EVALUATING NUTRIENT DATA BASES

Kim Crawford, Drexel University

1. INTRODUCTION:

   A. General uses of a nutrient data bases:
      1. The most common use of a nutrient data base is to assess the nutrient level of the diet.
         a. diet history of a patient
         b. analyzing results of a nationwide food consumption survey
      2. Research purposes
      3. To do recipe calculations
      4. To develop definitions for imitation foods and food substitutes
      5. To develop regulatory policies for nutrient fortification and food additives
      6. To determine the adequacy of the U.S food suppiy to meet nutritional needs
      7. To plan or evaluate menus for school lunch programs, hospitals, and other institutions and feeding groups
      8. To develop nutritional labeling
      9. To construct exchange lists
   B. Identify your specific needs for a nutrient data base

2. CHARACTERISTICS OF A NUTRIENT DATA BASE:

   A. Types of FOODS:
      1. Food variabiltiy ie. apples whole, applesauce
      2. Food types vary depending on the intended use:
         a. Food Company may need only compositional data for its own food and perhaps for competitors food products.
         b. Hospital data base should include institutional, special, and medical foods used throughout the institution
         c. Data bases used for assessment of patient/client, or for epidemiological or nutritional studies should reflect the

general food supply and must include traditional, commercial(brand name food items), homemade, restaurant, and ethnic foods

B. Number of FOODS:
   1. The number of foods is a function of the food descriptors- the greater the level of detail per food item the more foods you may need in the data base.
   2. The number of foods in currently available data bases ranges from 57->15,000+
      a. FDA total diet study 234 foods
      b. DAS(Dietary Analysis and Assessment Systems) 1,000 foods
      c. DINE 3,500 foods
      d. OSU 8,700 foods
      e. COMPUTRITION 15,000+ foods
   3. The number of foods in a data base should also reflect the unique nutritional differences of indivdual foods and the importance of these nutritional differences to the use of the data base.

C. Food Descriptions:
   1. Range from general to very specific depending upon the use of the data base
      a. food consumption surveys- the level of detail should reflect the level of detail of the survey questionnaire
   2. It may be important to know:
      a. the source of the food data
      b. preservation method
      c. type of packaging material
      d. the preparation method
      e. mixed dish
   3. There should be a specific order for descriptive terms:
      a. For example alphabetical order
      b. BE CONSISTENT
   4. If the data base contains descriptive terms, there should be a dictionary to explain the specific definitions of these terms.
      a. define low sodium
      b. define a cooking method

D. Classification or coding schemes:

1. Classifying and coding data should reflect the detail of data base.
2. Classification schemes:
   a. most common classification schemes are based on major food groups with minor subgroups in each food group
      -example: major food group: vegetables
                minor subgroup: beans
      - useful for diet evaluations, food consumption studies
   b. classification based on food descriptors:
      -product type
      -food source
      -degree of preparation
      -packaging material
      -ingredients

E. The nutrients to be included:

1. Selection of nutrients to include in the data base directly relates to the persons use of the data base.
   a. Institutional meal planning may only include RDA and dietary goal nutrients.
   b. Food industry may only include nutrients which pertain to food labeling or food items used in their products.
   c. Multi purpose data base is all inclusive.
      -leads to missing nutrient values since some foods have a lot of nutrient data available and other foods have only partial data available
2. Some nutrients included in the data base may have no current food records, but this allows for easy addition of the nutrient values as the data becomes available. It is more difficult to add new nutrients to an already existing data base.

F. Number of NUTRIENTS.

1. Decide exactly which nutrients are needed.
2. Currently available data bases contain between 4-100+ nutrients and may include:
   a. the 17 nutrients available in the old USDA Handbook #8
   b. those nutrients available in the revised Handbook #8

c. the lesser known vitamins and minerals as data becomes available
d. simple sugars, amino acids, and fatty acids

G. The expression of the nutrient values:
1. Nutrient values should be expressed on a fresh wet-weight basis.
a. a lot of literature reports nutrients values on a dry weight basis.
2. Nutrient values expressed per 100 grams of the food item.
a. most common way nutrient values are expressed
b. uses in food industry, research
3. Nutrient data expressed per single serving size.
a. uses for diet history, food consumption data- frequency use
4. Data that has been imputed or calculated from recipes should be documented or footnoted.
5. The units in which nutrient data is expressed varies:
a. Vit A IU or Vit A RE or Carotene
b. Energy- Calories or Joules

H. Addition information:
1. Food exchanges
2. Allergy codes such as gluten or lactose
3. Supplement class such as adult, child, or both

3. SOURCES OF NUTRIENT DATA:
A. The major source of the nutrient data
1. USDA Handbooks
2. USDA Home and Garden Bulletin
3. Data from food manufacture
B. The sources used to update the nutrient data
C. The policies that exist with regard to the updating
1. cost
2. how often will you receive the nutrient updates?
D. Addition of new foods
E. Addition of brand name food items
F. Addition of new nutrients

G. Missing nutrient values
H. Sources of nutrient data bank errors:
    1. poor laboratory method
    2. poor laboratory technician
    3. random error
    4. imputed values
    5. coding errors

4. SELECTING SOFTWARE:
    A. When evaluating a nutrient data base, compare the software packages that are compatible with the data base.
        1. Does it meet your needs?
        2. Make sure the software is compatible with the hardware
        3 Features to be concerned with:
            a. computational options available such as: single day diet histories, multiple day diet histories, meal by meal analysis, food group assessments
            b. standards of assessing nutritional adequacy of diets RDA's or other standards such as dietary goals
            c. the way missing values are treated
            d. data entry method of foods
                -key entry
                -alphanumeric search
                -optical scan
                -making choices from a list on terminal screen
            e. coding process for data entry
        4. Documentation:
            a. Appearance- format, print quality
            b. Usefulness- index, table of contents, clarity
            c. Completeness
            d. Writing style- jargon, academic or conversational

5. EVALUATING NUTRIENT DATA BASES:
    A. Analyze specific needs for a nutrient data base
    B. Review the characteristics of a nutrient data base
    C. Investigate the sources of nutrient data
    D. Evaluate compatible software packages