Chapter 4

Overview of Conducting a Nutrient Analysis

CHAPTER OBJECTIVES

After reading this chapter, you will understand how to:

- **Use the CN Database in conjunction with vendor-added and user-added data.**
- **List the five steps needed to conduct a nutrient analysis.**

The exact steps to conducting a nutrient analysis may vary slightly among software programs, but there are similar functions. Menu planners and State agency staff must understand and follow the procedures or protocols for each step when completing an accurate nutrient analysis, regardless of the software program. There are many principles for menu planners to understand before they can begin the process of conducting a nutrient analysis.

KEY
The USDA-approved nutrient analysis software contains foods or ingredients in the CN Database and also allows the user to add, modify, and delete food or ingredient items and recipes in the local database.

Detailed descriptions of each step will be provided in the following chapters but initially the menu planner must understand several principles or concepts prior to conducting a nutrient analysis.

Before beginning the process of entering new food items into the nutrient analysis software database, the menu planner should understand how the software database has been developed.

Contents of the Nutrient Analysis Software Database

There are two parts to the software database:

1. The Child Nutrition (CN) Database

All USDA-approved nutrient analysis software programs must contain the most current version of the CN Database. All files in the CN Database are *locked* which means they cannot be modified or deleted by the user. The CN Database includes:

- **USDA Standard Reference Foods or Ingredients:** The CN Database contains foods or ingredients most commonly used in school meals from the USDA Nutrient Database for Standard Reference. These foods or ingredients are identified in the software database under the "Source" as " **USDA Nutrient Database**."

Food categories in the USDA Nutrient Database for Standard Reference file include:

- Baked Goods
- Beef
- Beverages
- Cereals
- Condiments
- Dairy Products and Eggs
- Fats and Oils
- Fish
- Fruits/Juices
- Grains
- Lamb
- Luncheon Meats and Sausage
- Nuts and Seeds
- Poultry
- Pork
- Snacks and Sweets
- Soups, Sauces, Gravies
- Spices
- Vegetables

- **Commercially Prepared Foods:** FNS contracts with a private company to manage the CN Database. Since SFAs/schools use numerous commercially prepared products, manufacturers are encouraged to submit nutritional information for their products so they can be added to the CN Database[2]. This saves data entry time for local school districts/schools and State agencies and makes nutritional information on those products available nationwide. A sample of the form to be completed by manufacturers for submission of data is included in Appendix E. These food products or ingredients are identified in the software database under the "Source" as "**Food Industry**."

- **USDA Commodities:** The CN Database contains the current USDA commodity foods available to school districts/schools. These food products or ingredients are identified in the software database under the "Source" as "**USDA Commodity**." The CN Database does not include commodities that are processed under State processing contracts.

- **USDA *Food Buying Guide* Yield Data:** The CN Database contains yield data from the *Food Buying Guide* as a tool to assist the menu planner in determining raw-to-cooked yields for recipe analysis. It also provides yield data for many other foods from an "as purchased" form (AP) to the edible portion (EP) of the food. This yield data is also useful for volume/weight conversions from the purchase unit, e.g., can size to cups, cups per pound, and cans to weight.

[2] Companies that want their products entered into the CN Database should visit the Healthy School Meals Resource System website at http://schoolmeals.nal.usda.gov/Industry/CNdatabase.html

CAUTION
USDA has not reviewed the USDA recipes entered by software vendors for accuracy and adherence to nutrient analysis protocols. School districts/schools and State agencies are cautioned to carefully review vendor-added recipes to ensure that nutrient analysis protocols have been followed if these recipes are used for nutrient analyses.

- **USDA Quantity Recipes:** The CN Database contains all current USDA-standardized quantity recipes for school foodservice. Only the nutrient information is included – not the recipe ingredients and directions. If a school uses the USDA recipe exactly as displayed on the recipe card (first listed ingredient when alternates are listed and no optional ingredients), the nutrient analysis for the USDA quantity recipes in the CN Database is the most accurate selection for menu analysis. Some software companies have entered the USDA standardized quantity recipes into a separate recipe database, with each ingredient listed, to make it easier for school districts/schools to modify the recipes.

2. Local Database

In addition to the CN Database, some software manufacturers have included nutrient data in their local databases for the following:

CAUTION
USDA has not reviewed these local databases for accuracy. SFAs/State agencies are cautioned that these local databases may not have the same quality control monitoring as the CN Database, and may contain errors and/or missing data.

- Commercially prepared products, and
- Raw to cooked yield data for certain products

These vendor-added commercially prepared food products or ingredients are identified in the software database under the "Source" as "**Local.**"

All USDA-approved software also allows the user to:

- Enter the nutrient data for new food items, and
- Enter, modify, and analyze recipes.

