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Transaction Design Specification
Medical Exam Databases System (MED)
Update Transaction

Gil D. Tolan (workunit monitor)

SAS Institute Inc.
P.O. Box 200075
Austin, TX 78720-0075

Armstrong Laboratory (AFMC)
2507 Kennedy Circle AL/AOC
Brooks AFB, SA, TX 78235-5117

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System 2000 DBMS

Approved for public release; distribution is unlimited.

The enhancements to system 2000 developed under this contract have all passed acceptance testing except for dynamic where clause for Cobol and Fortran programs. This feature allows data to be qualified using the Syntax of the on-line Query Language Quest. At this time only the "same" feature is not working. A manual title "System 2000 DBMS" Medical Exam Data Bases System is the contract final report.

On-line update
System 2000 DBMS

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Transaction Design Specification

Medical Exam Databases System
(MED)
Update Transaction

December, 1986

SAS Institute Inc.
P.O. Box 200075
Austin, Texas 78720-0075

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PART 1: INTRODUCTION

This document specifies the design of the Medical Exam Databases (MED) system update transaction. This transaction will require the SYSTEM 2000(R) QueX(TM) with Screen Writer(TM) Release 4.0S software in order to be implemented and is thus is constrained to the availability of Release 4.0S for production use.

The MED system consists of the following five primary SYSTEM 2000 data bases:

1. ECG (ECG)
2. CATHETER (CA)
3. TREADMILL (TM)
4. PULMONARY (PUL)
5. LAB (LAB)

One additional data base will be used to hold edit and validation rules for the LAB data base.

The transaction specified herein provides an integrated update capability for the five primary data bases in the MED system. Although the logic and screens that process the level zero records and all records in the ECG data base are currently implemented, the work completed may or may not conform to the design set forth in this document. Consequently, existing development will have to be changed to correct problems as well as address new requirements, naming conventions, and standards. It is not the purpose of this document to detail discrepancies between the work already completed and the proposed design which has changed over time. Therefore, these discrepancies will be captured and maintained in a separate document entitled "Changes Required for Existing MED Transaction Update System". This repository will be the working document for evaluating, tracking, and forcing conformity between the design document and the work that has already been completed on the transaction.

This design document first provides an overview of the transaction. Following this are specifications of the the standards which govern both the development and the rules of operation throughout the transaction. The remainder of the document describes the transaction by data base. Each data base is divided into the steps required to process updates for that data base. The screen layout, processing logic, editing and validation rules, and any special notes are included for each step as appropriate. Consequently, this design document defines completely and precisely all operational characteristics of the final transaction.

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Part 1

PART 2: TRANSACTION OVERVIEW

The primary purpose of the MED system update transaction is to interactively update all information contained in the five data bases that comprise the MED system. The MED system update transaction will really be two transactions with distinct transaction names to be assigned by a DBA. Two different transactions are required to provide data security and at the same time flexibility in altering LAB data outside of normal editing and validation rules. One transaction "view" will only allow the entry of LAB values in the 'permissible' ranges. This transaction will be the TECH version. The other transaction will be duplicate in every respect except that all LAB validation rules will be removed. This will be the CHIEF version.

The MED views of each of the five data bases are presented in DESCRIBE format in the Part covering the specific data base, respectively. All data bases have the PERSON record at level zero and the various exam data at level one and below. Since the ECG data base is the 'controlling' data base in the MED system, a PERSON record must exist in the ECG data base before it can exist in any of the other data bases. However, the existence of a PERSON record in the ECG data base does not require that record to exist in any of the other data bases, although it may exist.

Entry to the transaction and all maintenance of the PERSON record are done through the ECG data base. If the person does not exist in the ECG data base, the user has the option to add the person and then to modify or correct the data just entered. If a person already exists in the ECG data base, the user is given the option to modify the person data. At this point, if the PERSON record is modified, the transaction modifies the person data, based on the unique social security number (SSAN), in all other data bases where the person exists. The transaction, though, does not add this person to data bases where the person did not already exist.

Only after a valid (and current) PERSON record in ECG is established is the user given the choice of exam type to work with.

If the exam type selected is ECG, the transaction remains in the ECG data base, the user is assured of the existence of a PERSON record to work from, and additional ECG exams can be added or existing ECG exams can be modified.

If the exam type is LABORATORY (LAB), TREADMILL (TM), CATHETER (CA), or PULMONARY (PUL), the transaction must close the ECG data base and open the requested data base to check for the existence of a matching PERSON record based on SSAN. If not found, the user is given a choice to add that person to the additional data base. If the user chooses to do so, the ECG PERSON record can be copied to the additional data base and inserted. Once valid PERSON data exists in the additional data base, the user can add new exam data or modify existing exams in that data base.

The logic described above is designed to insure consistency of PERSON data across the five data bases. Additionally, it is critical that the values within a data base be as correct as possible. Thus, the MED system update transaction validates almost all input data as extensively as possible. The consistency and correctness are vital to the medical conclusions that may be derived from the Medical Exam Databases.

PART 3: TRANSACTION STANDARDS

A uniform set of standards and conventions must be established and adhered to throughout an entire system to fully realize the substantial benefits. Uniformity facilitates easier user training, better productivity by more experienced users, and the user's ability to anticipate the next event in a given system while ensuring the consistency among the entire system in form and content. Of course, standards can also prove invaluable to the developer and hence reduce overall development time. Consequently, development standards have been identified to promote uniformity, consistency, and reduced development time.

With these goals in mind, the following standards and conventions apply to the MED system update transaction:

1. Screen literals will be lower case, low intensity and protected.
2. Screen output fields (both SWI and DBI) that cannot be changed by the user will be upper case, low intensity and protected.
3. Screen input/output fields (both SWI and DBI) that can be changed by the user will be upper case, high intensity and unprotected (tab stop).
4. Screen literals used to prompt for DBI (and in some cases SWI) values will be to the left or above the DBI/SWI field. These literals are to be the same as the DBI name in the data base except where abbreviations were approved in the design meetings. DBI literals will be above the field where possible.
5. Screen layouts are to follow the data entry forms where possible, at least in the ordering of items on the screen.
6. The literal prompt for option selection will be on the left of the option field and will not contain a question mark or colon.
7. If several choices for an option exist, they will be listed directly under the option field with a description to the right of the value.

8. All screens begin on line 1, column 1; except in those screens that work with records descendant to the PERSON record, the SSAN, NAME, DOB, RACE and SEX will begin on row 1 without identifying literals. On screens working on a given exam, that exam's identifying data will appear on line 2 without literals.
9. All SYSTEM 2000 commands will have an ERROR condition handling directive with a message identifying the command name, step, phase and sequence number. They will go to \$ERROR which displays the message along with other system parameters.
10. All option fields will be validated for exceptable values or choices.
11. All DBI fields will be validated on input as specified in the validation rules portion of a step description.
12. Screen names will match step names when possible.
13. INSERT screens always go to modify screens to allow the user to modify a record just inserted, except in the case of LABINSPAN or LABINTEST (allowing a modify might jeopardize the integrity of lower level data).
14. MODIFY screens return to themselves until the user answers 'N' to the 'modify' prompt, at which time the screens return to an appropriate menu.
15. Fields requiring an edit table lookup will allow both the short and long value on input. The long value will be stored in the data base. Validation will occur on the long values.
16. When multiple exams are displayed on a screen for selection, the following rules apply:
 - a) The exams will be numbered on the left beginning with 1, except the transaction screens which display 14 items, in which case numbering will be according to the \$DATASP of each item.
 - b) If no exams exist, an INSERT exam screen automatically appears.
 - c) If the SELECT exam field is left blank, the step tries to retrieve another page of exams for display (on EOD, message is displayed and user may enter a selection or re-review all choices).

- d) If '0' is entered for SELECT exam, control returns to prior menu.
- e) If an integer 'n' is entered and it is less than or equal to the number of existing exams, that exam is retrieved and displayed for possible modification.
- f) If an integer 'n' is entered and it is greater than the number of existing exams, then an INSERT exam screen is displayed.
17. INSERT screens will never insert a record unless the user answers 'Y' to the 'INSERT' prompt.
18. Data will be validated via Phase 2 Validation commands when possible so that the bell will ring and the cursor will be placed on the erroneous field. Phase 3 MESSAGE and Phase 2 commands will do complex validation not possible via the VALIDATE command.
19. VALIDATE commands will have messages that conform to existing conventions. Phase 3 MESSAGE commands used in validation will use the same convention. A list of existing message conventions is shown in Exhibit 3-1.
20. When the required information in a validation failure will not fit in a single message (for example, table lookups), a HELP screen will be provided. If all of the information will not fit on a single HELP screen, then examples will be provided and the appropriate document referenced.
21. All data bases will be closed as soon as access to another data base begins, except when going between LAB and BATTERY data bases.
22. Step names and screen names will conform to the following naming convention:
- | | | |
|-----|-----|-------------------------------|
| ECG | MEN | |
| TM | SEL | |
| CA | INS | record name (or abbreviation) |
| LAB | MOD | |
| PUL | SPC | |
- where
- | | | | | | |
|-----|---|----------------------|-----|---|---------------|
| ECG | = | ECG data base | MEN | = | menu |
| TM | = | Treadmill data base | SEL | = | select |
| CA | = | Catheter data base | INS | = | insert |
| LAB | = | Laboratory data base | MOD | = | modify |
| PUL | = | Pulmonary data base | SPC | = | special (LAB) |

Consequently, the full step or screen name will be comprised of the associated data base, the type of screen or action, and the associated record name or abbreviation (example: ECGSELPERSON for selecting a person from the ECG data base).

23. Each message sent to the terminal will ring the bell.

Exhibit 3-1: Existing Transaction Validation Error Messages

301* ENTER "Y" TO PROCEED, "N" TO EXIT
301* SSAN TOO LARGE
301* NAME MUST BE LETTERS ONLY, NO PUNCTUATION OR NUMBERS
301* YEAR OF BIRTH = AGE UNDER 17 OR OVER 83
301* MONTH OF BIRTH MUST BE 1 THRU 12
301* DAY OF BIRTH MUST BE 1 THRU 31
301* SEX MUST BE "M" OR "F"
301* RACE MUST BE "CAU", "BLK" OR "OTH"
301* SSAN MUST BE NUMBERS ONLY
301* SSAN MUST BE NUMBERS ONLY
301* SSAN MUST BE NUMBERS ONLY
301* YEAR OF BIRTH MUST BE NUMERIC
301* MONTH OF BIRTH MUST BE NUMERIC
301* DAY OF BIRTH MUST BE NUMERIC
301* ENTER PERSON SELECTED
301* VALID ENTRIES FOR SELECT PERSON ARE 1 OR 0
301* PLEASE SELECT A PERSON
301* IN SELECTING A PERSON, ENTER "1", "2" OR "0"
301* PLEASE SELECT A PERSON
301* IN SELECTING A PERSON, ENTER "1", "2", "3" OR "0"
301* YOU MUST INDICATE WHETHER TO INSERT THIS PERSON Y/N
301* FOR INSERT PERSON, SPECIFY "Y" OR "N"
301* YEAR OF BIRTH = AGE UNDER 17 OR OVER 83
301* DOB YEAR MUST BE NUMERIC
301* MONTH OF BIRTH MUST BE BETWEEN 1 AND 12
301* DAY OF BIRTH MUST BE BETWEEN 1 AND 31
301* MONTH OF BIRTH MUST BE NUMERIC
301* DAY OF BIRTH MUST BE NUMERIC
301* SEX MUST BE "M" OR "F"
301* RACE MUST BE "CAU", "BLK" OR "OTH"
301* NAME MUST BE SPECIFIED AS LAST FIRST MI SUFFIX
301* SSAN MUST BE UNIQUE
301* NAME MUST BE LETTERS ONLY, NO PUNCTUATION OR NUMBERS
301* SSAN MUST BE SPECIFIED
301* SSAN MUST BE SPECIFIED
301* SSAN MUST BE SPECIFIED
301* PLEASE SPECIFY WHICH IDENTIFIER IF ANY YOU'LL CHANGE
301* FOR MODIFY ID, ENTER "Y" OR "N"
301* SSAN MUST BE SPECIFIED
301* SSAN MUST BE NUMERIC
301* SSAN OUT OF RANGE
301* SSAN MUST BE ENTERED
301* SSAN MUST BE NUMERIC
301* SSAN MUST BE ENTERED
301* SSAN MUST BE NUMERIC
301* ENTER NAME LAST FIRST MI SUFFIX
301* NAME MUST BE ALL LETTERS, NO PUNCTUATION OR NUMBERS
301* YEAR OF BIRTH = AGE UNDER 17 OR OVER 83
301* YEAR OF BIRTH MUST BE NUMERIC
301* MONTH OF BIRTH MUST BE "1" THRU "12"
301* DAY OF BIRTH MUST BE "1" THRU "31"
301* SEX MUST BE ENTERED
301* SEX MUST BE "M" OR "F"
301* RACE MUST BE ENTERED

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Part 3

PART 4: ECG DATA BASE

Since the ECG data base is the 'controlling' data base in the MED system, a PERSON record must exist in the ECG data base before it can exist in any of the other data bases. However, the existence of a PERSON record in the ECG data base does not require that person to exist in any of the other data bases. In general, the ECG part of the transaction provides for the initialization of the transaction, the selection of a person, the addition or modification of a person, the addition or modification of ECG exam data, and the navigation to other data bases through menus based on a person located in the ECG data base.

Entry to the transaction and all maintenance of the PERSON record are done through the ECG data base. If the person does not exist in the ECG data base, the user has the option to add the person, modify the person data just entered, or select another person. If a person already exists in the ECG data base, the user is given the option to modify the person data. At this point, if the PERSON record is modified, the transaction modifies the person data, based on the unique social security number (SSAN), in all other data bases where the person exists.

Only after a valid (and current) PERSON record in ECG is established is the user given the choice of exam type to work with.

If the exam type selected is ECG, the transaction remains in the ECG data base, the user is assured of the existence of a PERSON record to work from, and additional ECG exams can be added or existing ECG exams can be modified.

If the exam type is LABORATORY (LAB), TREADMILL (TM), CATHETER (CA), or PULMONARY (PUL), the transaction closes the ECG data base and opens the other requested data base to check for the existence of a matching PERSON record based on SSAN. If not found, the user is given a choice to add that person to the additional data base and if the user chooses to do so, the ECG PERSON record can be copied to the additional data base and inserted. Once valid PERSON data exists in the additional data base, the user can add new exam data or modify existing exams in that data base. Further information on the other data bases can be found in the Part specific to that data base.

The ECG data base definition is shown in Exhibit 5-1 followed by the primary data input form in Exhibit 5-2. The steps and screens that perform updates to the ECG data base are defined in the following chapters.

Exhibit 4-1: ECG Data Base Definition

```
DATA BASE NAME IS ECG
DEFINITION NUMBER 3
DATA BASE CYCLE 2152
0* PERSON
  1* SSAN (CHAR X(9))
  2* NAME (CHAR X(19))
  5* DOB (DATE)
  11* SEX (NON-KEY CHAR X)
  12* RACE (NON-KEY CHAR XXX)
100* EXAMS (RECORD)
  110* DOB (DATE IN 100)
  120* NUM (INTEGER NUMBER 9(7) IN 100)
  130* AGE (INTEGER NUMBER 99 IN 100)
  140* HT (NON-KEY INTEGER NUMBER 999 IN 100)
  150* WT (NON-KEY DECIMAL NUMBER 999.2 IN 100)
  160* SBP (NON-KEY INTEGER NUMBER 999 IN 100)
  170* DBP (NON-KEY INTEGER NUMBER 999 IN 100)
  180* DX (NON-KEY CHAR X IN 100)
  200* RISK FACTORS (RECORD IN 100)
    210* TCOL (NON-KEY INTEGER NUMBER 9999 IN 200)
    220* HDL (NON-KEY INTEGER NUMBER 999 IN 200)
    230* TRIG (NON-KEY INTEGER NUMBER 9999 IN 200)
    240* FBS (NON-KEY INTEGER NUMBER 999 IN 200)
    250* PPD (NON-KEY DECIMAL NUMBER 9.9 IN 200)
    260* CIGARS (NON-KEY INTEGER NUMBER 99 IN 200)
    270* BOWLS (NON-KEY INTEGER NUMBER 99 IN 200)
    280* FM HX CAD (NON-KEY CHAR X IN 200)
    282* RISK (INTEGER NUMBER 9(6) IN 200)
  300* DX CODES (RECORD IN 100)
    310* SAM (CHAR X(6) IN 300)
  700* PRIOR NAMES (RECORD)
    710* PRIOR NAME (CHAR X(19) IN 700)
    720* NAME MODIFIED (NON-KEY DATE IN 700)
```

Exhibit 4-2: ECG Sample Input Forms

--Please Provide--

Chapter 4.1: BROADCAST

Called From

This is the initial step in the transaction.

Logic

1. If PROCEED = Y then go to step ECGSELPERS, else exit transaction.

Validation

SWI PROCEED mandatory, table (YESNOTBL, exists).

Exhibit 4-3: BROADCAST

>>> Sensitive Data for Official Use Only <<<
\$5000 Fine for Unauthorized Access

Aug 1983

In step Person, enter SSAN, NAME or both.

proceed _

Chapter 4.2: ECGSELPERS

Purpose

To select a person in the ECG data base given the exact social security number (SSAN) or by name.

Screen

ECGSELPERS

Logic

```
If only a social security number is entered,
    select a person on that social security number (SSAN);
    If $DATASN = 0, display message and go to Phase 2.
    If $DATASN = 1, go to ECGMODPERS.
    If $DATASN > 1,
        display msg: 'DUPLICATE SSAN, CALL BILL NIXON' and go to Phase 2.
If only a name is entered,
    select person record(s) on that name;
    If $DATASN = 0, display message and go to Phase 2.
    If $DATASN > 0 and < 5, go to ECGSELPERS4.
    If $DATASN > 4, go to ECGSELPERS14.
If SSAN and name are both entered,
    select person record on SSAN and name;
    If $DATASN > 1,
        display msg: 'DUPLICATE SSAN, CALL BILL NIXON' and go to phase 2.
    If $DATASN = 1, go to ECGMODPERS.
    If $DATASN = 0,
        select person record on name or SSAN;
        If $DATASN = 0,
            display message and go to ECGINSPERS.
        If $DATASN > 0 and < 5,
            go to ECGSELPERS4.
        If $DATASN > 4,
            go to ECGSELPERS14.
If neither SSAN or name entered,
    Exit.
```

Validation

SSAN - proper values: first three digits range 0-800, the rest numeric.

name - for alphabetic

person ssan	name	dob yy/mm/dd	sex	race
____-____-____	_____	____/____/____	____	_____

race

Chapter 4.3: ECGSELPERS4

Called From

ECGSELPERS when \$DATASN > 0 and < 5

Screen

ECGSELPERS4

Logic

1. Retrieve up to four PERSON records, number screen accordingly, and display.
2. If select record (SWI for select person option field) = 0, go to ECGSELPERS.
3. If select record (SWI for select-person option field) > \$DATASN, go to ECGINSPERS.
4. If select record (SWI for select person option field) = \$DATASP, go to ECGMODPERS.
5. If select record (SWI for select person option field) < \$DATASN, rewind locate file, retrieve PERSON via \$\$2KCOUNT, and go to ECGMODPERS.

