FAMILY STUDY

Cardiovascular Disease in American Indians
(Phase V)

Operations Manual - Volume Seven

DATA ENTRY

THE NATIONAL HEART, LUNG AND BLOOD INSTITUTE
OF THE NATIONAL INSTITUTES OF HEALTH
THE STRONG HEART STUDY V

Cardiovascular Disease in American Indians

Operations Manual

Volume VII

DATA ENTRY

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FLOWCHART FOR THE DATA ENTRY/EDIT BROWSE PROGRAM
Introduction

This manual was developed to assist Field Center (FC) data entry personnel in understanding and using the programs developed for Phase V of The Strong Heart Study. The following topics will be discussed: first, second and medications data entry, editing data, reports, correcting data entry errors, data entry codes and data clean up.

Before Starting

Before entering data, the data entry operator should screen each participant’s folder. This includes putting the forms in numerical order and skimming each form to make sure it has been filled out properly. If errors are found, contact the interviewer and correct them before entering the data. Performing these preliminary steps will make the data entry process more efficient and less tedious. If complications should arise when using the data entry program, contact the Coordinating Center (CC).

Getting Started

The data entry program is hosted on the Strong Heart Study Phase V Data Entry Server (SHS5-DES). To access the SHS5-DES, you need a network-ready computer system running the Windows XP operating system. Windows XP systems have the built-in Remote Desktop Client (RDC) software that allows you to connect to the server remotely. To run the RDC, perform the following procedures on your desktop computer:

Start -> All Programs -> Accessories -> Communications -> Remote Desktop Connection

After the ‘Remote Desktop Connection’ window appears, type in the Internet Protocol (IP) address (157.142.52.123) for the SHS5-DES in the box next to ‘Computer’ and then click on the ‘Connect’ button. After the connection is made, a new window, named ‘Log On to Windows,’ appears on your desktop asking you to provide your log-on information to the server. Enter the username and password provided by the Server Administrator. Please note that they are all case sensitive. After you type in this information and click ‘OK,’ the data entry session begins.

The next time when you log on to the server using the same computer, you usually do not need to retype the IP address and the username, because the computer remembers the previous entries. However, you do need to type in the password every time you log on to the server.

If you are accidentally disconnected from the server for any reason, you will have 3 hours to log on again to the server to continue your previous session without disruptions and loss of data.
When the data entry session begins, the following screen appears.

First Data Entry

After ‘DATA ENTRY FIRST’ is selected, the following input box appears.

After a SHS ID is entered and the ‘Enter’ key is pressed, the following input box is displayed.

After the SHS Family ID is entered and the ‘Enter’ key is pressed, the following screen is displayed.
If a date is displayed in the ‘FIRST DATA ENTRY’ column, the form shown on the same line as the date has been entered previously on the date shown for the participant whose SHS ID appears at the top of the form.

To proceed, click the button labeled ‘SELECT FORM.’ The following screen is displayed.
As you will see, the above screen confirms the mode (data entry or edit/browse) that was chosen from the ‘MAIN MENU’ and the participant’s SHS ID. To begin entering data, click, e.g., the ‘(S2) Personal Interview II’ button or any other button for forms that still need to be entered for this participant (as indicated on the screen appearing at the top of page VII-3, which shows dates that the various forms have been entered previously). During data entry, control will flow through the form as it should. At this time, the cursor cannot be moved to skip fields that require an entry. This will provide for more complete and accurate data for subsequent data analysis and a reduction in the number of errors returned to the FC.

After the last field on a form is exited, the following message box will appear, allowing return to the ‘Main Menu/Select’ form, opening the next form, e.g., ‘Medical History’ form or editing the current form.

If ‘Cancel’ is selected, the ‘Personal Interview II’ form remains open in a mode that allows changes to be made. At this time, the cursor can be used to skip fields not needing change. In this mode, skip patterns do not occur; however, no data can be entered in fields that should be blank. After changes are made, if necessary, the form can be exited either by exiting the last field on the form or by selecting the ‘Close Form’ button in the top left-hand corner of the form.
If ‘Yes’ is selected on the screen that appears in the middle of page VII-4, the following screen appears.

Please select one of the following:

1. Back to Select Forms and choose form for the same participant
2. Back to Main Menu

If ‘1’ is selected from the above screen, the following screen appears.

The Strong Heart Study V

If ‘2’ is selected from the above screen, the following screen is displayed.

The Strong Heart Study V

Please select one of the following options:

DATA ENTRY
- First
- Second
- Medications

EDIT/BROWSE
- First
- Second
- Medications

REPORTS
- First Entry Forms Missing
- Second Entry Forms Missing

Version 1: 05-30-2006
If ‘No’ is selected on the screen that appears in the middle of page VII-4, the following screen appears.

