu items and checks ingredients against the list of food allergies entered. The printout includes the foods that can safely be offered to the food-allergic patient. The printout is double-checked by the supervisor or manager for accuracy. If approved, a safe menu is generated for the patient.

Many patients choose where they go for elective procedures. Having a food allergy management plan in place may be a plus for your hospital. Be prepared to discuss your food allergy plan with potential patients.

Provide nutrition consultations

Dietitians should keep the following tips in mind when dealing with patients with food allergies:

- When meeting with patients, be understanding, listen carefully, and answer questions thoughtfully.

Case Review

A milk-allergic patient received a tray with a carton of milk on it. The menu clearly indicated that the patient had requested a milk-free tray, and the sticker from the Food Service Department indicated that the tray was prepared to be milk-free.

How did this happen?

A per-diem staff member was giving out trays that day, was not aware of the hospital policy on food allergies (written requests and stickers), and mistakenly added a milk carton from the floor pantry, assuming that the milk had somehow fallen off the tray.

How could you prevent this from happening?

Only staff members who are familiar with hospital policies regarding food allergies should be allowed to deliver trays to food-allergic patients.

- In your assessment, determine if all nutrients from the foods avoided are replaced in the tolerated foods and in sufficient quantities.
- Take this opportunity to determine if further patient education is needed and arrange for follow-up, if necessary.
- Refer patients to FAAN if the patient requests more education. FAAN can provide recipes as well as back-to-school, restaurant, travel, and camp guidelines.

Your hospital may choose to consider any food allergy sufficient to warrant a nutrition consultation. If you have a food-allergy procedure in place with alternate menu choices, consider making it a requirement for a dietary consultation when two or three foods must be avoided.

The timing of the consultation should be individualized, depending on the frequency of admission of patients with food allergy requests and the type of foods to be avoided. For example, if a patient is admitted with strawberry, kiwi, and

green bean allergy, it may not necessarily warrant a nutrition consultation, since a slight adjustment to the menu can provide safe foods for the patient. However, if a patient were allergic to milk, egg, or wheat, it would be worthwhile for the dietitian to see the patient and assess the situation.

The charts on the following pages show the key nutrients lost when common foods are removed from the diet and provide alternative sources of those nutrients.

Alternative Sources of Nutrients Lost Through Elimination Diets

Food Eliminated	Nutrients Lost	Chief Functions in Body	Alternative Sources of Nutrients
Milk	Vitamin B12	Healthy blood cell formation	Meat, poultry, fish, eggs, fortified nutritional yeast
	Calcium	Essential for the formation of strong bones	Leafy green vegetables, salmon, sardines
	Pantothenic Acid	Essential for the energy metabolism; formation of fat, cholesterol and blood cells; utilization of proteins	Meat, whole-grain products, poultry, fish, legumes, eggs
	Phosphorus	Essential for the formation of strong bones; essential for the metabolism of energy, protein, carbohydrates, and fats	Meat, poultry, fish, eggs, whole-grain products
	Riboflavin	Essential for the breakdown of proteins; energy metabolism	Meat, poultry, fish, leafy green vegetables, fortified nutritional yeast
	Vitamin A	Helps vision adjust to light and darkness; promotes skin and mucous membrane growth	Fish oils, liver, eggs, carrots, leafy green vegetables
	Vitamin D	Essential for the absorption of calcium and phosphorus; strong bone formation	Sunlight or artificial ultraviolet light

Food Eliminated	Nutrients Lost	Chief Functions in Body	Alternative Sources of Nutrients
Eggs	Vitamin B12	Healthy blood cell formation	Meat, fish, poultry, dairy products, fortified nutritional yeast
	Biotin	Essential for energy and protein metabolism; involved in the production of fats and glycogen	Liver, soy flour, whole-grain products
	Folate (folacin)	Essential for the growth and development of healthy blood cells	Liver, legumes, fruits, leafy greens (spinach, collards, kale)
	Pantothenic Acid	Essential for the energy metabolism; formation of fat, cholesterol and blood cells; utilization of proteins	Meat, whole-grain products, poultry, fish, legumes
	Riboflavin	Essential for the breakdown of proteins; energy metabolism	Meat, poultry, fish, dairy products, leafy green vegetables, fortified nutritional yeast
	Selenium	Essential for the breakdown of hydroperoxides; functions closely with Vitamin E	Meat, seafood

