Care CEU's

Continuing Education for Nursing Home Administrators

Nutritional Needs for Older Adults

Introduction

Nutrition can be an important determinant of older adults' health. Therefore, it is essential for assisted living and nursing home administrators to ensure older adults residing in their facilities receive the adequate nutrition they require. This course will review the key elements of care necessary to deliver older adults' adequate nutrition.

Section 1: Older Adult Nutrition

Case Study 1

A 72-year-old female patient is admitted into a nursing facility. The patient has a history of arthritis, hypertension and non-insulin dependent diabetes. The patient is 5'3'' tall and weighs approximately 70.3 kg. The patient is lucid and reports she is gluten intolerant. The patient also reports she tries to avoid dairy products whenever possible. However, the patient is given the nursing facility's standard meals. After the completion of each meal, the patient reports stomach bloating, gas and overall discomfort. The patient also reports she is experiencing frequent headaches, increased thirst and fatigue. The patient's signs and symptoms are documented, although the patient continues to receive the nursing facility's standard meals.

Case Study 1

An 82-year-old male resident of an assisted living facility begins to request "different types of meals". The patient is not specific about his request, although he is adamant about receiving what he continues to refer to as, "different types of meals." The patient has a history of hyperlipidemia, hypertension, glaucoma and asthma. The patient is 5'10'' and weighs approximately 63.5 kg. He has no known food or drug allergies. After the patient's initial request for "different types of meals", he becomes agitated regarding his meals. He voices his discontent, however the patient continues to receive what he refers to as the "same old food." Prior to the patient's recent agitation, the patient never complained about his surroundings or his comfort level, although it was observed and

documented by the patient's health care team that he was eating less than he had been in the previous 12 months. Approximately three weeks pass from the patient's first request for "different types of meals". In the aforementioned time period, the patient lost 4 lbs, became less active and reported extended bouts of dry mouth, confusion, lightheadedness and dizziness. Additionally, the patient has become increasingly agitated and anxious, especially around meal times. The patient's agitation and anxiety have also begun to interfere with his medication therapy. The patient often refuses to take medications because he believes "they are making him feel worse." No changes have been made to the patient's meals.

Case Study 3

A 74-year-old male patient enters a nursing facility after undergoing surgery and rehabilitation for a broken hip. The patient is 5'9'' tall and weighs 68 kg. The patient has no food or drug allergies and is currently taking warfarin to help prevent deep vein thrombosis (DVT). The patient is lucid, and as he puts it "eager to return to his active life and hobbies." Fortunately for the patient, through rehabilitation, he has reigned much of his function and mobility. However, the patient is required to continue his rehabilitation in order to further improve upon his function and mobility. The patient is also ordered to continue his warfarin therapy. A few weeks pass and the patient has successfully acclimated to his new surroundings and therapy. He expresses his contentment for his surroundings and reports he enjoys talking with his nurses. The patient also reports he is "moving much easier now" and has "less pain." Overall the patient is doing quite well, although recently his diet has been very inconsistent and his team of health care professionals reports his latest international normalized ratio (INR) values are non-therapeutic.

The scenarios outlined in the previous case studies highlight the impact nutrition and diet can have on older adults. The term older adult can refer to any individual 65 years or older[1]. For most older adults, nutrition and diet are important determinants of health. A nutritious diet tailor made to meet the health-related needs of older adults can help them maintain their weight, activity level, as well as their physical and mental health. On the other hand, a poor diet without significant nutritional value can lead to a host of different health-related issues including: weakened immune

systems, decreased energy levels as well as obesity, malnutrition, dehydration, impaired cognitive function, dementia, type 2 diabetes, hypertension, heart disease, stroke and osteoporoses[1]. In other words, poor nutrition can devastate an older adult's health, overall well-being and quality of life. Thus, it is essential for assisted living and nursing home administrators to ensure older adults residing in their facilities receive the nutrition they require. That being said, the following question remains: how can assisted living and nursing home administrators ensure they are meeting the nutritional and dietary requirements of their residents? To effectively answer the previous question, assisted living and nursing home administrators should review 3 key aspects related to their facility's care, the first of which is food and nutrition services - more specifically food and nutrition services related to the regulations outlined in the Final Rule, section §483.60 Food and Nutrition Services.

The Final Rule, section §483.60 Food and Nutrition Services outlines federal regulations and requirements related to the food, nutrition and dietary services provided by long-term care facilities. It is essential for assisted living, nursing homes and other types of long-term care facilities to meet the federal regulations and requirements outlined in the Final Rule, section §483.60 Food and Nutrition Services. Therefore, assisted living and nursing home administrators should review the food, nutrition and dietary services provided by their specific facility to ensure they meet federal requirements. By reviewing the aforementioned services, assisted living and nursing home administrators can ensure their facility is meeting the provisions of the federal government as well as the nutritional and dietary requirements of their residents. That being said, the remainder of this section will highlight the federal provisions found in the Final Rule, section §483.60 Food and Nutrition Services. The aforementioned information will be presented below and broken down into detailed segments. Each of the following informational segments represents individual sections of the Final Rule, section §483.60 Food and Nutrition Services. The following information was derived from regulations and requirements provided by the Federal Government of the United States of America[2].

The Final Rule, Section §483.60 Food and Nutrition Services

Food and Nutrition Services

• The facility must provide each resident with a nourishing, palatable, well-balanced diet that meets his or her daily nutritional and special dietary needs, taking into consideration the preferences of each resident.

• The facility should maintain ongoing communication and coordination among and between staff within all departments to ensure that the resident assessment, care plan and actual food and nutrition services meet each resident's daily nutritional and dietary needs and choices.

• The intent of the previous requirement is to ensure that facility staff support the nutritional well-being of the residents while respecting an individual's right to make choices about his or her diet.

• This previous requirement expects that there is ongoing communication and coordination among and between staff within all departments to ensure that the resident assessment, care plan and actual food and nutrition services meet each resident's daily nutritional and dietary needs and choices.

• How should assisted living and nursing home administrators ensure the previous requirements are met?

- Assisted living and nursing home administrators should conduct interviews and facility probes.

- Assisted living and nursing home administrators should maintain ongoing communication and coordination among and between relevant staff.

Staffing

• The facility must employ sufficient staff with the appropriate competencies and skills sets to carry out the functions of the food and nutrition service, taking into consideration resident assessments, individual plans of care and the number, acuity and diagnoses of the facility's resident population. This includes; a qualified dietitian or other clinically qualified nutrition professional either fulltime, part-time, or on a consultant basis. A qualified dietitian or other clinically qualified nutrition professional is one who:

- Holds a bachelor's or higher degree granted by a regionally accredited college or university in the United States (or an equivalent foreign degree) with completion of the academic requirements of a program in nutrition or dietetics accredited by an appropriate national accreditation organization recognized for this purpose.

- Has completed at least 900 hours of supervised dietetics practice under the supervision of a registered dietitian or nutrition professional.

- Is licensed or certified as a dietitian or nutrition professional by the State in which the services are performed. In a State that does not provide for licensure or certification, the individual will be deemed to have met this requirement if he or she is recognized as a "registered dietitian" by the Commission on Dietetic Registration or its successor organization, or meets the requirements of paragraphs in this section.

• For dietitians hired or contracted with prior to November 28, 2016, meets these requirements no later than 5 years after November 28, 2016 or as required by state law. If a qualified dietitian or other clinically qualified nutrition professional is not employed full-time, the facility must designate a person to serve as the director of food and nutrition services who:

- For designations prior to November 28, 2016, meets the following requirements no later than 5 years after November 28, 2016, or no later than 1 year after November 28, 2016 for designations after November 28, 2016, is:

- A certified dietary manager; or

- A certified food service manager; or

- Has similar national certification for food service management and safety from a national certifying body; or

- Has an associate's or higher degree in food service management or in hospitality, if the course study includes food service or restaurant management, from an accredited institution of higher learning; and

- In States that have established standards for food service managers or dietary managers, meets State requirements for food service managers or dietary managers, and

- Receives frequently scheduled consultations from a qualified dietitian or other clinically qualified nutrition professional.

• The intent of the previous requirement is to ensure there is sufficient and qualified staff with the appropriate competencies and skill sets to carry out food and nutrition services.

• How should assisted living and nursing home administrators ensure the previous requirements are met?

- Through observations and interviews, assisted living and nursing home administrators should determine if there are sufficient support personnel to safely and effectively carry out the meal preparation and other food and nutrition services as defined by facility management.

- Assisted living and nursing home administrators should observe and interview residents to determine if their needs and preferences are met, if the food is palatable, attractive, served at the proper temperatures and at appropriate times. If concerns are identified, determine if they may be related to insufficient or inadequately trained personnel.

- Assisted living and nursing home administrators should determine if observations and/or interviews indicate there are sufficient staff to prepare

and serve meals in a timely manner and to maintain food safety and temperature.

Sufficient Dietary Support Personal

• In addition to the previous requirements, if staff, specifically the qualified dietitian or other clinically qualified nutrition professional, did not carry out the functions of the food and nutrition services. While these functions may be defined by facility management, at a minimum they should include, but are not limited to:

- Assessing the nutritional needs of residents;

- Developing and evaluating regular and therapeutic diets, including texture of foods and liquids, to meet the specialized needs of residents;

- Developing and implementing person centered education programs involving food and nutrition services for all facility staff;

- Overseeing the budget and purchasing of food and supplies, and food preparation, service and storage; and,

- Participating in the quality assurance and performance improvement (QAPI) when food and nutrition services are involved.

• The facility must employ sufficient staff with the appropriate competencies and skills sets to carry out the functions of the food and nutrition service, taking into consideration resident assessments, individual plans of care and the number, acuity and diagnoses of the facility's resident population in accordance with the facility assessment.

• The facility must provide sufficient support personnel to safely and effectively carry out the functions of the food and nutrition service.

• "Sufficient support personnel" means having enough dietary and food and nutrition staff to safely carry out all of the functions of the food and nutrition services. This does not include staff, such as licensed nurses, nurse aides or paid feeding assistants, involved in assisting residents with eating.

• A member of the Food and Nutrition Services staff must participate on the interdisciplinary team.

• The facility should observe and interview residents to determine if their needs and preferences are met, if the food is palatable, attractive, served at the proper temperatures and at appropriate times. If concerns are identified, determine if they may be related to insufficient or inadequately trained personnel.

• The facility should determine if meals or nutritional supplements are provided in accordance with a resident's medication requirements.

• How should assisted living and nursing home administrators ensure the previous requirements are met?

- Assisted living and nursing home administrators should determine who represents food and nutrition services at interdisciplinary team meetings.

- Assisted living and nursing home administrators should evaluate and answer the following questions: are meals provided in accordance with a resident's medication requirements; are nutritional supplements provided in accordance with a resident's medication requirements; are meals or nutritional supplements provided to residents within 45 minutes of either a residents request or less depending on the facility's scheduled time for meals; are meals intended to be "hot" served as such and are maintained at the desired temperature when provided to the resident; are there any concerns regarding sufficient staff?

Menus and Nutritional Adequacy

• Menus must meet the nutritional needs of residents in accordance with established national guidelines.

• Menus must be prepared in advance.

• Menus must reflect, based on a facility's reasonable efforts, the religious, cultural and ethnic needs of the resident population, as well as input received from residents and resident groups.

• Menus must be updated periodically.

• Menus must be reviewed by the facility's dietitian or other clinically qualified nutrition professional for nutritional adequacy.

• The facility must make reasonable efforts to provide food that is appetizing to and culturally appropriate for residents. This means learning the resident's needs and preferences and responding to them. For residents with dementia or other barriers or challenges to expressing their preferences, facility staff should document the steps taken to learn what those preferences are. It is not required that there be individualized menus for all residents; however, alternatives aligned with individual needs and preferences should be available if the primary menu or immediate selections for a particular meal are not to a resident's liking. Facilities must make reasonable and good faith efforts to develop a menu based on resident requests and resident groups' feedback.

• The intent of the previous requirement is to ensure menus are developed and prepared to meet resident choices including their nutritional, religious, cultural, and ethnic needs while using established national guidelines.

• How should assisted living and nursing home administrators ensure the previous requirements are met?

- Assisted living and nursing home administrators should conduct interviews and record resident reviews regarding menus.

- Assisted living and nursing home administrators should evaluate and answer the following questions: are residents receiving food in the amount, type, consistency and frequency to maintain normal body weight and acceptable nutritional values; are residents' preferences and needs incorporated into the development of the individual resident's food plan; if a resident is a vegetarian, is he or she receiving the adequate nutrition; if a resident does not consume dairy products, is the resident receiving adequate nutrition; do menus meet basic nutritional needs by providing meals based on individual nutritional assessment, the individualized plan of care, and established national guidelines; are menus periodically updated to mitigate the risk of menu fatigue; are menus reviewed and

revised as needed by a qualified dietitian or other qualified nutrition professional?

- Assisted living and nursing home administrators should note the following: standard meal planning guides may be used for menu planning and food purchasing. They are not intended to meet the nutritional needs and preferences of residents and must be adjusted to consider individual differences. Some residents will need more due to age, size, gender, physical activity, and state of health. There are many guides , i.e., American Diabetes Association, Academy of Nutrition and Dietetics, American Medical Association, or U.S. Department of Agriculture, that are available and appropriate for use when adjusted to meet each resident's needs.

Food and Drink

• Each resident receives and the facility provides food prepared by methods that conserve nutritive value, flavor, and appearance.

• Each resident receives and the facility provides food and drink that is palatable, attractive, and at a safe and appetizing temperature.

• Food should be palatable, attractive, and at an appetizing temperature as determined by the type of food to ensure resident's satisfaction, while minimizing the risk for scalding and burns. Providing palatable, attractive, and appetizing food and drink to residents can help to encourage residents to increase the amount they eat and drink. Improved nutrition and hydration status can help prevent, or aid in the recovery from, illness or injury.

• Each resident receives, and the facility provides, food prepared in a form designed to meet individual needs.

• Each resident receives and the facility provides food that accommodates resident allergies, intolerances, and preferences.

• Each resident receives and the facility provides appealing options of similar nutritive value to residents who choose not to eat food that is initially served or who request a different meal choice.

• Each resident receives, and the facility provides drinks, including water and other liquids consistent with resident needs and preferences and sufficient to maintain resident hydration.

• Proper hydration alone is a critical aspect of nutrition among nursing home residents. Individuals who do not receive adequate fluids are more susceptible to urinary tract infections, pneumonia, decubitus ulcers, skin infections, confusion and disorientation.

• The intent of the previous requirement is to ensure that the nutritive value of food is not compromised and destroyed because of prolonged:

- Food storage, light, and air exposure;

- Cooking of foods in a large volume of water;

- Holding on steam table.

• The intent of the previous requirement is to also ensure accommodations are made for resident allergies, intolerances, and preference.

• How should assisted living and nursing home administrators ensure the previous requirements are met?

- Assisted living and nursing home administrators should review residents' complaints and/or suggestions regarding food.