![Screen](image1)

This allows the opportunity to verify the physical existence of the form to be opened. If ‘Yes’ is selected, the next form indicated will be opened in data entry mode. If ‘No’ is selected, the following screen appears.

![Screen](image2)

If ‘1’ is selected on the above screen, the following screen appears.

![Screen](image3)
If ‘2’ is selected on the screen shown in the middle of page VII-6, the following screen appears.

After the last field on the last form (Seven-Day Pedometer Record or Physical Examination QC) is exited, the following screen is displayed.

If ‘Cancel’ is selected, the current form remains open for editing. If ‘Yes’ is selected, the following screen is displayed.
If ‘No’ is selected, from the screen in the middle of page VII-7, the following screen appears.

If ‘1’ is selected from the above screen, the following screen appears.

If ‘2’ is selected, the data entry process starts for the next participant, as indicated in the instructions for ‘FIRST DATA ENTRY’ on page VII-2.
Second Data Entry

The process of entering data for 'DATA ENTRY SECOND' is identical to that for 'DATA ENTRY FIRST,' starting with the instructions on page VII-2. Because the second data entry screens are identical to the first data entry screens, a red '2' appears in the top left-hand corner of the second data entry forms to differentiate the two.

Edit/Browse

When 'EDIT/BROWSE FIRST OR SECOND' is selected from the 'MAIN MENU,' the following input box appears.

After a SHS ID is entered and the 'Enter' key is pressed, the following screen appears. The screen confirms that you are in the first or second edit/browse mode and the SHS ID of the participant.

The 'SELECT FORM,' shown below appears, with either a red '1' or '2' in the top left-hand corner, depending on the entry chosen.
After the form is selected, the form opens, displaying the data entered for the specific participant.

After corrections have been made, the form can be closed either by exiting the last field on the form or by clicking the ‘Close Form’ button in the top left-hand corner of the form, as shown below.

Both methods produce the following screen.

If ‘OK’ is selected, the following screen appears.

If ‘Cancel’ is selected, the current form remains open for any necessary changes.
Reports

To view and/or print a report of first or second forms entered, click on ‘REPORTS FIRST FORMS ENTERED’ or ‘REPORTS SECOND FORMS ENTERED’ on the ‘MAIN MENU,’ shown below.

The red 1 or 2 in the upper left corner confirms that the report is for first or second data entry. If ‘Gender Mismatch’ is indicated in the ‘Gender’ column, this means that there is a discrepancy between the gender entered on the Personal Interview II form and that entered on the Medical History form.
Making Corrections

In order to produce a data entry program that is user-friendly and selective about the data entered, skip patterns and message boxes have been added. Unfortunately, the same features that are intended to help the data entry operator can be a source of frustration when one is trying to correct errors, unless you follow these suggestions.

We will discuss two different situations—a data entry error noticed **BEFORE** exiting the field and an error noticed **AFTER** exiting the field in question.

1) **BEFORE** exiting the field, if in data entry mode or edit/browse mode:

   Solution: Use the backspace key to remove the error and enter the correct value.

2) **AFTER** exiting the field in data entry mode:

   Solution: Continue entering the remainder of the form, exiting the last field on the form. At this time ‘Edit Current Form’ can be selected, leaving the form open for editing. If the field to be changed is visible, place the I-bar in the field and click to make the correction. **In this mode, the vertical scroll bar, the cursor or the ‘Enter’ key can be used to select another field.** When editing is completed, the form can be exited either by exiting the last field on the form or by clicking the ‘Close Form’ button located in the top left-hand corner of the form. If the error is noticed after the form is closed, make a note of it and correct it after completing all of the forms for that participant.

3) **AFTER** exiting the field in edit/browse mode:

   Solution: Place the I-bar back in the field and click to make the correction. **In this mode, the vertical scroll bar, the cursor or the ‘Enter’ key can be used to select another field.** When editing is completed, the form can be exited either by exiting the last field on the form or by clicking the ‘Close Form’ button located in the top left-hand corner of the form.
If a field that requires an entry is left blank or a field contains an incorrect value, one or both of the following message boxes may appear:

The first message box indicates that the field being exited cannot be left blank, and the second indicates that an invalid response was entered. Select ‘OK’ on the message box, and when control returns to the form, enter a valid response.

