

## Form 44 Current Medication Data

### Collection Time points

WHI Clinical Centers were required to collect Form 44 – Current Medication on Clinical Trial (CT) participants at baseline and years 1, 3, 6 and 9. For Observational Study (OS) participants, collection was required at baseline and year 3.

Baseline collection of current medication data was expected to be done at the first screening visit. However, each participant was asked to bring any new medications that she started since her first screening visit to her third screening visit, so they could also be recorded.

#### ***Protocol Section 4.4.5.4 Current Medications Update***

*A participant will bring to the SV3 any new medications that are prescribed or that she started taking since SV1. Enter any new medications into the database as done at SV1 (see Section 4.2.4.6 – Current Medications and Current Supplements Inventory Review) as a new encounter. You only need to enter medications that are “new” to the participant since the SV1 interview. You do not need to re-enter the medications entered at SV1 nor delete any medications that the participant discontinued since the SV1.*

**This protocol implies that one needs to look at medications collected at all Screening Visits to get an accurate picture of the medications a participant was taking during the screening period.**

### Changes in Data Collection Over Time

- Initial Implementation (Pre Medi-Span) Clinical Centers enter the product name or generic name of the medication, the prescribed dose and frequency, the actual dose and frequency, the duration, and excluded class information.
- February 1, 1994 (Medi-Span Implemented) Clinical Centers look up medications using a subset of information from the Master Drug Database (MDDDB®) supplied by the Medi-Span Division of Wolters Kluwer Health. The National Drug Code (NDC) for the medication is entered and the product name and generic name come from a lookup to the Medi-Span database. An oral corticosteroid flag data item is added to replace the excluded class data item.

Pre Medi-Span data is hand assigned an appropriate NDC by the CCC based on the medication data that was previously entered.

- September 1, 1994 (Dose and Frequency Removed) The prescribed dose and frequency, and actual dose and frequency are no longer entered. An oral daily corticosteroid flag is added to replace the oral corticosteroid flag.

## Medication National Drug Codes (NDCs)

WHI used a subset of information from the Master Drug Database (MDDDB®) supplied by the Medi-Span Division of Wolters Kluwer Health. WHI tried to limit the number of medications the Clinical Centers had to choose from by collapsing identical medications (e.g. generic versions of a medication like Acetaminophen Tab 500mg) into one NDC.

When WHI first started using Medi-Span, it did not include Herbal Estrogen medications, therefore WHI added their own NDC called “HERBAL EST”. Clinical Centers could use this NDC to indicate a participant was taking an Herbal Estrogen. Later Medi-Span added Herbal Estrogens into their database.

## Main Medication Data File

The main F44 data file (f44\_ctos\_inv) includes information about the medication(s) recorded at a visit for a participant (e.g. NDC, duration of use, medication therapeutic class). If a participant was not taking any medications at a visit, there is one row of data for the participant visit with missing values for the medication data. If a participant was taking one or more medications at a visit, there is a row of data for each medication the participant was taking. Details about the medications themselves can be found by merging or referring to one or more of the reference files discussed below.

## Reference File descriptions

**f44ref\_meds (dat,pdf,sas):** Medication description, including National Drug Code (NDC), product name, generic name, strength, dosage form, administration route, and therapeutic class code. Merge to main F44 data file using the MEDNDC (Medication National Drug Code) variable.

**f44ref\_med\_classes (dat,pdf,sas):** Medication therapeutic class description. Includes medication therapeutic class code and name. Merge to main F44 data file or f44\_ref\_meds using the TCCODE (Medication Therapeutic Class Code) variable.

**f44ref\_med\_ingredients (dat,pdf,sas):** Medication ingredients. Includes NDC, ingredient name, and ingredient strength. Each medication may have none, one, or more than one ingredient associated with it. Merge to main F44 data file or f44ref\_meds using the MEDNDC (Medication National Drug Code) variable.

**f44ref\_therclas.pdf:** Medication Therapeutic Class list. Visually displays the hierarchy of drug groups, drug classes, and drug subclasses. The first 2 digits of the Therapeutic Class Code represent the Drug Group. The next 2 digits represent the Drug Class within the Drug Group. The last 2 digits represent the Drug Subclass within the Drug Class.