- Assisted living and nursing home administrators should ask residents how the food meets their preferences, allergies and/or intolerances.

- Assisted living and nursing home administrators should observe meals and food preparation to ensure the food is prepared and appropriate to meet resident’s needs and according to their assessment and care plan.

- Assisted living and nursing home administrators should evaluate resident hydration.

- Assisted living and nursing home administrators should evaluate and

answer the following questions: do foods have a distinctly appetizing aroma and appearance; is food generally well-seasoned (use of spices, herbs, etc.) and acceptable to residents; is food prepared in a way to preserve vitamins; are the methods of food storage and preparation effective enough to cause minimum loss of nutrients; what action(s) does facility staff take to ensure resident hydration is maintained?

Therapeutic Diets

• Therapeutic diets must be prescribed by the attending physician.

• The attending physician may delegate to a registered or licensed dietitian the task of prescribing a resident's diet, including a therapeutic diet, to the extent allowed by State law.

• If the residents' attending physician delegates this task, he or she must supervise the dietitian and remains responsible for the resident's care even if the task is delegated. The physician would be able to modify a diet order with a subsequent order, if necessary.

• "Therapeutic Diet" means a diet ordered by a physician or delegated registered or licensed dietitian as part of treatment for a disease or clinical condition, or to eliminate or decrease specific nutrients in the diet, (e.g., sodium) or to increase specific nutrients in the diet (e.g., potassium), or to provide food the resident is able to eat (e.g., a mechanically altered diet).

• The intent of the previous requirement is to ensure that residents receive and consume foods in the appropriate form and/or the appropriate nutritive content as prescribed by a physician, and/or assessed by the interdisciplinary team to support the resident's treatment, plan of care, in accordance with his her goals and preferences.

• How should assisted living and nursing home administrators ensure the previous requirements are met?

- Assisted living and nursing home administrators should determine if relevant staff are effectively identifying concerns regarding a resident's nutritional status.

- Assisted living and nursing home administrators should evaluate and answer the following questions: if a resident is receiving a therapeutic diet, is the diet prescribed by the attending physician or delegated registered or licensed dietitian; if a resident has inadequate nutrition or nutritional deficits that manifest into and/or are a product of weight loss or other medical problems, are efforts made be relevant staff to determine if there is a therapeutic diet that is medically prescribed?

Frequency of Meals

• Each resident must receive and the facility must provide at least three meals daily, at regular times comparable to normal mealtimes in the community or in accordance with resident needs, preferences, requests, and plan of care.

• There must be no more than 14 hours between a substantial evening meal and breakfast the following day, except when a nourishing snack is served at bedtime, and then up to 16 hours may elapse between a substantial evening meal and breakfast the following day, if a resident group agrees to this meal span.

• Suitable, nourishing alternative meals and snacks must be provided to residents who want to eat at non-traditional times or outside of scheduled meal service times, consistent with the resident plan of care.

• “Nourishing snack” means items from the basic food groups, either singly or in combination with each other.

• “Suitable and nourishing alternative meals and snacks” means that when an alternate meal or snack is provided, it is of similar nutritive value as the meal or snack offered at the normally scheduled time and consistent with the resident plan of care.

• The facility should observe meal times and schedules and determine if they are offered at regular times comparable to normal times found in the community. Interview residents to get their input on meal service schedules to determine if they meet their choices and their input regarding eating at nontraditional times and the availability of snacks throughout the day.

• How should assisted living and nursing home administrators ensure the previous requirements are met?

- Assisted living and nursing home administrators should observe meal times and schedules and determine if they are offered at regular times comparable to normal times found in the community. Interview residents to get their input on meal service schedules to determine if they meet their choices and their input regarding eating at nontraditional times and the availability of snacks throughout the day.

- Assisted living and nursing home administrators should evaluate and answer the following questions: are three meals offered at regular times; are snacks and meals available for residents at non-traditional times or outside of scheduled meal service times, or upon request?; do residents want snacks offered at bedtime?

Assistive Devices

• The facility must provide special eating equipment and utensils for residents who need them and appropriate assistance to ensure that the resident can use the assistive devices when consuming meals and snacks.

• The facility must provide appropriate assistive devices to residents who need them to maintain or improve their ability to eat or drink independently

- for example, improving poor grasp by enlarging silverware handles with foam padding, aiding residents with impaired coordination or tremor by installing plate guards, or specialized cups. The facility must also provide the appropriate staff assistance to ensure that these residents can use the assistive devices when eating or drinking.

• How should assisted living and nursing home administrators ensure the previous requirements are met?

- Assisted living and nursing home administrators should review sampled residents' comprehensive assessment and plan of care for their capacity/ability to eat independently.

- Assisted living and nursing home administrators should determine if recommendations were made for adaptive eating equipment and utensils. If they were, determine if these utensils are available and utilized by residents.

- Assisted living and nursing home administrators should observe and determine whether relevant staff competently assists residents who use assistive devices.

Paid Feeding Assistants

• A facility may use a paid feeding assistant if:

- The feeding assistant has successfully completed a State-approved training course that meets requirements before feeding residents; and

- The use of feeding assistants is consistent with State law.

• A feeding assistant must work under the supervision of a registered nurse (RN) or licensed practical nurse (LPN).

• In an emergency, a feeding assistant must call a supervisory nurse for help.

• A facility must ensure that a feeding assistant provides dining assistance only for residents who have no complicated feeding problems.

• Complicated feeding problems include, but are not limited to, difficulty swallowing, recurrent lung aspirations, and tube or parenteral/IV feedings.

• Paid feeding assistants are not permitted to assist residents who have complicated eating problems, such as (but not limited to) difficulty swallowing, recurrent lung aspirations, or who receive nutrition through parenteral or enteral means. Nurses or nurse aides must continue to assist residents who require the assistance of staff with more specialized training to eat or drink. Paid feeding assistants may assist eligible residents to eat and drink at meal times, snack times, or during activities or social events as needed, whenever the facility can provide the necessary supervision.

• Paid feeding assistants must complete a training program.

• A State-approved training course for paid feeding assistants must include, at a minimum, 8 hours of training in the following:
- Feeding techniques;
- Assistance with feeding and hydration;
- Communication and interpersonal skills;
- Appropriate responses to resident behavior;
- Safety and emergency procedures, including the Heimlich maneuver;
- Infection control;
- Resident rights; and
- Recognizing changes in residents that are inconsistent with their normal behavior and the importance of reporting those changes to the supervisory nurse.

• A facility must maintain a record of all individuals, used by the facility as feeding assistants, who have successfully completed the training course for paid feeding assistants.

• Paid feeding assistant may refer to an individual who meets the specified requirements and who is paid by the facility to feed residents, or who is used under an arrangement with another agency or organization.

• The intent of the previous requirement is to ensure that residents are assessed for appropriateness for a feeding assistant program, receive services as per their plan of care, and feeding assistants are trained and supervised. The use of paid feeding assistants is intended to supplement certified nurse aides, not substitute for nurse aides or licensed nursing staff.

• How should assisted living and nursing home administrators ensure the previous requirements are met?

- Assisted living and nursing home administrators should observe paid feeding assistants to ensure they are working under the supervision of an RN or LPN.

- Assisted living and nursing home administrators should observe paid

feeding assistants to ensure they call the supervisory nurse in case of an emergency.

- Assisted living and nursing home administrators should note the following: adequate supervision by a supervising nurse does not necessarily mean constant visual contact or being physically present during the meal/snack time, especially if a feeding assistant is assisting a resident to eat in his or her room. However, in the event that an emergency should occur, the feeding assistant must be aware of and know how to access the supervisory nurse immediately and the nurse must be located close enough to the resident that he or she can promptly respond. Should an emergency arise, a paid feeding assistant must immediately call a supervisory nurse for help.

Food Safety Requirements

• The facility must procure food from sources approved or considered satisfactory by federal, state or local authorities.

- This may include food items obtained directly from local producers, subject to applicable State and local laws or regulations.

- The previous provision does not prohibit or prevent facilities from using produce grown in facility gardens, subject to compliance with applicable safe growing and food-handling practices.

- The previous provision does not preclude residents from consuming foods not procured by the facility.

• The facility must store, prepare, distribute and serve food in accordance with professional standards for food service safety.

• The facility must have a policy regarding the use and storage of foods brought to residents by family and other visitors to ensure safe and sanitary storage, handling, and consumption. The aforementioned policy must also include ensuring facility staff assists the resident in accessing and consuming the food, if the resident is not able to do so on his or her own. The facility also is responsible for storing food brought in by family or

visitors in a way that is either separate or easily distinguishable from facility food.

• The facility should note the food procurement requirements for facilities are not intended to restrict resident choice. All residents have the right to accept food brought to them by family or visitor(s).

• The facility should note they must be in compliance with any State or local requirements that may exist pertaining to food grown on facility grounds for resident consumption.

• The facility should note the possibility of biological contamination. Biological contamination may result from pathogenic bacteria, viruses, toxins, and spores that contaminate food. The two most common types of disease producing organisms are bacteria and viruses. Although, parasites may also contaminate food.

• The facility must dispose of garbage and refuse properly.

• The intent of the previous requirement is to ensure the facility:

- Obtains food for resident consumption from sources approved or considered satisfactory by Federal, State or local authorities;

- Follows proper sanitation and food handling practices to prevent the outbreak of foodborne illness. Safe food handling for the prevention of foodborne illnesses begins when food is received from the vendor and continues throughout the facility's food handling processes; and,

- Ensures food safety is maintained when implementing various culture change initiatives, such as when serving buffet style from a portable steam table, or during a potluck.

• How should assisted living and nursing home administrators ensure the previous requirements are met?

- Assisted living and nursing home administrators should observe and evaluate their facilities' food safety methods.

- Assisted living and nursing home administrators should note the following: effective food safety systems involve identifying hazards at specific points during food handling and preparation, and identifying how the hazards can be prevented, reduced or eliminated.

- Assisted living and nursing home administrators should note the following: older adult residents risk serious complications from food borne illness as a result of their compromised health status. Unsafe food handling practices represent a potential source of pathogen exposure for residents. Sanitary conditions must be present in health care food service settings to promote safe food handling. CMS recognizes the U.S. Food and Drug Administration's (FDA) Food Code and the Centers for Disease Control and Prevention's (CDC) food safety guidance as national standards to procure, store, prepare, distribute and serve food in long term care facilities in a safe and sanitary manner.

- Additional information regarding food safety requirements and notes from the Final Rule, section §483.60 Food and Nutrition Services can be found in Figure 1.

Figure 1: Food Safety Requirements and Notes

The following information regarding food safety requirements and notes was derived from the Final Rule, section §483.60 Food and Nutrition Services[2].

• Many influences may contribute to food borne outbreaks, such as:

- Poor Personal Hygiene - Employees, residents, family or visitor's health and hygiene are significant factors in preventing foodborne illness. "Infectious" individuals (persons capable of transmitting an infection or communicable disease) are a source of contaminants such as Norovirus, Influenza, etc. Proper hand washing techniques and exclusion of infectious individuals from handling food are critical for prevention of foodborne illness.

-Inadequate Cooking and Improper Holding Temperatures - Poorly cooked food or food that is not held at appropriate temperatures may promote the growth of pathogens that cause foodborne illness.

• Contaminated Equipment - Equipment can become contaminated in various ways including, but not limited to:
- Poor personal hygiene;
- Improper sanitation; and
- Contact with raw food (e.g., poultry, eggs, seafood, and meat).

• Unsafe Food Sources - if surveyors have concerns or questions regarding the origin or processing of meat or other food products served to the facility residents, the surveyor should request that the facility provide documents which indicate the food product is from an approved or satisfactory source.

• Employee Health - employees who handle food must be free of communicable diseases and infected skin lesions.

• Hand Washing, Gloves, and Antimicrobial Gel - employees should never use bare hand contact with any foods, ready to eat or otherwise. Since the skin carries microorganisms, it is critical that staff involved in food preparation and services consistently utilize good hygienic practices and techniques. Staff should have access to proper hand washing facilities with available soap (regular or anti-microbial), hot water, and disposable towels and/or heat/air drying methods. Antimicrobial gel (hand hygiene agent that does not require water) cannot be used in place of proper hand washing techniques in a food service setting.

- The appropriate use of items such as gloves, tongs, deli paper, and spatulas is essential in minimizing the risk of foodborne illness. Gloved hands are considered a food contact surface that can get contaminated or soiled. Disposable gloves are a single use item and should be discarded between and after each use.

- The use of disposable gloves is not a substitute for proper hand washing. Hands must be washed before putting on gloves and after removing gloves. Failure to change gloves and wash hands between tasks, such as medical treatments or contact with residents, between handling raw meats and ready to eat foods or between handling soiled and clean dishes, can contribute to cross-contamination.

• Hair Restraints/Jewelry/Nail Polish - dietary staff must wear hair restraints (e.g., hairnet, hat, and/or beard restraint) to prevent hair from contacting food. Staff should maintain nails that are clean and neat, and wearing intact disposable gloves in good condition that are changed appropriately to reduce the spread of infection. Since jewelry can harbor microorganisms, it is recommended that staff keep jewelry to a minimum and cover hand or wrist jewelry with gloves when handling food.

• “Potentially Hazardous Food (PHF)” or “Time/Temperature Control for Safety (TCS) Food” means food that requires time/temperature control for safety to limit the growth of pathogens (i.e., bacterial or viral organisms capable of causing a disease or toxin formation).

• “Storage” refers to the retention of food (before and after preparation) and associated dry goods.

• Food Receiving and Storage - when food, food products or beverages are delivered to the nursing home, facility staff must inspect these items for safe transport and quality upon receipt and ensure their proper storage, keeping track of when to discard perishable foods and covering, labeling, and dating all PHF/TCS foods stored in the refrigerator or freezer as indicated.

• Dry Food Storage - dry storage may be in a room or area designated for the storage of dry goods, such as single service items, canned goods, and packaged or containerized bulk food that is not PHF/TCS. The focus of protection for dry storage is to keep non- refrigerated foods, disposable dishware, and napkins in a clean, dry area, which is free from contaminants. Controlling temperature, humidity, and rodent and insect infestation helps prevent deterioration or contamination of the food. Dry foods and goods should be handled and stored in a manner that maintains the integrity of the packaging until they are ready to use. It is recommended that foods stored in bins (e.g., flour or sugar) be removed from their original packaging. Food and food products should always be kept off the floor and clear of ceiling sprinklers, sewer/waste disposal pipes, and vents to maintain food quality and prevent contamination. Desirable practices include managing the receipt and storage of dry food, removing foods not safe for consumption, keeping dry food products in

closed containers, and rotating supplies.