Data Entry Codes

In some cases, the participant responding to a question may not know the answer or refuse to answer the question. Some questions have these options listed while others do not. For those that do not, the interviewer should indicate these responses by putting a question mark for unknown or drawing two lines through the box for refused. Since the data entry program will not allow the operator to use these symbols, codes which can be used instead have been developed. It was not possible to use the same code for every type of field (e.g. text, numeric, etc.), but the codes were made as consistent as possible. Finally, if a question is not answered and there is no indication that the participant did not know or refused, this should be classified as missing. The following is a list of data entry codes by variable type.

Text variables (questions that have options listed or are not quantitative)

OR

Numeric variables (questions requiring quantitative information, such as measurement data):

7, 77 or 777 = Missing
8, 88 or 888 = Refused
9, 99 or 999 = Unknown
Time variables (questions requesting the time of an event):

00:07 = Missing
00:08 = Refused
00:09 = Unknown

Date variables (questions requesting the date of an event):

01/01/1007 = Missing
01/01/1008 = Refused
01/01/1009 = Unknown

Note: If only the year is known, use 06/30/year.
   If only the month and year are known, use month/15/year.

If the variable type for the field being worked with is unknown, leave the field empty and press ‘Enter.’ This will cause a message box to appear indicating that the field cannot be left blank, and it will also indicate which codes are appropriate for the field. Select ‘OK’ and enter the appropriate response.

Guidelines for First Data Entry and Second Data Entry

To reduce the likelihood that a data entry error will be repeated during second data entry, first data entry and second data entry should not be done by the same person. It is understood that this is not possible at all FCs. If the same person is performing both first data entry and second data entry, following are two suggestions:

1) For the same participant, do first data entry and second data entry at least a day apart.

   OR

2) If both first data entry and second data entry must be entered on the same day and there are data for more than one participant:

   i) Do first data entry for all of the participants, then
   ii) Do second data entry for all of the participants in the same order that data entry was performed.
Medications

Data Entry

To enter the medications data, select ‘DATA ENTRY MEDICATIONS’ from the SHS ‘MAIN MENU.’

![Data Entry Menu]

After ‘Data Entry Medications’ is selected, the following screen appears.

![Medications Data Entry Screen]

With thanks to the MESA Coordinating Center,
University of Washington
Ignore the ‘Reports,’ ‘Transmit Data’ and ‘Settings’ buttons. This Medication Data Entry Program was modified from the MESA study for use in the SHS. These buttons are specifically for MESA. Do not click any of them. If one is accidentally selected and error messages pop up, click on the ‘Exit’ button in the top right-hand corner of the screen to return to the ‘Main Menu’ and start over again.

To enter new medications, click the ‘Enter New Record’ button in the top left-hand corner of the Medication Data Entry ‘Main Menu’, after which the following screen appears.

![Enter Record Screen]

‘Your ID’ = Data Entry Code
‘Date Keyed’ = defaults to the current date and can be skipped
‘Interviewer ID’ = Interviewer Code (page 3 of medications form)
‘Date Form Initiated’ = Interview Date (page 3 of medications form)
   if not entered, the date this form is entered will be assigned
‘Participant ID’ = SHS ID
‘Visit’ ignored, because the SHS does not use this
‘Comment’ = to record comments (page 3 of medications form), specifically to record use of any home remedies
‘List All Meds’ = Yes or Took None in most cases
‘Number of Meds’ = total number of medications to be entered, both prescription and over-the-counter (OTC) medications, used to cross-check the number of medications entered first
‘Specify Reason for Refusal’ = if participant refuses to provide medications information, enter reason here
‘Enter Medications’ for a list of medications
‘Cancel’ returns to Medication Data Entry Main Menu without saving data entered
‘Save and Close’ returns to Medication Data Entry Main Menu, after saving data entered
If the ‘Enter Medications’ button is selected from the above ‘Enter Record,’ screen the following screen appears.

When the medication name is entered, type in the first few letters. The medication menu will scroll down to match the medication name being typed. Click the dose that matches the strength listed on the paper form. If the correct strength cannot be found, choose ‘---,’ if it appears in the list; otherwise, choose the closest dose. Medication codes assigned for this particular medication will not be affected. If the medication is the same, with a different package, strength or brand, it will have a different NDC code, but the Class Code will be the same. In the SHS, the Class Code is used primarily to determine treatment; therefore, it is perfectly OK to do this.

Do not type the medication name too fast, especially when the medication name is long. The program only identifies the first thirteen characters of the medication name. If the typing is too fast, the pointer will roll back to the top of the menu, as if a match cannot be found, and the medication name must be retyped.

If a match cannot be found, check the spelling with your Field Coordinator. If the spelling is correct and still a match cannot be found, click ‘Add’ to complete the data entry. Keep a log of these unmatched medications and send the log to the CC once a month. The CC will check with MESA investigators in Seattle to solve the problem.