Food Eliminated	Nutrients Lost	Chief Functions in Body	Alternative Sources of Nutrients
Peanuts	Vitamin B6	Essential for the breakdown of proteins; healthy blood cell formation	Liver, poultry, fish, dairy products, leafy green vegetables, fortified nutritional yeast
	Biotin	Essential for energy and protein metabolism; involved in the production of fats and glycogen	Liver, eggs, soy flour, whole-grain products
	Chromium	Essential for normal metabolism of glucose	Brewer's yeast, whole-grain products, liver
	Copper	Essential for normal iron metabolism; maintains the function of the nervous system; hair and skin color and structure	Liver, seafood, seeds
	Folate (folacin)	Essential for the growth and development of healthy blood cells	Liver, legumes, fruits, leafy green vegetables
	Magnesium	Essential for numerous body processes including energy metabolism, and normal function of muscles and nerves	Leafy green vegetables, bananas, apples, peaches, seafood, lima beans
	Manganese	Essential for reproduction, growth, and bone formation; maintains normal glucose metabolism	Whole-grain products, fruits, vegetables
	Phosphorus	Essential for the formation of strong bones; essential for the metabolism of energy, protein, carbohydrates, and fats	Meat, poultry, fish, eggs, whole-grain products
	Potassium	Essential for normal function of muscles, including the heart; maintains normal blood pressure	Meat, poultry, fish, fruits, dairy products, vegetables
	Vitamin E	Acts as an antioxidant; protects the stability of polyunsaturated fats and vitamin A; maintains healthy cell membranes	Vegetable oils, wheat germ, leafy green vegetables

Food Eliminated	Nutrients Lost	Chief Functions in Body	Alternative Sources of Nutrients
Soybeans	Calcium	Essential for the formation of strong bones	Leafy green vegetables, salmon, sardines, dairy products
	Folate (folacin)	Essential for the growth and development of healthy blood cells	Liver, legumes, fruits, leafy green vegetables,
	Iron	Essential for the formation of healthy blood cells	Meat, poultry, fish, eggs, legumes, leafy green vegetables
	Magnesium	Essential for numerous body processes, including energy metabolism and normal function of muscles and nerves	Tree nuts, leafy green vegetables, bananas, apples, peaches, seafood, lima beans
	Phosphorus	Essential for the formation of strong bones; essential for the metabolism of energy, protein, carbohydrates, and fats	Meat, poultry, fish, eggs, whole-grain products
	Riboflavin	Essential for the breakdown of proteins; energy metabolism	Meat, poultry, fish, dairy products, leafy green vegetables, fortified nutritional yeast
	Thiamin	Essential for the breakdown of carbohydrates; maintains normal function of nerves and muscles, including the heart	Fortified nutritional yeast, liver, pork, legumes, seeds, tree nuts
	Vitamin B6	Essential for the breakdown of proteins; healthy blood cells formation	Liver, poultry, fish, dairy products, dark leafy greens, fortified nutritional yeast
	Zinc	Essential for growth; maintains normal immune system function, including healing of skin surfaces	Meat, seafood, eggs, whole-grain products

Food Eliminated	Nutrients Lost	Chief Functions in Body	Alternative Sources of Nutrients
Wheat	Chromium	Essential for normal metabolism of glucose	Brewer's yeast, alternative whole-grain products, liver
	Folate (folacin)	Essential for the growth and development of healthy blood cells	Liver, legumes, fruits, leafy green vegetables
	Iron	Essential for the formation of healthy blood cells	Meat, poultry, fish, eggs, legumes, leafy green vegetables
	Magnesium	Essential for numerous body processes including energy metabolism, and normal function of muscles and nerves	Tree nuts, leafy green vegetables, bananas, apples, peaches, seafood, lima beans
	Niacin	Essential for energy production; healthy skin; maintains normal function of the digestive and nervous systems	Fortified nutritional yeast, meat, poultry, fish
	Phosphorus	Essential for the formation of strong bones; essential for the metabolism of energy, protein, carbohydrates, and fats	Meat, poultry, fish, eggs, alternative whole-grain products
	Riboflavin	Essential for the breakdown of proteins; energy metabolism	Meat, fish, poultry, dairy products, leafy green vegetables, fortified nutritional yeast
	Selenium	Essential for the breakdown of hydroperoxides; functions closely with vitamin E	Meat, seafood
	Thiamin	Essential for the breakdown of carbohydrates; maintains normal function of nerves and muscles, including the heart	Fortified nutritional yeast, liver, pork, legumes, seeds, tree nuts