• Refrigerated Storage - PHF/TCS foods must be maintained at or below 41 degrees F, unless otherwise specified by law. Frozen foods must be maintained at a temperature to keep the food frozen solid. Refrigeration prevents food from becoming a hazard by significantly slowing the growth of most microorganisms. Inadequate temperature control during refrigeration can promote bacterial growth. Adequate circulation of air around refrigerated products is essential to maintain appropriate food temperatures. Foods in a walk-in unit should be stored off the floor. Practices to maintain safe refrigerated storage include:

- Monitoring food temperatures and functioning of the refrigeration equipment daily and at routine intervals during all hours of operation;

- Placing hot food in containers (e.g., shallow pans) that permit the food to cool rapidly;

- Separating raw foods (e.g., beef, fish, lamb, pork, and poultry) from each other and storing raw meats on shelves below fruits, vegetables or other ready-to-eat foods so that meat juices do not drip onto these foods; and

- Labeling, dating, and monitoring refrigerated food, including, but not limited to leftovers, so it is used by its use-by date, or frozen (where applicable) or discarded.

• Safe Food Preparation - many steps in safe food preparation must be controlled and monitored to prevent foodborne illness. Identification of potential hazards in the food preparation process and adhering to critical control points can reduce the risk of food contamination and thereby minimize the risk of foodborne illness. When verifying food temperatures, staff should use a thermometer which is both clean, sanitized, and calibrated to ensure accuracy.

• Final Cooking Temperatures - temperatures are critical in preventing foodborne illness. Cooking food to the temperature and for the time specified below will either kill dangerous organisms or inactivate them sufficiently so that there is little risk to the resident if the food is eaten

promptly after cooking. Monitoring the food's internal temperature is important and will help ensure n microorganisms can no longer survive and food is safe for consumption. Foods should reach the following internal temperatures in these situations:

- Poultry and stuffed foods, i.e., turkeys, pork chops, chickens, etc. - 165 degrees F;

- Ground meat (e.g., ground beef, ground pork), ground fish, and eggs held for service at least 155 degrees F;

- Fish and other non-ground meats - 145 degrees F;

- If the facility is using unpasteurized eggs these eggs must be cooked until all parts of the egg are completely firm, regardless of a resident's request for such things as "sunny side up". To accommodate residents choice for items such as "sunny side up" the facility must use pasteurized eggs only;

- When cooking raw foods in the microwave, they should be rotated and stirred during the cooking process so that all parts are heated to a temperature of at least 165 degrees F, and allowed to stand covered for at least 2 minutes after cooking to obtain temperature equilibrium.

- Fresh, frozen, or canned fruits and vegetables that are cooked do not require the same level of microorganism destruction as raw meats/foods. Cooking to a hot holding temperature (135 degrees F) prevents the growth of pathogenic bacteria that may be present in or on these foods.

• Reheating Foods - reheated cooked foods present a risk because they have passed through the danger zone multiple times during cooking, cooling, and reheating. The PHF/TCS food that is cooked and cooled must be reheated so that all parts of the food reach an internal temperature of 165 degrees F for at least 15 seconds before holding for hot service. Ready-to-eat foods that require heating before consumption are best taken directly from a sealed container (secured against the entry of microorganisms) or an intact package from an approved food processing source and heated to at least 135 degrees F for holding for hot service.

Although proper reheating will kill most organisms of concern, some toxins, such as that produced by Staphylococcus aureus, cannot be inactivated by reheating food.

- Using a steam table to reheat food is unacceptable since it does not bring the food to the proper temperature within acceptable timeframes.

• Cooling - Improper cooling is a major factor in causing foodborne illness. Taking too long to chill PHF/TCS foods has been consistently identified as one factor contributing to foodborne illness. Foods that have been cooked and held at improper temperatures promote the growth of disease-causing microorganisms that may have survived the cooking process (e.g., spore-formers). Cooled food items can be re-contaminated by unsanitary handling practices or cross-contaminated from other food products, utensils, and equipment.

- Large or dense food items, such as roasts, turkeys, soups, stews, legumes, and chili may require interventions (e.g., placing foods in shallow pans, cutting roasts into smaller portions, utilizing ice water baths, and stirring periodically) in order to be chilled safely within an allowed time period. These foods take a long time to cool because of their volume and density. If the hot food container is tightly covered, the cooling rate may be slowed further, leading to longer cooling times during which the food remains in the danger zone.

- Cooked potentially hazardous foods that are subject to time and temperature control for safety are best cooled rapidly within 2 hours, from 135 to 70 degrees F, and within 4 more hours to the temperature of approximately 41 degrees F. The total time for cooling from 135 to 41 degrees F should not exceed 6 hours.

• Modified Consistency - residents who require a modified consistency diet may be at risk for developing foodborne illness because of the increased number of food handling steps required when preparing pureed and other modified consistency foods. When hot pureed, ground, or diced food drop into the danger zone (below 135 degrees F), the mechanically altered food must be reheated to 165 degrees F for 15 seconds if holding for hot service.

• Eggs

- Pooled eggs are raw eggs that have been cracked and combined together. The facility should crack only enough eggs for immediate service in response to a resident's requests or as an ingredient immediately before baking.

- Unpasteurized Eggs- Salmonella infections may be prevented by substituting unpasteurized eggs with pasteurized eggs in the preparation of foods that will not be thoroughly cooked, such as, but not limited to, Caesar dressing, Hollandaise or Béarnaise sauce, egg fortified beverages, ice cream, and French toast.

- Raw eggs with damaged shells are also unsafe because of the potential for contamination.

• Food Service and Distribution - various systems are available for serving and distributing food items to residents. These include but are not limited to tray lines, portable steam tables transported to a unit or dining area, open shelved food transport carts with covered trays, or enclosed carts that have hot and cold compartments. Some systems incorporate a heating element (pellet) under each plate of hot food. The purpose of these systems is to provide safe holding and transport of the food to the resident's location. Food safety requires consistent temperature control from the tray line to transport and distribution to prevent contamination (e.g., covering food items). The length of time needed to transport trays is more critical when the food is simply covered and transported in open or closed carts without a heated and cooled environment.

• Tray line and Alternative Meal Preparation and Service Area - the tray line may include, but is not limited to the steam table where hot prepared foods are held and served, and the chilled area where cold foods are held and served. A resident's meal tray may consist of a combination of foods that require different temperatures. Food preparation or service area problems/risks to avoid include, but are not limited to:

- Holding foods in danger zone temperatures which are between 41 degrees F and 135 degrees F;

- Using the steam table to heat food;

- Serving meals on soiled dishware and with soiled utensils; and

- Handling food with bare hands or improperly handling equipment and utensils.

- While PHF/TCS foods are on the tray line, the temperature of the foods should be periodically monitored throughout the meal service to ensure proper hot or cold holding temperatures are maintained. If time is being used in place of temperature as a means of ensuring food safety, the facility must have a system in place to track the amount of time a PHF/TCS is held out of temperature control and dispose of it accordingly.

• Food Distribution - dining locations include any area where one or more residents eat their meals. These can be located adjacent to the kitchen or a distance from the kitchen, such as residents' rooms and dining rooms in nursing units on other floors or wings of the building. Potential food handling problems/risks associated with food distribution include:

- Staff distributing trays without first properly washing their hands; and

- Serving food to residents after collecting soiled plates and food waste, without proper hand washing.

• Snacks - Snacks refer to foods served between meals or at bed time. Temperature control and freedom from contamination are also important when ready-to-eat or prepared food items for snacks are sent to the unit and are held for delivery, stored at the nursing station in a unit refrigerator or unit cupboards, or stored in personal refrigerators in resident rooms.

• Special Events - Facility-sponsored special events, such as cookouts and picnics where food may not be prepared in the facility's kitchen and is served outdoors or in other locations, require the same food safety considerations.

• Potluck Events – are generally events where families, volunteers or other non-facility staff may organize to provide enjoyment to nursing home

residents and support a person-centered, homelike environment. These are different from a facility's special event. Regarding food brought into a nursing home prepared by others, please remember the nursing home is responsible for:

- Storing visitor food in such a way to clearly distinguish it from food used by or prepared by the facility.

- Ensuring safe food handling once the food is brought to the facility, including safe reheating and hot/cold holding, and handling of leftovers.

- Preventing contamination of nursing home food, if nursing home equipment and facilities are used to prepare or reheat visitor food.

- Clearly identifying what food has been brought in by visitors for residents and guests when served.

- Should a foodborne illness occur as a result of a potluck held at the facility, the nursing home could be held responsible. For example, the facility could be held responsible if the facility failed to ensure the food was protected from contamination while being stored in the refrigerator and became contaminated from raw meat juices or failed to ensure staff involved in food service used appropriate hand hygiene and a foodborne illness resulted.

• Nursing Home Gardens – nursing homes that have their own gardens such as, vegetable, fruit or herbs may be compliant with the food procurement requirements as long as the facility has and follows policies and procedures for maintaining and harvesting the gardens, including ensuring manufacturer's instructions are followed if any pesticide(s), fertilizer, or other topical or root-based plant preparations are applied.

• Transported Foods - if residents take prepared foods with them out of the facility (e.g., bag lunches for residents attending dialysis, clinics, sporting events, or day treatment programs), the foods must be handled and prepared for them with the same safe and sanitary approaches used during primary food preparation in the facility. Appropriate food transport equipment or another approach to maintaining safe

temperatures for food at special events can help minimize the risk of foodborne illness.

• Ice - appropriate ice and water handling practices prevent contamination and the potential for waterborne illness. Ice must be made from potable water. Ice that is used to cool food items (e.g., ice in a pan used to cool milk cartons) is not to be used for consumption. Keeping the ice machine clean and sanitary will help prevent contamination of the ice. Contamination risks associated with ice and water handling practices may include, but are not limited to:

- Staff, residents, visitors, etc., who fail to wash their hands adequately and use the scoop in an ice machine, or handle ice with their bare hands, are not following appropriate infection control practices when dispensing ice; and

- Unclean equipment, including the internal components of ice machines that are not drained, cleaned, and sanitized as needed and according to manufacturer's specifications.

- Ice chests or coolers used to store and transport ice should be cleaned regularly, especially prior to use and when contaminated or visibly soiled.

• Refrigeration - the facility's refrigerators and/or freezers must be in good working condition to keep foods at or below 41 degrees F and the freezer must keep frozen foods frozen solid. The following are methods to determine the proper working order of the refrigerators and freezers:

- Document the temperature of external and internal refrigerator gauges as well as the temperature inside the refrigerator. Measure whether the temperature of a PHF/TCS food is 41 degrees or less;

- To make sure the cooling process is effective, measure the temperature of a PHF/TCS that has a prolonged cooling time (e.g., one in a large, deep, tightly covered container). Determine if it is in the danger zone;

- Check for situations where potential for cross-contamination is high (e.g., raw meat stored over ready-to-eat items);

- Check the firmness of frozen food and inspect the wrapper to determine if it is intact enough to protect the food; and

- Interview food service personnel regarding the operation of the refrigerator and the freezer.

- Temperature control and freedom from contamination is also important when food or snacks are sent to a unit and held at the nursing station in a unit refrigerator or unit cupboards, or stored in personal refrigerators in resident rooms. Food handling risks associated with food stored on the units may include but are not limited to:

- Food left on trays or countertops beyond safe time and/or temperature requirements;

- Food left in refrigerators beyond safe "use by" dates (including, but not limited to foods that have been opened but were not labeled, etc.);

- Food stored in a manner (open containers, without covers, spillage from one food item onto another, etc.) that allows cross-contamination;

• Equipment and Utensil Cleaning and Sanitization - a potential cause of foodborne outbreaks is improper cleaning (washing and sanitizing) of equipment and protecting equipment from contamination via splash, dust, grease, etc.

• Machine Washing and Sanitizing - dishwashing machines use either heat or chemical sanitization methods. Manufacturer's instructions must always be followed. The following are general recommendations according to the U.S. Department of Health and Human Services, Public Health Services, Food and Drug Administration Food Code for each method.

High Temperature Dishwasher (heat sanitization):
- Wash - 150-165 degrees F;
- Final Rinse - 180 degrees F;

(160 degrees F at the rack level/dish surface reflects 180 degrees F at the manifold, which is the area just before the final rinse nozzle where the

temperature of the dish machine is measured); or 165 degrees F for a stationary rack, single temperature machine.

Low Temperature Dishwasher (chemical sanitization):
- Wash - 120 degrees F; and
- Final Rinse - 50 ppm (parts per million) hypochlorite (chlorine) on dish surface in final rinse.
- The chemical solution must be maintained at the correct concentration, based on periodic testing, at least once per shift, and for the effective contact time according to manufacturer's guidelines.

• Manual Washing and Sanitizing - a 3-step process is used to manually wash, rinse, and sanitize dishware correctly. The first step is thorough washing using hot water and detergent after food particles have been scraped off. The second is rinsing with hot water to remove all soap residues. The third step is sanitizing with either hot water or a chemical solution maintained at the correct concentration, based on periodic testing, at least when initially filled and as needed, such as with extended use, and for the effective contact time according to manufacturer's guidelines. Facilities must have appropriate and adequate testing equipment, such as test strips and thermometers, to ensure adequate washing and sufficient concentration of sanitizing solution is present to effectively clean and sanitize dishware and kitchen equipment. After washing and rinsing, dishes and utensils are sanitized by immersion in either:

- Hot water (at least 171 degrees F) for 30 seconds; or

- A chemical sanitizing solution used according to manufacturer's instructions. Chemical sanitization requires greater controls than hot water sanitization. Manufacturer's instructions must always be followed.

- A high concentration of sanitation solutions may be potentially hazardous (see manufacturer's instructions) and may be a chemical contaminant of food. Improper test strips yield inaccurate results when testing for chemical sanitation.

- Drying food preparation equipment and utensils with a towel or cloth may increase risks for cross contamination.

• Cleaning Fixed Equipment - when cleaning fixed equipment (e.g., mixers, slicers, and other equipment that cannot readily be immersed in water), the removable parts must be washed and sanitized and non-removable parts cleaned with detergent and hot water, rinsed, air-dried and sprayed with a sanitizing solution (at the effective concentration). Finally, the equipment is reassembled and any food contact surfaces that may have been contaminated during the process are re-sanitized (according to the manufacturer's instructions). Service area wiping cloths are cleaned and dried or placed in a chemical sanitizing solution of appropriate concentration.

Section 1: Summary

Nutrition and diet are important determinants of health in older adult populations. A nutritious diet tailor made to meet the health-related needs of older adults can help them maintain their weight, activity level, as well as their physical and mental health. On the other hand, a poor diet without significant nutritional value can lead to a host of different health-related issues including: weakened immune systems, decreased energy levels as well as obesity, malnutrition, dehydration, impaired cognitive function, dementia, type 2 diabetes, hypertension, heart disease, stroke and osteoporoses[1]. In other words, poor nutrition can devastate an older adult's health, overall well-being and quality of life. Thus, it is essential for assisted living and nursing home administrators to ensure older adults residing in their facilities receive the nutrition they require. To do so, assisted living and nursing home administrators should review 3 key aspects related to their facility's care, the first of which is food and nutrition services - more specifically food and nutrition services related to the regulations outlined in the Final Rule, section §483.60 Food and Nutrition Services. By reviewing the regulations outlined in the Final Rule, section §483.60 Food and Nutrition Services assisted living and nursing home administrators can help ensure their specific facility is meeting the provisions set forth by the Federal Government of the United States, as well as the nutritional and dietary requirements of older adult residents.

