17.0 NUTRITION READING CENTER MANUAL OF PROCEDURES

Detailed Methods for the Cincinnati Center for Nutritional Research and Analysis (CCNRA)

The CCNRA is a computer center developed to analyze dietary data from outpatient research studies. CCNRA is responsible for data entry, quality control, and the creation of the analysis file. The software used is the Nutrient Data System for Research (NDS-R), which was developed by the Nutrition Coding Center at the University of Minnesota. Data flow, quality control, and billing procedures were developed at CCNRA. The most current version of NDS-R available during the study will be used (currently NDS-R 2006).

Training of Coders at CCNRA

Accurate coding and calculation of dietary intake data are dependent on thorough and accurate documentation by dietary interviewers. Coding is the process of converting the written dietary record to computer entries. All data entry personnel (coders) at CCNRA have a background in nutrition. They have been trained and certified in data entry of outpatient food records and recalls and in default rules and procedures. Interviewers, at the study sites, are preferably nutritionists and trained and certified according to standards developed by the Nutrition Coding Center (NCC) at the University of Minnesota. The overall objective of the interviewer training program is:

1. To provide a standardized protocol for the dietary data collection.
2. To acquaint the interviewers with the coding system so that the documentation of dietary data will be adequate for accurate coding.
3. To provide interviewers with the necessary skills for the research interview.

The training session agenda includes an overview of the NCC Nutrition Data System and study objectives, a review of the training material, and instructions and practice in coding and interviewing. Trainees receive a thorough introduction to the use of the food record, the food models, and the interviewer checklist. Open-ended and probing questions and techniques for skillful handling of problem situations are illustrated and discussed. During the session, trainees practice the interviewing techniques and receive feedback. The importance of thorough and accurate documentation for high quality data collection is stressed.

Coder Certification at CCNRA

Certification requirements include attendance at a training session, completing the NDS tutorial, and coding of 3 three-day diet records. The data will be reviewed and corrected as necessary. When it is deemed that the coder has reached an acceptable level of accuracy (approximately 90% of foods have been entered correctly), the coder will begin coding records or recalls from actual participants.

Coder References

The coder will be made familiar with the computer and all of its functions, such as checking nutrients of various foods or groups of foods, printing component ingredient lists, and any other NDS functions deemed necessary. Other references will be presented, such as the Restaurant Guide, The Supplement Guide, The Product Guide, The default lists, and The Coding Hints Book. The coder will become familiar with checking foods on the Internet and in the grocery store or in a restaurant. Certain coding rules have been developed to ensure uniformity of coding. Coders must know how to apply these rules, found in the Interviewer's Checklist described in the Food Record MOP.

Quality Control for CALERIE

The following quality control steps will be in place at the CCNRA during CALERIE to assure accurate coding and calculation of dietary intake data:

- Single entry will be used for food records. However, the NDS-R system has a built in edit system for food amounts. NDS-R automatically questions unusually large portion sizes or an unusually large number of servings of a specific food item. Each of these out of range items are tracked and checked by a dietitian to determine the validity of the quantity entered.
- During CALERIE, 100% of records will be hand checked for accuracy and consistency by the head RD, Marcia Schmidt, after they are entered by a coder into NDS-R, and corrected as necessary. If any corrections are needed, the record will be returned to the coder for correction. It will then be re-checked by the head RD and logged as complete.
- Queries will be sent to the CALERIE sites to resolve questions related to poorly documented or unfamiliar food items on food record (described below).

Query Resolution

If a record comes to the coding center poorly documented, a query will be sent to the interviewer at the CALERIE site for clarification. The same is true for unfamiliar food items. In addition to providing clarification, this also calls attention to the problem in hopes of preventing its recurrence. If the information is unavailable, standardized rules are used to code the item.

The CCNRA will track all queries and keep a log of the queries, the date the query was sent to the site where the data were collected, and the date the query was answered and returned. If there is a food item that is not in NDS-R, it will be researched immediately. If there is a new food product, information will be obtained from the manufacturer when possible. If the issue cannot be resolved at the CCNRA, it will be sent to NCC for resolution.

The query form is found in Appendix __ and will contain the following information:

- ID of the participant
- Date of birth as a secondary identifier
- Protocol time point
- Date of the record being queried
- Initials of Interviewer who completed the interview
- Query sent date

- Query return date
- Initials of respondent
- Resolution of each query

Data Entry and Transmission

Data Entry Timeline

The food record data will be entered into NDS-R within 2 weeks of receipt from the CALERIE site. If there is a query needed on a record, it will be sent to the appropriate site and answered by the site within 1 week. The entry will be completed within 1 week of the query being answered. If the query cannot be resolved at the CCNRA and is sent to NCC, it may take an additional 3 weeks for the issue to be resolved.

Data Transfer from CCNRA to the Study Sites

Within one week of completed analysis by the CCNRA, the results of food records will be returned to the Feeding Nutritionist or Counselor at the CALERIE site, who will review the average 6-day macronutrient intake for analyzed food records. Average fat, protein, carbohydrate intake will be compared with the Dietary Reference Intake (DRI) guidelines as part of the nutritional adequacy monitoring (Section 24.3). These summary files from NDS-R will be sent electronically from the CCNRA to the sites.

The NDS-R summary files that will be sent for each participant are:

- Average nutrient totals report

If needed, other summary files that are available from the CCNRA upon request are:

- Nutrients per food report (per day) containing information on grams, calories, fat (g), protein (g), carbohydrate (g), calcium and iron (or other specified nutrient).
- Nutrient totals report (by day)

Data Transfer from CCNRA to the Coordinating Center

Data will be transmitted to the coordinating center monthly. Output files will be sent electronically. Hard copies of the food record will be held in a secure area until they are ready to be sent back to the Coordinating Center. The output files will be sent electronically in the form of compressed text files which can then be unzipped and brought into SAS by the Coordinating Center. Once the output file has been unzipped, several files become available and each file is named for the project abbreviation followed by a number (0-5) that indicates the type of file available for the data set. The variables available in each of these file types can be found in Appendix __.

The CCNRA will provide the Coordinating Center with information on output file column headers and SAS programs as necessary.

The following output files will be transferred to the Coordinating Center:

- Error file – labeled with a 0; and lists all records excluded from the dataset due to incomplete data

- Food file – labeled with a 2; nutrient data at the whole food level
- Intake file – labeled with a 4; contains nutrient data at the daily totals (intake properties) level

Recommend these files be archived at Reading Center:

- Component file – labeled with a 1; contains nutrient data at the component/ingredient level
- Meal file – labeled with a 3; contains nutrient data at the meal (or eating occasion) level
- Recipe file – labeled with a 5; contains nutrient totals for user recipe records

Tracking and Billing

When a food record is received, it will be checked against the packing slip and then entered into an Excel spreadsheet. The following information will be logged in the Excel spreadsheet:

- Date the record is received
- Date the record entry is completed
- Whether a query was sent to a CALERIE site
- Whether a query was sent to NCC
- Date the reports are sent electronically to the study site
- Date the output files are sent to the Coordinating Center

Turnaround time for records or recalls will be approximately 2-3 weeks unless there is a query that needs resolution, in which case turnaround time could take an additional 2-5 weeks.

Progress Reports

Progress reports from the CCNRA on the data retrieval, entry, and transmission will be available to the Coordinating Center as needed.