Validation

1. select record - numeric, mandatory, range 0-5

Exhibit 4-5: ECGSELPERS4

select person _

	ssan	name	dob yy/mm/dd	sex	race
1	- - -	_____	____/____/____	-	-
2					
3					
4					
0	none of the above				

Chapter 4.4: ECGSELPERS14

Called From

ECGSELPERS when \$DATASN > 4

Screen

ECGSELPERS14

Logic

1. Retrieve up to 14 PERSON records, number screen accordingly, and display.

If \$DATASP < \$DATASN, then issue message: "Press Return To See More Records".

If \$DATASP = \$DATASN and \$DATASN > 14, then issue message: "Press Return To See Prior Records".
2. If select record (SWI for select person option field) = 0, go to ECGSELPERS.
3. If select record (SWI for select-person option field) = blanks, then if \$DATASP = \$DATASN, rewind locate file. In either case, go to 1.
4. If select record (SWI for select-person option field) > \$DATASN, go to ECGINSPERS.
5. If select record (SWI for select-person option field) = \$DATASP, go to ECGMODPERS.
6. If select record (SWI for select-person option field) < \$DATASN, rewind locate file, retrieve proper person, go to ECGMODPERS.

Validation

1. select record - numeric

Exhibit 4-6: ECGSELPERS14

select person _				
	ssan	name	dob yy/mm/dd	sex race
1	- -		/ /	-
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
0 none of the above				

1. Record numbers in columns 1 and 2 are SWIs corresponding to the \$DATASP for each record.

Chapter 4.5: ECGMODPERS

Called From

ECGSELPERS if a unique person is selected; ECGSELPERS4 or ECGSELPRES14 if a particular PERSON record is selected; ECGINSPER after a new PERSON record is inserted.

Screen

ECGMODPERS

Logic

Set OLDNAME = NAME and display screen.
If modify record (SWI for modify-person option field) = N,
go to ECGMENPERS.
If modify record (SWI for modify-person option field) = Y,
modify PERSON.
If OLDNAME not = NAME,
set PRIOR NAME = OLDNAME;
set NAME MODIFIED = \$TODAY;
retrieve last PRIOR NAMES record;
insert PRIOR NAMES record after.
go to ALLMODPERS.

Validate

1. SSAN - mandatory, range 0-800 for first three digits, numeric, and unique
2. name - mandatory, alphabetic
3. date of birth - for proper values
4. sex - for SEXTBL table
5. race - for RACETBL table
6. modify record (SWI for modify-person option field) is mandatory (YESNOTBL, exists).

Exhibit 4-7: ECGMODPERS

modify person _				
ssan	name	dob yy/mm/dd	sex	race
__-__-__	_____	__/__/__	__	__

Chapter 4.6: ALLMODPERS

Called From

ECGMODPERS if modify record (SWI, modify-person option field) = Y.

Screen

None.

Logic

1. This step will open all data bases one at a time.

Then attempt to retrieve the record on SSAN selected in prior step.

If found, modify that PERSON record. If not found, close data base and go to the next data base.

Continue to each of the other four data bases.

When finished, go to ECGMODPERS.

Validation

None - done in ECGMODPERS

Chapter 4.7: ECGINSPERS

Called From

ECGSELPERS4 or ECGSELPERS14 when select record > \$DATASN. From
ECGSELPERS when both SSAN and NAME entered but \$DATASN = 0.

Screen

ECGINSPERS

Logic

If insert record (SWI for insert-person option field) = Y,
insert person record;
go to ECGMODPERS.

If insert record (SWI for insert-person option field) = N,
go to ECGSELPERS.

Validation

1. insert record (SWI for insert-person option field) is
mandatory (YESNOTBL, exists).
2. Same as ECGMODPERS, except only insert record is mandatory.

Exhibit 4-8: ECGINSPERS

insert person _				
person				
ssan	name	dob	sex	race
yy/mm/dd				
__/__/__	_____	__/__/__	__	__

Chapter 4.8: ECGMENPERS

Called From

ECGINSPERS, ECGMODPERS, ECGMENEXAM, ECGMENPRIO, and others in other data bases which want to switch to a new data base

Screen

ECGMENPERS

Logic

If SELECTYPE = 1, go to ECGSELPERS.

If SELECTYPE = 2, go to TMSelpERS.

If SELECTYPE = 3, go to CASELPERS.

If SELECTYPE = 4, go to LABSELPERS.

If SELECTYPE = 5, go to PULSELPERS.

If SELECTYPE = 6, go to ECGSELEXAM.

If SELECTYPE = 7, go to ECGSELPRIO.

If SELECTYPE = 0, go to \$EXIT.

Validation

1. SELECT STEP - mandatory, numeric, range 0-7

Exhibit 4-9: ECGMENPERS

<ssan>	<name>	<dob>	<sex>	<race>
--------	--------	-------	-------	--------

select next step _

- 1 select new person
- 2 select treadmill
- 3 select cath
- 4 select lab
- 5 select pulmonary
- 6 select ecg
- 7 select prior names
- 0 exit

Chapter 4.9: ECGSELEXAM

Called From

ECGMENPERS

Screen

none.

Logic

1. Select PERSON on SSAN (guarantees one person in locate file).
Select all EXAMS records where SAME, ORDER BY DOE.
2. If \$DATASN = 0, go to ECGINSEXAM.
If \$DATASN > 0 and < 5, go to ECGSELEXAM4.
If \$DATASN > 4, go to ECGSELEXAM14.

Validation

None

Screen

None

Chapter 4.10: ECGSELEXAM4

Called From

ECGSELEXAM when \$DATASN < 5

Logic

1. Retrieve up to four EXAM records.
Number screen accordingly.
Display screen.
2. If select record (SWI for select-exam option field) = 0,
go to ECGMENPERS.
3. If select record (SWI for select-exam option field) = \$DATASP,
go to ECGMODEXAM.
4. If select record (SWI for select-exam option field) $\leq$ \$DATASN,
rewind sibling chain;
retrieve record via \$S2KCOUNT;
go to ECGMODEXAM.
5. If select record (SWI for select-exam option field) > \$DATASN,
go to ECGINSEXAM.

Validation

1. Select record (SWI for select-exam option field) -
mandatory, numeric.

Exhibit 4-10: ECGSELEXAM4

<ssan>	<name>	<dob>	<sex>	<race>			
select exam _							
doe	number	age	ht	wt	sbp	dbp	dx
1	_____	_____	_____	_____	_____	_____	_____
2							
3							
4							
0	none of the above						

Chapter 4.11: ECGSELEXAM14

Called From

ECGSELEXAM when \$DATASN > 4

Logic

Retrieve up to 14 EXAM records.

Number screen accordingly.

If \$DATASP < \$DATASN,

 issue message: "Press Return To See More Records".

If \$DATASP = \$DATASN and \$DATASN > 14,

 issue message: "Press Return To See Prior Records".

Display screen.

If select record (SWI for select-exam option field) = blanks,

 If \$DATASP = \$DATASN,

 rewind locate file.

 go to phase 1.

If select record (SWI for select-exam option field) = 0,

 go to ECGMENEXAM.

If select record (SWI for select-exam option field) = \$DATASP,

 go to ECGMODEXAM.

If select record (SWI for select-exam option field) > \$DATASN,

 go to ECGINSEXAM.

If select record (SWI for select-exam option field) ≤ \$DATASN,

 rewind the sibling chain;

 retrieve record via \$S2KCOUNT;

 go to ECGMODEXAM.

Validation

1. Select record (SWI for select-exam option field) - numeric

Exhibit 4-11: ECGSELEXAM14

<ssan>	<name>	<dob>	<sex>	<race>			
select exam _							
doe	number	age	ht	wt	sbp	dbp	dx
1	_____	_____	_____	_____	_____	_____	_____
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
0 none of the above							

Chapter 4.12: ECGINSEXAM

Called From

ECGSELEXAM4, ECGSELEXAM14, or ECGSELEXAM

Logic

1.

If insert record (SWI for insert-exam-option field) = N,
go to ECGMENPERS.

If insert record (SWI for insert-exam-option field) = Y,
retrieve last EXAMS record;
insert EXAMS record after and go to ECGMODEXAM.

Validation

1. Insert record - mandatory, (YESNOTBL table, exists).
2. Same as ECGMODEXAM except only Insert record mandatory.

Exhibit 4-12: **ECGISEXAM**

<ssan>	<name>	<dob>	<sex>	<race>
--------	--------	-------	-------	--------

insert exam _

doe								
yy/mm/dd	number	age	ht	wt	sbp	dbp	dx	
__/__/__	_____	__	__	__	__	__	__	__

Chapter 4.13: ECGMODEXAM

Called From

ECGSELEXAM4, ECGSELEXAM14, or ECGINSEXAM

Logic

Display screen.

If modify record (SWI for modify-exam option field) = Y,
 modify EXAM record;
 go to Phase 2.

If modify record (SWI for modify-exam option field) = N,
 go to ECGMENEXAM.

Validation

1. doe - mandatory, numeric, year range 55-87, month range 1-12, day range 1-31
2. num - numeric
3. sbp - range 90-300
4. dbp - range 50-150
5. ht - range 152-203
6. wt - range 38.0-210.0
7. dx - table (ECGDXTBL N,V,B,A)
8. modify record (SWI for modify-exam option field) is mandatory (YESNOTBL, exists).

Exhibit 4-13: ECGMODEXAM

<ssan>	<name>	<dob>	<sex>	<race>			
modify exam _							
doe							
yy/mm/dd	number	age	ht	wt	sbp	dbp	dx
//	_____	__	__	__	__	__	__

Chapter 4.14: ECGMENEXAM

Called From

ECGMODEXAM, ECGMODDXCO, and ECGMODRISK.

Logic

1. If SELECTSTEP = 0, go to \$EXIT.
2. If SELECTSTEP = 1, go to ECGSELPERS.
3. If SELECTSTEP = 2, go to ECGMENPERS.
4. If SELECTYPE = 3, go to ECGSELEXAM.
5. If SELECTSTEP = 4, go to ECGSELPRIOR.
6. If SELECTSTEP = 5, go to ECGSELRISK.
7. If SELECTSTEP = 6, go to ECGSELDXCO.

Validation

1. SELECTSTEP - mandatory, range 0-6

Exhibit 4-14: ECGMENEXAM

```
<ssan>          <name>          <dob>      <sex>      <race>
<doe>
select next step _
1  select new person
2  select data base
3  select ecg
4  select prior names
5  select risk factor
6  select dx code
0  exit
```

Chapter 4.15: ECGSELPRIO

Purpose

The purpose of this step is to select all PRIOR NAMES records from the ECG data base and to then display up to four occurrences if present. Called From

ECGMENPERS

Screen

ECGSELPRIO.

Logic

Select all PRIOR NAMES records on SSAN.

If \$DATASN = 0,
go to ECGINSPRIO.

If \$DATASN > 0,
retrieve up to 4 PRIOR NAMES records;
number screen accordingly;

Display screen.

If select record (SWI for select-prior-name-option field) = 0,
go to ECGMENPERS.

If select record (SWI for select-prior-name-option field) = \$DATASP,
go to ECGMODPRIOR.

If select record (SWI for select-prior-name option field) > \$DATASN,
go to ECGINSPRIO.

If select record (SWI for select-prior-name-option field) ≤ \$DATASN,
rewind sibling chain;
retrieve record via \$S2KCOUNT;
go to ECGMODPRIOR.

Validation

1. Select record (SWI for select-prior-name option field) - mandatory, numeric.

Exhibit 4-15: ECGSELPRIO - Select From Up To 4 Prior Names Records

<ssan>	<name>	<dob>	<sex>	<race>
select prior name _				
	prior name	name modified		
1	_____	_/_/_		
2				
3				
4				
0 none of the above				

Chapter 4.16: ECGMODPRIO

Called From

ECGINSPRIO, ECGSELPRI0

Logic

Display screen.

If modify record (SWI for modify-prior-name option field) = N,
go to ECGMENEXAM.

If modify record (SWI for modify-prior-name option field) = Y,
modify PRIOR NAMES record;
go to Phase 2.

Validation

1. Modify record (SWI for modify-prior-name option field) mandatory (YESNOTBL table, exists).
2. Prior name - mandatory
3. Name modified - proper date format, mandatory

Exhibit 4-16: ECGMODPRIO

<ssan>	<name>	<dob>	<sex>	<race>
modify prior name _				
prior name _____		name modified ____/____/____		

Chapter 4.17: ECGINSPRIO

Called From

ECGSELPRIO; prior names are also inserted automatically in
ECGMODPERS

Logic

If insert record (SWI for insert-prior-name option field) = N,
go to ECGMENPERS.

If insert record (SWI for insert-prior-name option field) = Y,
retrieve last PRIOR NAMES record;
insert PRIOR NAMES record after;
go to ECGMODPRIO.

Validation

1. Insert record (SWI for insert-prior-name option field) -
mandatory (YESNOTBL table, exists)
2. Priorname - alphanumeric
3. Name modified - proper date format

Exhibit 4-17: ECGINSPRIO

<ssan>	<name>	<dob>	<sex>	<race>
insert prior name _				
prior name		name modified		
_____		_/_/_		

Chapter 4.18: ECGSELRISK

Called From

ECGMENEXAM

Logic

Select RISKFACTORS record on SSAN and EXAMS DOE.

If \$DATSN = 0,
 go to ECGINSRISK,
Else,
 retrieve RISKFACTORS record;
 go to ECGMODRISK.

Note: There shall be only one RISK FACTORS
record per EXAMS record if it exists.

Screen

None

Chapter 4.19: ECGMODRISK

Called From

ECGSELRISK, ECGINSRISK

Logic

Display screen.

If modify record (SWI for modify-risk option field) = Y,
 modify RISK FACTORS record;
 go to Phase 2.

If modify record (SWI for modify-risk option field) = N,
 go to ECGMENEXAM.

Validation

1. tchol - range 75-4000, mandatory
2. hdl - range 15-120
3. trig - range 30-4000
4. fbs - range 45-500
5. ppd - range 0.0-10.0
6. cigars - range 0-20
7. bowls - range 0-30
8. fm hx cad - (YESNOTBL table, exists).
9. Modify record (SWI for modify-risk option field) -
 mandatory, (YESNOTBL table, exists).

Exhibit 4-18: ECGMODRISK

<ssan>	<name>	<dob>	<sex>	<race>		
<doe>						
modify risk _						
tchol	hdl	trig	fbs	packs/day	cigars	pipes
_____	_____	_____	_____	_____	_____	_____
fm	hx	cad	risk			
_____	_____	_____	_____			

Chapter 4.20: ECGINSRISK

Called From

ECGSELRISK

Logic

Purge RISKFACTOR record.
Display Screen.

If insert record (SWI for insert-risk option field) = Y,
insert RISKFACTOR record;
go to ECGMODRISK.

If insert record (SWI for insert-risk option field) = N,
go to ECGMENEXAM.

Validation

1. Insert record (SWI for insert-risk option field) - mandatory, (YESNOTBL table, exists).
2. Same as ECGMODRISK 1 through 8 except tchol not mandatory.

Exhibit 4-19: ECGINSRISK

<ssan>	<name>	<dob>	<sex>	<race>		
<doe>						
insert risk _						
tchol	hdl	trig	fbs	packs/day	cigars	pipes
_____	_____	_____	_____	_____	_____	_____
fm	hx	cad	risk			
_____	_____	_____	_____			

Chapter 4.21: ECGSELDXCO

Called From

ECGMENEXAM

Logic

1. Select DXCODE records on SSAN and EXAMS DOE.
2. If \$DATASN = 0, go to ECGINSDXCO.
3. If \$DATASN > 0 and < 5, go to ECGSELDXCO4.
4. If \$DATASN > 4, go to ECGSELDXCO14.

Screen

None

Chapter 4.22: ECGSELDXCO4

Called From

ECGSELDXCO if \$DATASN < 5

Logic

1. Retrieve up to four DXCODE records, number screen accordingly, and display.
2. If select record (SWI for select-dxcode option field) = 0, go to ECGMENEXAM.
3. If select record (SWI for select-dxcode option field) = \$DATASP, go to ECGMODDXCO.
4. If select record (SWI for select-dxcode option field) > \$DATASN, go to ECGINSDXCO.
5. If select record (SWI for select-dxcode option field) < \$DATASN, rewind sibling chain, retrieve record, and go to ECGMODDXCO.

Validation

1. Select record (SWI for select-dxcode option field) - numeric, range 0-5, mandatory.

Exhibit 4-20: ECGSELDXC04

<ssan>	<name>	<dob>	<sex>	<race>
<doe>				

select dxcode _

 sam

- 1 _____
- 2 _____
- 3 _____
- 4 _____

0 none of the above

Chapter 4.23: ECGSELDXCO14

Called From

ECGSELDXCO if \$DATASN > 4

Logic

Retrieve up to 14 DXCODE records.

Number screen accordingly.

If \$DATASP < \$DATASN,

 issue message: "Press Return To See More Records".

If \$DATASP = \$DATASN and \$DATASN > 14,

 issue message: "Press Return To See Prior Records".

Display screen.

If select record (SWI for select-dxcode option field) = blanks,

 If \$DATASP = \$DATASN,

 rewind locate file.

 go to 1.

If select record (SWI for select-dxcode option field) = 0,

 go to ECGMENEXAM.

If select record (SWI for select-dxcode option field) = \$DATASP,

 go to ECGMODDXCO.

If select record (SWI for select-dxcode option field) > \$DATASN,

 go to ECGINSDXCO.

If select record (SWI for select-dxcode option field) ≤ \$DATASN,

 rewind sibling chain;

 retrieve record via \$\$2KCOUNT;

 go to ECGMODDXCO.

Validation

1. Select record (SWI for select-dxcode option field) -
 numeric.

Exhibit 4-21: ECGSELDXC014

<ssan>	<name>	<dob>	<sex>	<race>
<doe>				
select dxcode _				
1	sam			
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
0	none of the above			

Chapter 4.24: ECGMODXCO

Called From

ECGINSDXCO, ECGSELDXC04, ECGSELDXC014

Logic

Display screen.

If modify record (SWI for modify-dxcode option field) = Y,
 modify DXCODE records;
 go to Phase 2.

If modify record (SWI for modify-dxcode option field) = N,
 go to ECGMENEXAM.

Validation

1. modify record (SWI for modify-dxcode option field) -
 mandatory (YESNOTBL table, exists).
2. sam - use ECGCODESTBL for editing three character
 abbreviation to long values, then validate on long values.

Exhibit 4-22: ECGMODDXCO

<ssan>	<name>	<dob>	<sex>	<race>
<doe>				
modify dxcode _				
sam				

Chapter 4.25: ECGINSDXCO

Called From

ECGINSDXCO, ECGSELDXCO4, ECGSELDXCO14

Logic

If insert record (SWI for insert-dxcode option field) = N,
go to ECGMENEXAM.