Section 1: Key Concepts

• Nutrition and diet are important determinants of health in older adult populations.

• Assisted living and nursing home administrators must ensure their facility is meeting the nutritional and dietary requirements of older adult residents.

• Assisted living and nursing home administrators should ensure their facility is meeting the provisions outlined in the Final Rule, section §483.60 Food and Nutrition Services.

• By reviewing the regulations outlined in the Final Rule, section §483.60 Food and Nutrition Services assisted living and nursing home administrators can help ensure their specific facility is meeting the provisions set forth by the Federal Government of the United States as well as the nutritional and dietary requirements of older adult residents.

Section 1: Key Terms

Older adult - any individual 65 years or older[1]

Sufficient support personnel - having enough dietary and food and nutrition staff to safely carry out all of the functions of the food and nutrition services[2]

Therapeutic Diet - a diet ordered by a physician or delegated registered or licensed dietitian as part of treatment for a disease or clinical condition, or to eliminate or decrease specific nutrients in the diet, (e.g., sodium) or to increase specific nutrients in the diet (e.g., potassium), or to provide food the resident is able to eat (e.g., a mechanically altered diet)[2]

Nourishing snack - items from the basic food groups, either singly or in combination with each other[2]

Suitable and nourishing alternative meals and snacks - when an alternate meal or snack is provided, it is of similar nutritive value as the meal or snack offered at the normally scheduled time and consistent with the resident plan of care[2]

Paid feeding assistant - an individual who meets the specified requirements and who is paid by the facility to feed residents, or who is used under an arrangement with another agency or organization[2]

Section 1: Personal Reflection Question

How may assisted living and nursing home administrators ensure their specific facility is meeting the requirements of the Final Rule, section §483.60 Food and Nutrition Services?

Section 2: Nutritional and Dietary Guidelines

As previously alluded to, nutrition and diet are important determinants of health for older adults. A nutritious diet tailor made to meet the health-related needs of an older adult can help maintain his or her physical and mental health, while a poor diet without significant nutritional value can, essentially, devastate an older adult's health, overall well-being and quality of life. Therefore, it is essential for assisted living and nursing home administrators to ensure older adults residing in their facilities receive the nutrition they require. To ensure older adult residents receive the nutrition they require, assisted living and nursing home administrators should review 3 key aspects related to their specific facility's care, the first of which is food and nutrition services - more specifically food and nutrition services related to the regulations outlined by the Final Rule, section §483.60 Food and Nutrition Services. In other words, assisted living and nursing home administrators should verify their specific facility is meeting the provisions outlined by the Final Rule, section §483.60 Food and Nutrition Services to help ensure they are meeting the nutritional and dietary requirements of older adult residents. That being said, the food and nutrition services provided by a specific facility, is only one of the 3 key aspects of care needed to meet the nutritional and dietary requirements of older adults. Therefore, in addition to the food and nutrition services,

assisted living and nursing home administrators should also review the second key aspect of care related to nutrition and diet, which is the actual nutritional value of the food and meals provided by the facility to residents.

Nutritional value may refer to the understanding of the contents of food in terms of carbohydrates, fats, proteins, minerals, additives, enzymes, vitamins, sugar intake, cholesterol, fat as well as salt and how those contents impact the human body[3]. In other words, nutritional value defines the potential impact of food on the human body. With that said, how can assisted living and nursing home administrators ensure older adult residents are receiving the nutritional value they require? The simple, straightforward answer to the previous question is to review the Dietary Guidelines for Americans 2015 - 2020.

The Dietary Guidelines for Americans 2015 - 2020 outlines guidelines, recommendations and essential elements of healthy eating. One of the goals of the Dietary Guidelines for Americans 2015 - 2020 is to provide evidence-based recommendations regarding the components of a healthy and nutritionally adequate diet, while promoting disease prevention, healthy eating patterns and methods of eating to promote health. Due to the importance and the potential impact of the Dietary Guidelines for Americans 2015 - 2020 assisted living and nursing home administrators should review its contents to ensure their facility is providing residents with a nutritionally adequate diet consisting of foods and meals with significant nutritional value. To further the understanding of the Dietary Guidelines for Americans 2015 - 2020, the remainder of this section will highlight its contents. The aforementioned information will be presented below and broken down into detailed segments. The information found in the below segments was derived from the Dietary Guidelines for Americans 2015 - 2020[3].

The Dietary Guidelines for Americans 2015 - 2020

Guidelines

• Individuals should follow a healthy eating pattern across their lifespan. All food and beverage choices matter. Choose a healthy eating pattern at an appropriate calorie level to help achieve and maintain a healthy body

weight, support nutrient adequacy, and reduce the risk of chronic disease.

• Individuals should focus on variety, nutrient density, and amount. To meet nutrient needs within calorie limits, choose a variety of nutrient-dense foods across and within all food groups in recommended amounts.

• Individuals should limit calories from added sugars and saturated fats and reduce sodium intake. Consume an eating pattern low in added sugars, saturated fats, and sodium. Cut back on foods and beverages higher in these components to amounts that fit within healthy eating patterns.

• Individuals should shift to healthier food and beverage choices. Choose nutrient-dense foods and beverages across and within all food groups in place of less healthy choices. Consider cultural and personal preferences to make these shifts easier to accomplish and maintain.

• Individuals should support healthy eating patterns for all. Everyone has a role in helping to create and support healthy eating patterns in multiple settings nationwide, from home to school to work to communities.

Key Recommendations Regarding Eating Patterns

• An eating pattern may refer to the combination of foods and beverages that constitute an individual's complete dietary intake over time; an eating pattern may describe a customary way of eating or a combination of foods recommended for consumption.

• Individuals should consume a healthy eating pattern that accounts for all foods and beverages within an appropriate calorie level.

• A healthy eating pattern includes:

- A variety of vegetables from all of the subgroups - dark green, red and orange, legumes (beans and peas), starchy, and other

- Fruits, especially whole fruits

- Grains, at least half of which are whole grains

- Fat-free or low-fat dairy, including milk, yogurt, cheese, and/or fortified soy beverages

- A variety of protein foods, including seafood, lean meats and poultry, eggs, legumes (beans and peas), and nuts, seeds, and soy products

- Oils

• A healthy eating pattern limits:

- Saturated fats and trans fats, added sugars, and sodium

Key Recommendations That Are Quantitative

• Key Recommendations that are quantitative are provided for several components of the diet that should be limited. These components are of particular public health concern in the United States, and the specified limits can help individuals achieve healthy eating patterns within calorie limits.

• Individuals should consume less than 10 percent of calories per day from added sugars.

• Individuals should consume less than 10 percent of calories per day from saturated fats.

• Individuals should consume less than 2,300 milligrams (mg) per day of sodium.

• If alcohol is consumed, it should be consumed in moderation - up to one drink per day for women and up to two drinks per day for men.

• In tandem with the recommendations above, Americans of all ages - children, adolescents, adults, and older adults - should meet the Physical Activity Guidelines for Americans to help promote health and reduce the risk of chronic disease. Americans should aim to achieve and maintain a healthy body weight. The relationship between diet and physical activity

contributes to calorie balance and managing body weight. As such, the Dietary Guidelines includes a Key Recommendation to: meet the Physical Activity Guidelines for Americans.

Recommendations Regarding Calorie Balance

• Calorie balance may refer to the balance between the calories taken in from foods and the calories expended from metabolic processes and physical activity.

• Managing calorie intake is fundamental to achieving and maintaining calorie balance. The best way to determine whether an eating pattern is at an appropriate number of calories is to monitor body weight and adjust calorie intake and expenditure in physical activity based on changes in weight over time.

• All foods and many beverages contain calories, and the total number of calories varies depending on the macronutrients in a food. On average, carbohydrates and protein contain 4 calories per gram, fats contain 9 calories per gram, and alcohol has 7 calories per gram. The total number of calories a person needs each day varies depending on a number of factors, including the person's age, sex, height, weight, and level of physical activity. In addition, a need to lose, maintain, or gain weight and other factors affect how many calories should be consumed.

• All Americans - children, adolescents, adults, and older adults - are encouraged to achieve and/or maintain a healthy body weight. General guidance for achieving and maintaining a healthy body weight.

• Adults who are obese should change their eating and physical activity behaviors to prevent additional weight gain and/or promote weight loss. Adults who are overweight should not gain additional weight, and those with one or more CVD risk factors (e.g., hypertension and hyperlipidemia) should change their eating and physical activity behaviors to lose weight. To lose weight, most people need to reduce the number of calories they get from foods and beverages and increase their physical activity. For a weight loss of 1 to 1½ pounds per week, daily intake should be reduced by 500 to 750 calories. Eating patterns that contain 1,200 to 1,500 calories each day can help most women lose weight safely, and eating patterns

that contain 1,500 to 1,800 calories each day are suitable for most men for weight loss. In adults who are overweight or obese, if reduction in total calorie intake is achieved, a variety of eating patterns can produce weight loss, particularly in the first 6 months to 2 years.

• Older adults, ages 65 years and older, who are overweight or obese are encouraged to prevent additional weight gain. Among older adults who are obese, particularly those with CVD risk factors, intentional weight loss can be beneficial and result in improved quality of life and reduced risk of chronic diseases and associated disabilities.

Recommendations Regarding Vegetables (An Essential Element of Healthy Eating)

• Vegetables are important sources of many nutrients, including dietary fiber, potassium, vitamin A, vitamin C, vitamin K, copper, magnesium, vitamin E, vitamin B6, folate, iron, manganese, thiamin, niacin, and choline.

• The recommended amount of vegetables in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 2½ cup-equivalents of vegetables per day.

• Individuals should include variety of vegetables from all five subgroups - dark green, red and orange, legumes (beans and peas), starchy, and other.

• Individuals may include all fresh, frozen, canned, and dried vegetable options in cooked or raw forms, including vegetable juices.

• Vegetables should be consumed in a nutrient-dense form, with limited additions such as salt, butter, or creamy sauces.

• When selecting frozen or canned vegetables, choose those lower in sodium.

Recommendations Regarding Fruits (An Essential Element of Healthy Eating)

• Fruits are important source of many nutrients, including dietary fiber, potassium, and vitamin C

• Healthy eating patterns include fruits, especially whole fruits.

• The fruits food group includes whole fruits and 100% fruit juice.

• When juices are consumed, they should be 100% juice, without added sugars.

• Whole fruits include fresh, canned, frozen, and dried forms.

• When selecting canned fruit, choose options that are lowest in added sugars.

• The recommended amount of fruits in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 2 cup-equivalents per day. One cup of 100% fruit juice counts as 1 cup of fruit.

Recommendations Regarding Grains (An Essential Element of Healthy Eating)

• Whole grains are a source of nutrients, such as dietary fiber, iron, zinc, manganese, folate, magnesium, copper, thiamin, niacin, vitamin B6, phosphorus, selenium, riboflavin, and vitamin A.

• Healthy eating patterns include whole grains.

• Healthy eating patterns also limit the intake of refined grains and products made with refined grains, especially those high in saturated fats, added sugars, and/or sodium, such as cookies, cakes, and some snack foods.

• The recommended amount of grains in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 6 ounce-equivalents per day. At least half of this amount should be whole grains.

• Ounce-Equivalent (oz-eq) may refer to the amount of a food product that is considered equal to 1 ounce from the grain or protein foods food group. An oz-eq for some foods may be less than a measured ounce in weight if the food is concentrated or low in water content (nuts, peanut butter, dried meats, flour) or more than a measured ounce in weight if the food contains

a large amount of water (tofu, cooked beans, cooked rice or pasta).

• The most direct way to meet the whole grain recommendation is to choose 100 percent whole-grain foods for at least half of all grains consumed.

• The relative amount of whole grain in the food can be inferred by the placement of the grain in the ingredients list. The whole grain should be the first ingredient - or the second ingredient, after water. For foods with multiple whole-grain ingredients, they should appear near the beginning of the ingredients list.

• Many grain foods contain both whole grains and refined grains. These foods also can help individuals meet the whole grain recommendation, especially if a considerable proportion of the grain ingredients is whole grains.

Recommendations Regarding Dairy (An Essential Element of Healthy Eating)

• The dairy group contributes many nutrients, including calcium, phosphorus, vitamin A, vitamin D (in products fortified with vitamin D), riboflavin, vitamin B12, protein, potassium, zinc, choline, magnesium, and selenium.

• The recommended amounts of dairy in the Healthy U.S.-Style Pattern are based on age rather than calorie level.

• The recommended amounts of dairy for adults is 3 cup-equivalents per day.

• Fat-free and low-fat (1%) dairy products provide the same nutrients but less fat (and thus, fewer calories) than higher fat options, such as 2% and whole milk and regular cheese.

• Fat-free or low-fat milk and yogurt, in comparison to cheese, contain less saturated fats and sodium and more potassium, vitamin A, and vitamin D.

• Individuals who are lactose intolerant can choose low-lactose and lactose-free dairy products.

• Those who are unable or choose not to consume dairy products should consume foods that provide the range of nutrients generally obtained from dairy, including protein, calcium, potassium, magnesium, vitamin D, and vitamin A (e.g., fortified soy beverages [soymilk]).

• Soy beverages fortified with calcium, vitamin A, and vitamin D, are included as part of the dairy group because they are similar to milk based on nutrient composition and in their use in meals.

Recommendations Regarding Protein (An Essential Element of Healthy Eating)

• Protein foods are important sources of nutrients in addition to protein, including B vitamins (e.g., niacin, vitamin B12, vitamin B6 , and riboflavin), selenium, choline, phosphorus, zinc, copper, vitamin D, and vitamin E).

• Nutrients provided by various types of protein foods differ. Meats provide the most zinc, while poultry provides the most niacin. Meats, poultry, and seafood provide heme iron, which is more bioavailable than the non-heme iron found in plant sources. Seafood provides the most vitamin B12 and vitamin D, in addition to polyunsaturated omega-3 fatty acids, eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA). Eggs provide the most choline, and nuts and seeds provide the most vitamin E. Soy products are a source of copper, manganese, and iron, as are legumes.

• The recommendation for protein foods in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 5½ ounce equivalents of protein foods per day.

• A specific recommendation for at least 8 ounce equivalents of seafood per week also is included for the 2,000-calorie level.

• Healthy eating patterns include a variety of protein foods in nutrient-dense forms including meat and poultry. Specific information and recommendations regarding meat and poultry can be found in Figure 2.

• In addition to specific types of meat, foods such as: eggs, nuts, seeds and vegetables contain protein.

• When selecting protein foods, nuts and seeds should be unsalted, and meats and poultry should be consumed in lean forms.

• The inclusion of protein foods from plants allows vegetarian options to be accommodated.

Figure 2: Recommendations and Information Regarding Meat and Poultry[3]

• Meat, also known as red meat, includes all forms of beef, pork, lamb, veal, goat, and non-bird game (e.g., venison, bison, and elk).