Managing Food Allergies in the Food Service Department Quiz

1. Which of the following items are risky for food-allergic patients?
 - a) fried foods
 - b) desserts
 - c) foods served with sauces
 - d) complex dishes with many ingredients
 - e) all of the above
2. Which items are the safest for food-allergic patients?
 - a) any items that don't list the allergen in the menu descriptions
 - b) anything on the menu, as long as you tell the kitchen staff to be sure to remove the allergen
 - c) all items that you're pretty sure are safe
 - d) the most simply prepared foods with the fewest ingredients (plain, broiled, or grilled items, no sauces, etc.) that are prepared from scratch
3. Before preparing a meal for a food-allergic patient, what method should be used to clean all equipment and utensils?
 - a) wipe surfaces of the equipment and utensils with a damp cloth
 - b) thoroughly clean equipment and utensils with hot, soapy water
 - c) mist water onto equipment and utensils and rub vigorously with a clean, dry towel.
 - d) none of the above
4. When cooking or preparing a meal for an allergic patient, it is important to —
 - a) avoid cooking an allergy-containing food next to it
 - b) not pass over the pan containing the special order with other foods, plates, pans, utensils, etc., as it cooks
 - c) clearly identify the dish once it is made
 - d) all of the above
5. Which of the following are possible sources of cross contact?
 - a) not washing your hands or using a fresh pair of gloves before serving the special order
 - b) carrying the special order on a tray with other food items
 - c) garnishing other orders near the special order item
 - d) using the same napkin or towel (for hot-plate service) with other plates prior to using it to serve a special order
 - e) all of the above

6. If a mistake occurs — for example, the kitchen staff has added cheese to an order for a milk-allergic guest, or you forget to use a separate serving tray and food from another order comes into contact with the special order — what is the acceptable method for correcting the situation?
 - a) remove the top layer of food that the allergen came in contact with and add a little more of an acceptable food
 - b) if it's just a little, and it's something that can be removed completely, remove the allergen and carefully inspect the dish to be sure you've removed it all
 - c) have the kitchen staff remake the order from scratch
 - d) all of the above

7. Fried foods can be dangerous for those with food allergies because —
 - a) oils may contain protein
 - b) high fat content makes allergic reactions worse
 - c) frying changes the chemical structure of foods
 - d) cross contact with other foods can occur

8. Which of the following are precautions that can be taken to avoid cross-contact problems?
 - a) wrap and/or cover allergen-free meals and place them above all other foods on the delivery cart
 - b) clean trays used to carry allergy-free meals with hot, soapy water
 - c) allow garnishes to only be added by a supervisor, manager, or designated staff member
 - d) all of the above

9. To encourage food-allergic patients to work with staff members, some hospitals —
 - a) order special meals from restaurants
 - b) use a computer program that includes all menu items and checks ingredients against a list of food allergies
 - c) require janitors to clean kitchens several times a day
 - d) ask patients with food allergies to bring their own food from home

10. When working with patients with food allergies, the floor dietitian should —
 - a) be understanding
 - b) listen carefully
 - c) answer questions thoughtfully
 - d) all of the above

***Answers appear on the next page.**

Answers for Managing Food Allergies in the Food Service Department Quiz

1. **e** — all of the above
2. **d** — the most simply prepared foods with the fewest ingredients (plain, broiled, or grilled items, no sauces, etc.) that are prepared from scratch.
3. **b** — thoroughly clean equipment and utensils with hot, soapy water
4. **d** — all of the above
5. **e** — all of the above
6. **c** — have the kitchen staff remake the order from scratch
7. **d** — cross contact with other foods can occur
8. **d** — all of the above
9. **b** — use a computer program that includes all menu items and checks ingredients against a list of food allergies
10. **d** — all of the above

Glossary of Allergy Terms

Glossary of Allergy Terms

Acute — Symptoms that begin suddenly and have a short and relatively severe course.

Adverse reaction — An undesirable reaction.

Allergen — Any substance that causes an allergic reaction.

Allergic reaction — An immune system response to a harmless substance that the body mistakenly interprets as harmful.

Anaphylaxis — A sudden, severe allergic reaction that involves various areas of the body simultaneously and causes difficulty breathing and swelling of the throat and tongue. In extreme cases, it can cause death. Anaphylaxis is sometimes called a systemic reaction or a general body reaction.

Angio-edema or edema — A medical term used to describe swelling that may occur anywhere in the body.

Antibody — A protein in the bloodstream or in other body fluids that is produced during an immune response to foreign materials that enter the body; antibodies usually protect us.

Antigen — Any substance that provokes an immune response when introduced into the body.

Antihistamine — A medication used to block the effects of histamine, a chemical that is released during an allergic reaction. Antihistamines are available by prescription and over the counter.

Asthma — A reactive airway disease that causes coughing and wheezing. Asthma is very treatable. Common in children, it is often associated with allergies, including food allergy.

Biphasic reaction — An allergic reaction that has two phases. Often the first “wave” of symptoms subsides

with treatment; however, hours later (often one to four hours), the symptoms may return, often worse than the initial constellation of symptoms. It is recommended that patients stay at a hospital under observation for four to six hours to be sure medical assistance is quickly available, if needed.

Chronic — A condition that occurs frequently or lasts a long time (i.e., typically longer than six weeks).

