

CALERIE Phase 2 Food diary data handling rules

If possible, the same data handling rules should be used across all analyses / manuscripts that use this data. For example, this data is used in all analyses that examine self-reported energy intake at a visit, or % caloric intake of fat, carbs, protein, and alcohol. This data is also relevant to analyses in which FQ or RQ is calculated.

CALERIE food record data originally generated using versions of NDS 2007-2010 has now been rerun to produce OUTPUT that is uniformly generated with the NDS version 2010. The output from this version is most optimal for analysis.

NDS Manual 2010 (% Calories)

The percent of calories contributed by each macronutrient (protein, fat, carbohydrate, alcohol) is calculated by the NDSR software using the following method:

1. Energy factors (e.g., general or specific Atwater factors) for each macronutrient and specific to each individual core food are incorporated into the database.
2. The gram weight of each macronutrient for each food is multiplied by its energy factor to determine the calories provided by each macronutrient for that food.
3. The calories contributed by each macronutrient are summed for all foods in the diet.
4. The total calories per macronutrient are divided by the total calories in the diet and multiplied by 100 to equal the percent calories contributed by each macronutrient.

This method, beginning with NDSR 2008, provides the most accurate measure of both total calories and percent of calories from each macronutrient.

1. Raw data

The data received at the CC from the Nutrition Reading Center has **one record for each day** that a food diary was collected for each subject. The fields for total caloric intake, and intake for each macronutrient are:

KCAL: total caloric intake (kcal)

TFAT: Fat intake (grams)

TCARB: Carbohydrate intake (grams)

TPROT: Protein intake (grams)

ALCOHOL: Alcohol intake (grams)

PCALFAT: % calories from fat

PCALCARB: % calories from carbohydrates

PCALPROT: % calories from protein

PCALC: % calories from alcohol

2. Calculating calories for each macronutrient

This dataset does not include total calories from fat, carbohydrates, protein and alcohol. To calculate these values multiply total caloric intake by the % calories for each macronutrient – eg Fat calories = KCAL x PCALFAT / 100.

3. Reducing data to 1 record per visit.

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For analyses involving % calories from fat, carbs, protein and alcohol at baseline or follow-up visits, we will need to reduce this data from one record per day to one record per visit. The best way to do this is to:

- First, calculate the number of fat calories for each day, by multiplying total caloric intake for that day by % calories from fat. (KCAL x PCALFAT/100).
- Next, add up the fat calories over the entire visit, and divide by the total caloric intake added up over the entire visit. This is basically a weighted average of the %fat etc., weighted by the kcal intake for each day

4. Recalculating total Energy Intake for adherence analysis

For the purposes of calculating RQ for the CALERIE 2 Adherence analysis, we had decided to use the % calories for each macronutrient obtained from the food diaries (using Method above), but not to use the total energy intake (KCAL) from the food diaries because they are not considered reliable.

The absolute total reported dietary intakes were considered unreliable; however, the relative caloric proportions of fat, carbohydrates, protein and alcohol were more likely to be accurate. Therefore, we adjusted intakes of fat, carbohydrates, protein and alcohol grams, by multiplying the intake of each (in grams) by the ratio of estimated EI to reported EI, where EI was estimated using a prediction equation using age, sex, FM and FFM as predictors.

A Provisional Energy intake at each follow-up visit will be estimated using a prediction equation involving sex, age, fat mass and fat free mass at that visit. The prediction equation will be developed using linear regression of TEE on sex, age, FM, FFM using baseline data

For each macronutrient, the number of grams are adjusted by multiplying by the ratio of estimated EI to reported EI. For example,

$$F = \text{average daily Fat intake (g/day)} = \text{average daily reported fat (g)} \times \frac{\text{Estimated EI}}{\text{Average daily EI reported in food diary}}$$

5. Data reduction for other variables

Most food diary variables other than the % calories for macronutrients are in units of weight, eg g, mg, mcg. It will be straightforward to use the average of the daily values of these variables during the visit.

6. Which days/records to include in analyses

According to the protocol, food diaries should be collected for 6 days during each DLW period. For our analyses we will allow a small window to include food diaries slightly outside the DLW period? There were only 4 food diaries that were done outside the DLW period, and these were done on DLW days 19, 22, 23 and 25.

We will use all the data that are available.

There were also 3 subjects who had 6 food diary days but did not have the DLW performed.

We will not eliminate these data from the food record data file since someone looking at diet patterns only would hate to throw the 3 subjects' data out for good. We have a small number of people with FR but no DLW and that is encouraging.

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7. How many days are needed at a visit

Use food record data for subjects who have at least 3 complete days of food recorded within the DLW period (2 weekdays and 1 weekend day is preferred). CALERIE 2 food record data appear s to be fulfil this requirement SO WE SHOULD KEEP ALL RECORDS obtained in this study.