• Poultry includes all forms of chicken, turkey, duck, geese, guineas, and game birds (e.g., quail and pheasant).

• Meats and poultry vary in fat content and include both fresh and processed forms.

• Processed meat and processed poultry include all meat or poultry products preserved by smoking, curing, salting, and/or the addition of chemical preservatives. Additionally, processed meats and poultry include all types of meat or poultry sausages (bologna, frankfurters, luncheon meats and loaves, sandwich spreads, viennas, chorizos, kielbasa, pepperoni, salami, and summer sausages), bacon, smoked or cured ham or pork shoulder, corned beef, pastrami, pig's feet, beef jerky, marinated chicken breasts, and smoked turkey products.

• Lean meats and poultry contain less than 10 g of fat, 4.5 g or less of saturated fats, and less than 95 mg of cholesterol per 100 g and per labeled serving size (e.g., 95% lean ground beef, pork tenderloin, and skinless chicken or turkey breast).

• Lean meats and poultry are recommended.

• Research suggests that eating patterns which include lower intake of meats as well as processed meats and processed poultry are associated with reduced risk of CVD in adults.

• The recommendation for the meats, poultry, and eggs subgroup in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 26 ounce-equivalents per week.

Recommendations Regarding Oils (An Essential Element of Healthy Eating)

• Oils are fats that contain a high percentage of monounsaturated and polyunsaturated fats and are liquid at room temperature.

• Monounsaturated fatty acids may refer to fatty acids that have one double bond and are usually liquid at room temperature. Plant sources rich in MUFAs include vegetable oils (e.g., canola, olive, high oleic safflower and sunflower), as well as nuts.

• Polyunsaturated fatty acids may refer to fatty acids that have two or more double bonds and are usually liquid at room temperature. Primary sources are vegetable oils and some nuts and seeds. PUFAs provide essential fats such as n-3 and n-6 fatty acids.

• Although they are not a food group, oils are emphasized as part of healthy eating patterns because they are the major source of essential fatty acids and vitamin E.

• The recommendation for oils in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 27 g (about 5 teaspoons) per day.

• Commonly consumed oils extracted from plants include canola, corn, olive, peanut, safflower, soybean, and sunflower oils.

• Oils also are naturally present in nuts, seeds, seafood, olives, and avocados.

Recommendations and Information Regarding Added Sugars

• Added sugars provide sweetness that can help improve the palatability of foods, help with preservation, and/or contribute to functional attributes such as viscosity, texture, body, color, and browning capability.

• Added sugars include syrups and other caloric sweeteners. Specific examples of added sugars that can be listed as an ingredient include brown sugar, corn sweetener, corn syrup, dextrose, fructose, glucose, high-fructose corn syrup, honey, invert sugar, lactose, malt syrup, maltose, molasses, raw sugar, sucrose, trehalose, and turbinado sugar.

• Healthy eating patterns limit added sugars to less than 10 percent of calories per day.

• When sugars are added to foods and beverages to sweeten them, they add calories without contributing essential nutrients.

• Consumption of added sugars can make it difficult for individuals to meet their nutrient needs while staying within calorie limits.

• Naturally occurring sugars, such as those in fruit or milk, are not added sugars.

Recommendations and Information Regarding Saturated Fats

• The main sources of saturated fats in the U.S. diet include mixed dishes containing cheese, meat, or both, such as burgers, sandwiches, and tacos; pizza; rice, pasta, and grain dishes; and meat, poultry, and seafood dishes.

• The intake of saturated fats should be limited to less than 10 percent of calories per day.

• When possible, foods high in saturated fats should be replaced with foods high in unsaturated fats, and other choices.

• Strong and consistent evidence shows that replacing saturated fats with unsaturated fats, especially polyunsaturated fats, is associated with reduced blood levels of total cholesterol and of low-density lipoprotein-cholesterol (LDL-cholesterol).

• Strong and consistent evidence shows that replacing saturated fats with polyunsaturated fats is associated with a reduced risk of CVD events (heart attacks) and CVD-related deaths.

Recommendations and Information Regarding Saturated Trans Fats

• Trans fats occur naturally in some foods and also are produced in a process called hydrogenation. Hydrogenation is used by food manufacturers to make products containing unsaturated fatty acids solid at room temperature (i.e., more saturated) and therefore more resistant to becoming spoiled or rancid.

• Individuals should limit intake of trans fats to as low as possible by limiting foods that contain synthetic sources of trans fats, such as partially hydrogenated oils in margarines, and by limiting other solid fats.

• A number of studies have observed an association between increased intake of trans fats and increased risk of CVD. This increased risk is due, in part, to its LDL-cholesterol-raising effect.

Recommendations and Information Regarding Solid Fats

• Solid fats are the fats found in meats, poultry, dairy products, hydrogenated vegetable oils, and some tropical oils.

• They contain more saturated fatty acids and less mono- and polyunsaturated fatty acids, compared to oils

• Solid fats, including the tropical oils, are solid at room temperature.

• Solid fats contribute substantially to excess calorie intake.

• Food category sources of solid fats are similar to those for saturated fats: mixed dishes, snacks and sweets, protein foods, and dairy.

• Solid fats should be reduced or avoided.

• Strategies to avoid solid fats include the following: choosing packaged foods lower in saturated fats; shifting from using solid fats to oils in preparing foods; choosing dressings and spreads that are made from oils rather than solid fats; reducing overall intake of solid fats by choosing lean or low-fat versions of meats, poultry, and dairy products; and consuming

smaller portions of foods higher in solid fats or consuming them less often.

Recommendations and Information Regarding Dietary Cholesterol

• The body uses cholesterol for physiological and structural functions but makes more than enough for these purposes. Therefore, people do not need to obtain cholesterol through foods.

• Dietary cholesterol is found only in animal foods such as egg yolk, dairy products, shellfish, meats, and poultry.

• Individuals should eat as little dietary cholesterol as possible while consuming a healthy eating pattern.

• Evidence shows that eating patterns that include lower intake of dietary cholesterol are associated with reduced risk of CVD.

Recommendations and Information Regarding Sodium

• Sodium is an essential nutrient and is needed by the body in relatively small quantities, provided that substantial sweating does not occur.

• The recommendation for adults and children ages 14 years and older to limit sodium intake to less than 2,300 mg per day.

• Sodium is primarily consumed as salt (sodium chloride).

• Sodium is found in foods across the food supply, including mixed dishes such as burgers, sandwiches, and tacos; rice, pasta, and grain dishes; pizza; meat, poultry, and seafood dishes; and soups.

• Evidence shows linear dose-response relationship between increased sodium intake and increased blood pressure in adults.

• Individuals should make efforts to lower sodium intake.

Recommendations and Information Regarding Caffeine

• Caffeine is not a nutrient; it is a dietary component that functions in the body as a stimulant.

• Caffeine can be found in coffees, teas and soda.

• Moderate coffee consumption (three to five 8-oz cups/day or providing up to 400 mg/day of caffeine) can be incorporated into healthy eating patterns.

• Individuals who do not consume caffeinated coffee or other caffeinated beverages should not be encouraged to incorporate them into their eating pattern.

• Individuals should consider caffeinated beverages, such as some sodas or energy drinks, may include calories from added sugars, and although coffee itself has minimal calories, coffee beverages often contain added calories from cream, whole or 2% milk, creamer, and added sugars, which should be limited.

Recommendations and Information Regarding Alcohol

• Alcohol is not a component of the USDA Food Patterns.

• The Dietary Guidelines does not recommend that individuals who do not drink alcohol start drinking for any reason.

Information Regarding Carbohydrates

• Carbohydrates are one of the macronutrients and a source of energy. They include sugars, starches, and fiber.

• Fiber - total fiber is the sum of dietary fiber and functional fiber. Dietary fiber consists of non-digestible carbohydrates and lignin that are intrinsic and intact in plants (i.e., the fiber naturally occurring in foods). Functional fiber consists of isolated, non-digestible carbohydrates that have beneficial physiological effects in humans. Functional fibers are either extracted from natural sources or are synthetically manufactured and

added to foods, beverages, and supplements.

• Starches- many glucose units linked together into long chains. Examples of foods containing starch include vegetables (e.g., potatoes, carrots), grains (e.g., brown rice, oats, wheat, barley, corn), and legumes (beans and peas; e.g., kidney beans, garbanzo beans, lentils, split peas).

• Sugars - composed of one unit (a monosaccharide, such as glucose or fructose) or two joined units (a disaccharide, such as lactose or sucrose). Sugars include those occurring naturally in foods and beverages, those added to foods and beverages during processing and preparation, and those consumed separately.

Information Regarding Nutrient Dense Food Options

• Nutrient dense may refer to a characteristic of foods and beverages that provides vitamins, minerals, and other substances that contribute to adequate nutrient intakes or may have positive health effects, with little or no solid fats and added sugars, refined starches, and sodium, i.e. nutrient dense indicates the nutrients and other beneficial substances in a food have not been “diluted” by the addition of calories from added solid fats, sugars, or refined starches, or by the solid fats naturally present in the food.

• Ideally, foods and beverages should exist in forms that retain naturally occurring components, such as dietary fiber. All vegetables, fruits, whole grains, seafood, eggs, beans and peas, unsalted nuts and seeds, fat-free and low-fat dairy products, and lean meats and poultry - when prepared with little or no added solid fats, sugars, refined starches, and sodium - are nutrient-dense foods. The previous foods contribute to meeting food group recommendations within calorie and sodium limits.

• When typical instead of nutrient-dense choices are made in each food group, individuals consume extra calories when meeting their food group recommendations.

• Shifting from typical choices to nutrient-dense options is an important principle for maintaining calorie balance in a healthy eating pattern.

• Examples of a nutrient dense food shifts include the following: replacing fried chicken with baked chicken, replacing creamed spinach with steamed spinach, replacing chocolate covered nuts with plain nuts.

• Reducing the portion size of foods and beverages that are not in nutrient-dense forms can also help maintain calorie balance.

Strategies to Shift Individuals to Health Eating Patterns

• Consume more vegetables

- Strategies to increase vegetable intake include choosing more vegetables - from all subgroups - in place of foods high in calories, saturated fats, or sodium such as some meats, poultry, cheeses, and snack foods.

• Consume more fruits.

- Strategies to help achieve this shift include choosing more fruits as snacks, in salads, as side dishes, and as desserts in place of foods with added sugars, such as cakes, pies, cookies, doughnuts, ice cream, and candies.

• Make half of all grains consumed be whole grains.

- Strategies to increase whole grains in place of refined grains include using the ingredient list on packaged foods to select foods that have whole grains listed as the first grain ingredient. Another strategy is to cut back on refined grain desserts and sweet snacks such as cakes, cookies, and pastries, which are high in added sugars, solid fats, or both, and are a common source of excess calories.

• Consume more dairy products in nutrient-dense forms.

- Most individuals in the United States would benefit by increasing dairy intake in fat-free or low-fat forms, whether from milk (including lactose free milk), yogurt, and cheese or from fortified soy beverages (soymilk). Strategies to increase dairy intake include drinking fat-free or low-fat milk

(or a fortified soy beverage) with meals, choosing yogurt as a snack, or using yogurt as an ingredient in prepared dishes such as salad dressings or spreads. Strategies for choosing dairy products in nutrient-dense forms include choosing lower fat versions of milk, yogurt, and cheese in place of whole milk products and regular cheese.

• Increase the variety in protein food choices and make more nutrient-dense choices.

- Strategies to increase the variety of protein foods include incorporating seafood as the protein foods choice in meals twice per week in place of meat, poultry, or eggs, and using legumes or nuts and seeds in mixed dishes instead of some meat or poultry. Specific information and recommendations regarding seafood and legumes can be found in Figure 3 and Figure 4.

• Replace solid fats with oils.

- To move the intake of oils to recommended levels, individuals should use oils rather than solid fats in food preparation where possible. Strategies to shift intake include using vegetable oil in place of solid fats (butter, stick margarine, shortening, lard, coconut oil) when cooking, increasing the intake of foods that naturally contain oils, such as seafood and nuts, in place of some meat and poultry, and choosing other foods, such as salad dressings and spreads, made with oils instead of solid fats.

• Reduce added sugar consumption to less than 10 percent of calories per day.

- Individuals have many potential options for reducing the intake of added sugars. Strategies include choosing beverages with no added sugars, such as water, in place of sugar-sweetened beverages, reducing portions of sugar-sweetened beverages, drinking these beverages less often, and selecting beverages low in added sugars.

• Reduce saturated fat consumption to less than 10 percent of calories per day.

- Strategies to lower saturated fat intake include reading food labels to choose packaged foods lower in saturated fats and higher in polyunsaturated and monounsaturated fats, choosing lower fat forms of foods and beverages that contain solid fats (e.g., fat-free or low-fat milk instead of 2% or whole milk; low-fat cheese instead of regular cheese; lean rather than fatty cuts of meat), and consuming smaller portions of foods higher in saturated fats or consuming them less often. One realistic option is to change ingredients in mixed dishes to increase the amounts of vegetables, whole grains, lean meat, and low-fat or fat-free cheese, in place of some of the fatty meat and/ or regular cheese in the dish.

• Reduce sodium intake.

- Strategies to lower sodium intake include using the Nutrition Facts label to compare sodium content of foods and choosing the product with less sodium and buying low-sodium, reduced sodium, or no salt-added versions of products when available.

• Consider beverage choices.

- Beverages are not always remembered or considered when individuals think about overall food intake. However, they are an important component of eating patterns. When choosing beverages, both the calories and nutrients they may provide are important considerations. Beverages that are calorie free -especially water—or that contribute beneficial nutrients, such as fat-free and low-fat milk and 100% juice, should be the primary beverages consumed.

Figure 3: Recommendations and Information Regarding Seafood[3]

• For the general population, consumption of about 8 ounces per week of a variety of seafood, which provide an average consumption of 250 mg per day of EPA and DHA, is associated with reduced cardiac deaths among individuals with and without preexisting CVD.

• Strong evidence from mostly prospective cohort studies, but also randomized controlled trials, has shown that eating patterns that include

seafood are associated with reduced risk of CVD, and moderate evidence indicates that these eating patterns are associated with reduced risk of obesity.

• Mercury is a heavy metal found in the form of methyl mercury in seafood in varying levels. Seafood choices higher in EPA and DHA but lower in methyl mercury are encouraged.

• Some canned seafood, such as anchovies, may be high in sodium. To keep sodium intake below recommended limits, individuals can use the Nutrition Facts label to compare sodium amounts.

Figure 4: Recommendations and Information Regarding Legumes[3]

• Legumes include kidney beans, pinto beans, white beans, black beans, garbanzo beans (chickpeas), lima beans (mature, dried), split peas, lentils, and edamame (green soybeans).

• Legumes are excellent sources of protein. In addition, they provide other nutrients that also are found in seafood, meats, and poultry, such as iron and zinc. They are excellent sources of dietary fiber and of nutrients, such as potassium and folate that also are found in other vegetables.