Cross contact — When one food comes in contact with another food and their proteins mix. As a result, each food then contains small amounts of the other food, often invisible to us.

Eczema, also called **atopic dermatitis** — A skin condition that is characterized by an itchy, red rash typically found at the fold of the elbows and behind the knees. It can ooze and cause so much itching that a child will scratch until the skin bleeds. In young children, eczema is sometimes caused by food allergy.

Epinephrine — Epinephrine is “adrenaline.” It is the medicine of choice for controlling severe or anaphylactic reactions. It is available by prescription as EpiPen® or Twinject™. If an epinephrine kit is prescribed, it should be available *at all times*.

Food allergy — Food allergy is the immune system’s reaction to a certain food. The immune system mistakenly reads the food as harmful and creates antibodies to that food. When the food is eaten again, the immune system releases histamine and other chemicals. These chemicals cause the symptoms of an allergic reaction.

Gluten intolerance, also called **celiac sprue disease** — A condition that is caused by the body’s abnormal immunological response to gluten, which is contained in wheat, barley, rye, and oat. Symptoms can include severe abdominal pain and diarrhea and can occur six or more hours after the food is eaten.

Histamine — One of several chemicals released by the body during an allergic reaction. It is the cause of many of the symptoms of an allergic reaction.

Hives — Hives are mosquito bite-like bumps that are extremely itchy. They can appear anywhere on the body.

Lactose intolerance — A gastrointestinal reaction to a food that does not involve the immune system. Lactose-intolerant people lack an enzyme that is needed to digest milk sugar. When milk products are eaten, symptoms such as gas, bloating, and abdominal pain may occur. Lactose intolerance is more common in adults than in young children.

Urticaria — The medical term for hives.

Appendixes

Appendix 1

Masqueraders of food allergy

An adverse food reaction is any type of problem a person may have as a result of something he or she has eaten. It can be caused by food allergy, food intolerance, food poisoning, or a psychological response to a food that is associated with bad memories about that food.

Keep in mind that choking or heart attacks may sometimes look as if an allergic reaction is occurring. If an individual is choking, apply the Heimlich maneuver. In any event, summon emergency help.

Food allergy vs. food intolerance

“Food allergy” and “food intolerance” do not mean the same thing. *Food intolerance* is an adverse reaction to a food that does not involve the immune system.

Lactose intolerance, a type of food intolerance, is the most common food intolerance. In this case, the individual lacks an enzyme that is needed to digest milk sugar. When the person ingests milk products, symptoms such as gas, bloating, and abdominal pain may occur. However, if the individual eats only a small amount of the food, he or she may avoid symptoms. There are pills or drops that can be taken before eating dairy products that will replace the missing enzyme, thereby enabling the individual to enjoy dairy products.

Gluten intolerance, or “celiac sprue,” is a genetically controlled immune disease not using IgE. It is caused by the body’s immunologic reaction to gluten-containing grains (wheat, rye, barley, and possibly oat). Specific immunologic reactions occur in the gut, and inflammatory changes result in disease in the small intestine. Symptoms can occur six or more hours after the food is eaten. As a result, it is often difficult to pinpoint the food that caused the reaction.

Individuals with adverse reactions to gluten must avoid all gluten-containing flours: wheat, oats, barley, and rye.

A *food allergy* occurs when the immune system reacts to a certain food protein. The most common form of an immune system reaction occurs when the body creates immunoglobulin E (IgE) antibodies to a certain food. When these IgE antibodies react with the food, histamine and other chemicals are released from various cells within the body. This can cause symptoms of a reaction throughout the body in the skin, respiratory tract, gastrointestinal tract, or cardiovascular system.

Food poisoning

Some adverse reactions, particularly ones that occur after eating fish and shellfish, are due to food poisoning. Foods that are frozen, thawed, and then refrozen or that are kept at refrigerator temperature for a long time before cooking can cause problems.

Typical symptoms of food poisoning include vomiting or diarrhea, which usually will manifest themselves several hours later but also can occur days later. Individuals who contract food poisoning after eating fish or shellfish may mistakenly consider themselves allergic.

What a doctor can do

Be sure to discuss adverse reactions to any food with a doctor to rule out, or diagnose, food allergy. It will be helpful to the doctor if you can provide as much detailed information as possible about the circumstances of the reaction, such as a diary of everything you ate or drank for several days, any symptoms that developed, the sequence in which symptoms appeared, and the quantity of food that was eaten before the reaction began.

It is very important not to make any changes to the diet without advice from a doctor.