If insert record (SWI for insert-dxcode option field) = Y,
retrieve last DXCODE record;
insert DXCODE record after;
go to ECGMODDXCO.

Validation

1. Insert record (SWI for insert-dxcode option field) - mandatory (YESNOTBL table, exists).
2. sam - use ECGCODESTBL for editing three character abbreviation to long values, then validate on long values.

Exhibit 4-23: ECGISDXCO

<ssan>	<name>	<dob>	<sex>	<race>
<doe>				
insert dxcode _				
sam				

PART 5: TREADMILL DATA BASE

The TREADMILL (TM) data base contains a PERSON record and data associated with several different types of treadmill exams. The TM part of the transaction allows selection of persons within the TREADMILL data base and if located, the insertion and modification of treadmill exam data. The TREADMILL data base definition is shown in Exhibit 5-1 followed by the primary data input form in Exhibit 5-2. The steps that perform updates to the TREADMILL data base are presented in the following chapters.

Exhibit 5-1: TREADMILL Data Base Definition

SYSTEM RELEASE NUMBER R3.0
DATA BASE NAME IS TREADMILL
DEFINITION NUMBER 3
DATA BASE CYCLE 2

0* PERSON

- 1* SSAN (CHAR X(9))
- 2* NAME (CHAR X(19))
- 3* DOB (DATE)
- 4* SEX (NON-KEY CHAR X)
- 5* EXAMS (RECORD)
 - 6* DOE (DATE IN 5)
 - 7* TIME (NON-KEY INTEGER NUMBER 9999 IN 5)
 - 8* AGE (INTEGER NUMBER 99 IN 5)
 - 9* GRADE (CHAR XXX IN 5)
 - 10* TITLE (NON-KEY CHAR XXX IN 5)
 - 11* TYPE (NON-KEY CHAR X IN 5)
 - 12* CASE NO (INTEGER NUMBER 9(5) IN 5)
 - 13* HRS SINCE LAST MEAL (NON-KEY INTEGER NUMBER 99 IN 5)
 - 14* HT (NON-KEY INTEGER NUMBER 999 IN 5)
 - 15* WT (NON-KEY DECIMAL NUMBER 999.9 IN 5)
 - 16* EXERCISE TIME (NON-KEY INTEGER NUMBER 9999 IN 5)
 - 17* DOUBLE PRODUCT (NON-KEY INTEGER NUMBER 9(5) IN 5)
 - 18* POTASSIUM (NON-KEY DECIMAL NUMBER 9.9 IN 5)
 - 19* HX HBP (NON-KEY CHAR X IN 5)
 - 20* ANTIHYPERTENSIVES (NON-KEY CHAR X IN 5)
 - 21* ACTIVITY STATUS (NON-KEY INTEGER NUMBER 9 IN 5)
 - 22* AEROBIC HRS PER WEEK (NON-KEY DECIMAL NUMBER 99.9 IN 5)
- 24* VITALS (RECORD IN 5)
 - 25* ACTIVITY (NON-KEY CHAR XXX IN 24)
 - 26* MINUTE (NON-KEY INTEGER NUMBER 99 IN 24)
 - 27* SBP (NON-KEY INTEGER NUMBER 999 IN 24)
 - 28* DBP (NON-KEY INTEGER NUMBER 999 IN 24)
 - 29* HR (NON-KEY INTEGER NUMBER 999 IN 24)
- 30* STOP REASONS (RECORD IN 5)
 - 31* STOP REASON (CHAR X(6) IN 30)
- 32* FINDINGS (RECORD IN 5)
 - 36* INTERPRETATION (CHAR X(6) IN 32)
 - 37* ABN BP RESPONSE (NON-KEY CHAR X IN 32)
 - 38* ARRHYTHMIAS (RECORD IN 32)
 - 39* ARRHYTHMIA (CHAR X(6) IN 38)
 - 391* ONSET (CHAR X(6) IN 38)
 - 392* FREQUENCY (CHAR X(6) IN 38)
 - 40* REPOLARIZATIONS (RECORD IN 32)
 - 41* LEAD (CHAR X(6) IN 40)
 - 441* PERIOD (CHAR X(6) IN 40)
 - 442* REPOLARIZATION (CHAR X(6) IN 40)
 - 42* ECG CODES (RECORD IN 32)
 - 43* ECG CODE (CHAR X(6) IN 42)

Exhibit 5-2: TREADMILL Sample Input Forms

PAGE NUMBER		14 TREADMILL EXERCISE TOLERANCE TEST									
PLAN		NAME (Last, First, MI)						GRADE		CASE NUMBER	
DATE OF EXAMINATION			AGE	DATE OF BIRTH			AEROBIC EXERCISE PER WEEK		HOURS		
YEAR	MONTH	DAY		YEAR	MONTH	DAY					
2. CONDITIONS				6. REASON FOR TERMINATING				7. LABORATORY DATA			
A TIME OF DAY				1 EXHAUSTION B LEG FATIGUE				SERUM POTASSIUM			
B HOURS SINCE LAST MEAL				C JOINT/MUSCLE PAIN/OR INJURY				RECENTLY OR CURRENTLY ON ANTIHYPERTENSIVES (Y-N)			
C HT (Cm)				(Explain)							
D WT (Kg)				D CHEST PAIN (Possible Angina)				ACTIVITY STATUS (Circle One)			
E TOTAL TIME (MIN+SEC)				E SUB MAX EFFORT BECAUSE OF POOR COOPERATION							
DOUBLE PRODUCT				F SYST ≥ 280 AND/OR DIAST ≥ 190				1 2 3			
3. BASELINE		SYST	DIAST	H R		G RELATIVE HYPOTENSION					
A SUPINE (2nd)						H ARRHYTHMIA I ST CHANGES					
B IMMED STD						J OTHER (Explain)					
C 3RD STD											
D 45 SEC HV											
4. WALKING 3.3 MPH (90/MIN)				8. FINDINGS							
MINUTES		SYST	DIAST	H R		A. INTERPRETATION					
A 1 0%						B. ARRHYTHMIA					
B 2						1 2 3 4 5 6					
C 3						4 5 6 7 8 9					
D 4 5%						C. REPOLARIZATION					
E 5						1 2 3 4 5 6					
F 6						4 5 6 7 8 9					
G 7 10%						D. ECG CODE					
H 8						1 2 3 4 5 6					
I 9						3 4 5 6 7 8					
J 10 15%						E. ABNORMAL B/P RESPONSE (Y-N)					
K 11											
L 12											
M 13 20%											
N 14											
O 15											
P 16 25%											
Q 17											
R 18											
S 19 30%											
T 20											
U 21											
V 22											
W 23											
X 24											
Y LAST											
Z MAXIMAL											
5. RECOVERY - SUPINE				9. COMMENTS							
MINUTES		SYST	DIAST	H R							
A IMMED											
B											
C 5											
D 4											

Chapter 5.1: TMSELPERS

Purpose

When a person is selected from ECG and then the TREADMILL data base is chosen, TMSELPERS is called and first determines whether the person exists in the TREADMILL data base. If the person exists, TMSELPERS calls TMSELEXAM. Otherwise TMSELPERS calls TMINSPERS.

Called From

TMSELPERS is called from ECGMENPERS (data base menu).

Logic

Select TMPERSON record on SSAN.

If \$DATASN = 0,
go to TMINSPERS.

If \$DATASN = 1,
go to TMSELEXAM.

Validation

None.

Chapter 5.2: TMINSPERS

Purpose

The pupose of TMINSPERS is to allow the user the option to insert a new PERSON (TMPERSON) record into the TREADMILL data base.

Called From

TMSELPERS (when no person exists in the TREADMILL data base).

Screen

TMINSPERS

Logic

Move PERSON values to TMPERSON.

Display TMINSPERS.

If insert record (SWI for insert-person option field) = Y,
insert TMPERSON after.
go to TMSELEXAM.

If insert record (SWI for insert-person option field) = N,
go to ECGMENPERS.

Validation

The insert-person option field (SWI is insert record) is mandatory (TABLE-YESNOTBL, exists)

All other fields are protected. The transaction inserts a record containing fields with identical data to ECG PERSON data or none at all.

Exhibit 5-3: **TMINSPERS** Screen - Insert Person In **TREADMILL**

insert person _				
<ssan>	<name>	<dob> yy/mm/dd	<sex>	<race>
- - -	_____	__/__/__	-	_____

1. All Fields are protected except the 'insert-person' option field.
2. The SWI name for the 'insert-person' option field is insert record.

Chapter 5.3: TMSELEXAM

Purpose

The pupose of TMSELEXAM to decide if there are 0, more than 4, or between 1 and 4 (inclusive) EXAMS (TMEXAM) records in the TREADMILL data base. If there are no EXAMS records, TMINSEXAM is called; if there are between 1 and 4 (inclusive) EXAMS records, TMSELEXAM4 is called; if there are more than 4 EXAMS records, TMSELEXAM14 is called; There are no screens associated with this step.

Called From

TMINSPEERS (when TM-PERSON with SSAN is located in TREADMILL or from the FINDINGS menu (TMENFIND)).

Screen

None

Logic

Select EXAMS records on SSAN.

If NODATA,

go to TMINSEXAM.

If $0 < \$DATASN \leq 4$,

go to TMSELEXAM4.

If $\$DATASN > 4$,

go to TMSELEXAM14.

Note: TMSELEXAM4 is identical to TMSELEXAM14 except that it only retrieves up to 4 exams instead of 14 at a time).

Chapter 5.4: TMSELEXAM4

Purpose

The purpose of TMSELEXAM4 is to present up to four EXAMS records to the user. The user may either select an existing exam for review or modification, choose to insert a new exam, or exit to choose another person.

Called From

This step is entered from TMSELEXAM (when $0 < \$DATASN \leq 4$).

Screen

TMSELEXAM4

Logic

1. Retrieve up to four TMEXAM records, number screen accordingly, and display.
2. If 'select record' (SWI for select-exam option field) =
 - a) '0', go to ECGMENPERS.
 - b) 'n', where $n = \$DATASP$, go to TMMODEXAM.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the TMEXAM sibling chain and retrieve the nth record via $SS2KCOUNT$. Go to TMMODEXAM.
 - d) 'n', where $n > \$DATASN$, go to TMINSEXAM.

Validation

1. The select-exam option field (SWI select record) - mandatory, range 0-5.

Exhibit 5-4: TMSELEXAM4 Screen - Select 4 Exams From TREADMILL

	<ssan>	<name>	<dob>	<sex>	<race>
	select exam _				
	type	case no	doe	age	time
1	-	_____	__/__/__	__	_____
2					
3					
4					
0	none of the above				

1. All data on the screen is protected except for the 'select-exam' option field.
2. The SWI name for the 'select-exam' option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 5.5: TMSELEXAM14

Purpose

To present the user with treadmill EXAMS (TMEXAM) records up to 14 at a time for the current person. The user may select an exam for review or modification, choose to insert a new exam, or exit to select another person.

Called From

This step is called from TMSELEXAM (when more than 4 TMEXAM records are located for a particular person).

Screen

TMSELEXAM14

Logic

1. Retrieve up to 14 TMEXAM records, number screen accordingly, and display.

If \$DATASP < \$DATASN, then issue message: "Press Return To See More Records".

If \$DATASP = \$DATASN and \$DATASN > 14, then issue message: "Press Return To See Prior Records".

2. If 'select record' (SWI for select-exam option field) is
 - a) blanks, then if \$DATASP = \$DATASN, rewind locate file. In either case, go to 1.
 - b) '0', go to ECGMENPERS.
 - c) 'n', where n = \$DATASP, and go to TMODEXAM.
 - d) 'n', where $1 \leq n \leq \$DATASN$, rewind the sibling chain, retrieve the nth record via \$S2KCOUNT, and go to TMODEXAM.
 - e) 'n', where n > \$DATASN, go to TMINSEXAM.

Validation

1. The select-exam option field (SWI select record) - numeric, if present.

Exhibit 5-5: TMSELEXAM14 Screen - Select 14 Exams From TREADMILL

<ssan>	<name>	<dob>	<sex>	<race>
select exam __				
	type	case no	doe	age time
1	—	—	/	—
2	—	—	/	—
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
0 none of the above				

1. This screen is identical to TMSELEXAM4 except that it will accommodate up to 14 exams per screen.
2. All data on the screen is protected except for the 'select-exam' option field.
3. The SWI name for the 'select-exam' option field is select record.
4. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 5.6: TMODEXAM

Purpose

To allow the user to modify an existing treadmill EXAMS (TMEXAM) record.

Called From

This step is called when an exam is selected from TMSELEXAM4 or TMSELEXAM14, or immediately after an exam is entered through TMINSEXAM.

Screen

TMODEXAM

Logic

1. If 'modify record' (SWI for modify-exam option field) = N,
go to TMENEXAM.
2. If 'modify record' (SWI for modify-exam option field) = Y,
validate DOE $\leq$ \$DATE, AGE against DOB and DOE if DOB present.
If these tests fail,
ring bell and issue standard error message.
go to Phase 2.
NOTE: These are Phase 3 validation tests and not VALIDATE
commands in Phase 2.
3. If these tests (above) pass, issue a modify command and go
to Phase 2.

Validation

1. Grade - mandatory, table (GRADETAB: E01 $\rightarrow$ E09, W01 $\rightarrow$ W04
and o01 $\rightarrow$ o10).
Note: o is alphabetic
0 is zero
2. Type - mandatory, table (TYPET3L: A, B, C, D, E, K, M, P
and T).
3. Case # - mandatory, range (1-25000).
4. Age - mandatory, range (17-70).

Validation (continued)

5. Time - mandatory, range (700-1700).
Partial field HRS with range (7-17).
Partial field MIN with range (0-59).
6. Hours since last meal - mandatory, range (0-48).
7. Ht - mandatory, range (152-203).
8. Wt - mandatory, range (38.0-210.0).
9. K+ - mandatory, range (3.0-6.0).
10. Antihypertensive - mandatory, table (YESNOTBL, exists).
11. Activity status - mandatory, range (1-3).
12. Modify record - mandatory, table (YESNOTBL, exists).

Exhibit 5-6: TMODEXAM Screen - Modify Exam In TREADMILL

<ssan>	<name>	<dob>	<sex>	<race>
modify exam _				
grade	type	case #	doe	age time
__	-	__	__/_/_	__ : __
hrs since last meal	ht cm	wt kgm	total time	double product
__	__	__	__ : __	__
kt	antihypertensive	activity status		
__	-	-		

1. All fields designated via '_' are input fields and thus high intensity and unprotected, except for 'total time' and 'double product' which are protected.
2. All fields under prompts are DBIs except doe and time which are SWIs for validation. They are then concatenated into the final DBI.
3. Protected fields include first row, 'total time', and 'double product'; 'total time' and 'double product' are calculated by TMMODVITALS.

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Chapter 5.7: TMINSEXAM

Purpose

To allow the user to insert a new treadmill EXAMS (TMEXAM) record for the current person.

Called From

This step is entered when the user enters an integer larger than the highest record number in TMSELEXAM4 or TMSELEXAM14. This step is also entered if the person had no TREADMILL exams (including the case where the person was just entered into the TREADMILL data base).

Screen

TMINSEXAM

Logic

Purge the TMEXAM data to insure a blank screen.

Display the screen.

If insert record (SWI for insert-exam field option) = N,

 If \$DATASN = 0,

 go to ECGMENPERS.

 go to TMSELEXAM.

If insert record (SWI for insert-exam field option) = Y,

 validate DOE $\leq$ \$DATE, AGE against DOB and DOE if DOB present.

 If these "tests" fail,

 ring bell and issue standard error message;

 go to Phase 2.

 If these "tests" pass,

 retrieve last EXAMS record;

 insert EXAMS record after;

 go to TMMODEXAM.

NOTE: "Tests" are Phase 3 validation tests
and not VALIDATE commands in Phase 2.

Validation

1. Same as for TMMODEXAM, except all DBI fields are optional.
2. The insert-person option field (SWI is insert record) is mandatory, table (YESNOTBL, exists).

Exhibit 5-7: TMINSEXAM Screen - Insert Exam In TREADMILL

<ssan>	<name>		<dob>	<sex>	<race>
insert exam _					
grade	type	case #	doe	age	time
__	-	__	__/_/_	-	__:__
hrs since last meal	ht cm	wt kgm	total time	double product	
__	__	__	__:__	__	
k+	antihypertensive		activity status		
__	-		-		

1. All fields designated via '_' are input fields and thus high intensity and unprotected, except for 'total time' and 'double product' which are protected.
2. All fields under prompts are DBIs except doe and time which are SWIs for validation. They are then concatenated into the final DBI.
3. Protected fields include first row, 'total time', and 'double product'; 'total time' and 'double product' are calculated by TMMODVITALS when present.
4. The insert-exam option field (SWI name is insert record) is unprotected.

Chapter 5.8: TMSSELVITAL

Purpose

This step determines if there are 0, more than 4, or between 1 and four (inclusive) VITALS records. If there are 0, TMINSVITAL is called to allow the user to insert a record; if there are between 1 and 4 (inclusive) VITALS records, TMSSELVITAL4 is called to present up to 4 VITALS records; if there are more than 4 VITALS records, TMSSELVITAL14 is called to present for the user VITALS records up to 14 at a time. This step has no screen associated with it.

Called From

The TMSSELVITAL step is called from TMMENEXAM.

Screen

None.

Logic

```
Select VITALS records on SSAN and DOE.  
If NODATA,  
    go to TMINSVITAL.  
If 0 < $DATASN < 4,  
    go to TMSSELVITAL4.  
If $DATASN > 4,  
    go to TMSSELVITAL14
```

NOTE: TMSSELVITAL14 is identical to TMSSELVITAL4 except it uses the TMSSELVITAL14 screen and retrieves up to 14 vitals at a time.

Validation

None.

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Chapter 5.9: TMSELVITAL4

Purpose

The purpose of the TMSELVITAL4 step is to present up to four VITALS records to the user, ordered by the DOE in the parent record. The user can then select an existing record for review or modification, choose to insert a new record, or exit to a menu.

Called From

The TMSELVITAL4 step is called from TMSELVITAL (when $0 < \$DATASN \leq 4$).

Screen

TMSELVITAL4

Logic

1. Retrieve up to 4 VITALS records, number screen accordingly, and display.
2. If 'select record' (SWI for select-vitals option field) is:
 - a) '0', go to TMENEXAM.
 - b) 'n', where $n = \$DATASP$, go to TMMODVITAL.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the VITALS sibling chain, retrieve the nth record via $SSZKCOUNT$, and go to TMMODVITAL.
 - d) 'n', where $n > \$DATASN$, go to TMINSVITAL.

Validation

1. Select vitals is mandatory, numeric.
2. All other fields are protected.

Exhibit 5-8: TMSELVITAL4 Screen - Select 4 Vitals From TREADMILL

<ssan>	<name>	<dob>	<sex>	<race>
<type>	<case #>	<doe>	<age>	<time>
select vitals _				
act	min	sbp	dbp	hr
1	—	—	—	—
2	—	—	—	—
3				
4				
0 none of the above				

1. This screen displays up to 4 VITALS records for the exam identified on row 2.
2. The numbers to the left of the records are SWIs that are computed by the step logic. They appear only when a record fills that slot else there are blanks in their place.
3. All fields are protected except for the select-vitals option field (SWI is select record).