• Legumes have a similar nutrient profile to foods in both the protein foods group and the vegetable group. They may be thought of as either a vegetable or a protein food and thus, can be counted as a vegetable or a protein food to meet recommended intakes.

Strategies to Align Menus with Healthy Eating Patterns

• Menus should include offering more vegetables, fruits, whole grains, low-fat and fat-free dairy, and a greater variety of protein foods that are nutrient dense, while also reducing sodium and added sugars, reducing saturated fats and replacing them with unsaturated fats, and reducing added refined starches.

• Those developing menus should consider the range of offerings both

within and across food groups and other dietary components to determine whether the healthy options offered reflect the proportions in healthy eating patterns.

Individual Diet Recommendations Which May be Used to Establish Healthy Eating Patterns

• The Healthy Mediterranean-Style Eating Pattern

- The Healthy Mediterranean-Style Eating Pattern encourages the consumption of fruits, vegetables, breads, cereals, beans, nuts and seeds as well as fish, olive oil; dairy products (mainly cheese and yogurt); and small amounts of occasional red meat. To follow the Healthy Mediterranean-Style Eating Pattern, individuals identify the appropriate calorie level, choose a variety of foods in each group and subgroup over time in recommended amounts, and limit choices that are not in nutrient-dense forms so that the overall calorie limit is not exceeded.

• A Healthy Vegetarian Eating Pattern

- A Healthy Vegetarian Eating Pattern encourages the consumption of fruits, vegetables, whole grains, nuts, soy products, and fiber while omitting specific animal-derived foods.

• The DASH Dietary Pattern

- The DASH Dietary Pattern encourages the consumption of vegetables, fruits, low-fat dairy products, whole grains, poultry, fish, beans, and nuts and is low in sweets, sugar-sweetened beverages, and red meats. It is low in saturated fats and rich in potassium, calcium, and magnesium, as well as dietary fiber and protein. It also is lower in sodium than the typical American diet. The DASH Dietary Pattern may be beneficial for individuals suffering from hypertension.

Healthy Eating Patterns and Physical Activity

• Physical activity may refer to any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level; generally refers to the subset of physical activity that enhances health.

• Individuals ages 18 - 64 years

- All adults should avoid inactivity. Some physical activity is better than none, and adults who participate in any amount of physical activity gain some health benefits.

- For substantial health benefits, adults should do at least 150 minutes (2 hours and 30 minutes) a week of moderate-intensity, or 75 minutes (1 hour and 15 minutes) a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity. Aerobic activity should be performed in episodes of at least 10 minutes, and preferably, it should be spread throughout the week.

- For additional and more extensive health benefits, adults should increase their aerobic physical activity to 300 minutes (5 hours) a week of moderate-intensity, or 150 minutes a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity activity. Additional health benefits are gained by engaging in physical activity beyond this amount.

- Adults should also include muscle-strengthening activities that involve all major muscle groups on 2 or more days a week.

• Individuals 65 years and older

- Older adults should follow the adult guidelines. When older adults cannot meet the adult guidelines, they should be as physically active as their abilities and conditions will allow.

- Older adults should do exercises that maintain or improve balance if they are at risk of falling.

- Older adults should determine their level of effort for physical activity relative to their level of fitness.

- Older adults with chronic conditions should understand whether and how their conditions affect their ability to do regular physical activity safely.

Estimated Calorie Intake Per Day

• Individuals ages 61 - 65 years

- Males who are sedentary should take in approximately 2,000 calories. Males who are moderately active should take in approximately 2,400 calories. Males who are active should take in approximately 2,600 calories.

- Females who are sedentary should take in approximately 1,600 calories. Females who are moderately active should take in approximately 1,800 calories. Females who are active should take in approximately 2,000 calories.

• Individuals ages 66 - 70 years

- Males who are sedentary should take in approximately 2,000 calories. Males who are moderately active should take in approximately 2,200 calories. Males who are active should take in approximately 2,600 calories.

- Females who are sedentary should take in approximately 1,600 calories. Females who are moderately active should take in approximately 1,800 calories. Females who are active should take in approximately 2,000 calories.

• Individuals ages 71 - 75 years

- Males who are sedentary should take in approximately 2,000 calories. Males who are moderately active should take in approximately 2,200 calories. Males who are active should take in approximately 2,600 calories.

- Females who are sedentary should take in approximately 1,600 calories. Females who are moderately active should take in approximately 1,800 calories. Females who are active should take in approximately 2,000 calories.

• Individuals 75 years and older

- Males who are sedentary should take in approximately 2,000 calories.

Males who are moderately active should take in approximately 2,200 calories. Males who are active should take in approximately 2,400 calories.

- Females who are sedentary should take in approximately 1,600 calories. Females who are moderately active should take in approximately 1,800 calories. Females who are active should take in approximately 2,000 calories.

Section 2: Summary

The second key aspect of care that assisted living and nursing home administrators should review is the nutritional value of the food and meals provided to residents. Nutritional value may refer to the understanding of the contents of food in terms of carbohydrates, fats, proteins, minerals, additives, enzymes, vitamins, sugar intake, cholesterol, fat as well as salt and how those contents impact the human body[3]. Assisted living and nursing home administrators should ensure their facility is providing residents with a nutritionally adequate diet consisting of foods and meals with significant nutritional value and that are in line with the recommendations included in the Dietary Guidelines for Americans 2015 - 2020.

Section 2: Key Concepts

• The Dietary Guidelines for Americans 2015 - 2020 outlines guidelines, recommendations and essential elements of healthy eating.

• One of the goals of the Dietary Guidelines for Americans 2015 - 2020 is to provide evidence-based recommendations regarding the components of a healthy and nutritionally adequate diet, while promoting disease prevention, healthy eating patterns and methods of eating to promote health. Due to the importance and the potential impact of the Dietary Guidelines for Americans 2015 - 2020, assisted living and nursing home administrators should review its contents to ensure their facility is providing residents with a nutritionally adequate diet consisting of foods and meals with significant nutritional value.

• Due to the importance and the potential impact of the Dietary Guidelines for Americans 2015 - 2020, assisted living and nursing home administrators should review its contents to ensure their facility is providing residents with a nutritionally adequate diet consisting of foods and meals with significant nutritional value.

Section 2: Key Terms

Nutritional value - the understanding of the contents of food in terms of carbohydrates, fats, proteins, minerals, additives, enzymes, vitamins, sugar intake, cholesterol, fat as well as salt and how those contents impact the human body[3]

Eating pattern - the combination of foods and beverages that constitute an individual's complete dietary intake over time; an eating pattern may describe a customary way of eating or a combination of foods recommended for consumption[3]

Calorie balance - the balance between the calories taken in from foods and the calories expended from metabolic processes and physical activity[3]

Ounce-Equivalent (oz-eq) - the amount of a food product that is considered equal to 1 ounce from the grain or protein foods food group[3]

Monounsaturated fatty acids - fatty acids that have one double bond and are usually liquid at room temperature. Plant sources rich in MUFAs include vegetable oils (e.g., canola, olive, high oleic safflower and sunflower), as well as nuts[3]

Polyunsaturated fatty acids - fatty acids that have two or more double bonds and are usually liquid at room temperature. Primary sources are vegetable oils and some nuts and seeds. PUFAs provide essential fats such as n-3 and n-6 fatty acids[3]

Nutrient Dense - a characteristic of foods and beverages that provides vitamins, minerals, and other substances which contribute to adequate

nutrient intakes or may have positive health effects, with little or no solid fats and added sugars, refined starches, and sodium, i.e. nutrient dense indicates the nutrients and other beneficial substances in a food have not been "diluted" by the addition of calories from added solid fats, sugars, or refined starches, or by the solid fats naturally present in the food[3]

Physical activity - any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level; generally refers to the subset of physical activity that enhances health[3]

Section 2: Personal Reflection Question

How can assisted living and nursing home administrators use the recommendations found in the Dietary Guidelines for Americans 2015 - 2020 to ensure their facility is providing residents with a nutritionally adequate diet?

Section 3: Domains of Practice

Section 1 and Section 2 of this course highlighted the first 2 key aspects of care which should be reviewed by assisted living and nursing home administrators to ensure their facility is meeting the nutritional and dietary requirements of their residents. As previously indicated, the first 2 key aspects of care include: the food and nutrition services provided by the facility and the actual nutritional value of the food and meals provided by the facility to residents. Although the first 2 indicated key aspects of care are important to the nutritional and deity requirements of older adults, the third and final key aspect of care is potentially the most essential to ensuring older adult residents of assisted living and nursing home facilities receive adequate nutrition. With that said, the third key aspect of care which should be reviewed by assisted living and nursing home administrators relates to the nutrition-related policies and procedures and/or guidelines of their specific facility. The reason that nutrition-related policies and procedure/guidelines are the most essential elements of care regarding the nutrition of older adults is quite straightforward - without nutrition-related policies and procedures/guidelines, the first 2 key aspects of care cannot be effectively implemented in a given facility. In other

words, it is one thing to understand the nutrition required by older adult residents, however it is quite another thing to outline and guide how that nutrition may be delivered to older adult residents - the nutrition-related policies and procedures/guidelines of a specific facility can serve as the means and methods to outline and guide the delivery of adequate nutrition to older adult residents. With that potentially being the case, two questions remain - what domains of practice should nutrition-related policies and procedures/guidelines include and how may the domains of practice included in nutrition-related policies and procedures/guidelines impact the care of the individual older adult resident?

The first of the previously posed questions deals with the actual nutrition-related policies and procedures/guidelines of each specific health care facility and what they should include. Essentially, nutrition-related policies and procedures/guidelines should include specific elements of care referred to as domains of practice. Domains of practice, as they relate to this course, may refer to clearly defined standards, responsibilities and guidelines which establish continuity of care among health care-related staff in order to ensure the delivery of safe and effective care and/or adequate nutrition to patients. That being said, what specific domains of practice, related to adequate nutrition, should be interwoven in specific facilities' nutrition-related policies and procedures/guidelines? The specific domains of practice, related to adequate nutrition, which should be interwoven and included in specific facilities' nutrition-related policies and procedures/guidelines may be found in Figure 5. Assisted living and nursing home administrators should review each domain of practice included in Figure 5 while considering their specific facility's nutritional policies and procedures/guidelines. Each facility's nutritional policies and procedures/guidelines should be in line with the domains of practice included in Figure 5.

Figure 5: Nutrition-related Domains of Practice

• Health care facilities and relevant staff should ensure plans of care are evidence-based, established, implemented, updated, and monitored based on care recipients' preferences and assessed needs.

- The previous domain of practice requires administrators to ensure that relevant staff implement a plan of care for each resident, based on the

individuals' needs and preferences, under the direction of a physician. This includes a comprehensive assessment of each resident/recipient. The comprehensive assessment should include (but not limited to) assessments for nutrition (to include diet, texture, weight, swallowing), therapy, mobility, fall risk, skin/wound management, medications and contraindications, cognitive abilities, behavior, mental health, etc.

• Health care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring, and evaluation of nutritional needs and preferences of care recipients.

- The previous domain of practice requires that administrators ensure the care recipient's nutritional needs are met in accordance with their individualized needs and preferences while simultaneously meeting all physicians' prescribed orders.

• Health care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring and evaluation of dining experiences that meet the needs and preferences of care recipients.

- The previous domain of practice requires that administrators ensure dining services are resident-centered and meet the nutritional needs paralleled with the recipient preferences.

When reviewing the domains of practice included in Figure 5, two very relevant themes should be observed, the first of which is that nutrition-related care should be based on the care recipient's preferences and assessed needs. The reason the aforementioned theme is relevant is because it highlights the importance of the care recipient's, which in this case is an older adult resident, input into the food, meals, and dining experience provided by a specific health care-related facility. In other words, the reason the aforementioned theme is relevant is because it puts the older adult resident at the center of his or her nutrition, which evokes and reinforces one of the four cornerstones of health care-related ethics.

The health care system, as it is known today, is built on four major ethic cornerstones which include: beneficence, nonmaleficence, justice and

patient autonomy. Of the four ethic cornerstones of health care, many argue that patient autonomy is the most important. Patient autonomy may refer to the individual patient's ability and right to all information regarding their current and future health care options, diagnosis, treatments, interventions and/or strategies, including both potential benefits and risks, in order to formulate their own informed decisions regarding their own personal health care[4].

In other words, patient autonomy grants patients the sole right to make decisions regarding their own health, health care and personal well-being. One of the reasons, many argue, that the ethic principle of patient autonomy is the most important of the four major ethic cornerstones of health care cite its ability to establish a patient as an individual, with individual needs, rights and preferences - thus, avoiding the objectification of patients and enforcing the need for individual patient assessment to determine what the individual patient needs, wants and prefers. Furthermore, patient autonomy allows the patient to make his or her own decisions regarding health care while safeguarding against health care professionals that may attempt to dictate health care and/or force health care upon patients. Moreover, patient autonomy establishes the foundation of the health care professional-patient relationship, while providing insight into the roles of health care professionals and patients. In essence, patient autonomy clarifies that the role of a health care professional is to provide health care to a patient, while the role of a patient is to make decisions regarding his or her own personal health and health care.

The importance of patient autonomy cannot be understated. Its acknowledgement and practice underscores the very essence of ethically driven health care, which is why it is encapsulated within the themes of the domains of practice included in Figure 5. Thus, assisted living and nursing home administrators should ensure their facilities determine the individual older adult's needs and preferences, through patient assessments, when providing adequate nutrition to residents.

The second major theme expressed through the domains of practice included in Figure 5 relates to the requirements of each domain of practice. Each domain of practice requires administrators to ensure the

implementation of the standards included in the domain of practice. For example, the first domain of practice included in Figure 5 requires that administrators ensure relevant staff implement a plan of care for each resident, based on the individuals' needs and preferences, under the direction of a physician. Basically, what the previous requirement stipulates is that administrators must ensure relevant staff incorporate the first domain of practice into their care of residents. How can administrators ensure relevant staff incorporate the first domain of practice into their care of residents? The answer, as previously alluded to, is by incorporating nutrition-related domains of practice into their facilities specific policies and procedures/guidelines.

Case Studies Revisited

The second question that was posed at the beginning of this section was as follows: how may the domains of practice included in nutrition-related policies and procedures and/or guidelines impact the care of the individual older adult resident? To provide the optimal answer to the previous question, the three case studies presented at the beginning of this course will be revisited. Each case study will be presented in its entirety below, followed by a detailed application of the domains of practice included in Figure 5 with an explanation of how the domains of practice included in older adult resident care may impact the individual resident. At the end of each case study review, a reflection question will be posed to encourage further internal debate and consideration regarding the presented case.