Appendix 2

HOW TO READ A LABEL for a MILK-FREE DIET CÓMO LEER UNA ETIQUETA para una DIETA SIN LÁCTEOS	
Avoid foods that contain milk or any of these ingredients: <i>Evite alimentos que contengan leche o cualquiera de los siguientes ingredientes:</i>	
English	Español
artificial butter flavor butter, butter fat, butter oil buttermilk casein (<i>casein hydrolysate</i>) caseinates (<i>in all forms</i>) cheese cream cottage cheese curds custard ghee half & half lactalbumin, lactalbumin phosphate lactoferrin lactulose milk (<i>in all forms including condensed, derivative, dry, evaporated, goat's milk and milk from other animals, low-fat, malted, milk fat, non-fat, powder, protein, skimmed, solids, whole</i>) nisin nougat pudding Recaldent® rennet casein sour cream, sour cream solids sour milk solids whey (<i>in all forms</i>) yogurt	saborizante artificial a mantequilla mantequilla, grasa láctea, aceite de mantequilla suero de leche caseína (<i>hidrolizado de caseína</i>) caseinatos (<i>en todas sus formas</i>) queso nata requesón cuajada natilla ghee mezcla de nata y leche lactalbúmina, fosfato de lactalbúmina lactoferrina lactulosa leche (<i>en todas sus formas, incluidas condensada, derivada, seca, evaporada, de cabra y de otros animales, de bajo contenido graso, malteada, grasa de leche, sin grasa, en polvo, proteína, desnatada, sólidos, entera</i>) nisina turrón pudín Recaldent caseína rennet crema agria, sólidos de crema agria sólidos de leche cortada suero lácteo (<i>en todas sus formas</i>) yogur
May indicate the presence of milk protein: <i>Podrían indicar la presencia de proteínas lácteas:</i>	
English	Español
caramel candies chocolate flavorings (<i>including natural and artificial</i>) high-protein flour lactic acid starter culture lactose luncheon meat, hot dogs, sausages margarine non-dairy products	dulces de caramelo chocolate saborizantes (<i>naturales y artificiales</i>) harina de alto nivel proteínico cultivo de ácido láctico lactosa carnes frías, perros calientes, salchichas margarina productos sin lácteos

HOW TO READ A LABEL for an EGG-FREE DIET
CÓMO LEER UNA ETIQUETA para una DIETA SIN HUEVOS

Avoid foods that contain eggs or any of these ingredients:
 Evite alimentos que contengan huevo o cualquiera de los siguientes ingredientes:

English	Español
albumin (<i>also spelled as albumen</i>)	albúmina (<i>albumen</i>)
egg (<i>dried, powdered, solids, white, yolk</i>)	huevo (<i>seco, en polvo, sólidos, clara, yema</i>)
eggnog	ponche de huevo
lysozyme	lisozima
mayonnaise	mayonesa
meringue (<i>meringue powder</i>)	merengue (<i>polvo de merengue</i>)
surimi	surimi

May indicate the presence of egg protein: / Podrían indicar la presencia de proteínas de huevo:

English	Español
flavoring (<i>including natural and artificial</i>)	saborizantes (<i>naturales y artificiales</i>)
lecithin	lecitina
macaroni	macarrones
marzipan	mazapán
marshmallows	malvaviscos
nougat	turrón
pasta	pasta

**HOW TO READ A LABEL for a WHEAT-FREE DIET
CÓMO LEER UNA ETIQUETA para una DIETA SIN TRIGO**

Avoid foods that contain wheat or any of these ingredients:
Evite alimentos que contengan trigo o cualquiera de los siguientes ingredientes:

English	Español
bran	salvado
bread crumbs	pan rallado
bulgur	trigo burgol
couscous	cusús
cracker meal	galleta molida
durum	trigo duro
farina	farina
flour (<i>all purpose, bread, durum, cake, enriched, graham, high gluten, high protein, instant, pastry, self-rising, soft wheat, steel ground, stone ground, whole wheat</i>)	harina (<i>todo uso, para pan, de trigo duro, para tortas, enriquecida, graham, alto gluten, alta proteina, instantánea, para postres, con levadura, de trigo tierno, molida en metal, molida en piedra, integral</i>)
gluten	gluten
kamut	kamut
matzoh, matzoh meal (<i>also spelled as matzo</i>)	matzoh, harina de matzoh (matzo)
pasta	pasta
seitan	seitán
semolina	semolina
spelt	espelta
vital gluten	gluten vital
wheat (<i>bran, germ, gluten, malt, sprouts</i>)	trigo (<i>salvado, germen. gluten, malta, retoños</i>)
wheat grass	pasto de trigo
whole-wheat berries	granos de trigo integral

May indicate the presence of wheat protein: / Podrían indicar la presencia de proteína de trigo:

English	Español
flavoring (<i>including natural and artificial</i>)	saborizantes (<i>naturales y artificiales</i>)
hydrolyzed protein	proteína hidrolizada
soy sauce	salsa de soya
starch (<i>gelatinized starch, modified starch, modified food starch, vegetable starch, wheat starch</i>)	almidón (<i>almidón gelatinizado, almidón modificado, almidón alimenticio modificado, almidón vegetal, almidón de trigo</i>)
surimi	surimi

HOW TO READ A LABEL for a PEANUT-FREE DIET
CÓMO LEER UNA ETIQUETA para una DIETA SIN MANÍ

Avoid foods that contain peanuts or any of these ingredients:
 Evite alimentos que contengan maní o cualquiera de los siguientes ingredientes:

English	Español
artificial nuts	nueces artificiales
beer nuts	nueces mezcladas
cold pressed, expelled, extruded peanut oil	aceite de maní prensado en frío, expelido o extruído
goobers	cacahuates
ground nuts	nueces molidas
mixed nuts	nueces mezcladas
monkey nuts	cacahuates con cáscara
nutmeat	parte comestible de las nueces
nut pieces	trozos de nueces
peanut	maní
peanut butter	mantequilla de maní
peanut flour	harina de maní

May indicate the presence of peanut protein: / Podrían indicar la presencia de proteína de maní:

English	Español
African, Asian (<i>especially Chinese, Indian, Indonesian, Thai, and Vietnamese</i>), and Mexican dishes	Platos de la cocina africana, mexicana y asiática (<i>especialmente china, india, indonesia, tailandesa y vietnamita</i>)
baked goods (<i>pastries, cookies, etc.</i>)	repostería (<i>pasteles, galletas, etc.</i>)
candy (<i>including chocolate candy</i>)	dulces (<i>incluyendo chocolate</i>)
chili	chili
egg rolls	rollitos de primavera
enchilada sauce	salsa para enchiladas
flavoring (<i>including natural and artificial</i>)	saborizantes (<i>naturales y artificiales</i>)
marzipan	mazapán
mole sauce	mole
nougat	turrón

- Mandelonas are peanuts soaked in almond flavoring.
Las mandelonas son manies remojados en saborizante de almendra.
- Studies show that most allergic individuals can safely eat peanut oil (**not** cold pressed, expelled, or extruded peanut oil).
Los estudios han demostrado que la mayoría de las personas alérgicas pueden ingerir aceite de maní (pero no aceite de maní prensado en frío, expelido o extruído).
- Arachis oil is peanut oil.
El aceite de arachis es aceite de maní.
- Experts advise patients allergic to peanuts to avoid tree nuts as well.
Los expertos aconsejan a las personas alérgicas al maní que tampoco coman nueces de árbol.
- A study showed that, unlike other legumes, there is a strong possibility of cross-reaction between peanuts and lupine.
Un estudio demostró que, a diferencia de con otras legumbres, existe una gran posibilidad de que exista reacción cruzada entre maní y lupina.
- Sunflower seeds are often produced on equipment shared with peanuts.
Las semillas de girasol a menudo se procesan en equipo que también se usa para procesar maní.

HOW TO READ A LABEL for a TREE-NUT-FREE DIET
CÓMO LEER UNA ETIQUETA para una DIETA SIN NUECES DE ÁRBOL

Avoid foods that contain nuts or any of these ingredients:
 Evite alimentos que contengan nueces o cualquiera de los siguientes ingredientes:

English	Español
almonds	almendras
artificial nuts	nueces artificiales
Brazil nuts	nueces de Brasil
caponata	caponata
cashews	anacardos
chestnuts	castañas
filbert/hazelnuts	avellanas
gianduja (<i>a nut mixture found in some chocolate</i>)	gianduja (<i>mezcla de nueces que se usa para algunos chocolates</i>)
hickory nuts	nueces duras
macadamia nuts	nueces macadamia
marzipan/almond paste	mazapán/pasta de almendras
nan-gai nuts	nueces de Nangai
natural nut extract (<i>i.e., almond, walnut</i>)	extractos naturales de nueces (como el de almendra o el de nuez)
nougat	turrón
nut butters (<i>i.e., cashew butter</i>)	mantequillas de nueces (<i>por ejemplo, de anacardo</i>)
nut meal	harina de nueces
nutmeat	parte comestible de las nueces
nut oil	aceite de nueces
nut paste (<i>i.e., almond paste</i>)	pasta de nueces (<i>como la pasta de almendras</i>)
nut pieces	trozos de nueces
pecans (<i>Mashuga Nuts®</i>)	nuez pecana (<i>Mashuga Nuts®</i>)
pesto	pesto
pine nuts (<i>also referred to as Indian, piñon, pinyon, pignoli, piñolia, and pignon nuts</i>)	piñones (<i>también conocidos como nueces de pino o pignoli</i>)
pistachios	pistachos
pralines	praliné
walnuts	nueces