Chapter 5.10: TMSELVITAL14

Purpose

This step displays up to 14 VITALS records for the current exam. The user can page through more records, select a numbered record for review or modification, choose to insert a new record, or exit to choose another exam.

Called From

The TMSELVITAL14 step is called from TMSELVITAL (when more than four VITALS records are selected).

Screen

TMSELVITAL14

Logic

1. Retrieve up to 14 VITALS records, number screen accordingly, and display.

If \$DATASP < \$DATASN, then issue message: "Press Return To See More Records".

If \$DATASP = \$DATASN and \$DATASN > 14, then issue message: "Press Return To See Prior Records".

2. If 'select record' (SWI for select-vitals option field) is
 - a) blanks, then if \$DATASP = \$DATASN, rewind locate file. In either case, go to 1.
 - b) '0', go to TMENEXAM.
 - c) 'n', where n = \$DATASP, go to TMMODVITAL.
 - d) 'n', where $1 \leq n \leq$ \$DATASN, rewind the VITALS sibling chain and retrieve the nth record via \$S2KCOUNT. Go to TMMODVITAL.
 - e) 'n', where n > \$DATASN, go to TMINSVITAL.

Validation

1. Select vitals - numeric.
2. All other fields are protected.

Exhibit 5-9: TMSELVITAL14 Screen - Select 14 Vitals From TREADMILL

	<ssan> <type>	<name> <case #>	<dob> <age>	<sex>	<race>
	select vitals __				
	act	min	sbp	dbp	hr
1	—	—	—	—	—
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
0	none of the above				

1. This screen displays up to 14 TMVITAL records for the exam identified on row 2 of the screen.
2. The numbers to the left of the records are SWIs that are computed by the step logic as the records are retrieved. They appear only when a record fills that slot, else there are blanks in their place.
3. All fields are protected except for the select-vitals option field (SWI is select record).

Chapter 5.11: TMMODVITALS

Purpose

To allow the user to modify existing VITALS records.

Called From

This step is entered from TMSELVITAL4 or TMSELVITAL14 when the user selects the number of an existing record ($0 < \text{select record} < \DATASN) or from TMINSVITAL to allow the user to modify a record just inserted.

Screen

TMMODVITAL

Logic

1. If the modify-vitals option field (SWI is modify record) is 'N', go to TMENEXAM.
2. Else if 'activity' = 'mx', set 'total time' = 'min' with two least significant digits filled with zero, calculate 'double product' = 'sbp' * 'hr', and modify the TMEXAM ('total time' and 'double product') record.
3. Modify VITALS record.
4. Go to Phase 2.

Validation

1. Act - mandatory, table(TMACTTBL: SUP,STD,HV,EX,MX,REC).
2. Min - mandatory, range (0-24).
3. Sbp - range (80-300).
4. Dbp - range (0-180).
5. Hr - mandatory, range (20-250).
6. The modify-vitals field option (SWI is modify record) is mandatory and must be Y or N (validated against YESNOTBL).

Exhibit 5-10: TMMODVITAL Screen - Modify Vitals in TREADMILL

<ssan>		<name>		<dob>		<sex>		<race>
<type>		<case #>	<doe>	<age>	<time>			
modify vitals _								
act	min	sbp	dbp	hr				
—	—	—	—	—				

1. First two rows are protected.
2. The 'modify-vitals' option field (SWI is modify record) is mandatory.

Chapter 5.12: TMINSVITAL

Purpose

To allow the user to insert new VITALS records for the current exam.

Called From

This step is entered from TMSELVITAL when no existing records occur or from TMSELVITAL4 or TMSELVITAL14 if the user selects to insert a new record.

Screen

TMINSVITAL

Logic

1. Purge the VITALS data and display the screen.
2. If the insert-vitals option field (SWI is insert record) is 'N', go to TMMENEXAM.
3. Else, issue an insert TMVITAL after and go to TMMODVITAL.

Validation

1. Same as for TMMODVITAL, except all DBI fields are optional.
2. Insert record (SWI for insert-vitals option field) mandatory (YESNOTBL, exists).

Exhibit 5-11: TMINSVITAL Screen - Insert Vitals in TREADMILL

<ssan>	<name>	<dob>	<sex>	<race>
<type>	<case #>	<doe>	<age>	<time>
insert vitals _				
act	min	sbp	dbp	hr
—	—	—	—	—

1. First two rows are protected.
2. The 'insert-vitals' option field (SWI is insert record) is unprotected.

Chapter 5.13: TMMENEXAM

Purpose

This step gives the user a choice of what to do next. The user can work with VITALS records again or process STOP REASONS or FINDINGS records. Additionally, it gives the user the flexibility to return to any level above this step in the transaction hierarchy.

Called From

This step is called from TMMODEXAM when 'N' is entered in the modify-exam option field (SWI is modify record) and can be entered from all lower level menus and steps that process VITALS, FINDINGS, and STOP REASONS records (TMSELVITAL4, TMSELVITAL14, TMINSVITAL, TMMENFIND, etc.)

Screen

TMMENEXAM

Logic

1. If the 'select next step' option field is set to:
 - a) '1', go to ECGSELPERS.
 - b) '2', go to ECGMENPERS.
 - c) '3', go to TMSELEXAM.
 - d) '4', go to TMSELVITAL.
 - e) '5', go to TMSELSTOPR.
 - f) '6', go to TMSELFIND.
 - g) '0', go to \$EXIT.

Validation

1. SELECTSTEP mandatory, range 0-6.

Exhibit 5-12: TMENEXAM Screen - TREADMILL Exam Menu

<ssan>	<name>	<dob>	<sex>	<race>
<type>	<case #>	<doe>	<age>	<time>

select next step _

- 1 select new person
- 2 select data base
- 3 select exam
- 4 select vitals
- 5 select stop reasons
- 6 select findings
- 0 exit

Chapter 5.14: TMSLSTOPR

Purpose

To display up to four existing STOP REASONS records for the current exam and allow the user to select one for modification or choose to enter a new record.

Called From

This step is entered from TMMENEXAM when the user enters '5' for 'select next step'.

Screen

TMSLSTOPR

Logic

Select STOP REASON records on SSAN and DOE.

If NODATA,

 go to TMINSSSTOPR.

Retrieve up to four STOP REASONS records.

Number screen accordingly.

Display screen with up to four STOP REASON records.

If the user sets 'select stop reason' option field to:

 0 , go to TMMENEXAM.

 n , where n = \$DATASP,
 go to TMMODSTOPR.

 n , where $1 \leq n \leq \$DATASN$,
 rewind the STOP REASONS sibling chain;
 retrieve the nth record via \$\$2KCOUNT;
 go to TMMODSTOPR.

 n , where n > \$DATASN,
 go to TMINSSSTOPR.

Validation

The select record (SWI for select-stop-reasons option field) option field is mandatory, range 0-5.

Exhibit 5-13: TMSELSTOPR Screen - Select Stop Reasons in TREADMILL

```
<ssan>      <name>      <dob>      <sex>      <race>
<type>      <case #>    <doe>      <age>      <time>

select stop reason _

1  _____
2
3
4

0 none of the above
```

1. All of the fields on this screen are protected except for the select record (SWI for the select-stop-reason option field).
2. There will never be more than 4 stop reasons so this screen will not repeat.

Chapter 5.15: TMMODSTOPR

Purpose

To allow the user to modify an existing STOP REASONS record.

Called From

This step is entered when an existing record is selected in TMSELSTOPR or after a new record is inserted in TMINSTOPR.

Screen

TMMODSTOPR

Logic

1. If the user enters 'Y' to 'modify stop reason' (SWI is modify record), modify STOP REASONS and go to Phase 1.
2. Else, go to TMENEXAM.

Validation

1. The modify-stop-reason option field (SWI is modify record) is mandatory and must be validated (YESNOTBL, exists).
2. Stop reason is mandatory, table (TMSTOPRTBL, table edit and table validate - edit on input, search COL1, replace with COL2, then validate on COL2).

TMSTOPRTBL	
<u>COL1</u>	<u>COL2</u>
A	A - EXHAUSTION
B	B - LEG FATIGUE
C	C - JOINT/MUSCLE/PAIN OR INJURY
D	D - CHEST PAIN
E	E - SUB MAX EFFORT BECAUSE OF POOR COOPERATION
F	F - SYST > 280 AND/OR DIAST > 150
G	G - RELATIVE HYPOTENSION
I	I - ST CHANGES
J	J - OTHER

The user can modify the long code or enter a new short code.

Exhibit 5-14: ~~TM~~MODSTOPR Screen - Modify Stop Reasons in TREADMILL

```
<ssan>          <name>          <dob>          <sex>          <race>
<type>    <case #>    <doe>    <age>    <time>

modify stop reason _

stop reason
_____ (72 chars) _____
```

1. The stop reason field will display the long value stored in the data base.
2. The user can modify the long value or enter a short code which will be edited to the long value.
3. The first two rows are protected.
4. The ~~modify-stop-reason~~ option field (SWI is modify record) is unprotected and mandatory.

Chapter 5.16: TMINSTOPR

Purpose

To allow the user to insert a new STOP REASONS record for the current exam.

Called From

This step is entered when no STOP REASONS records exist for the exam or the user chooses to insert from TMSELSTOPR.

Screen

TMINSTOPR

Logic

1. Purge STOP REASONS data and display fresh screen.
2. If the user answers 'N' to 'insert stop reason' (SWI insert record), then go to TMENEXAM.
3. Else, insert STOP REASONS record after and go to TMMODSTOPR.

Validation

1. The insert-stop-reason option field (SWI is insert record) is mandatory and must be validated (YESNOTBL, exists).
2. Stop Reason - same as described under TMMODSTOPR, except optional.

Exhibit 5-15: **TMSSTOPR** Screen - Insert Stop Reason in **TREADMILL**

<ssan>	<name>	<dob>	<sex>	<race>
<type>	<case #>	<doe>	<age>	<time>
insert stop reason _				
stop reason _____(72 chars)_____				

1. The user can enter the short or long value in the input field. The value will be edited to the long form in both cases.
2. The first two rows are protected.
3. The insert-stop-reason option field (SWI is insert record) and the stop reason are unprotected. The first two rows are protected.

Chapter 5.17: TMSelfFind

Purpose

The purpose of TMSelfFind is to select all FINDINGS records and display up to four to the user. This allows the user to choose one of the four FINDINGS records for review or modification.

Called From

This step is entered when the user selects option '6' on TMMENEXAM.

Screen

TMSelfFind

Logic

Select FINDINGS records on SSAN, DOE, and CASENO.

If NODATA,

 go to TMINSFIND.

Retrieve up to 4 FINDINGS records and number screen accordingly.

Display screen.

If the user sets select-findings option field to:

 0 , go to TMMENEXAM.

 n , where $n = \$DATASP$,

 go to TMMODFIND.

 n , where $1 \leq n \leq \$DATASN$,

 rewind the FINDINGS sibling chain;

 retrieve the nth record via $\$S2KCOUNT$;

 go to TMMODFIND.

 n , where $n > \$DATASN$,

 go to TMINSFIND.

Validation

1. Select findings - mandatory, numeric.

Exhibit 5-16: TMSELFIND Screen - Select Findings from TREADMILL

<ssan>	<name>	<dob>	<sex>	<race>
<type>	<case #>	<doe>	<age>	<time>

select findings _

	dx	md	md	abn	
	date	ssan	init	bp	interpretation
1	_____	____	_____	_____	_____
2	_____	_____	_____	_____	_____
3	_____	_____	_____	_____	_____
4	_____	_____	_____	_____	_____

0 none of the above

1. All fields are protected on this screen except the select-findings-option field (SWI is select record).
2. Interpretation is truncated on this screen to fit on one line.
3. This screen cannot repeat thus allowing only four findings.

Chapter 5.18: TMMODFIND

Purpose

To allow the user to modify existing FINDINGS records.

Called From

This step is entered when the user selects an existing FINDINGS record in TMSELFIND or after a new record is inserted in TMINSFIND.

Screen

TMMODFIND

Logic

1. If the user enters an 'N' in the modify-findings option field (SWI is modify record), go to TMENFIND.
2. Else, test DXDATE > DOE and < \$DATE. Save MDSSAN and MDINIT as SWIs and default to them in the future.
3. If above tests fail, issue message and go to Phase 2. Else, issue a modify FINDINGS and go to Phase 1.

Validation

1. The modify-findings-option field is mandatory, table (YESNOTBL, exists).
2. MD SSAN - SSAN1 (SWI): range (0-800), numeric
SSAN2 (SWI): numeric
SSAN3 (SWI): numeric
3. MD initials - alphabetic.
4. Interpretation is mandatory, table (TMINTTBL, edit and validate - edit from COL1 to COL2, then validate on COL2).
5. Validate dx date partial fields by standard rules for dates.
6. Abnormal BP is mandatory, table (YESNOTBL, exists).
7. Interpretation - mandatory, table (TMINTTBL is the subset of ECGCODESTBL which begin with 32x and 34x).

Exhibit 5-17: TMMODFIND Screen - Modify Findings in TREADMILL

<ssan>	<name>	<dob>	<sex>	<race>
<type>	<case #>	<doe>	<age>	<time>
modify findings _				
dx date	md ssan	md init	abnormal bp	
__/__/__	__-__-__	__	__	
interpretation				

1. The dx date and md ssan SWIs are for validation purposes and are partial field moved to their DBIs.
2. The interpretation can be modified in long form or the new code can be entered after clearing the field. It will be edited to long form in all cases.
3. The modify-findings option field (SWI is modify record) is mandatory.

Chapter 5.19: TMINSFIND

Purpose

To allow the user to insert a new FINDINGS record for the current exam.

Called From

This step is entered from TMSELFIND when no FINDINGS records exist or when user chooses to insert a new FINDINGS record from TMSELFIND.

Screen

TMINSFIND

Logic

1. Purge the FINDINGS data from screen. Move the saved MD SSAN (SWI) and MD INIT (SWI) to MDSSAN and MDINIT. Move DOE to DXDATE. Display screen.
2. If the user enters 'N' to 'insert findings' (SWI is insert record), go to TMMENFIND.
3. Else, test DXDATE > DOE and < \$DATE. If this fails, issue message and go to Phase 2.
4. Else, partial field move DXDATE and MDSSAN together from SWIs. Issue insert FINDINGS after.
5. Save MDSSAN and MDINIT, go to TMMODFNDGS.

Validation

1. The insert-findings option field (SWI is modify record) is mandatory, table(YESNOTBL, exists).
2. Otherwise, same as TMMODFIND, except all DBIs are optional.

Exhibit 5-18: TMINSFIND Screen - Insert Findings in TREADMILL

<ssan>	<name>	<dob>	<sex>	<race>
<type>	<case #>	<doe>	<age>	<time>

insert findings _

dx date	md ssan	md init	abnormal bp
__/__/__	__-__-__	__	__

interpretation

1. The fields on this screen are identical to those on TMMODFIND.
2. The insert-findings option field (SWI is insert record) is mandatory.

Chapter 5.20: TMMENFIND

Purpose

This step gives the user a choice of what to do next. The user can work with ARRHYTHMIAS, REPOLARIZATION, or ECG-CODES records. Additionally, it gives the user the flexibility to return to any level above this step in the transaction hierarchy.

Called From

This step is called from TMMODFIND when 'N' is entered in the modify-exam option field (SWI is modify record) and is entered from all lower level steps that process ARRHYTHMIAS, REPOLARIZATION, or ECG-CODES records.

Screen

TMMENFIND

Logic

1. If 'SELECT NEXT STEP' is set to:
 - a) '1', go to ECGSELPERS.
 - b) '2', go to ECGMENPERS.
 - c) '3', go to TMSELEXAM.
 - d) '4', go to TMSELVITAL.
 - e) '5', go to TMSELSTOPR.
 - f) '6', go to TMSELFIND.
 - g) '7' go to TMSELARR.
 - h) '8' go to TMSELREPO.
 - i) '9' go to TMSELECODE.
 - j) '0', go to \$EXIT.

Validation

1. Selection field must be validated to be numeric in the range 0-9.

Exhibit 5-19: TMENFIND Screen - TREADMILL Findings Menu

```
<ssan>          <name>          <dob>          <sex>          <race>
<type>    <case #>    <doe>    <age>    <time>
<dx date>    <md ssan>    <md init>    <abnormal bp>    <interpretation>
```

select next step _

- 1 select new person
- 2 select data base
- 3 select exam
- 4 select vitals
- 5 select stop reasons
- 6 select findings
- 7 select arrhythmias
- 8 select repolarization
- 9 select ecg codes
- 0 exit

1. Interpretation may be truncated.

Chapter 5.21: TMSELARR

Purpose

This step determines if there are 0, more than 4, or between 1 and four (inclusive) ARRHYTHMIAS records. If there are 0 records, TMINSARR is called to allow the user to insert a record; if there are between 1 and 4 (inclusive) ARRHYTHMIAS records, TMSELARR4 is called to display up to 4 records; if there are more than 4 ARRHYTHMIAS, TMSELARR14 is called to display up to 14 ARRHYTHMIAS records at a time. This step has no screen associated with it.

Called From

The TMSELARR step is called from TMENFIND.

Screen

None.

Logic

```
Select ARRHYTHMIAS record on
      SSAN, DOE, and DXDATE.
If NODATA,
    go to TMINSARR.
If 0 < $DATASN < 4,
    go to TMSELARR4.
If $DATASN > 4,
    go to TMSELARR14.

NOTE: TMSELARR14 identical to TMSELARR4, except
      TMSELARR14 uses the TMSELARR14 screen and
      retrieves up to 14 arrhythmias at a time).
```

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Chapter 5.22: TMSELARR4

Purpose

The purpose of the TMSELARR4 step is to display up to 4 ARRHYTHMIAS records (by codes) to the user. The user can then select an existing record for review or modification, choose to insert a new record, or exit to a menu.

Called From

The TMSELARR4 step is called from TMSELARR (when $0 < \$DATASN \leq 4$).

Screen

TMSELARR4

Logic

1. Retrieve up to 4 ARRHYTHMIAS records, number screen accordingly, and display only the first character of each of the three items in the ARRHYTHMIAS record in 3 DBIs on the screen.
2. If 'select record' (SWI for select-arrhythmia option field) is:
 - a) '0', go to TMENFIND.
 - b) 'n', where $n = \$DATASP$, go to TMMODARR.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the ARRHYTHMIAS record sibling chain and retrieve the nth record via $SS2KCOUNT$. Go to TMMODARR.
 - d) 'n', where $n > \$DATASN$, go to TMINSARR.

Validation

1. The select-arrhythmias-codes option field (SWI is select record) is mandatory, range 0-5.
2. All other fields are protected.