Case Study 1

A 72-year-old female patient is admitted into a nursing facility. The patient has a history of arthritis, hypertension and non-insulin dependent diabetes. The patient is 5'3'' tall and weighs approximately 70.3 kg. The patient is lucid and reports she is gluten intolerant. The patient also reports she tries to avoid dairy products whenever possible. However, the patient is given the nursing facility's standard meals. After the completion of each meal, the patient reports stomach bloating, gas and overall discomfort. The patient also reports she is experiencing frequent headaches, increased thirst and fatigue. The patient's signs and symptoms are documented, although the patient continues to receive the nursing facility's standard meals.

Case Study 1 Review

Domains of Practice:

• Health-care facilities and relevant staff should ensure plans of care are evidence-based, established, implemented, updated, and monitored based on care recipients' preferences and assessed needs.

• Health-care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring, and evaluation of nutritional needs and preferences of care recipients.

• Health-care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring and evaluation of dining experiences meet the needs and preferences of care recipients.

Which of the aforementioned domains of practice may be the most relevant to the patient in Case 1?

All three of the aforementioned domains of practice are relevant to the patient, however the first two domains of practice may be the most relevant to the patient based on the scenario highlighted in the case study.

Where the aforementioned relevant domains of practice applied to the patient in Case 1?

It appears an evidence based plan of care was not effectively established, implemented, updated, or monitored. Also, the patient's nutritional preferences and needs where not effectively assed or met.

How did a lack of the relevant domain(s) of practice impact the patient?

The patient in Case 1 has a history of arthritis, hypertension and non-insulin dependent diabetes. However, no attempts were made by the nursing facility to adjust her nutrition and diet to meet the requirements of her disease states, resulting in the following signs and symptoms of poor glycemic control: frequent headaches, increased thirst and fatigue. Also,

the patient noted a gluten intolerance and that she tries to avoid dairy products whenever possible. No attempts were made by the nursing facility to adjust her meals accordingly. The patient was given "standard meals" by the nursing facility resulting in stomach bloating, gas and overall discomfort.

How could have the application of the aforementioned relevant domains of practice impacted the patient's care?

First, an assessment could have been used to determine the patient's body mass index (BMI). BMI may refer to a measure of weight in kilograms (kg) relative to height in meters squared (m2)[3]. BMI is considered a reasonably reliable indicator of total body fat, which is related to the risk of disease and death[3]. BMI determination is essential for the administration of nutrition-related care to older adult patients. BMI values can be used to establish a healthy weight for a patient.

Secondly, a patient assessment could have been used to establish an evidence based plan of care to manage the patient's arthritis, hypertension and non-insulin dependent diabetes. Lastly, an evaluation of the nutritional needs and preferences of the patient could have been used to establish an appropriate and adequately nutritious diet plan, which accommodated the patient's disease states as well as her gluten intolerance and desire to avoid dairy products.

If the relevant domains of practice where applied to the patient's care in Case 1, the patient, potentially, could have avoided the complications associated with poor glycemic control as well as the stomach bloating, gas and overall discomfort she experiencing as result of eating meals that were not tailor made or customized to meet her requirements and/or preferences. In what other ways could the application of the relevant domains of practice impact the patient's care?

Case Study 2

An 82-year-old male resident of an assisted living facility begins to request "different types of meals". The patient is not specific about his request, although he is admit about receiving what he continues to refer to as " different types of meals." The patient has a history of hyperlipidemia,

hypertension, glaucoma and asthma. The patient is 5'10'' and weighs approximately 63.5 kg. He has no known food or drug allergies. After the patient's initial request for "different types of meals", he becomes agitated regarding his meals. He voices his discontent, however the patient continues to receive what he refers to as the "same old food." Prior to the patient's recent agitation, the patient never complained about his surroundings or his comfort level - although, it was observed and documented by the patient's health care team that he was eating less than he had been in the previous 12 months. Approximately three weeks pass from the patient's first request for "different types of meals". In the aforementioned time period, the patient lost 2.2 kg, became less active and reported extended bouts of dry mouth, confusion, lightheadedness and dizziness. Additionally, the patient has become increasingly agitated and anxious, especially around meal times. The patient's agitation and anxiety have also begun to interfere with his medication therapy. The patient often refuses to take medications because he believes "they are making him feel worse." No changes have been made to the patient's meals.

Case Study 2 Review

Domains of Practice:

• Health-care facilities and relevant staff should ensure plans of care are evidence-based, established, implemented, updated, and monitored based on care recipients' preferences and assessed needs.

• Health-care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring, and evaluation of nutritional needs and preferences of care recipients.

• Health-care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring and evaluation of dining experiences meet the needs and preferences of care recipients.

Which of the aforementioned domains of practice may be the most relevant to the patient in Case 2?

All three of the aforementioned domains of practice are relevant to the

patient - however, the last of the three domains of practice may be the most relevant to the patient based on the scenario highlighted in the case study.

Where the aforementioned relevant domains of practice applied to the patient in Case 1?

It appears the patient's dining experience was not effectively evaluated to determine the patient's needs and/or preferences.

How did a lack of the relevant domain(s) of practice impact the patient?

The patient in Case 2 made requests for what he referred to as "different types of meals". However, the assisted living facility the patient resides in made no effort to further evaluate the patient's dining experience to determine what the patient meant by "different types of meals." The patient continued to receive what he referred to as the "same old food," resulting in patient agitation and eventual anxiety. Initially the patient's agitation and anxiety was limited to meal times. However, as the case progressed, the patient's agitation and anxiety began to increase and intensify until they ultimately began to negatively impact his medication therapy. By the end of the case study, the patient's overall demeanor was altered and he was refusing medication therapy, putting his health and overall well-being in jeopardy. Additionally, the patient was eating less, losing weight and experiencing dry mouth, confusion, lightheadedness and dizziness, all of which possess the potential to further jeopardize the patient's health and overall well-being.

How could have the application of the aforementioned relevant domains of practice impacted the patient's care?

First, an assessment/evaluation could have been used to determine if the patient's hyperlipidemia, hypertension, glaucoma and asthma where being adequately treated. Also, an assessment could have been used to identify what the patient meant by "different types of meals" and "same old food." Furthermore, an assessment could have been carried out to determine the patient's dining experience needs and preferences.

Secondly, the patient should have been more effectively monitored and evaluated for weight loss. The patient lost 2.2 kg in three weeks. Weight loss can be detrimental to an older adult's health, especially if the patient is close to being underweight. Weight loss can lead to decreased energy levels, activity and overall mobility. Weight loss can also effect an older adult patient's cognitive function and overall demeanor[1,3]. It is vital for older adults to maintain a healthy weight. Older adult resident's weight should be routinely monitored and efforts should be made if a patient is losing a considerable amount of weight, or gaining a considerable amount of weight.

BMI values can help determine a healthy weight for a patient. A BMI value less than 18.5 kg/m2 can mean a patient is underweight[3]. A BMI value of 18.5 to 24.9 kg/m2 can mean a patient is maintaining a normal or health weight[3]. A BMI value of 25.0 to 29.9 kg/m2 can mean a patient is overweight and a BMI value of 30.0 kg/m2 or greater can mean the patient is obese[3]. The terms overweight and obese may refer to ranges of weight that are greater than what is considered healthy, while the term underweight may refer to a weight that is lower than what is considered healthy[3].

Lastly, a patient evaluation could have been carried out to address the patient's reported dry mouth, confusion, lightheadedness and dizziness, all of which are signs and symptoms of dehydration.

Dehydration may refer to a condition characterized by an excessive loss of fluid, which disrupts the human body's normal function[5]. Dehydration may be caused by several different factors including: diarrhea, vomiting, sweating, increased urination and decreased fluid intake[5]. Symptoms of dehydration may include: dry mouth, confusion, lightheadedness and dizziness as well as thirst, dry skin and dark-colored urine[5]. Dehydration is concerning and dangerous for individuals of all ages, however it is especially concerning and dangerous for older adults.

Dehydration is especially concerning for older adults because older adults are more susceptible to dehydration, the reason being is related to the human body's aging process. As the human body ages, it loses its ability to regulate its fluid balance, conserve water and sense thirst. Additionally,

older adults typically suffer from multiple disease states such as diabetes and dementia as well as reduced kidney function, which may contribute to dehydration. Furthermore, older adults are often on medication therapies which may also increase the potential for dehydration. With that said, dehydration is especially dangerous for older adults because if left untreated, dehydration could lead to heart injury, decreased kidney function, seizures, shock, coma and death5. Thus, older adults must be routinely monitored and evaluated for signs and symptoms of dehydration as well as fluid intake. It is recommended that older adults take in approximately 5 - 6 8-ounce glasses of water per day to maintain adequate hydration[5].

If the relevant domains of practice where applied to the patient's care in Case 2, the patient, potentially, could have avoided the agitation and anxiety which may have lead to his weight loss and interruptions in therapy. Also, the patient could have avoided potentially dangerous dehydration signs and symptoms. Essentially, if the nutrition-related domains of practice where applied to the patient he could have averted a chain of events, which eventually resulted in a decline in health, overall well-being and quality of life. In what other ways could the application of the relevant domains of practice impact the patient's care?

Case Study 3

A 74-year-old male patient enters a nursing facility after undergoing sugary and rehabilitation for a broken hip. The patient is 5'9'' tall and weighs 68 kg. The patient has no food or drug allergies and is currently taking warfarin to help prevent deep vein thrombosis (DVT). The patient is lucid, and as he puts it "eager to return to his active life and hobbies." Fortunately for the patient, through rehabilitation, he has reigned much of his function and mobility. However, the patient is required to continue his rehabilitation in order to further improve upon his function and mobility. The patient is also ordered to continue his warfarin therapy. A few weeks pass and the patient has successfully acclimated to his new surroundings and therapy. He expresses his contentment for his surroundings and reports he enjoys talking with his nurses. The patient also reports he is "moving much easier now" and has "less pain." Overall the patient is doing quite well, although recently his diet has been very inconsistent and his

team of health care professionals reports his latest international normalized ratio (INR) values are non-therapeutic.

Case Study 3 Review

Domains of Practice:

• Health-care facilities and relevant staff should ensure plans of care are evidence-based, established, implemented, updated, and monitored based on care recipients' preferences and assessed needs.

• Health-care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring, and evaluation of nutritional needs and preferences of care recipients.

• Health-care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring and evaluation of dining experiences meet the needs and preferences of care recipients.

Which of the aforementioned domains of practice may be the most relevant to the patient in Case 3?

All three of the aforementioned domains of practice are relevant to the patient - however, the last two domains of practice may be the most relevant to the patient based on the scenario highlighted in the case study.

Where the aforementioned relevant domains of practice applied to the patient in Case 3?

It appears the patient's team of health care professionals established and implemented an evidence-based plan of care for the patient, which included further rehabilitation and the continuation of warfarin therapy for DVT prevention. It also appears the patient was being monitored based on the report regarding his INR values. Although, it also appears the patient's nutritional needs and preferences may not have been adequately established and perhaps his dining experience was not effectively implemented, monitored, and/or evaluated, resulting in his inconsistent diet.

How did a lack of the relevant domain(s) of practice impact the patient?

Overall, the patient is doing quite well. He is acclimating to his new surroundings, he is getting along with his health care team and his rehabilitation is progressing to the point where the patient reports that he is "moving much easier now" and that he is experiencing "less pain." However, the patient's diet has been very inconsistent, potentially resulting in the non-therapeutic INR values.

How could have the application of the aforementioned relevant domains of practice impacted the patient's care?

A patient evaluation could have been used to determine why the patient's diet is inconsistent. Perhaps the patient has specific dietary needs and preferences that are not being met, resulting in his inconsistent diet. It is important to note the patient's inconsistent diet because, as previously alluded to, it could be impacting his warfarin therapy.

Warfarin is an anticoagulant or blood thinner. It is often used to prevent blood clots. Although, warfarin does not require a specific diet, some foods and beverages can affect warfarin and make it less effective in preventing blood clots[6]. One group of foods that can be especially concerning to the effectiveness of warfarin are those foods rich in vitamin K. Foods that are rich in vitamin K include the following: kale, spinach, parsley, broccoli, cabbage and Brussels sprouts.

The best way to manage and balance the intake of foods rich in vitamin K with warfarin therapy is to keep a patient's diet consistent. For example, if a patient enjoys eating spinach and broccoli, that patient should eat spinach and broccoli on a consistent basis. The patient should not eat large amounts of spinach and broccoli one week and then have little to no spinach and broccoli the next week. A large increase in vitamin K could lower the patient's INR and decrease the overall effectiveness of warfarin, leading to the potential formation of dangerous blood clots[6]. On the other hand, a large decrease in vitamin K could increase the patient's INR and make it harder for the patient's blood to clot, leading to the potential for bleeding and/or uncontrolled bleeding, which may be fatal[6]. Thus, it is

best to keep a patient's diet consistent regarding vitamin K intake in order to keep his or her INR within a therapeutic range and to avoid the potential formation of dangerous blood clots, bleeding and/or uncontrolled bleeding[6].

It is important to further note that the bleeding and/or uncontrolled bleeding associated with warfarin therapy can be fetal. Warfarin does possess a bleeding risk warning. The bleeding risk warning associated with warfarin therapy may be found in Figure 6. Assisted living and nursing home administrators should keep the bleeding risk warning associated with warfarin in mind when developing facility specific polices and procedure related to the nutritional needs of residents receiving warfarin therapy.

Figure 6: Warning: Bleeding Risk Associated with Warfarin (Coumadin)[6]

• Coumadin can cause major or fatal bleeding.

• Perform regular monitoring of INR in all treated patients.

• Drugs, dietary changes, and other factors affect INR levels achieved with Coumadin therapy.

• Instruct patients about prevention measures to minimize risk of bleeding and to report signs and symptoms of bleeding.

Assisted living and nursing home administrators should also keep in mind the herbal products and food recommendations associated with warfarin therapy. Warfarin related herbal products and food recommendations may be found in Figure 7.

Figure 7: Herbal products and Food Recommendations Associated with Warfarin (Coumadin)[6]

• Exercise caution when botanical (herbal) products are taken concomitantly with Coumadin. Few adequate, well-controlled studies evaluating the potential for metabolic and/or pharmacologic interactions between botanicals and Coumadin exist. Due to a lack of manufacturing

and nutritionally adequate diet, while promoting disease prevention,

standardization with botanical medicinal preparations, the amount of active ingredients may vary. This could further confound the ability to assess potential interactions and effects on anticoagulation.

• Some botanicals may cause bleeding events when taken alone (e.g., garlic and Ginkgo biloba) and may have anticoagulant, antiplatelet, and/or fibrinolytic properties. These effects would be expected to be additive to the anticoagulant effects of Coumadin. Conversely, some botanicals may decrease the effects of Coumadin (e.g., co-enzyme Q10, St. John's wort, ginseng). Some botanicals and foods can interact with Coumadin through CYP450 interactions (e.g., echinacea, grapefruit juice, ginkgo, goldenseal, St. John's wort).

• Monitor the patient's response with additional INR determinations when initiating or discontinuing any botanicals.

