

Protocol for: vr_fxrev_2012_1_0747s

Framingham Heart Study (FHS) Offspring Cohort Fracture Dataset

Revision Information

The **vr_fxrev_2012_1_0747** is an update of previously submitted datasets (submitted in Aug 2009 as the 1st batch submitted in June 2010 as the 2nd batch). This version includes the following changes from these datasets.

- Combined previously submitted dataset batches into one complete dataset
- Extended fracture confirmation date from December 2007 to December 2008.
- Added 86 records.
- 19 records were revised with updated information.
- Added “Record ID” as a unique identifier for each record.

Dataset Description

The **vr_fxrev_2012_1_0747** file is a multiple record file with 2,766 records and 10 variables that contains both hip and non-hip fractures in the Framingham Heart Study (FHS) Offspring Cohort through December 31, 2008. Some participants may have more than one record in this dataset; Record ID serves as a unique identifier for each record. The fractures in this dataset include adult *lifetime* fractures, which participants reported in the questionnaires. Therefore, in some cases, the fracture date (of_fxdate) is earlier than the baseline FHS Offspring Cohort exam (1972).

This dataset differs from the official FHS examination data in that attempts were made to verify self-reported fractures using medical records (including x-ray reports) mostly for more recently occurring fractures. Also, for fractures that could not be confirmed by medical records, attempts were made to adjudicate instances when it appeared that the same fracture was reported multiple times (e.g. right forearm fracture reported as occurring in 1992 at one exam, 1992 at another exam, and 1993 at a third exam would be coded as occurring in 1992).

The variable “**of_cnfrmfx**” (fracture confirmed by medical record? yes/no) designates whether the fracture was confirmed by medical records. For a fracture to be considered confirmed by medical records it had to be confirmed by at least one of the following reports: x-ray or MRI report, orthopedic, consulting physician, nursing home notes, discharge summaries, operating room (OR) or emergency room (ER) reports. If a fracture record did not include any of these medical record reports or notes, and was reported only via the Osteoporosis Study or Framingham exam questionnaires, it was considered to be self-reported without medical record confirmation.

When the exact date (including month, day and year) of a fracture was not available, the missing month, day and/or year was imputed. The dichotomous variable, “**of_fxdt_imp**” (fxdate imputed yes/no), indicates whether any component of the fracture date was imputed. The categorical variable, “**of_imp_type**” (fxdate imputed type), indicates which component(s) of the date was

imputed and in some cases includes information on the criteria used for the imputation (e.g. using an x-ray that mentioned an old fracture). The six categories of **of_imp_type** are:

0. Fracture date NOT imputed because month, day and year were available
1. DAY of fracture imputed because day was missing; “15” was assigned in cases like this
2. MONTH of fracture imputed because month was missing; “6” was assigned in cases like this
3. DAY & MONTH of fracture imputed because both were missing;
4. DAY, MONTH, AND YEAR of fracture imputed because all were missing; date was obtained from an x-ray report of an old fracture
5. DAY, MONTH, AND YEAR of fracture imputed because all were missing; date was obtained from a note in the medical history taken by nurse/MD in participant’s medical record.

Fractures were initially categorized into 60 detailed skeletal sites (see Hip/Non-hip Fracture Questionnaire attached to this codebook) and then the fracture categories were collapsed into 21 consolidated categories, **of_fxsite** (fracture location), for ease of analysis. The consolidated category codes are listed in the frequency table on Page 5:

The variable, **of_hipfxtype**, specifies the detailed hip fracture locations. Please note that the values of this variable have been re-coded to be the same as Original Cohort hip fracture data set and are listed in the frequency table on Page 6.

The variable, **of_fxside**, indicates the side of a fracture as listed in the frequency table on Page 6:

The variable, **of_fxcircum**, specifies detailed circumstances of a fracture. Refer to Q12 in the Hip/Non-hip Fracture Questionnaire attached to this codebook.

Hip Fracture Ascertainment

The hip fracture ascertainment protocol was originally developed by Douglas P. Kiel MD, MPH and David T. Felson MD and first described in:

Kiel DP, Felson DT, Anderson JJ, Wilson PW, Moskowitz MA. Hip fracture and the use of estrogens in postmenopausal women. The Framingham Study. N Engl J Med 1987 Nov 5;317(19):1169-74

This paper is usually referenced when referring to FHS Original Cohort hip fractures. The ascertainment process for the Offspring Cohort was based on the process used for the Original Cohort with some additional questions.

Non-hip Fracture Ascertainment

Non-hip fractures reported prior to 2002: These non-hip fractures were collected from the following sources:

- FHS Osteoporosis Study Time 1 (see timeline on next page) questionnaires
- FHS Offspring Cohort study exam 4, 5, 6 and 7 questionnaires

Most self-reported non-hip fractures from questionnaires prior to 2002 were not confirmed by medical records. There were some fractures prior to 2002 that were confirmed by medical records when available.

Non-hip fractures reported after 2002: These non-hip fractures were collected from the following sources:

- FHS Osteoporosis Study Time 2 and 3 questionnaires
- FHS Offspring Cohort study exam 8 questionnaires
- Medical records, including x-ray reports, orthopedic notes, discharge summaries, OR and ER reports.

Please refer to the following timeline for detailed exam dates and fracture questions.