Exhibit 5-20: TMSLARR4 Screen - Select 4 Arrhythmias in TREADMILL

```
<ssan>      <name>      <dob>      <sex>      <race>
<type>      <case #>    <doe>      <age>      <time>
<dx date>    <interpretation>
```

```
select arrhythmias codes _
```

```
1  ---
2
3
4
```

```
0  none of the above
```

1. All fields on this screen are protected, except for select-arrhythmias-codes option field (SWI is select record).

Chapter 5.23: TMSELARR14

Purpose

This step displays up to 14 ARRHYTHMIAS records (by code) at a time. The user can page through additional records, select an existing record for review or modification, choose to insert a new record, or exit to a menu.

Called From

The TMSELARR14 step is called from TMSELARR when more than 4 ARRHYTHMIAS records exist.

Screen

TMSELARR14

Logic

1. Retrieve up to 14 ARRHYTHMIAS records, number the screen accordingly, and display only the first character of each of the three items in the ARRHYTHMIAS record in 3 DBIs on the screen.
If \$DATASP < \$DATASN, then issue message: "Press Return To See More Records".
If \$DATASP = \$DATASN and \$DATASN > 14, then issue message: "Press Return To See Prior Records".
2. If 'select record' (SWI for select-arrhythmias option field) is
 - a) blanks, then if \$DATASP = \$DATASN, rewind locate file. In either case, go to 1.
 - b) '0', go to TMENFIND.
 - c) 'n', where n = \$DATASP, go to TMMODARR.
 - d) 'n', where $1 \leq n \leq$ \$DATASN, rewind the ARRHYTHMIAS sibling chain and retrieve the nth record via \$S2KCOUNT. Go to TMMODARR.
 - e) 'n', where n > \$DATASN, go to TMINSARR.

Validation

1. The select-arrhythmia-codes option field (SWI is select record) must be numeric, if entered.
2. All other fields are protected.

Exhibit 5-21: TMSLARR14 Screen - Select 14 Arrhythmias in TREADMILL

```
<ssan>          <name>          <dob>          <sex>          <race>
<type>    <case #>    <doe>    <age>    <time>
<dx date>    <interpretation>
```

```
select arrhythmias codes _
```

```
1  ---
2
3
4
5
6
7
8
9
10
11
12
13
14
```

```
0 none of the above
```

1. All fields on this screen are protected, except for select-arrhythmias-codes-option field (SWI is select record).

Chapter 5.24: TMMODARR

Purpose

To allow the user to modify existing ARRHYTHMIAS records.

Called From

This step is entered when the user selects an existing ARRHYTHMIAS record in TMSELARR4 or TMSELARR14, or after a new record is inserted in TMINSAARR.

Screen

TMMODARR

Logic

1. If the user enters an 'N' in the modify-arrhythmias option field (SWI is modify record), go to TMENFIND.
2. Else modify and go to phase 1.

Validation

1. The modify-arrhythmia field option (SWI is modify record) is mandatory and validated (YESNOTBL, exists).
2. The arrhythmia codes fields are edited on input according to the appropriate table associated with each item and are mandatory (TMARRTBL, edit column 1 to column 2 then validate on column 2, TMONSTBL, edit column 1 to column 2 then validate on column 2, TMFRETBL, edit column 1 to column 2 then validate on column 2).
3. User may input either short or long values. Short values will be edited to long and then validated.

Exhibit 5-22: TTMODARR Screen - Modify Arrhythmias in TREADMILL

```
<ssan>          <name>          <dob>          <sex>          <race>  
<type>    <case #>    <doe>    <age>    <time>  
<dx date>    <interpretation>
```

modify arrhythmias _

```
arrhythmia _____ (60 chars) _____  
  onset _____ (60 chars) _____  
frequency _____ (60 chars) _____
```

1. All fields on this screen are protected, except for the modify-arrhythmia option field (SWI is modify record), arrhythmia, onset, and frequency.

Chapter 5.25: TMINSARR

Purpose

To allow the user to insert a new ARRHYTHMIAS record for the current FINDINGS record.

Called From

This step is entered from TMSELARR4 when no ARRHYTHMIAS records exist or when user chooses to insert a new ARRHYTHMIAS record from TMSELARR4 or TMSELARR14.

Screen

TMINSARR

Logic

1. Display screen.
2. If the user enters 'N' to insert arrhythmias option field (SWI is insert record), go to TMENFIND.
3. Else, insert ARRHYTHMIAS record after. Go to TMODARR.

Validation

1. The insert-arrhythmias-codes field option (SWI is insert record) is mandatory and validated (YESNOTBL, exists).
2. The arrhythmia codes fields are edited on input according to the appropriate table associated with each item and are optional (TMARRTBL, edit column 1 to column 2 then validate on column 2, TMONSTBL, edit column 1 to column 2 then validate on column 2, TMFRETBL, edit column 1 to column 2 then validate on column 2).
3. User may input either short or long values. Short values will be edited to long and then validated.

Exhibit 5-23: **TMINSARR** Screen - Insert Arrhythmias in TREADMILL

```
<ssan>          <name>          <dob>          <sex>          <race>
<type>    <case #>    <doe>    <age>    <time>
<dx date>    <interpretation>

insert arrhythmias codes _

arrhythmia  _
  onset     _
  frequency _
```

1. All fields on this screen are protected, except for insert-arrhythmias-codes option field (SWI is insert record), arrhythmia, onset, and frequency. Data values will be put in the data base in long form.

Chapter 5.26: TMSELREPO

Purpose

The purpose of the TMSELREPO step is to determine if there are 0, between 1 and four (inclusive), or more than 4 REPOLARIZATION records. If there are 0, TMINSREPO is called to allow the user to insert a record; if there are between 1 and 4 (inclusive) records, TMSELREPO4 is called to display up to 4 REPOLARIZATIONS records; if there are more than 4, TMSELREPO14 is called to display for the user REPOLARIZATIONS records up to 14 at a time. This step has no screen associated with it.

Called From

The TMSELREPO step is called from TMENFIND.

Screen

None.

Logic

Select REPOLARIZATIONS records on
SSAN, DOE, and DXDATE.

If NODATA,

go to TMINSREPO.

If $0 < \$DATASN \leq 4$,

go to TMSELREPO4.

If $\$DATASN > 4$,

go to TMSELREPO14.

NOTE: TMSELREPO14 is identical to TMSELREPO4 except it uses the TMSELREPO14 screen and retrieves up to 14 repolarizations at a time).

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Chapter 5.27: TMSELREPO4

Purpose

The purpose of the TMSELREPO4 step is to display up to four (inclusive) REPOLARIZATION records (by code only). The user can then select an existing record for review or modification, choose to insert a new record, or exit to a menu.

Called From

The TMSELREPO4 step is called from TMSELREPO.

Screen

TMSELREPO4

Logic

1. Retrieve up to 4 REPOLARIZATIONS records, number screen accordingly, and display only the first character of each of the three items in the REPOLARIZATIONS record in 3 DBIs on the screen.
2. If 'select record' (SWI for select-repolarizations-codes option field) is:
 - a) '0', go to TMENFIND.
 - b) 'n', where $n = \$DATASP$, go to TMMODREPO.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the REPOLARIZATIONS record sibling chain and retrieve the nth record via $SS2KCOUNT$. Go to TMMODREPO.
 - d) 'n', where $n > \$DATASN$, go to TMINSREPO.

Validation

1. The select-repolarizations-codes option field (SWI is select record) is mandatory and must be numeric.
2. All other fields are protected.

Exhibit 5-24: TMSLREPO4 Screen - Select 4 TREADMILL Repolarizations

<ssan>	<name>	<dob>	<sex>	<race>
<type>	<case #>	<doe>	<age>	<time>
<dx date>	<interpretation>			

select repolarizations codes _

1 ---
2
3
4

0 none of the above

1. All fields on this screen are protected, except for the select-repolarizations-codes option field (SWI is select record).

Chapter 5.28: TMSELREPO14

Purpose

This step displays up to 14 REPOLARIZATIONS records (by codes) at a time. The user can page through additional records, select an existing record for review or modification, choose to insert a new record, or exit to a menu.

Called From

The TMSELREPO14 step is called from TMSELREPO when more than 4 REPOLARIZATIONS records exist.

Screen

TMSELREPO14

logic

1. Retrieve up to 14 REPLOARIZATIONS records, number screen accordingly, and display only the first character of each of the three items in the REPOLARIZATIONS record in 3 DBIs on the screen.

If \$DATASP < \$DATASN, then issue message: "Press Return To See More Records".

If \$DATASP = \$DATASN and \$DATASN > 14, then issue message: "Press Return To See Prior Records".

2. If 'select record' (SWI for select-vitals option field) is
 - a) blank, then if \$DATASP = \$DATASN, rewind locate file. In either case, go to 1.
 - b) '0', go to TMMENFIND.
 - c) 'n', where $n = \$DATASP$, go to TMMODREPO.
 - d) 'n', where $1 \leq n \leq \$DATASN$, rewind the REPOLARIZATIONS sibling chain and retrieve the nth record via \$S2KCOUNT. Go to TMMODREPO.
 - e) 'n', where $n > \$DATASN$, go to TMINBREPO.

Validation

1. The select-repolarizations-codes option field (SWI is select record) is optional and must be numeric, if entered.
2. All other fields are protected.

Exhibit 5-25: TMSLREPO14 Screen -Select 14 TREADMILL Repolarizations

<ssan>	<name>	<dob>	<sex>	<race>
<type>	<case #>	<doe>	<age>	<time>
<dx date>	<interpretation>			
select repolarizations codes __				
1	---			
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
0	none of the above			

1. All fields on this screen are protected, except for the select-repolarizations-codes option field (SWI is select record).

Chapter 5.29: TMMODREPO

Purpose

To allow the user to modify existing REPOLARIZATIONS records.

Called From

This step is entered when the user selects an existing REPOLARIZATIONS record in TMSELREPO4 or TMSELREPO14, or after a new record is inserted in TMINREPO.

Screen

TMMODREPO

Logic

1. If the user enters an 'N' in the modify-repolarizations option field (SWI is modify record), go to TMENFIND.
2. Else modify and go to phase 1.

Validation

1. The modify repolarizations field option (SWI is modify record) is mandatory and validated (YESNOTBL, exists).
2. The items in the REPOLARIZATIONS record are validated according to that particular table and are mandatory (TMLEATBL, edit to column 2, then validate on column 2 (TMPERTBL, edit to column 2, then validate on column 2 (TMREPTBL, edit to column 2, then validate on column 2

Exhibit 5-26: TMMODREPO Screen - Modify Repolarizations in TREADMILL

<ssan>	<name>	<dob>	<sex>	<race>
<type>	<case #>	<doe>	<age>	<time>
<dx date>	<interpretation>			

modify repolarizations _

lead	_____	(60 chars)
period	_____	(60 chars)
repolarization	_____	(60 chars)

1. All fields on this screen are protected, except for the modify-repolarizations-codes option field (SWI is modify record), lead, period, and repolarization.
2. The items in the REPOLARIZATIONS record will always appear in long form, but the user may use either the short or the long form in modifying the record. The items will be edited to long for the data base.

Chapter 5.30: TMINSREPO

Purpose

To allow the user to insert a new REPOLARIZATIONS record (by codes) for the current FINDINGS record.

Called From

This step is entered from TMSELREPO4 when no REPOLARIZATIONS records exist or when user chooses to insert a new REPOLARIZATIONS record from TMSELREPO4 or TMSELREPO14.

Screen

TMINSREPO

Logic

1. Display screen.
2. If the user enters 'N' to insert-repolarizations-codes option field (SWI is insert record), go to TMENFIND.
3. Else, insert REPOLARIZATIONS record after. Go to TMMODREPO.

Validation

1. The insert-repolarizations option field (SWI is insert record) is mandatory (YESNOTBL, exists).
2. The items in the REPOLARIZATIONS record are validated according to that particular table but are optional (TMLEATBL, edit to column 2, then validate on column 2 (TMPERTBL, edit to column 2, then validate on column 2 (TMREPTBL, edit to column 2, then validate on column 2

Exhibit 5-27: **TMINREPO** Screen - Insert Repolarizations in **TREADMILL**

```
<ssan>          <name>          <dob>          <sex>          <race>
<type>    <case #>    <doe>    <age>    <time>
<dx date>    <interpretation>
```

```
insert repolarizations _
```

```
      lead      _
      period     _
repolarization  _
```

1. All fields on this screen are protected, except for insert-repolarizations option field (SWI is insert record), lead, period, and repolarization. Data values will be put in the data base in long form.

Chapter 5.31: TMSELECODE

Purpose

The purpose of the TMSELECODE step is to determine if there are 0, between 1 and 4 (inclusive), or more than 4 ECG-CODES records. If there are 0 ECG-CODE records selected, TMINSECODE is called to allow the user to insert a record; if there are between 1 and four ECG-CODES records, TMSELECODE4 is called to display up to 4 records; if there are more than 4 records, TMSELECODE14 is called to display for the user ECG-CODES records up to 14 at a time. This step does not have a screen associated with it.

Called From

The TMSELECODE step is called from TMENFIND which is the FINDINGS menu.

Screen

None.

Logic

```
Select ECG-CODES records on
      SSAN, DOE, and DXDATE.
If NODATA,
    go to TMINSECODE.
If 0 < $DATASN < 4,
    go to TMSELECODE4.
If $DATASN > 4,
    go to TMSELECODE14.
```

NOTE: TMSELECODE14 is identical to TMSELECODE4 except it uses the TMSELECODE14 screen and retrieves up to 14 ecg-codes at a time).

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Chapter 5.32: TMSELECODE4

Purpose

The purpose of the TMSELECODE4 step is to display up to 4 ECG-CODES records. The user can then select an existing record for review or modification, choose to insert a new record, or exit to a menu.

Called From

The TMSELECODE4 step is called from TMSELECODE (when $0 < \$DATASN \leq 4$).

Screen

TMSELECODE4

Logic

1. Retrieve up to 4 ECG-CODE records, number screen accordingly, and display.
2. If 'select record' (SWI for select-ecg-codes option field) is
 - a) '0', go to TMMENFIND.
 - b) 'n', where $n = \$DATASP$, go to TMMODECODE.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the ECG-CODES record sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to TMMODECODE.
 - d) 'n', where $n > \$DATASN$, go to TMINSECODE.

Validation

1. The select-ecg-codes option field (SWI is select record) is mandatory and must be numeric.
2. All other fields are protected.

Exhibit 5-28: TMSELECODE4 Screen - Select 4 ECG Codes in TREADMILL

<ssan>	<name>	<dob>	<sex>	<race>
<type>	<case #>	<doe>	<age>	<time>
<dx date>	<interpretation>			

select ecg codes _

1 _____(72 chars)_____

2

3

4

0 none of the above

1. All fields on this screen are protected, except for select ecg-codes option field (SWI is select record).
2. All ecg codes will appear in long form.

Chapter 5.33: TMSELECODE14

Purpose

This step displays up to 14 ECG-CODES records at a time. The user can page through additional records, select an existing record for review or modification, choose to insert a new record, or exit to a menu.

Called From

The TMSELECODE14 step is called from TMSELECODE (when more than 4 ECG-CODES records exist).

Screen

TMSELECODE14

Logic

1. Retrieve up to 14 ECG-CODES records, number screen accordingly, and display.

If \$DATASP < \$DATASN, then issue message: "Press Return To See More Records".

If \$DATASP = \$DATASN and \$DATASN > 14, then issue message: "Press Return To See Prior Records".

2. If 'select record' (SWI for select-ecg-codes option field) is
 - a) blank, then if \$DATASP = \$DATASN, rewind locate file. In either case, go to 1.
 - b) '0', go to TMMENFIND.
 - c) 'n', where $n = \$DATASP$, go to TMMODECODE.
 - d) 'n', where $1 \leq n \leq \$DATASN$, rewind the ECG-CODES sibling chain and retrieve the nth record via \$\$2KCOUNT. Go to TMMODECODE.
 - e) 'n', where $n > \$DATASN$, go to TMINSECODE.

Validation

1. The select-ecg-codes option field (SWI is select record) is mandatory and must be numeric.
2. All other fields are protected.

Exhibit 5-29: TMSELECODE14 Screen -Select 14 ECG Codes in TREADMILL

<ssan>	<name>	<dob>	<sex>	<race>
<type>	<case #>	<doe>	<age>	<time>
<dx date>	<interpretation>			

select ecg codes __

1 _____ (72 chars) _____

2

3

4

5

6

7

8

9

10

11

12

13

14

0 none of the above

1. All fields on this screen are protected, except for select ecg-codes option field (SWI is select record).
2. Codes will appear in long form.

Chapter 5.34: TMODECODE

Purpose

To allow the user to modify existing ECG-CODES records.

Called From

This step is entered when the user selects an existing ECG-CODES record in TMSELECODE4 or TMSELECODE14, or after a new record is inserted in TMINSECODE.

Screen

TMODECODE

Logic

1. If the user enters an 'N' in the modify-ecg-codes option field (SWI is modify record), go to TMENFIND.
2. Else modify and go to phase 1.

Validation

1. The modify ecg codes field option (SWI is modify record) is mandatory and validated (YESNOTBL, exists).
2. The ECG-CODES field is edited on input from COL1 to COL2 (ECGCODESTBL, exists) and validated on ECGCODESTBL COL2.

Exhibit 5-30: ~~TM~~MODECODE Screen - Modify ECG Codes in TREADMILL

```
<ssan>          <name>          <dob>          <sex>          <race>
<type>    <case #>    <doe>    <age>    <time>
<dx date>    <interpretation>
```

modify ecg codes _

ecg code

_____ (72 chars) _____

1. All fields on this screen are protected, except for the modify ecg codes option field (SWI is modify record) and ECG-CODE.
2. ECG code will appear in long form, but user may use either in modifying the record.

Chapter 5.35: TMINSECODE

Purpose

To allow the user to insert a new ECG-CODES record for the current FINDINGS record.

Called From

This step is entered from TMSELECODE when no ECG-CODES records exist or when user chooses to insert a new ECG-CODES record from TMSELECODE4 or TMSELECODE14.

Screen

TMINSECODE

Logic

1. Display screen.
2. If the user enters 'N' to insert-ecg-codes option field (SWI is insert record), go to TMENFIND.
3. Else, insert ECG-CODES record after. Go to TMODECODE.

Validation

1. The insert ecg codes option field (SWI is insert record) is mandatory (YESNOTBL, exists).
2. Otherwise, same as TMODECODE, except DBI is optional.

Exhibit 5-31: TMINSECODE Screen - Insert ECG Codes in TREADMILL

```
<ssan>          <name>          <dob>      <sex>      <race>
<type>   <case #>  <doe>    <age>   <time>
<dx date>  <interpretation>
```

```
insert ecg codes _
```

```
    ecg code
```

```
    _
```

1. All fields on this screen are protected, except for insertecg-codes option field (SWI is insert record) and 'ecg code'. Data values will be put in the data base in long form.