In addition to warfarin, other specific medications or medications belonging to specific medication classes may require dietary considerations. For example, medications belonging to the class of medications referred to as ACE inhibitors may require dietary considerations. The reason being is that ACE inhibitors, such as lisinopril and captopril, may increase the amount of potassium in a patient's body[6]. The aforementioned potential effect of ACE inhibitors is important to note because too much potassium in the human body may lead to an irregular heartbeat and heart palpitations, both of which can be dangerous[6]. Therefore, it is recommended that individuals taking ACE inhibitors should avoid eating large amounts of foods high in potassium such as: bananas, oranges, green leafy vegetables and salt substitutes that contain potassium[6]. A diet consisting largely of foods high in potassium while taking ACE inhibitors may lead to dangerously high potassium levels and the complications that come with them. With the previous information in mind, assisted living and nursing home administrators should ensure the residents of their facilities undergo routine medication reconciliations to identify specific medications that may require dietary considerations. Assisted living and nursing home administrators should also ensure the residents of their facilities undergo routine nutrition/diet-related evaluations and monitoring as well as nutrition/diet-related adjustments, if needed, to ensure residents are meeting their dietary needs.

If the domains of practice where applied to the patient in Case 3, perhaps adjustments could have been made to the patient's diet to avoid the inconsistency which may have eventually lead to non-therapeutic INR values. In what other ways could the application of the relevant domains of practice impact the patient's care?

Section 3: Summary

Section 1 and Section 2 of this course highlighted the first two key aspects of care which should be reviewed by assisted living and nursing home administrators to ensure their facility is meeting the nutritional and dietary requirements of their residents. As previously indicated, the first two key aspects of care include: the food and nutrition services provided by the facility and the actual nutritional value of the food and meals provided by the facility to residents. With that said, the third key aspect of care which should be reviewed by assisted living and nursing home administrators relates to nutrition-related policies and procedures and/or guidelines of a specific facility. When reviewing nutrition-related policies and procedures and/or guidelines, assisted living and nursing home administrators should ensure their facility's policies and procedures/guidelines include specific domains of practice. Domains of practice, as they relate to this course, may refer to clearly defined standards, responsibilities and guidelines which establish continuity of care among health care-related staff in order to ensure the delivery of safe and effective care and/or adequate nutrition to patients. The specific domains of practice, related to adequate nutrition, which should be interwoven and included in specific facilities' nutrition-related policies and procedures/guidelines include the following: health-care facilities and relevant staff should ensure plans of care are evidence-based, established, implemented, updated, and monitored based on care recipients' preferences and assessed needs; health-care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring, and evaluation of nutritional needs and preferences of care recipients; health-care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring and evaluation of dining experiences meet the needs and preferences of care recipients. By verifying their facility's nutrition-related policies and procedures/guidelines include the aforementioned domains of practice, assisted living and nursing home administrators can help ensure

the individual residents of their facility are firmly placed at the center of their nutritional care, maintaining patient autonomy, and that they are receiving the adequate nutrition they require to maintain their health, overall well-being and quality of life.

Section 3: Key Concepts

• The nutrition-related policies and procedures and/or guidelines of a specific facility can serve as the means and methods to outline and guide the delivery of adequate nutrition to older adult residents.

• The specific domains of practice, related to adequate nutrition, which should be interwoven and included in specific facilities' nutrition-related policies and procedures/guidelines include the following: health care facilities and relevant staff should ensure plans of care are evidence-based, established, implemented, updated, and monitored based on care recipients' preferences and assessed needs; health care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring, and evaluation of nutritional needs and preferences of care recipients; health care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring and evaluation of dining experiences meet the needs and preferences of care recipients.

• In order to maintain patient autonomy, nutrition-related care should be based on a resident's preferences and assessed needs.

• Domains of practice can help ensure health care facilities and relevant staff evaluate and monitor older adult residents to determine vital elements of care such as: a patient's BMI, a healthy weight for a patient, dehydration, disease state and medication-related requirements as well as the individual resident's specific nutritional and dietary preferences.

• Domains of practice can help ensure older adult residents receive the adequate nutrition they require to maintain their health, overall well-being and quality of life.

Section 3: Key Terms

Domains of practice (as they relate to this course) - clearly defined standards, responsibilities and guidelines which establish continuity of care among health care-related staff in order to ensure the delivery of safe and effective care and/or adequate nutrition to patients

Patient autonomy - the individual patients' ability and right to all information regarding their current and future health care options, diagnosis, treatments, interventions and/or strategies, including both potential benefits and risks, in order to formulate their own informed decisions regarding their own personal health care; patient autonomy grants patients the sole right to make decisions regarding their own health, health care and personal well-being[4]

Body mass index (BMI) - a measure of weight in kilograms (kg) relative to height in meters squared (m2); BMI is considered a reasonably reliable indicator of total body fat, which is related to the risk of disease and death[3]

Overweight and obese - ranges of weight that are greater than what is considered healthy[3]

Underweight - a weight that is lower than what is considered healthy[3]

Dehydration - a condition characterized by an excessive loss of fluid, which disrupts the human body's normal function[5]

Section 3: Personal Reflection Question

How may nutrition-related domains of practice impact older adult residents of assisted living and nursing home facilities?

Course Review

The following questions are presented below to further review the concepts found in this course. By reviewing the following questions, assisted living and nursing home administrators can obtain practical knowledge, which may be used to ensure older adult residents receive adequate nutrition.

What does the Final Rule, section §483.60 Food and Nutrition Services outline?

The Final Rule, section §483.60 Food and Nutrition Services outlines federal regulations and requirements related to the food, nutrition and dietary services provided by long-term care facilities.

According to the Final Rule, section §483.60 Food and Nutrition Services a facility must provide sufficient support personnel to safely and effectively carry out the functions of the food and nutrition service. What does "sufficient support personnel" mean?

"Sufficient support personnel" means having enough dietary and food and nutrition staff to safely carry out all of the functions of the food and nutrition services. This does not include staff, such as licensed nurses, nurse aides or paid feeding assistants, involved in assisting residents with eating.

What are the Final Rule, section §483.60 Food and Nutrition Services key requirements regarding meal frequency?

Each resident must receive and the facility must provide at least three meals daily, at regular times comparable to normal mealtimes in the community or in accordance with resident needs, preferences, requests, and plan of care. Additionally, there must be no more than 14 hours between a substantial evening meal and breakfast the following day, except when a nourishing snack is served at bedtime, up to 16 hours may elapse between a substantial evening meal and breakfast the following day if a resident group agrees to this meal span.

According to the Final Rule, section §483.60 Food and Nutrition Services, are paid feeding assistants permitted to assist residents who have complicated eating problems?

Paid feeding assistants are not permitted to assist residents who have complicated eating problems, such as (but not limited to) difficulty swallowing, recurrent lung aspirations, or who receive nutrition through parenteral or enteral means. Nurses or nurse aides must continue to assist residents who require the assistance of staff with more specialized training to eat or drink. Paid feeding assistants may assist eligible residents to eat and drink at meal times, snack times, or during activities or social events as needed, whenever the facility can provide the necessary supervision.

According to the Dietary Guidelines for Americans 2015 - 2020, what is an eating pattern?

An eating pattern may refer to the combination of foods and beverages that constitute an individual's complete dietary intake over time; an eating pattern may describe a customary way of eating or a combination of foods recommended for consumption. Individuals should consume a healthy eating pattern that accounts for all foods and beverages within an appropriate calorie level.

According to the Dietary Guidelines for Americans 2015 - 2020, what are the key recommendations for the daily intake of sugars, saturated fats and sodium?

- Individuals should consume less than 10 percent of calories per day from added sugars.
- Individuals should consume less than 10 percent of calories per day from saturated fats.
- Individuals should consume less than 2,300 milligrams (mg) per day of sodium.

According to the Dietary Guidelines for Americans 2015 - 2020, what is a nutrient dense food option?

Nutrient dense is a characteristic of foods and beverages that provides

vitamins, minerals, and other substances which contribute to adequate nutrient intakes or may have positive health effects, with little or no solid fats and added sugars, refined starches, and sodium, i.e. nutrient dense indicates the nutrients and other beneficial substances in a food have not been "diluted" by the addition of calories from added solid fats, sugars, or refined starches, or by the solid fats naturally present in the food[1]. Examples of nutrient dense food options include the following: vegetables, fruits, whole grains, seafood, eggs, beans and peas, unsalted nuts and seeds, fat-free and low-fat dairy products, and lean meats and poultry - when prepared with little or no added solid fats, sugars, refined starches, and sodium[1].

According to the Dietary Guidelines for Americans 2015 - 2020, what is a key strategy to align menus with health eating patterns?

Menus should offer more vegetables, fruits, whole grains, low-fat and fat-free dairy, and a greater variety of protein foods that are nutrient dense, while also reducing sodium and added sugars, reducing saturated fats and replacing them with unsaturated fats, and reducing added refined starches.

What is the DASH Dietary Pattern?

The DASH Dietary Pattern is a type of diet which encourages the consumption of vegetables, fruits, low-fat dairy products, whole grains, poultry, fish, beans, and nuts and is low in sweets, sugar-sweetened beverages, and red meats. It is low in saturated fats and rich in potassium, calcium, and magnesium, as well as dietary fiber and protein. It also is lower in sodium than the typical American diet. The DASH Dietary Pattern may be beneficial for individuals suffering from hypertension.

According to the Dietary Guidelines for Americans 2015 - 2020, what are the estimated calorie intake per day recommendations for individuals ages 66 - 70 years?

- Males who are sedentary should take in approximately 2,000 calories. Males who are moderately active should take in approximately 2,200 calories. Males who are active should take in approximately 2,600 calories.

- Females who are sedentary should take in approximately 1,600 calories. Females who are moderately active should take in approximately 1,800 calories. Females who are active should take in approximately 2,000 calories.

What are the requirements of administrators regarding the following domain of practice: health care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring, and evaluation of nutritional needs and preferences of care recipients; health care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring and evaluation of dining experiences that meet the needs and preferences of care recipients?

- The previous domains of practices require administrators to ensure the care recipient's nutritional needs are met in accordance with their individualized needs and preferences while simultaneously meeting all physicians prescribed orders.

- The previous domains of practices require administrators to ensure dining services are resident-centered and meet the nutritional needs paralleled with the recipient preferences.

Conclusion

Nutrition and diet are important determinants of health in older adult populations. A nutritious diet customized to meet the health-related needs of older adults can help them maintain their weight, activity level as well as their physical and mental health. On the other hand, a poor diet without significant nutritional value can lead to a host of different health-related issues including: weakened immune systems, decreased energy levels as well as obesity, malnutrition, dehydration, impaired cognitive function, dementia, type 2 diabetes, hypertension, heart disease, stroke and osteoporosis[1]. In other words, poor nutrition can devastate an older adult's health, overall well-being and quality of life. Thus, it is essential for assisted living and nursing home administrators to ensure older adults residing in their facilities receive the nutrition they require. To do so assisted living

and nursing home administrators should review three key aspects related to their facility's care, which include: food and nutrition services, the actual nutritional value of the food and meals provided by the facility to residents and nutrition-related policies and procedures and/or guidelines.

As previously mentioned, the first of the three key aspects of care which should be reviewed by assisted living and nursing home administrators is food and nutrition services - more specifically food and nutrition service related to the regulations outlined in the Final Rule, section §483.60 Food and Nutrition Services. The Final Rule, section §483.60 Food and Nutrition Services outlines federal regulations and requirements related to the food, nutrition and dietary services provided by long-term care facilities. It is essential for assisted living, nursing homes and other types of long-term care facilities to meet the federal regulations and requirements outlined in the Final Rule, section §483.60 Food and Nutrition Services. Therefore, assisted living and nursing home administrators should review the food, nutrition and dietary services provided by their specific facility to ensure they meet federal requirements. By reviewing the aforementioned services assisted living and nursing home administrators can help ensure their facility is meeting the provisions of the federal government, as well as the nutritional and dietary requirements of their residents.

The second key aspect of care that assisted living and nursing home administrators should review is the actual nutritional value of the food and meals provided to residents. Nutritional value may refer to the understanding of the contents of food in terms of carbohydrates, fats, proteins, minerals, additives, enzymes, vitamins, sugar intake, cholesterol, fat as well as salt and how those contents impact the human body[3]. In other words, nutritional value defines the potential impact of food on the human body. To effectively review the actual nutritional value of the food and meals provided to residents, assisted living and nursing home administrators should take note of the recommendations included in the Dietary Guidelines for Americans 2015 - 2020.

The Dietary Guidelines for Americans 2015 - 2020 outlines guidelines, recommendations and essential elements of healthy eating. One of the goals of the Dietary Guidelines for Americans 2015 - 2020 is to provide evidence-based recommendations regarding the components of a healthy

and nutritionally adequate diet, while promoting disease prevention, healthy eating patterns and methods of eating to promote health. Due to the importance and the potential impact of the Dietary Guidelines for Americans 2015 - 2020, assisted living and nursing home administrators should review its contents to ensure their facility is providing residents with a nutritionally adequate diet consisting of foods and meals with significant nutritional value.

Finally, the last of the three key aspects of care which should be reviewed by assisted living and nursing home administrators relates to the nutrition-related policies and procedures and/or guidelines of their specific facility. It is vital that assisted living and nursing home administrators review their facility's policies and procedures/guidelines because they can serve as the means and methods to outline and guide the delivery of adequate nutrition to older adult residents.

When reviewing nutrition-related policies and procedures and/or guidelines, assisted living and nursing home administrators should ensure their facility's policies and procedures/guidelines include specific domains of practice. Domains of practice may refer to clearly defined standards, responsibilities and guidelines which establish continuity of care among health care-related staff in order to ensure the delivery of safe and effective care and/or adequate nutrition to patients. The specific domains of practice, related to adequate nutrition, which should be interwoven and included in specific facilities' nutrition-related policies and procedures/guidelines include the following: health-care facilities and relevant staff should ensure plans of care are evidence-based, established, implemented, updated, and monitored based on care recipients' preferences and assessed needs; health-care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring, and evaluation of nutritional needs and preferences of care recipients; health-care facilities and relevant staff should ensure the planning, development, implementation/execution, monitoring and evaluation of dining experiences meet the needs and preferences of care recipients. The aforementioned domains of practice should be incorporated into health care facilities' nutrition-related policies and procedures/guidelines because they can help maintain patient autonomy as well as ensure health care facilities and relevant staff

evaluate and monitor older adult residents to determine vital elements of care such as: a patient's BMI, a healthy weight for a patient, dehydration, disease state and medication-related requirements. Furthermore, they can help determine the individual resident's specific nutritional and dietary preferences. Essentially, the aforementioned domains of practice along with the previously outlined three key aspects of care can, ultimately, ensure older adult residents of assisted living facilities and nursing homes receive the adequate nutrition they require to maintain their health, overall well-being and quality of life.

When older adults enter a health care facility, they place their health and overall well-being in the hands of health care staff and the administrators who guide their care. Thus, it is of the upmost importance for assisted living and nursing home administrators to provide older adult residents with the care they require and rely on, which should include adequate nutrition.

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