- Mandelonas are peanuts soaked in almond flavoring.
Las mandelonas son manies remojados en saborizante de almendra.
- Mortadella may contain pistachios.
La mortadela podría contener pistachos.
- Natural and artificial flavoring may contain tree nuts.
Los saborizantes naturales y artificiales podrían contener nueces de árbol.
- Experts advise patients allergic to tree nut butters (i.e., cashew butter) to avoid peanuts as well.
Los expertos aconsejan a las personas alérgicas a las mantequillas de nueces de árbol (es decir a la mantequilla de anacardo) que tampoco coman mani.
- Talk to your doctor if you find other nuts not listed here.
Consulte a su médico sobre otras nueces que no se hayan incluido en este documento.

HOW TO READ A LABEL for a SOY-FREE DIET
CÓMO LEER UNA ETIQUETA para una DIETA SIN SOYA

Avoid foods that contain soy or any of these ingredients:
 Evite alimentos que contengan soya o cualquiera de los siguientes ingredientes:

English	Español
edamame	edamame
hydrolyzed soy protein	proteína de soya hidrolizada
miso	miso
natto	natto
soy sauce	salsa shoyu
soy (<i>soy albumin, soy fiber, soy flour, soy grits, soy milk, soy nuts, soy sprouts</i>)	soya (<i>albúmina de soya, fibra de soya, harina de soya, sémola de soya, leche de soya, nueces de soya, retoños de soya</i>)
soya	soya
soybean (<i>curd, granules</i>)	frijol de soya (<i>cuajada, gránulos</i>)
soy protein (<i>concentrate, isolate</i>)	proteína de soya (<i>concentrada, aislada</i>)
soy sauce	salsa de soya
Tamari	Tamari
Tempeh	Tempeh
textured vegetable protein (<i>TVP</i>)	proteína vegetal texturizada (<i>TVP por sus siglas en inglés</i>)
tofu	tofú

May indicate the presence of soy protein: / Podrían indicar la presencia de proteína de soya:

English	Español
Asian cuisine	Cocina asiática
flavoring (<i>including natural and artificial</i>)	saborizantes (<i>naturales y artificiales</i>)
vegetable broth	caldo de vegetales
vegetable gum	goma vegetal
vegetable starch	almidón vegetal

- Studies show most individuals allergic to soy may safely eat soy lecithin and soybean oil.
Los estudios han demostrado que la mayoría de las personas alérgicas a la soya pueden ingerir lecitina de soya y aceite de soya sin sufrir reacción alérgica.

HOW TO READ A LABEL for a SHELLFISH-FREE DIET
CÓMO LEER UNA ETIQUETA para una DIETA SIN MARISCOS

Avoid foods that contain shellfish or any of these ingredients:
 Evite alimentos que contengan mariscos o cualquiera de los siguientes ingredientes:

English	Español
abalone	abalones
clams (<i>cherrystone, littleneck, pismo, quahog</i>)	almejas (<i>almeja redonda, mercenaria pequeña, almeja pismo, almeja dura</i>)
cockle (<i>periwinkle, sea urchin</i>)	berberecho (<i>bigaro, erizo de mar</i>)
crab	cangrejo
crawfish (<i>crayfish, ecrevisse</i>)	cangrejo de río (<i>cigala, cangrejo de los canales</i>)
lobster (<i>langouste, langoustine, scampo, coral, tomalley</i>)	langosta (<i>langostino, scampo, coral, tomalley</i>)
mollusks	moluscos
mussels	mejillones
octopus	pulpo
oysters	ostras
prawns	gambas
scallops	vieiras
shrimp (<i>crevette</i>)	camarones (<i>crevette</i>)
snails (<i>escargot</i>)	caracoles (<i>escargot</i>)
squid (<i>calamari</i>)	calamares (<i>calamari</i>)

May indicate the presence of shellfish protein: / Podrían indicar la presencia de proteína de mariscos:

English	Español
bouillabaisse	bullabesa
cuttlefish ink	tinta de la jibia
fish stock	caldo de pescado
flavoring (<i>including natural and artificial</i>)	saborizantes (<i>naturales y artificiales</i>)
seafood flavoring (<i>such as crab or clam extract</i>)	saborizante a mariscos (<i>como extracto de cangrejo o de almejas</i>)
surimi	surimi

Keep the following in mind: / Tenga en cuenta que:

- Any food served in a seafood restaurant may be cross-contaminated with fish or shellfish.
Cualquier comida servida en una marisquería podría estar contaminada con pescado o con mariscos.
- For some individuals, a reaction may occur from cooking odors or from handling fish or shellfish.
Algunas personas podrían sufrir reacción alérgica al oler los vapores de la cocina o al tocar pescado o mariscos.
- Always carry medications and use them as soon as symptoms develop.
Siempre debe llevar consigo medicamentos y usarlos apenas se manifiesten los síntomas.