PART 6: THE PULMONARY DATABASE

The PULMONARY transaction is the same as previous transactions except that in each lower level selection step (below EXAMS), there is only one occurrence of type of record, so the selection steps only have to determine whether or not a particular type of record exists. There are four different record types; namely, baseline spirometry and bronchodilated spirometry (PFTS records) and, arterial blood gases at rest and arterial blood gases with exercise (ARTERIAL GASES records). In PFTS records, the type is determined by the contents of the component Bronchodilated. If Bronchodilated is null or N, the record is a baseline spirometry; if Bronchodilated is Y, the record is a bronchodilated spirometry. In ARTERIAL GASES records, the type is determined by the contents of the component Exercise. If Exercise is null or N, the record is arterial blood gas at rest; if Exercise is Y, the record is arterial blood gas with exercise. If a record type exists, a step is called to allow the user to modify the record. If the record type does not exist, a step is called to allow the user to insert a new record.

The PULMONARY data base definition and sample input data forms are shown in the following exhibits. The steps which update the data base are then presented in the logical order in which they would be encountered.

Exhibit 6-1: PULMONARY Database Definition

DESCRIBE:
SYSTEM RELEASE NUMBER 2.97
DATA BASE NAME IS PULMONARY
DEFINITION NUMBER 2
DATA BASE CYCLE 3

0* PERSON

1* SSAN (CHAR X(9))
2* NAME (CHAR X(19))
3* DOB (DATE)
4* SEX (NON-KEY CHAR X)
5* EXAMS (RECORD)

6* DOE (DATE IN 5)
7* TIME (NON-KEY INTEGER NUMBER 9999 IN 5)
8* AGE (INTEGER NUMBER 99 IN 5)
9* GRADE (CHAR XXX IN 5)
10* TITLE (NON-KEY CHAR XXX IN 5)
11* TYPE (NON-KEY CHAR X IN 5)
12* CASE-NO (INTEGER NUMBER 9(5) IN 5)
13* TEMP (NON-KEY INTEGER NUMBER 99 IN 5)
14* HT (NON-KEY INTEGER NUMBER 999 IN 5)
15* WT (NON-KEY DECIMAL NUMBER 999.9 IN 5)
16* BSA (NON-KEY DECIMAL NUMBER 9.99 IN 5)
17* BARO (NON-KEY INTEGER NUMBER 999 IN 5)
18* EVER-SMOKED-CIGARETTES-FOR-ONE-YEAR (CHAR X IN 5)
19* SMOKE-CIGARETTES-NOW (CHAR X IN 5)
20* QUIT-CIGARETTES-LESS-THAN-ONE-YEAR (NON-KEY CHAR X IN 5)
21* WHOLE-YEARS-SINCE-QUIT-CIGARETTES (NON-KEY INTEGER NUMBER 9
9 IN 5)
22* TOTAL-YEARS-CIGARETTES-SMOKED-REGULARLY (NON-KEY INTEGER NU
MBER 99 IN 5)
23* OVER-SMOKING-YEARS-AVERAGE-FACS-PER-DAY (NON-KEY DECIMAL N
UMBER 9.9 IN 5)
24* PACK-YEARS (NON-KEY INTEGER NUMBER 999 IN 5)
25* HX-ASTHMA-EVER (CHAR X IN 5)
26* HX-CHRONIC-COUGH (CHAR X IN 5)
27* HX-RECENT-COLD (CHAR X IN 5)
28* FM-HX-LUNG-DX (CHAR X IN 5)
29* HRS-SINCE-SMOKED (NON-KEY INTEGER NUMBER 99 IN 5)
30* ECOLIZER (NON-KEY INTEGER NUMBER 999 IN 5)
31* PFT-WNL (CHAR X IN 5)
32* TECH-SSAN (NON-KEY CHAR X(9) IN 5)
33* TECH-INITIALS (NON-KEY CHAR XXX IN 5)
34* PFTS (RECORD IN 5)

35* BRONCHODILATED (NON-KEY CHAR X IN 34)
36* FVC-EXP (NON-KEY DECIMAL NUMBER 9.99 IN 34)
37* FVC-OBS (NON-KEY DECIMAL NUMBER 9.99 IN 34)
38* FVC-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
39* FEV05-EXP (NON-KEY DECIMAL NUMBER 9.99 IN 34)
40* FEV05-OBS (NON-KEY DECIMAL NUMBER 9.99 IN 34)
41* FEV05-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
42* FEV05-FVC (NON-KEY INTEGER NUMBER 999 IN 34)
43* FEV1-EXP (NON-KEY DECIMAL NUMBER 9.99 IN 34)
44* FEV1-OBS (NON-KEY DECIMAL NUMBER 9.99 IN 34)
45* FEV1-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
46* FEV1-FVC (NON-KEY INTEGER NUMBER 999 IN 34)
47* FEV3-EXP (NON-KEY DECIMAL NUMBER 9.99 IN 34)
48* FEV3-OBS (NON-KEY DECIMAL NUMBER 9.99 IN 34)

Exhibit 6-1: PULMONARY Database Definition (continued)

49* FEV3-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
50* FEV3-FVC (NON-KEY INTEGER NUMBER 999 IN 34)
51* FEF0-25 (NON-KEY DECIMAL NUMBER 99.99 IN 34)
52* FEF25-75-EXP (NON-KEY DECIMAL NUMBER 9.99 IN 34)
53* FEF25-75-OBS (NON-KEY DECIMAL NUMBER 9.99 IN 34)
54* FEF25-75-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
55* FEF75-85-EXP (NON-KEY DECIMAL NUMBER 9.99 IN 34)
56* FEF75-85-OBS (NON-KEY DECIMAL NUMBER 9.99 IN 34)
57* FEF75-85-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
58* VMAX50-EXP (NON-KEY DECIMAL NUMBER 9.99 IN 34)
59* VMAX50-OBS (NON-KEY DECIMAL NUMBER 9.99 IN 34)
60* VMAX50-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
61* VMAX75-EXP (NON-KEY DECIMAL NUMBER 9.99 IN 34)
62* VMAX75-OBS (NON-KEY DECIMAL NUMBER 9.99 IN 34)
63* VMAX75-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
64* PEF-EXP (NON-KEY DECIMAL NUMBER 99.99 IN 34)
65* PEF-OBS (NON-KEY DECIMAL NUMBER 99.99 IN 34)
66* PEF-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
67* PIF-EXP (NON-KEY DECIMAL NUMBER 99.99 IN 34)
68* PIF-OBS (NON-KEY DECIMAL NUMBER 99.99 IN 34)
69* PIF-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
70* TLC-EXP (NON-KEY DECIMAL NUMBER 9.99 IN 34)
71* TLC-OBS (NON-KEY DECIMAL NUMBER 9.99 IN 34)
72* TLC-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
73* FRC-EXP (NON-KEY DECIMAL NUMBER 9.99 IN 34)
74* FRC-OBS (NON-KEY DECIMAL NUMBER 9.99 IN 34)
75* FRC-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
76* RV-EXP (NON-KEY DECIMAL NUMBER 9.99 IN 34)
77* RV-OBS (NON-KEY DECIMAL NUMBER 9.99 IN 34)
78* RV-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
79* RV-TLC (NON-KEY INTEGER NUMBER 999 IN 34)
80* DLCO-EXP (NON-KEY DECIMAL NUMBER 99.99 IN 34)
81* DLCO-OBS (NON-KEY DECIMAL NUMBER 99.99 IN 34)
82* DLCO-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
83* VA-EXP (NON-KEY DECIMAL NUMBER 9.99 IN 34)
84* VA-OBS (NON-KEY DECIMAL NUMBER 9.99 IN 34)
85* VA-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
86* DLCO-VA-EXP (NON-KEY DECIMAL NUMBER 9.99 IN 34)
87* DLCO-VA-OBS (NON-KEY DECIMAL NUMBER 9.99 IN 34)
88* DLCO-VA-PCT (NON-KEY INTEGER NUMBER 999 IN 34)
89* TLC-VA (NON-KEY INTEGER NUMBER 999 IN 34)
90* N2-WASHOUT (NON-KEY DECIMAL NUMBER 99.99 IN 34)
98* ARTERIAL-GASES (RECORD IN 5)
99* EXERCISE (CHAR X IN 98)
100* INSPIRED-O2-PCT (NON-KEY INTEGER NUMBER 999 IN 98)
101* HGB (NON-KEY DECIMAL NUMBER 99.9 IN 98)
102* CO-HGB (NON-KEY DECIMAL NUMBER 99.9 IN 98)
103* SAO2 (NON-KEY INTEGER NUMBER 999 IN 98)
104* PAO2 (NON-KEY INTEGER NUMBER 999 IN 98)
105* PACO2 (NON-KEY INTEGER NUMBER 99 IN 98)
106* PH (NON-KEY DECIMAL NUMBER 9.99 IN 98)

Exhibit 6-2: PULMONARY Sample Input Forms

PAGE NO.		13 PULMONARY FUNCTION (THIS FORM IS AFFECTED BY THE PRIVACY ACT OF 1974 - SEE DD FORM 1003)									
SOCIAL SECURITY NO.			NAME (Last, First, Middle Initial)				GRADE		CASE NO.		
X			X				X		X		
DATE OF EXAMINATION			TIME		DAY OF BIRTH			TEMPERATURE			
YEAR	MONTH	DAY			YEAR	MONTH	DAY				
HEIGHT			WEIGHT		BAROMETRIC PRESSURE						
X			X		X			X			
HEIGHT			WEIGHT		BAROMETRIC PRESSURE						
X			X		X			X			
SPIROMETRY											
BASELINE				POST BRONCHODILATOR							
	PREDICTED	OBS	% PREDICTED		PREDICTED	OBS	% PREDICTED				
FVC		X				X					
FoV 0.5		X				X					
FoV 1.0		X				X					
FoV 3.0		X				X					
FoF 0.25		X				X					
FoF 25-75		X				X					
FLOW VOLUME CURVES				DIFFUSION CAPACITY							
	PREDICTED	OBS	% PREDICTED		PREDICTED	OBS	% PREDICTED				
V max 50		X		DLCO		X					
V max 75		X		VA		X					
PeF		X		DL/VA							
PiF		X									
No DILUTION/Lung Volume				ARTERIAL BLOOD GASES							
	PREDICTED	OBS	% PREDICTED	HGB		X					
TLC		X		CO Hgb							
FRC		X		SoO ₂							
RV		X		PeO ₂							
NITROGEN WASHOUT				PH							

modify spirometry

modify Flow Volume Curves

①

2

AND 122 REPLACES SAM FORM 18, OCT 76, WHICH IS OBSOLETE.
① + ② = modify gas studies.

Exhibit 6-2: PULMONARY Sample Input Forms (continued)

CIGARETTE HISTORY			
A. HAS THE SUBJECT EVER SMOKED CIGARETTES FOR AT LEAST ONE YEAR? (Circle One)			NO YES
B. DOES HE SMOKE NOW? (Circle One)			NO YES
C. IF HE DOES NOT SMOKE NOW, WHEN DID HE STOP?	(1) LESS THAN ONE YEAR AGO		←
	(2) ENTER NUMBER OF YEARS IF ONE OR MORE		
D. WHAT IS THE TOTAL OF THE YEARS THAT THE SUBJECT SMOKED REGULARLY? ENTER NUMBER OF YEARS			←
E. OVER THE YEARS, HOW MANY CIGARETTES HAS THE SUBJECT SMOKED A DAY ON THE AVERAGE? (If he has stopped, how many did he usually smoke?) ENTER NUMBER PACKS/DAY			←
PULMONARY HISTORY			
A. HAS THE SUBJECT EVER HAD ASTHMA? (Circle One)			NO YES
B. HAS THE SUBJECT HAD A CHRONIC COUGH? (Circle One)			NO YES
C. HAS THE SUBJECT RECENTLY HAD OR DOES HE NOW HAVE A COLD? (Circle One)			NO YES
D. HAS ANYONE IN THE SUBJECT'S FAMILY HAD LUNG DISEASE? (Circle One)			NO YES
INTERPRETATION			
Carbon monoxide level HRS Since Last smoke FEF 75-85 all of the above			

Chapter 6.1: PULSELPERS

Purpose

This step determines whether the Person selected (based on SSAN) exists in the PULMONARY data base. If it does, a step is called which allows the user to continue updating the data base. If not, a step is called which allows the user insert the new person.

Called From

This step is called from ECGMENPERS when the option is chosen to update the PULMONARY data base.

Screen

None.

Logic

1. Select PUL PERSON on current SSAN. If found, go to PULSELEXAM.
2. Else, go to PULINSPERS.

Validation

None.

Chapter 6.2: PULINSPERS

Purpose

The purpose of this step is to allow the user to insert a person that does not exist in the PUL data base. Person data entered into the data base must be the same as what is in ECG. Called From

PULSELPERS.

Screen

PULINSPERS

Logic

1. IF insert-person option field = 'Y',
 insert PUL PERSON after;
 go to PULSELEXAM.
2. IF insert-person option field = 'N',
 go to ECGMENPERS.

Validation

1. Insert-person option field mandatory (YESNOTBL, exists).

Exhibit 6-3: POLINSPERS - Insert A Person Into The Data Base

insert person _			
<ssan>	<name>	<dob>	<sex>
- - -	_____	- / -	-

1. All fields protected except for insert-person option field.
2. SWI for insert-person option field is insert record.

Chapter 6.3: PULSELEXAM

Purpose

The purpose of this step is to first determine how many, if any, exam records exist in the data base. If no records exist, the step is called which allows the user to insert exams; if 1 to 4 records exist (inclusive), the step is called to display up to 4 records for the user's selection; finally, if there are more than 4 records, the step is called which displays the records for the user up to 14 at a time.

Called From

PULSELPERS when a person exists in the data base at access time and PULINSPERS when a person has been added to the data base.

Screen

None.

Logic

1. Select EXAMS records on SSAN.
2. If \$DATASN is
 - a) 0, go to PULINSEXAM.
 - b) n , where $1 \leq n \leq 4$,
go to PULSELEXAM4.
 - c) n , where $n \geq 4$,
go to PULSELEXAM14.

Validation

None.

Chapter 6.4: PULSEEXAM4

Purpose

To display existing PULMONARY exams up to four at a time. The user can exit, select an existing exam for optional modification or choose to insert a new exam.

Called From

This step is entered from PULSEEXAM when there are between 1 and 4 EXAM records in the data base.

Screen

PULSEEXAM4.

Logic

1. Retrieve up to 4 EXAMS records and display the screen.
2. If the select-exam option field =
 - a) blank,
issue message and return to Phase 2.
 - b) '0', go to ECGMENPERS.
 - c) 'n', where $n = \$DATASP$,
go to PULMODEXAM.
 - d) 'n', where $1 \leq n \leq \$DATASN$,
rewind sibling chain,
retrieve record via $SS2KCOUNT$,
go to PULMODEXAM.
 - e) 'n', where $n > \$DATASN$,
go to PUINSERTEXAM.

Validation

1. Select exam option field - numeric, if exists.
2. All other fields are protected.

Exhibit 6-4: PULSEEXAM4 - Select From Up To 4 Exams

<ssan>	<name>	<dob>	<sex>		
select exam _					
	type	case #	doe	time	age
1	—	—	/ /	—	—
2	—	—	/ /	—	—
3	—	—	/ /	—	—
4	—	—	/ /	—	—
0 none of the above					

1. This screen is used when the number of exams found is between 1 and 4 (inclusive).
2. All fields except for select-exam option field are protected.

Chapter 6.5: PULSELEXAM14

Purpose

To display existing PUL exams up to 14 at a time. The user can exit, select an existing exam for optional modification or choose to insert a new exam.

Called From

This step is entered from PULSELEXAM when more than 4 EXAMS records exist in the PULMONARY data base.

Screen

PULSELEXAM14.

Logic

Retrieve up to 14 EXAMS records.

Number screen accordingly, and display.

If \$DATASP < \$DATASN, then issue message:

"PRESS RETURN TO SEE MORE RECORDS".

If \$DATASP = \$DATASN and \$DATASN > 14, then issue message:

"PRESS RETURN TO SEE PRIOR RECORDS".

If 'select record' (SWI for select-exam option field) is blanks, if \$DATASP = \$DATASN, rewind locate file.

go to phase 1.

0, go to ECGMENPERS.

n, where n = \$DATASP, go to PULMODEXAM.

n, where $1 \leq n \leq$ \$DATASN,

rewind the sibling chain;

retrieve the nth record via \$\$2KCOUNT;

go to PULMODEXAM.

n, where n > \$DATASN,

go to PULINSEXAM.

Validation

1. The select-exam option field (SWI select record) - numeric, if present.

Exhibit 6-5: PULSELEXAM14 - Select From Up To 14 Exams

<ssan>	<name>	<dob>	<sex>
select exam _			
type	case #	doe	time age
1	—	—/—/—	—
2	—	—/—/—	—
3	—	—/—/—	—
4	—	—/—/—	—
5	—	—/—/—	—
6	—	—/—/—	—
7	—	—/—/—	—
8	—	—/—/—	—
9	—	—/—/—	—
10	—	—/—/—	—
11	—	—/—/—	—
12	—	—/—/—	—
13	—	—/—/—	—
14	—	—/—/—	—
0 none of the above			

1. This screen is identical to PULSELEXAM4 except that it will accommodate up to 14 exams per screen.
2. All data on the screen is protected except for the select-exam option field.
3. The SWI name for the select-exam option field is select record.
4. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 6.6: PULINSEXAM

Purpose

To allow the user to insert a new PULMONARY exam.

Called From

This step is entered when a person has no PULMONARY exams (including the case when the person was just inserted in the data base) and when the user chooses insert from PULSELEXAM4 or PULSELEXAM14.

Screen

PULINSEXAM.

Logic

Blank exams fields and display screen.

If insert-exam option field (SWI insert record) = N,

 If \$DATASN > 0,
 go to PULSELEXAM.

 Else
 go to ECGMENPERS.

If insert-exam option field (SWI insert record) = Y,

 If C18 ≠ Y,
 If C19, C20, C21, C22, and C23 ≠ null, issue message:
 "INCONSISTENT ANSWERS PROVIDED"; go to phase 2.

 Else If C18 = Y,
 If C19, C22, or C23 = null, issue message:
 "INCONSISTENT ANSWERS PROVIDED"; go to phase 2.

 If C19 = N,
 If C20 = null, issue message:
 "INCONSISTENT ANSWERS PROVIDED"; go to phase 2.

 Else If C19 = Y,
 If C20 and C21 ≠ null, issue message:
 "INCONSISTENT ANSWERS PROVIDED"; go to phase 2.

 If C20 = 'N',
 If C21 = null, issue message:
 "INCONSISTENT ANSWERS PROVIDED"; go to phase 2.

 If C20 = 'Y',
 If C21 ≠ null, issue message:
 "INCONSISTENT ANSWERS PROVIDED"; go to phase 2.

 calculate PACK YEARS = C23*C22.

 insert EXAMS record after.

 go to PULMODEXAM.

Validation

insert record	mandatory, table (YESNOTBL, exists).
Grade	mandatory, table (GRADELBL, previously defined).
Type	mandatory, table (TYPETBL, previously defined).
Case no	mandatory, range (1-25000).
Age	mandatory, range (17-60). also validate against DOB and DOE.
Time	mandatory, range (0700-1700). partial field HRS with range (07-17). partial field MIN with range (00-59).
Temp	range (16-27).
Ht	mandatory, range (150-210).
Wt	mandatory, range (40.0-130.0).
C18-C20,C25-C28	table (YESNOTBL, exists).
Bsa	range (1.0-2.7).
Baro	range (730-795).