EXAMPLE:            Drug Group: 270000 Antidiabetic  
                         Drug Class: 271000 Insulin  
                             Drug Subclass: 271010 Mixed Insulin  
   271020 Beef Insulin  
   271030 Pork Insulin  
   271040 Human Insulin  
                         Drug Class: 272000 Sulfonylureas  
                             Drug Subclass: 272099 Sulfonylurea Combinations  
                         Drug Class: 272500 Biguanides  
                         Drug Class: 272800 Meglitinide Analogues  
                         Drug Class: 273000 Diabetic Other  
                             Drug Subclass: 273099 Diabetic Combinations

## Using the Medications Data

Using the medications data can be challenging. A few points to keep in mind:

- To get an accurate picture of medication use for a participant at baseline, you will need to take into consideration medication data from each of the screening visits at which medication data was collected. This is not true of follow-up visits, where medications should only have been recorded once for any one Annual Visit. In the case of follow-up visits consider using the “Closest to visit within visit type and number” variable to restrict your selection of medications to a particular follow-up visit.
- Participants could be taking none, one, or more than one medication at a visit. Each medication taken by a participant is listed in the data file. Sometimes the same medication will be listed more than once for a participant, this is the way it was entered by the Clinical Center, and therefore it is that way in the data file.
- The easiest and most common way to look at medication use is by therapeutic class. For example, if you want to look at participants taking any type of Antidiabetic, you could look at those participants taking medications in a therapeutic class between 270000 and 279999 (TCCODE >= 270000 and TCCODE <= 279999).
- Often participants will be taking more than one medication in a therapeutic class at a visit. To derive a single value for a participant’s duration of use within a therapeutic class, you could take the duration of the medication taken the longest.
- Analyses that are more complicated can be done by using the reference files. For example, you can look at participants taking medications containing a particular ingredient or use of specific medications within a therapeutic class.