These user-added or modified food products and recipes should be identified in the software database under the "Source" as "**Local.**"

Overview of Steps for Nutrient Analysis

STEP 1
Preparing for Nutrient Analysis – Gathering the Materials

This process will be discussed in-depth in Chapter 5. Materials include:

- Draft menus developed, including menu choices and portion sizes for each age/grade group.
- Standardized recipes, including USDA Quantity Recipes and local recipes that will be used in the menus.
- Description or specifications for all food products used in the menus.
- Nutrient information for ingredients used in recipes that are not included in the software database,
- Food production records to assist in weighting the more frequently selected items. If this is an entirely new set of menus this information may not be available until the menus for an entire menu cycle have been served.

STEP 2
Entering Food Items (Ingredients) into the Local Database

This process will be discussed further in Chapter 6 and includes:

- Reviewing the recipes to be used in the cycle menus (SFA) or the review week's menus for the school (State agency) and identifying ingredients missing in the software database.
- Entering the missing ingredients, including volume and weight measurements, and nutrient information.

How Food Manufacturers Provide Nutrient Information

Manufacturers provide nutrient analysis information in one of two ways – "**as purchased**" or "**as served.**"

- "**As purchased**" nutrient analysis data represents the nutritional content of a weight and/or a volume or other measurable amount of the product e***xactly as it is pur - chased***; that is, the nutrients contained in a certain amount of an **unprepared** cake mix or an **unbaked** prepared pizza or pre-fried egg roll. Note: "The Nutrition Facts" labels on products are required to provide "as purchased" data. A sample copy of a Nutrition Facts Label is included in Appendix E.

- "**As served**" nutrient analysis data provides the nutrient values for a product ***after it has been further prepared***. For example, a cake mix will provide "as purchased" data on the unprepared mix and may also provide "as served" data on the mix when prepared according to package instructions.

KEY

When entering new ingredients, always indicate whether the nutrient data is "as purchased" or "as served", and indicate the cooking method.

Food Products Used "As Purchased"

For **ready-to-serve** products, i.e., foods that only require chilling, heating and/or portioning and are used "as purchased", use the nutrient data exactly as provided on the food product and enter it into the ingredient database.

Food Products Prepared According to Manufacturer's "As Served" Nutrient Information

When a manufacturer provides "as served" nutrient analysis information, specifies the cooking method, and the school foodservice prepares the food *exactly* according to directions, use the nutrient data exactly as provided on the food product and enter it into the ingredient database.

Food Products Requiring Further Preparation

For purchased products that do require further preparation, if the manufacturer *has not* provided "as served" nutrient infor-

mation, or the SFA uses a differing preparation method, the user must develop a recipe for this prepared ingredient. This will be further described in Chapter 7.

STEP 3
Adding Recipes to the Local Database

Select the correct food items from the database for each recipe in the menus. The person who adds recipes to the local software database for nutrient analysis must have knowledge of the foods that are purchased and how they will be prepared and served in order to select the correct database item for the recipes. The software program, including the CN Database, contains multiple entries (and different nutrient content) of the same food item, based on the varieties, types, and forms of the food item and different preparation methods.

Recipes are nutritionally analyzed based on the form in which the food is consumed. If quantity recipes include raw ingredients that will be cooked or further prepared before consuming, they will need conversion to the *edible* form of the ingredient. This is referred to as "the Yield Factor Method" and will be further discussed in Chapter 7.

Basic Rules for the Yield Factor Method

- Use the form and portion of the food as served.
- Select raw if not heated or cooked.
- Select cooked if cooked before serving, using the database food code for the cooked ingredient.

Convert or adjust the amount of the raw ingredient in the recipe by using a yield factor from the *Food Buying Guide*. Some commonly used cooked food products in schools have a raw to cooked conversion factor included in the software database. If this option is available, it will eliminate the need to convert the raw weight to the cooked yield.

YIELD FACTOR METHOD

A method for nutrient analysis of recipes that requires that each raw ingredient be converted and entered into the recipe database as ready-to-serve or cooked.

If the database does not include raw-to-cooked yield information for a specific ingredient, use yield data from USDA's *Food Buying Guide for Child Nutrition Programs* to convert from the raw to the cooked form.

STEP 4
Entering Specific Menu Planning Data

The order of this process may differ from software program to software program but the data needed to complete the nutrient analysis is common among programs.

- Identify menu name(s) or site names and associated age or grade nutrient standards.
- Identify menu or meal type, such as breakfast or lunch.
- Develop individual menus or link to cycle menus.
- Assign dates to menus and determine a date range for each nutrient analysis, as defined by the school week.
- Determine the number of servings of reimbursable meals and the serving sizes of food or menu items.
- Print the reports for review.

STEP 5
Evaluating and Modifying Menus and Recipes to Achieve the Nutrient Standard(s)

- Review menus for variety.
- Review the weekly nutrient analyses, noting nutrient standards that have not been met.
- If necessary, modify the menus to meet the nutrient standards.
- Reanalyze menus when substitutions occur outside the two-week window.
- Reanalyze menus when menus/food items change, products change, recipes change, or when participation or student selections change.