<continued next page>

Validation (continued)

Whole years since quit	range (1-50).
Total years smoked	range (1-50).
Avg ppd	range (0.1-4.0).
Hours since smoked	range (1-100).
Ecolizer	range (1-50).
PFT-WNL	table (YESNOTBL, exists).
Bronchodilated mandatory,	table (YESNOTBL, exists).
FVC OBS	range (2.0-9.0).
FEV05 OBS	range (1.0-6.0).
FEV1 OBS	range (1.5-7.0).
FEV3 OBS	range (2.0-8.0).
FEF 25 75 OBS	range (0.5-9.0).
FEF 75 85 OBS	range (0.1-6.0).
VMAX 50 OBS	range (0.1-10.0).
VMAX 75 OBS	range (0.3-8.0).
PEF OBS	range (1.0-17.0).
PIF OBS	range (1.0-17.0).
TLC OBS	range (3.0-11.0).
FRC OBS	range (1.5-7.0).
RV OBS	range (0.3-5.0).
PLC0 OBS	range (14.0-65.0).
VA OBS	range (1.0-11.0).
N2 Washou:	range (1.0-5.0).

Exhibit 6-6: **PULIPSM EXAM** - Insert Pulmonary Exam

<ssan>	<name>	<dob>	<sex>
insert exam _			
grade	type	case no	doe
___	___	___	___/___/___
			time
			___:___
			age

temp	ht	wt	
c	cm	kg	
___	___	___	
		bsa	baro
		___	___
			tech
			ssan

			tech
			initials

ever smoked cigarettes for one year			
___ if no -----			
smoke cigarettes now			
___ if yes -----+			
quit cigarettes less than one year			
___ if yes ----->			
whole years since quit cigarettes			
___ <-----+			
total years cigarettes smoked regularly			
___ <-----+			
over smoking years average packs per day			
___ ----+			
pack years			
___ <-----+			
hx asthma ever			
___ <-----+			
hx chronic cough			

hx recent cold			

fm hx lung dx			

hours since smoked			

ecolizer			

pft wnl			

1. Pack years DBI is protected along with first row. For vertical dashes, use the character which is the shift on the reverse slash.

Chapter 6.7: PULMODEXAM

Purpose

To allow the user to modify an existing PUL EXAMS record.

Called From

This step is entered when the user selects an exam in PULSEEXAM4 or PULSEEXAM14 or after an exam is inserted in PULINSEXAM.

Screen

PULMODEXAM.

Logic

Move HT to PRIORHT, WT to PRIORWT, and AGE to PRIORAGE.

Display screen.

If modify-exam option field (SWI modify record) = N,
go to PULMENEXAM.

If modify-exam option field (SWI modify record) = Y,

 If C18 ≠ Y,

 If C19, C20, C21, C22, and C23 ≠ null, issue message:

 "INCONSISTENT ANSWERS PROVIDED"; go to phase 2.

 Else If C18 = Y,

 If C19, C22, or C23 = null, issue message:

 "INCONSISTENT ANSWERS PROVIDED"; go to phase 2.

 If C19 = N,

 If C20 = null, issue message:

 "INCONSISTENT ANSWERS PROVIDED"; go to phase 2.

 Else If C19 = Y,

 If C20 and C21 ≠ null, issue message:

 "INCONSISTENT ANSWERS PROVIDED"; go to phase 2.

 If C20 = 'N',

 If C21 = null, issue message:

 "INCONSISTENT ANSWERS PROVIDED"; go to phase 2.

 Else If C20 = 'Y',

 If C21 ≠ null, issue message:

 "INCONSISTENT ANSWERS PROVIDED"; go to phase 2.

 calculate PACK YEARS = C23*C22.

 issue a modify for EXAMS record.

 If HT ≠ PRIORHT or WT ≠ PRIORWT or AGE ≠ PRIORAGE,

 retrieve PFTS records one at a time,

 for each PFTS record, re-compute all 'EXP' items,

 re-compute all 'PCT' items,

 modify the record.

 on EOD, go to phase 1.

go to phase 1.

Note: EXP and PCT items are recomputed
according to the rules in Appendix B.

Validation

modify record	mandatory, table (YESNOTBL, exists).
Grade	mandatory, table (GRADETBL, previously defined).
Type	mandatory, table (TYPETBL, previously defined).
Case no	mandatory, range (1-25000).
Age	mandatory, range (17-60). also validate against DOB and DOE.
Time	mandatory, range (0700-1700). partial field HRS with range (07-17). partial field MIN with range (00-59).
Temp	range (16-27).
Ht	mandatory, range (150-210).
Wt	mandatory, range (40.0-130.0).
C18-C20,C25-C28	table (YESNOTBL, exists).
Bsa	range (1.0-2.7).
Baro	range (730-795).

<continued next page>

Validation (continued)

Whole years since quit	range (1-50).
Total years smoked	range (1-50).
Avg ppd	range (0.1-4.0).
Hours since smoked	range (1-100).
Ecolizer	range (1-50).
PFT-WNL	table (YESNOTBL, exists).
Bronchodilated mandatory,	table (YESNOTBL, exists).
FVC OBS	range (2.0-9.0).
FEV05 OBS	range (1.0-6.0).
FEV1 OBS	range (1.5-7.0).
FEV3 OBS	range (2.0-8.0).
FEF 25 75 OBS	range (0.5-9.0).
FEF 75 85 OBS	range (0.1-6.0).
VMAX 50 OBS	range (0.1-10.0).
VMAX 75 OBS	range (0.3-8.0).
PEF OBS	range (1.0-17.0).
PIF OBS	range (1.0-17.0).
TLC OBS	range (3.0-11.0).
FRC OBS	range (1.5-7.0).
RV OBS	range (0.3-5.0).
PLCO OBS	range (14.0-65.0).
VA OBS	range (1.0-11.0).
N2 Washout	range (1.0-5.0).

Exhibit 6-7: PULMODEXAM - Modify Exam Record

<ssan>	<name>	<dob>	<sex>
modify exam _			
grade	type	case no	doe
__	__	__	__/_/_
			time
			__:
			age
			__
temp	ht	wt	
c	cm	kg	
__	__	__	
			bsa
			baro
			tech
			ssan
			__
			tech
			initials
			__
ever smoked cigarettes for one year			
smoke cigarettes now			
quit cigarettes less than one year			
whole years since quit cigarettes			
total years cigarettes smoked regularly			
over smoking years average packs per day			
pack years			
hx asthma ever			
hx chronic cough			
hx recent cold			
fm hx lung dx			
hours since smoked			
ecolizer			
pft wnl			

1. Pack years DBI is protected along with first row. For vertical dashes, use the character which is the shift on the back slash.

Chapter 6.8: PULMENEXAM

Purpose

This step allows the user to go to steps which allow the selection of a new person, a new data base, an updating method for the PUL data base, or to exit the PUL data base.

Called From

This step is entered from PULMODEXAM and lower level steps that have completed.

Screen

PULMENEXAM.

Logic

Display screen.

If select next step option field is

0, go to exit;

1, go to ECGSELPERS.

2, go to ECGMENPERS.

3, go to PULSELEXAM.

4, go to PULSELBASE.

5, go to PULSELBRON.

6, go to PULSELABAR.

7, go to PULSELABWE.

Validation

1. Select next step option field - numeric, range (0-7).

Exhibit 6-8: **PULMENEXAM** - Menu for Updating **EXAMS** Descendents

<ssan>	<name>		<dob>	<sex>
<type>	<case no>	<doe>	<age>	<time>
select next step _				
1	person			
2	data base			
3	select new exam			
4	update baseline spirometry			
5	update bronchodilated spirometry			
6	update arterial bloodgases at rest			
7	update arterial bloodgases with exercise			
0	exit			

1. First three rows are protected.
2. SWI for select-next-step option field is unprotected.

Chapter 6.9: PULSELBASE

Purpose

This step first determines if a baseline spirometry (PFTS type record) exists for the current patient. If it does, PULMODBASE is called to allow the user to modify the baseline spirometry. If a baseline spirometry does not exist, PULINSBASE is called to allow the user to insert a new baseline record. After insert, the user is allowed to modify the spirometry. PULMODBASE returns to PULMENEXAM for another transaction.

A baseline spirometry is determined by the Bronchodilated component in the data base. If it does not exist or is N, it is a baseline spirometry. If Bronchodilated equals Y, it is a Bronchodilated type PFTS record.

Called From

PULMENEXAM.

Screen

None.

Logic

Select PFTS records on SSAN, DOE and (C35 = null or C35 = N).

If NODATA,

go to PULINSBASE.

If \$DATASN = 1,

retrieve PFTS record;

go to PULMODBASE.

If \$DATASN > 1,

issue message:

"MORE THAN ONE BASELINE SPIROMETRY FOR THIS EXAM"

go to PULMENEXAM.

Validation

None.

Chapter 6.10: PULINSBASE

Purpose

The purpose of this step is to allow the user to insert a new baseline type spirometry (PFTS) record into the PUL data base.

Called From

This step is called from PULSELBASE.

Screen

PULINSBASE1, PULINSBASE2, and PULINSBASE3.

Logic

Calculate EXP values for all baseline OBS fields (RE: Appendix B);

Clear insert record.

Display PULINSBASE1.

```
If insert baseline spirometry option field = Y,
    calculate PCT and %VC on baseline OBS fields (that exist);
    calculate EXP values for all flow volume curve OBS fields;
    clear insert record;
    display PULINSBASE2;
If insert flow volume curves option field = Y,
    calculate PCT values on existing flow volume curve OBS fields;
    calculate EXP values for all blood gases OBS fields;
    clear insert record;
    display PULINSBASE2;
If insert gas studies option field = Y,
    calculate PCT values on existing blood gases OBS fields;
    set SWI Bronchodilated = N;
    insert record;
    go to PULMOBASE.
Else
    go to PULMENEXAM.
Else
    go to PULMENEXAM.
Else
    go to PULMENEXAM.
```

Note: The pct fields are computed in Phase III as one hundred times the ratio of observed to expected. The %vc fields are computed in Phase III as one hundred times the ratio of observed fev to observed fvc.

Validation

For each screen in this step, insert record (SWI for various option fields) is mandatory, (YESNOTBL, exists).

All other fields protected except for OBS fields.

All OBS fields are optional.

Bronchodilated mandatory, table (YESNOTBL, exists).

FVC OBS	range (2.0-9.0).
FEV05 OBS	range (1.0-6.0).
FEV1 OBS	range (1.5-7.0).
FEV3 OBS	range (2.0-8.0).
FEF 25 75 OBS	range (0.5-9.0).
FEF 75 85 OBS	range (0.1-6.0).
VMAX 50 OBS	range (0.1-10.0).
VMAX 75 OBS	range (0.3-8.0).
PEF OBS	range (1.0-17.0).
PIF OBS	range (1.0-17.0).
TLC OBS	range (3.0-11.0).
FRC OBS	range (1.5-7.0).
RV OBS	range (0.3-5.0).
PLCO OBS	range (14.0-65.0).
VA OBS	range (1.0-11.0).
N2 Washout	range (1.0-5.0).

Exhibit 6-9: **FULINBASE1 - Insert Baseline Spirometry (Screen 1)**

<ssan>	<name>	<dob>	<sex>
<type>	<case no>	<age>	<time>

insert baseline spirometry _

	exp	obs	pct	%vc
fvc	_____	_____	_____	
fev 0.5	_____	_____	_____	_____
fev 1.0	_____	_____	_____	_____
fev 3.0	_____	_____	_____	_____
fef 0-25		_____		
fef 25-75	_____	_____	_____	
fef 75-85	_____	_____	_____	

1. Exp values are calculated from rules in Appendix B.
2. All fields are protected except insert baseline spirometry option field and obs fields. The pct and %vc fields are calculated from rules listed in Appendix B if the obs fields are entered.

Exhibit 6-10: **PULINSBASE2 - Insert Flow Volume Curves (Screen 2)**

<ssan>	<name>	<dob>	<sex>
<type>	<case no>	<doe>	<age>
<time>			

insert flow volume curves _

baseline spirometry - flow volume curves

	exp	obs	pct
v max 50	_____	_____	_____
v max 75	_____	_____	_____
pef	_____	_____	_____
pif	_____	_____	_____

1. Exp values are calculated from rules in Appendix B.
2. All fields are protected except insert flow volume curves option field and obs fields. The pct and %vc fields are calculated from rules listed in Appendix B if the obs fields are entered.

Exhibit 6-11: **PULIMSBASE3 - Insert Gas Studies (Screen 3)**

<ssan>	<name>	<dob>	<sex>
<type>	<case no>	<age>	<time>

insert gas studies _

baseline spirometry - gas studies

	exp	obs	pct
tlc	_____	_____	_____
frc	_____	_____	_____
rv	_____	_____	_____
rv/tlc		_____	
dlco	_____	_____	_____
va	_____	_____	_____
dlco/va	_____	_____	_____
tlc/va		_____	
n2 washout		_____	

1. Exp values are calculated from rules in Appendix B.
2. All fields are protected except insert gas studies option field and obs fields. The pct and %vc fields are calculated from rules listed in Appendix B if the obs fields are entered.

Chapter 6.11: PULMODBASE

Purpose

The purpose of this step is to allow the user to modify a baseline type spirometry (PFTS) record into the PUL data base.

Called From

This step is called from PULMENEXAM and PULINSBASE.

Screen

PULMODBASE1, PULMODBASE2, and PULMODBASE3.

Logic

Move values to screen fields for PULMODBASE1.
Clear modify record.

Display PULMODBASE1.

If modify baseline spirometry option field = Y,
 re-calculate PCT and %VC on baseline OBS fields (that change);
 issue a modify for baseline portion of PFTS record;
 go to PULMODBASE1 phase 2.

If modify baseline spirometry option field = N,
 move values to screen fields for PULMODBASE2;
 clear modify record;

display PULMODBASE2;

If modify flow volume curves option field = Y,
 re-calculate PCT values on fvc OBS fields (that change);
 issue a modify for flow volume curves portion of PFTS record;
 go to PULMODBASE2 phase 2.

If modify flow volume curves option field = N,
 move values to screen fields for PULMODBASE3;
 clear modify record;

display PULMODBASE3;

If modify gas studies option field = Y,
 re-calculate PCT values on gas studies OBS fields;
 issue a modify for gas studies portion of PFTS record
 go to PULMODBASE3 phase 2.

If modify gas studies option field = N,
 go to PULMENEXAM.

Note: The pct fields are computed in Phase III as one hundred times the ratio of observed to expected. The %vc fields are computed in Phase III as one hundred times the ratio of observed fev to observed fvc.

Validation

For each screen in this step, modify record (SWI for various option fields) is mandatory, (YESNOTBL, exists).

All other fields protected except for OBS fields.

All OBS fields are optional.

Bronchodilated mandatory, table (YESNOTBL, exists).

FVC OBS	range (2.0-9.0).
FEV05 OBS	range (1.0-6.0).
FEV1 OBS	range (1.5-7.0).
FEV3 OBS	range (2.0-8.0).
FEF 25 75 OBS	range (0.5-9.0).
FEF 75 85 OBS	range (0.1-6.0).
VMAX 50 OBS	range (0.1-10.0).
VMAX 75 OBS	range (0.3-8.0).
PEF OBS	range (1.0-17.0).
PIF OBS	range (1.0-17.0).
TLC OBS	range (3.0-11.0).
FRC OBS	range (1.5-7.0).
RV OBS	range (0.3-5.0).
PLC0 OBS	range (14.0-65.0).
VA OBS	range (1.0-11.0).
N2 Washout	range (1.0-5.0).

Exhibit 6-12: PULMODBASE1 - Modify Baseline Spirometry

<ssn> <type>	<name> <case no>	<dob> <age>	<sex> <time>
modify baseline spirometry _			
baseline spirometry			
	exp	obs	pct %vc
fvc	_____	_____	_____
fev 0.5	_____	_____	_____
fev 1.0	_____	_____	_____
fev 3.0	_____	_____	_____
fef 0-25	_____	_____	_____
fef 25-75	_____	_____	_____
fef 75-85	_____	_____	_____

1. All fields are protected except modify baseline spirometry option field and obs fields. The pct and %vc fields are calculated from rules listed in Appendix B if the obs fields are changed.

Exhibit 6-13: PULMODBASE2 - Modify Flow Volume Curves (Screen 2)

<ssan>	<name>		<dob>	<sex>
<type>	<case no>	<doe>	<age>	<time>

modify flow volume curves _

baseline spirometry - flow volume curves

	exp	obs	pct
v max 50	_____	_____	_____
v max 75	_____	_____	_____
pef	_____	_____	_____
pif	_____	_____	_____

1. All fields are protected except modify flow volume curves option field and obs fields. The pct and %vc fields are calculated from rules listed in Appendix B if the obs fields are changed.

Exhibit 6-14: PULMODBASE3 - Modify Gas Studies (Screen 3)

<ssan>	<name>	<dob>	<sex>
<type>	<case no>	<age>	<time>

modify gas studies _

baseline spirometry - gas studies

	exp	obs	pct
tlc	_____	_____	_____
frc	_____	_____	_____
rv	_____	_____	_____
rv/tlc		_____	
dlco	_____	_____	_____
va	_____	_____	_____
dlco/va	_____	_____	_____
tlc/va		_____	
n2 washout		_____	

1. All fields are protected except modify gas studies option field and obs fields. The pct and %vc fields are calculated from rules listed in Appendix B if the obs fields are changed.

Chapter 6.12: PULSELBRON

Purpose

This step first determines if a Bronchodilated spirometry (PFTS type record) exists for the current patient. If it does, PULMODBRON is called to allow the user to modify the Bronchodilated spirometry. If a Bronchodilated spirometry does not exist, PULINSBRON is called to allow the user to insert a new Bronchodilated PFTS record. After insert, the user is allowed to modify the spirometry. PULMODBRON returns to PULMENEXAM for another transaction.

A Bronchodilated spirometry is determined by the Bronchodilated component in the data base. If bronchodilated equals Y, it is a Bronchodilated type PFTS record. If it does not exist or is N, it is a baseline spirometry.

Called From

PULMENEXAM.

Screen

None.

Logic

```
Select PFTS records on SSAN and C6 = DOE and C35 = Y.  
If NODATA,  
    go to PULINSBRON.  
If $DATASN = 1,  
    retrieve PFTS record;  
    go to PULMODBRON.  
If $DATASN > 1,  
    issue message:  
        "MORE THAN ONE BRONCHODILATED SPIROMETRY FOR THIS EXAM"  
    go to PULMENEXAM.
```

Validation

None.

Chapter 6.13: PULINSBRON

Purpose

The purpose of this step is to allow the user to insert a new bronchodilated type spirometry (PFTS) record into the PUL data base.

Called From

This step is called from PULSELBRON.

Screen

PULINSBRON1, PULINSBRON2, and PULINSBRON3.