## Example SAS Code

```
/* Examples of SAS code used to extract medication information from */
/* Form 44 data files. */

/* Example #1 - create indicator variable for any statin use reported */
/* at baseline, and variable with duration of use. */
/* Step 1 - find medication therapeutic class code for statins in PDF, */
/* TCCODE=394000 */

/* Read in data file with participant level information at baseline */
DATA f44_base;
  INFILE 'f44_base_inv.dat' LRECL=53 ;
  INPUT ID 1-6 F44DAYS 8-12 F44VNUM 14-15 MEDNDC $ 17-29 ADULTDY 31-38 ADULTY 40-44
        CORT 46 TCCODE $ 48-53;

  LABEL
    ID= "WHI Participant Common ID"
    F44DAYS= "F44 Days since randomization/enrollment"
    F44VNUM= "F44 Visit number"
    MEDNDC= "F44 Medication National Drug Code (NDC)"
    ADULTDY= "F44 Adult duration of medication use (days)"
    ADULTY= "F44 Adult duration of medication use (years)"
    CORT= "F44 Oral daily use of a glucocorticosteroid"
    TCCODE= "F44 Medication Therapeutic Class Code";

  FORMAT
    CORT CORT.;

/* only keep records with therapeutic class code for statins */
IF tccode eq '394000' THEN DO ; statin=1 ; statiny=adulty ; END;
ELSE DO ; statin=0 ; statiny=. ; END;

LABEL statin='Baseline statin use'
      statiny='Baseline statin use duration (years)' ;

KEEP id statin statiny;
RUN;

/* Additional steps needed to reduce data file to one record per participant. */
/* It is possible a participant reported use of more than one statin at baseline. If */
/* this occurs, take the maximum amount of time on statins for the duration, since */
/* start dates are not available. */

PROC SORT DATA=f44_base ; BY id ; RUN;

PROC MEANS DATA=f44_base NOPRINT ;
  BY id ;
  VAR statin statiny ;
  OUTPUT OUT=f44base MAX= ;
RUN;

/* Final data file with one record for each participant, and 3 variables: ID, */
/* statin (indicator for statin use), and statiny (years of statin use). */
DATA f44base ;
  SET f44base ;
  DROP _TYPE_ _FREQ_ ;
RUN;
```

```

/* Example #2 - create variable with type of NSAID for participants */
/* using any NSAID at baseline. */
/* Step 1 - find medication therapeutic class code for NSAID in PDF, */
/* TCCODE=661000 */

/* Read in data file with participant level information at baseline */
DATA f44_base;
  INFILE 'f44_base_inv.dat' LRECL=53;

  INPUT ID 1-6 F44DAYS 8-12 F44VNUM 14-15 MEDNDC $ 17-29 ADULTDY 31-38 ADULTY 40-44 CORT 46
         TCCODE $ 48-53;

  LABEL
    ID= "WHI Participant Common ID"
    F44DAYS= "F44 Days since randomization/enrollment"
    F44VNUM= "F44 Visit number"
    MEDNDC= "F44 Medication National Drug Code (NDC)"
    ADULTDY= "F44 Adult duration of medication use (days)"
    ADULTY= "F44 Adult duration of medication use (years)"
    CORT= "F44 Oral daily use of a glucocorticosteroid"
    TCCODE= "F44 Medication Therapeutic Class Code";

  FORMAT CORT CORT.;

IF tccode eq '661000' ; /* only keep records for NSAID use */
DROP cort adultdy adulty;
RUN;

/* Now need to merge above data file by MEDNDC code with data file */
/* that includes the medication name, strength, etc. for each medication. */

DATA f44ref_meds;
  INFILE 'f44ref_meds.dat' LRECL=207;
  INPUT MEDNDC $ 1-13 MEDNAME $ 15-76 MEDABRV $ 78-104 MEDGENER $ 106-160 MEDSTREN 170-178
         MEDUOM $ 180-192 MEDFORM $ 194-197 MEDRT $ 199-200 TCCODE $ 202-207 ;

  LABEL
    MEDNDC= "F44 Medication National Drug Code (NDC)"
    MEDNAME= "F44 Medication Product Name"
    MEDABRV= "F44 Abbreviated Medication Product Description"
    MEDGENER= "F44 Generic Medication Name"
    MEDSTREN= "F44 Medication Metric Strength"
    MEDUOM= "F44 Medication Strength Unit of Measure"
    MEDFORM= "F44 Medication Dosage Form"
    MEDRT= "F44 Medication Administration Route"
    TCCODE= "F44 Medication Therapeutic Class Code";

/* NSAID */
IF tccode eq '661000' ;
DROP medabrv medstren meduom medform medrt ;
RUN;

/* Both files must be sorted before merge */
PROC SORT DATA=f44_base ; BY medndc; run;
PROC SORT DATA=f44ref_meds ; BY medndc ; run;

DATA nsaidtype ;
  MERGE f44_base (IN=inflag) f44ref_meds ;
  BY medndc ;
  IF inflag ;

DROP F44VTYP F44VNUM F44DAYS TCCODE ;
RUN;

```

```
/* Participants may have more than 1 record in the above data file */
/* if they are taking more than 1 type of NSAID. The user will have */
/* to decide how to handle multiple records. The following lines */
/* show the data for two different participants with 2 records each. */
```

```
/*
ID          MEDNDC          MEDNAME          MEDGENER
          (NDC #)          (Product name)      (Generic name)
1000XX      "00005312223"    "IBUPROFEN"         "IBUPROFEN TAB 600 MG"
1000XX      "00005355134"    "SULINDAC"          "SULINDAC TAB 200 MG"
1000YY      "00069323041"    "FELDENE"           "PIROXICAM CAP 20 MG"
1000YY      "00069323041"    "FELDENE"           "PIROXICAM CAP 20 MG"
*/
```

```
/* The first participant, ID=1000XX, reported use of two different */
/* NSAIDs at baseline. The second, ID=1000YY, has two records with */
/* the same information. Can use the following statement to delete */
/* duplicate records. */
```

```
PROC SORT DATA=nsaidtype NODUPKEY ; BY id medndc medname medgener ;run;
```