Other Sources of Information

Other Sources of Information

For additional information about food allergies, contact:

The Food Allergy & Anaphylaxis Network

11781 Lee Jackson Highway, Suite 160
Fairfax, VA 22033
(800) 929-4040
www.foodallergy.org

Contact us for a listing of other resources that may be of interest to you, such as the *Grocery Manufacturers Directory* and the video *It Only Takes One Bite: Food Allergy and Anaphylaxis*.

Visit our Web site to sign up for free “Special Allergy Alerts” that contain notices of mislabeled or recalled food or pharmaceutical products and/or advance notice of ingredient changes.

For a sample copy of the *Food Allergy News* newsletter, call our office, or send an e-mail to faan@foodallergy.org.

International Food Information Council

1100 Connecticut Avenue NW, Suite 430
Washington DC 20036
(202) 296-6540
www.ific.org

For information about celiac sprue, contact:

Celiac Disease Foundation

13251 Ventura Blvd., Suite 3
Studio City, CA 91604-1838
(818) 990-2354
www.celiac.org

Celiac Sprue Association

P.O. Box 31700
Omaha, NE 68131-0700
(402) 558-0600
www.csaceliacs.org

For a list of allergists in your community, contact:

The American Academy of Allergy Asthma & Immunology

(800) 822-ASMA

www.aaaai.org

The American College of Allergy Asthma & Immunology

(800) 842-7777

www.acaai.org

References

References

- Bock, M.D., S. Allan; Munoz-Furlong, Anne; Sampson, M.D., Hugh A. "Fatalities Due to Anaphylactic Reactions to Food," *Journal of Allergy and Clinical Immunology*, Vol. 107, No. 1, 2001.
- Hahn, J.D., Martin J., "Liability and Recall Issues in the Food Industry," *Food Allergy Research & Resource Program: Food Allergens Conference*, 2000.
- Metcalf, M.D., Dean D.; Sampson, M.D., Hugh A.; Simon, M.D., Ronald A. *Food Allergy: Adverse Reactions to Foods and Food Additives*, 2nd ed. Cambridge, MA: Blackwell Science, 1997.
- M.W. Yocum, et. al., "Epidemiology of Anaphylaxis in Oldmstead County: A Population-Based Study," *The Journal of Allergy and Clinical Immunology*, Vol. 104, No. 2, Pt. 1, pp. 452-56, 1999.
- Perry, T.T.; Conover-Walker, M.K.; Pomes, A.; Chapman, M.; Wood, R.A. "Distribution of Peanut Allergen in the Environment," *Journal of Allergy and Clinical Immunology*, Vol. 113, pp. 973-976, 2004.
- Sampson, M.D., Hugh A. "Update on Food Allergy," *Journal of Allergy and Clinical Immunology*, Vol. 113, pp. 805-819, 2004.
- Sampson, M.D., Hugh A.; Mendelson, M.D., Louis; Rosen, M.D., James P. "Fatal and Near-Fatal Anaphylactic Reactions to Food in Children and Adolescents," *The New England Journal of Medicine*, Vol. 327, No. 6, pp. 380-384, 1992.
- Sicherer, M.D., Scott H. "Food Protein Induced Enterocolitis: Case Presentations and Management Lessons," *Journal of Allergy and Clinical Immunology*, Vol. 115, pp. 149-156, 2005.
- Sicherer, M.D., Scott H.; Munoz-Furlong, Anne; Sampson, M.D., Hugh A. "Prevalence of Seafood Allergy in the United States Determined by a Random Telephone Survey," *Journal of Allergy and Clinical Immunology*, Vol. 114, pp. 159-165, 2004.

Sicherer, M.D, Scott H.; DeSimone, Jennifer; Furlong, Terence J. "Peanut and Tree Nut Allergic Reactions in Restaurants and Food Establishments," *Journal of Allergy and Clinical Immunology*, Vol. 107, No. 2, Abstract 759, S231, 2001.

Sicherer, M.D., Scott H.; Munoz-Furlong, Anne; Burks, M.D., A. Wesley; Sampson, M.D., Hugh A. "Prevalence of Peanut and Tree Nut Allergy in the U.S. Determined by a Random Digit Dial Telephone Survey," *Journal of Allergy and Clinical Immunology*, Vol. 103, No. 4, 1999.

Simonte, S.J.; Ma, S.; Mofidi, S.; Sicherer, S.H. "Relevance of Casual Contact With Peanut Butter in Children With Peanut Allergy," *Journal of Allergy and Clinical Immunology*, Vol. 112, pp.180-182, 2003.