Put a check in the correct box to indicate if this is an over-the-counter (OTC) medication. The next three boxes are for entering the number of doses taken in what time period; check the ‘PRN’ box, if the medication is taken ‘as needed.’ Click the ‘Update’ button. The medication will be added to the list on the right-hand side. Repeat this process for all the remaining medications. After all medications have been entered, click the ‘Done’ button; all entries will be saved.
**Edit Browse**

If ‘EDIT/BROWSE MEDICATIONS’ from the SHS ‘MAIN MENU’ is selected, the following Medication Data Entry Program ‘Main Menu’ appears.

<table>
<thead>
<tr>
<th>Enter New Record</th>
<th>Edit/View Records</th>
<th>Reports</th>
<th>Transmit Data</th>
<th>Settings</th>
<th>Exit</th>
</tr>
</thead>
</table>

**Strong Heart Study**

**Medications Data Entry**

With thanks to the MESA Coordinating Center, University of Washington

As in data entry, **ignore the ‘Reports,’ ‘Transmit Data’ and ‘Settings’ buttons.** This Medication Data Entry Program was modified from the MESA study for use in the SHS. These buttons are specifically for MESA. **Do not click any of them.** If one is accidentally selected and error messages pop up, click on the ‘Exit’ button in the top right-hand corner of the screen to return to the ‘Main Menu’ and start over again.

To edit medications, click the ‘Edit/View Records’ button, after which the following screen appears.
'Your ID' = Data Entry Code
'Date Keyed' = defaults to the current date and can be skipped
'Interviewer ID' = Interviewer Code (page 3 of medications form)
'Date Form Initiated' = Interview Date (page 3 of medications form)
    if not entered, the date this form is entered will be assigned
'Participant ID' = SHS ID
'Visit' ignored, because the SHS does not use this
'Comment' = to record comments (page 3 of medications form),
    specifically to record use of any home remedies
'List All Meds' = Yes or Took None in most cases
'Number of Meds' = total number of medications to be entered, both
    prescription and over-the-counter (OTC) medications, used to cross-
    check the number of medications entered first
'Specify Reason for Refusal' = if participant refuses to provide
    medications information, enter reason here
'Enter Medications' for a list of medications
'Cancel' returns to Medication Data Entry Main Menu without saving
    data entered
'Save and Close' returns to Medication Data Entry Main Menu after
    saving data entered

To return to the SHS 'Main Menu,' click the 'Exit' button in the
    top right-hand corner of the Medication Data Entry 'Main Menu.'
Data Clean Up

Data will be stored at the CC as it is entered (form-by-form), so there will be no need for separate backup or transmission procedures at the FC computers. Opportunities to edit previously entered data through the online Data Entry program will be limited, as CC staff will "sweep" all raw data on a weekly basis, Mondays before 12:00 Noon Central Time -- moving them from the online entry database into first-stage cleaning (see below).

The CC will be responsible for identifying: missing forms, orphan records (records which do not belong to any participant according to the SHS ID listed on the form), incomplete forms, discrepancies between 'First Data Entry' and 'Second Data Entry' and values which appear to be unreasonable. The FCs will be responsible for providing information to the CC so that the aforementioned problems can be rectified.

Data clean up will occur in two stages.

**Stage One:** Raw data are examined at the CC. Incomplete items and discrepancies between 'First Data Entry' and 'Second Data Entry' are listed and sent to the FCs via email. The Field Coordinators will fax copies of the form with correct information circled and all confidential information marked off and participant SHS ID written on it within five working days. The CC will make corrections to the database.

**Stage Two:** Statistical checks will be performed to identify unreasonable values. These items will be listed and sent to the FC. FC personnel will perform verification of the suspect data. A response (fax, as detailed under stage one) is expected within five working days.

Upon completion of both stages, cleaned records will be appended to the Main Database. Please note that the Main Database will be used to perform analyses for reports and publications. Therefore, if a FC were to identify any data entry errors after data clean up has been completed; they must notify the CC promptly.

In cases where there are many data entry errors found in stage one of data clean up, the CC may request that changes to a specific record be made at the FC and said records be reentered through the online Data Entry program.

**If You Have Questions**

So that your questions can be answered efficiently, please address your queries to the following CC personnel:

- Data Entry Programs - Martha Stoddart, MS
- Data Clean Up - Debra Gates
- Forms - Jeunliang Yeh, MPH, PhD
- Data Entry On-line Server (FC computer) client program - Yiming Wang, MS