Logic

```
Calculate EXP values for all bronchodilated OBS fields;
Clear insert record.
Display PULINSBRON1.
If insert bronchodilated spirometry option field = Y,
    calculate PCT and %VC on OBS fields (that exist);
    calculate EXP values for all flow volume curve OBS fields;
    clear insert record;
    display PULINSBRON2;
If insert flow volume curves option field = Y,
    calculate PCT values on fvc OBS fields (that exist);
    calculate EXP values for all blood gases OBS fields;
    clear insert record;
    display PULINSBRON2;
If insert gas studies option field = Y,
    calculate PCT values on existing bg OBS fields;
    set SWI Bronchodilated = Y;
    insert record;
    go to PULMODBRON.
Else
    go to PULMENEXAM.
Else
    go to PULMENEXAM.
Else
    go to PULMENEXAM.
```

Note: The pct fields are computed in Phase III as one hundred times the ratio of observed to expected. The %vc fields are computed in Phase III as one hundred times the ratio of observed fev to observed fvc.

Validation

Insert record (SWI for various bronchodilated option fields) mandatory,
(YESNOTBL, exists) on all screens.

All other fields protected except for OBS fields.

All OBS fields are optional.

Bronchodilated mandatory, table (YESNOTBL, exists).

FVC OBS	range (2.0-9.0).
FEV05 OBS	range (1.0-6.0).
FEV1 OBS	range (1.5-7.0).
FEV3 OBS	range (2.0-8.0).
FEF 25 75 OBS	range (0.5-9.0).
FEF 75 85 OBS	range (0.1-6.0).
VMAX 50 OBS	range (0.1-10.0).
VMAX 75 OBS	range (0.3-8.0).
PEF OBS	range (1.0-17.0).
PIF OBS	range (1.0-17.0).
TLC OBS	range (3.0-11.0).
FRC OBS	range (1.5-7.0).
RV OBS	range (0.3-5.0).
PLC0 OBS	range (14.0-65.0).
VA OBS	range (1.0-11.0).
N2 Washout	range (1.0-5.0).

Exhibit 6-15: **PULMONESBRON1-Insert Bronchodilated Spirometry**

<ssan> <type>	<name> <case no>	<dob> <age>	<sex> <time>
insert bronchodilated spirometry _			
bronchodilated spirometry			
	exp	obs	pct %vc
fvc	_____	_____	_____
fev 0.5	_____	_____	_____
fev 1.0	_____	_____	_____
fev 3.0	_____	_____	_____
fef 0-25	_____	_____	_____
fef 25-75	_____	_____	_____
fef 75-85	_____	_____	_____

1. Exp values are calculated from rules in Appendix B.
2. All fields are protected except insert bronchodilated spirometry option field and obs fields. The pct and %vc fields are calculated from rules listed in Appendix B if the obs fields are entered.

Exhibit 6-16: PULINBRON2-Insert Bronchodilated Flow Volume Curves

<ssan>	<name>	<dob>	<sex>	
<type>	<case no>	<doe>	<age>	<time>

insert flow volume curves _

bronchodilated spirometry - flow volume curves

	exp	obs	pct
v max 50	_____	_____	_____
v max 75	_____	_____	_____
pef	_____	_____	_____
pif	_____	_____	_____

1. Exp values are calculated from rules in Appendix B.
2. All fields are protected except insert flow volume curves option field and obs fields. The pct and %vc fields are calculated from rules listed in Appendix B if the obs fields are entered.

Exhibit 6-17: **PULINBRON3-Insert Bronchodilated Gas Studies Screen3**

<ssan>	<name>	<dob>	<sex>
<type>	<case no>	<age>	<time>

insert gas studies _

bronchodilated spirometry - gas studies

	exp	obs	pct
tlc	_____	_____	_____
frc	_____	_____	_____
rv	_____	_____	_____
rv/tlc	_____	_____	_____
dlco	_____	_____	_____
va	_____	_____	_____
dlco/va	_____	_____	_____
tlc/va	_____	_____	_____
n2 washout	_____	_____	_____

1. Exp values are calculated from rules in Appendix B.
2. All fields are protected except insert flow volume curves option field and obs fields. The pct and %vc fields are calculated from rules listed in Appendix B if the obs fields are entered.

Chapter 6.14: PULMODBRON

Purpose

The purpose of this step is to allow the user to modify a bronchodilated type spirometry (PFTS) record in the PUL data base. Although this step requires three screens, a modify is issued for the data contained on each screen to the corresponding portion of the PFTS record in the data base.

Called From

This step is called from PULSELBRON and PULINSBRON.

Screen

PULMODBRON1, PULMODBRON2, and PULMODBRON3.

Logic

Move values to screen fields for PULMODBRON1.

Clear modify record.

Display PULMODBRON1.

If modify bronchodilated spirometry option field = Y,
re-calculate PCT and ZVC on OBS fields (that change);
issue a modify for first portion of PFTS record;
go to PULMODBRON1 phase 2.

If modify baseline spirometry option field = N,
move values to screen fields for PULMODBRON2;
clear modify record;

display PULMODBRON2;

If modify flow volume curves option field = Y,
re-calculate PCT values on fvc OBS fields (that change);
issue a modify for flow volume curves portion of PFTS record;
go to PULMODBRON2 phase 2.

If modify flow volume curves option field = N,
move values to screen fields for PULMODBRON3;
clear modify record;

display PULMODBRON3;

If modify gas studies option field = Y,
re-calculate PCT values on gas studies OBS fields;
issue a modify for gas studies portion of PFTS record
go to PULMODBRON3 phase 2.

If modify gas studies option field = N,
go to PULMENEXAM.

Note: The pct fields are computed in Phase III as one hundred times the ratio of observed to expected. The Zvc fields are computed in Phase III as one hundred times the ratio of observed fev to observed fvc.

Validation

Modify record (SWI for various bronchodilated option fields) mandatory, (YESNOTBL, exists) on all screens.

All other fields protected except for OBS fields.

All OBS fields are protected.

Bronchodilated mandatory, table (YESNOTBL, exists).

FVC OBS	range (2.0-9.0).
FEV05 OBS	range (1.0-6.0).
FEV1 OBS	range (1.5-7.0).
FEV3 OBS	range (2.0-8.0).
FEF 25 75 OBS	range (0.5-9.0).
FEF 75 85 OBS	range (0.1-6.0).
VMAX 50 OBS	range (0.1-10.0).
VMAX 75 OBS	range (0.3-8.0).
PEF OBS	range (1.0-17.0).
PIF OBS	range (1.0-17.0).
TLC OBS	range (3.0-11.0).
FRC OBS	range (1.5-7.0).
RV OBS	range (0.3-5.0).
PLCO OBS	range (14.0-65.0).
VA OBS	range (1.0-11.0).
N2 Washout	range (1.0-5.0).

Exhibit 6-18: **PULMODBRON1-Modify Bronchodilated Spirometry**

<ssan>	<name>		<dob>	<sex>
<type>	<case no>	<dob>	<age>	<time>

modify bronchodilated spirometry _

bronchodilated spirometry

	exp	obs	pct	%vc
fvc	_____	_____	_____	
fev 0.5	_____	_____	_____	_____
fev 1.0	_____	_____	_____	_____
fev 3.0	_____	_____	_____	_____
fef 0-25		_____		
fef 25-75	_____	_____	_____	
fef 75-85	_____	_____	_____	

1. Exp values are calculated from rules in Appendix B.
2. All fields are protected except modify bronchodilated spirometry option field and obs fields. The pct and %vc fields are calculated from rules listed in Appendix B if the obs fields are entered.

Exhibit 6-19: PULMODBRON2-Modify Bronchodilated Flow Volume Curves

<ssan>	<name>	<dob>	<sex>
<type>	<case no>	<age>	<time>

modify flow volume curves _

bronchodilated spirometry - flow volume curves

	exp	obs	pct
v max 50	_____	_____	_____
v max 75	_____	_____	_____
pef	_____	_____	_____
pif	_____	_____	_____

1. Exp values are calculated from rules in Appendix B.
2. All fields are protected except modify flow volume curves option field and obs fields. The pct and %vc fields are calculated from rules listed in Appendix B if the obs fields are entered.

Exhibit 6-20: PULMODBRON3-Modify Bronchodilated Gas Studies Screen3

<ssan> <type>	<name> <case no>	<dob> <age>	<sex> <time>
modify gas studies _			
bronchodilated spirometry - gas studies			
	exp	obs	pct
tlc	_____	_____	_____
frc	_____	_____	_____
rv	_____	_____	_____
rv/tlc		_____	
dlco	_____	_____	_____
va	_____	_____	_____
dlco/va	_____	_____	_____
tlc/va		_____	
n2 washout		_____	

1. Exp values are calculated from rules in Appendix B.
2. All fields are protected except modify flow volume curves option field and obs fields. The pct and %vc fields are calculated from rules listed in Appendix B if the obs fields are entered.

Chapter 6.15: PULSELABAR

Purpose

This step first determines if an "at-rest" type Arterial Gases record exists for the current patient. If it does, PULMODABAR is called to allow the user to modify the "at-rest" Arterial Gases record. If an "at-rest" type record does not exist, PULINSABAR is called to allow the user to insert a new "at-rest" Arterial Gases record. After insert, the user is allowed to modify the record. PULMODABAR returns to PULMENEXAM for another transaction.

An "at-rest" or "with-exercise" type Arterial Gases record is determined by the Exercise component in the PUL data base. If Exercise is null or equal to N, then it is an "at-rest" type Arterial Gases record. If Exercise is equal to Y, then it is a "with-exercise" type Arterial Gases record.

Called From

PULMENEXAM.

Screen

None.

Logic

Select ARTERIAL GASES records on SSAN and C6 = DOE and
(C35 = N or C35 = null).

If NODATA,

go to PULINSABAR.

If \$DATASN = 1,

retrieve ARTERIAL GASES record;

go to PULMODABAR.

If \$DATASN > 1,

issue mesage:

"MORE THAN ONE AT-REST ARTERIAL GASES RECORD FOR THIS EXAM"

go to PULMENEXAM.

Validation

None.

Chapter 6.16: PULINSABAR

Purpose

The purpose of this step is to allow the user to insert a new "at-rest" Arterial Gases record into the PUL data base.

An "at-rest" or "with-exercise" type Arterial Gases record is determined by the Exercise component in the PUL data base. If Exercise is null or equal to N, then it is an "at-rest" type Arterial Gases record. If Exercise is equal to Y, then it is a "with-exercise" type Arterial Gases record.

Called From

This step is called from PULSELABAR.

Screen

PULINSABAR.

Logic

Display PULINSABAR.

If insert arterial blood gases at rest option field = Y,
 set SWI Exercise = N;
 insert record;
 go to PULMODABAR.

Else

 go to PULMENEXAM.

Validation

Insert record (SWI for insert arterial blood gases at rest option field)
 - mandatory, (YESNOTBL, exists).
Inspired O2 pct - optional, range (10-100).
Hgb - optional, range (5.0-18.0).
Co hgb - optional, range (0.5-20.0).
Sa O2 - optional, range (30-100).
Pa O2 - optional, range (50-680).
Pac O2 - optional, range (10-50).
Ph - optional, range (6.85-7.60).

Exhibit 6-21: PULINSABAR - Insert Arterial Gases "At Rest" Record

<ssan>	<name>	<dob>	<sex>
<type>	<case no>	<age>	<time>
insert arterial blood gases at rest _			
arterial blood gases at rest			
inspired O2 pct _____			
hgb _____			
co-hgb _____			
saO2 _____			
paO2 _____			
pacO2 _____			
ph _____			

1. First two rows are protected.
2. All other fields are unprotected.

Chapter 6.17: PULMODABAR

Purpose

The purpose of this step is to allow the user to modify an "at-rest" Arterial Gases record into the PUL data base.

An "at-rest" or "with-exercise" type Arterial Gases record is determined by the Exercise component in the PUL data base. If Exercise is null or equal to N, then it is an "at-rest" type Arterial Gases record. If Exercise is equal to Y, then it is a "with-exercise" type Arterial Gases record.

Called From

This step is called from PULSELABAR or PULINSABAR.

Screen

PULMODABAR.

Logic

Move values to screen fields.

Display screen.

If modify arterial blood gases at rest option field = Y,
 modify record;
 go to phase 2.

Else
 go to PULMENEXAM.

Validation

Modify record (SWI for insert arterial blood gases at rest option field)

 - mandatory, (YESNOTBL, exists).

Inspired O2 pct - range (10-100).

Hgb - range (5.0-18.0).

Co hgb - range (0.5-20.0).

Sa O2 - range (30-100).

Pa O2 - range (50-680).

Pac O2 - range (10-50).

Ph - range (6.85-7.60).

Exhibit 6-22: PULMODABAR - Modify Arterial Gases "At Rest" Record

<ssan>	<name>	<dob>	<sex>	
<type>	<case no>	<doe>	<age>	<time>
modify arterial blood gases at rest _				
arterial blood gases at rest				
inspired O2 pct _____				
hgb _____				
co-hgb _____				
saO2 _____				
paO2 _____				
pacO2 _____				
ph _____				

1. First two rows are protected.
2. All other fields are unprotected.

Chapter 6.18: PULSELABWE

Purpose

This step first determines if an "exercise" type Arterial Gases record exists for the current patient. If it does, PULMODABWE is called to allow the user to modify the "exercise" Arterial Gases record. If an "exercise" type record does not exist, PULINSABWE is called to allow the user to insert a new "exercise" Arterial Gases record. After insert, the user is allowed to modify the record. PULMODABWE returns to PULMENEXAM for another transaction.

A "with-exercise" or an "at-rest" type Arterial Gases record is determined by the Exercise component in the PUL data base. If Exercise is equal to Y, then it is a "with-exercise" type Arterial Gases record. If Exercise is null or equal to N, then it is an "at-rest" type Arterial Gases record.

Called From

PULMENEXAM.

Screen

None.

Logic

Select ARTERIAL GASES records on SSAN and C6 = DOE and C35 = Y.
If NODATA,
 go to PULINSABWE.
If \$DATASN = 1,
 go to PULMODABWE.
If \$DATASN > 1,
 issue message:
 "MORE THAN ONE ARTERIAL GASES RECORD WITH EXERCISE FOR THIS EXAM"
 go to PULMENEXAM.

Validation

None.

Chapter 6.19: PULINSABWE

Purpose

The purpose of this step is to allow the user to insert a new "with exercise" Arterial Gases record into the PUL data base.

A "with-exercise" or an "at-rest" type Arterial Gases record is determined by the Exercise component in the PUL data base. If Exercise is equal to Y, then it is a "with-exercise" type Arterial Gases record. If Exercise is null or equal to N, then it is an "at-rest" type Arterial Gases record.

Called From

This step is called from PULSELABWE.

Screen

PULINSABWE.

Logic

Display PULINSABWE.

If insert arterial blood gases with exercise option field = Y,

 set SWI Exercise = Y;

 insert record;

 go to PULMODABWE.

Else

 gc to PULMENEXAM.

Validation

Insert record (SWI for insert arterial blood gases with exercise option field) - mandatory, (YESNOTBL, exists).

Inspired O2 pct - optional, range (10-100).

Hgb - optional, range (5.0-18.0).

Co hgb - optional, range (0.5-20.0).

Sa O2 - optional, range (30-100).

Pa O2 - optional, range (50-680).

Pac O2 - optional, range (10-50).

Ph - optional, range (6.85-7.60).

Exhibit 6-23: PULINSABWE-Insert Arterial Gases With Exercise Record

<ssan>	<name>	<dob>	<sex>	
<type>	<case no>	<doe>	<age>	<time>
insert arterial blood gases with exercise _				
arterial blood gases with exercise				
inspired O2 pct		___		
hgb		___		
co-hgb		___		
saO2		___		
paO2		___		
pacO2		___		
ph		___		

1. First two rows are protected.
2. All other fields are unprotected.

Chapter 6.20: PULMODABWE

Purpose

The purpose of this step is to allow the user to modify a "with exercise" Arterial Gases record into the PUL data base.

A "with-exercise" or an "at-rest" type Arterial Gases record is determined by the Exercise component in the PUL data base. If Exercise is equal to Y, then it is a "with-exercise" type Arterial Gases record. If Exercise is null or equal to N, then it is an "at-rest" type Arterial Gases record.

Called From

This step is called from PULSELABWE or PULINSABWE.

Screen

PULMODABWE.

Logic

Move values to screen fields.

Display screen.

If modify arterial blood gases with exercise option field = Y,
 modify record;
 go to phase 2.

Else

 go to PULMENEXAM.

Validation

Modify record (SWI for insert arterial blood gases with exercise option field)

Inspired O2 pct	- mandatory, (YESNOTBL, exists).
Hgb	- range (10-100).
Co hgb	- range (5.0-18.0).
Sa O2	- range (0.5-20.0).
Pa O2	- range (30-100).
Pac O2	- range (50-680).
Ph	- range (10-50).
	- range (6.85-7.60).

Exhibit 6-24: PULMODABWE-Modify Arterial Gases With Exercise Record

<ssan>	<name>	<dob>	<sex>
<type>	<case no>	<doe>	<age>
<time>			

modify arterial blood gases with exercise _

arterial blood gases with exercise

inspired O2 pct	___
hgb	___
co-hgb	___
saO2	___
paO2	___
pacO2	___
ph	___

1. First two rows are protected.
2. All other fields are unprotected.

Transaction Design Specification

Medical Exam Databases System
(MED)
Update Transaction

Feb
December, 1986

SAS Institute Inc.
P.O. Box 200075
Austin, Texas 78720-0075

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Medical Exam Databases System

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PART 7: THE CATH DATABASE

The CATH data base definition is shown in the following exhibit followed by the multipage input forms. The steps that perform updates to the CATH data base are then defined and presented.

Exhibit 7-1: CATH Database Definition

DESCRIBE:
SYSTEM RELEASE NUMBER 2.95B
DATA BASE NAME IS CATH
DEFINITION NUMBER 2
DATA BASE CYCLE 0

0* PERSON

1* SSAN (CHAR X(9))
2* NAME (CHAR X(19))
3* DOB (DATE)
4* SEX (NON-KEY CHAR X)
5* CATHS (RECORD)

6* TYPE (NON-KEY CHAR X IN 5)
7* CASE NO (INTEGER NUMBER 9(5) IN 5)
8* DOE (DATE IN 5)
9* AGE (NON-KEY INTEGER NUMBER 99 IN 5)

11* CATH NO (INTEGER NUMBER 9999 IN 5)
12* NO FOR PATIENT (NON-KEY INTEGER NUMBER 9 IN 5)
13* GRADE (NON-KEY CHAR XXX IN 5)
14* HT (NON-KEY INTEGER NUMBER 999 IN 5)
15* WT (NON-KEY DECIMAL NUMBER 999.9 IN 5)
16* BSA (NON-KEY DECIMAL NUMBER 9.99 IN 5)
17* ARTERIAL CATH TIME (NON-KEY INTEGER NUMBER 999 IN 5)
18* AORTIC SBP (NON-KEY INTEGER NUMBER 999 IN 5)
19* AORTIC DBP (NON-KEY INTEGER NUMBER 999 IN 5)
20* AORTIC PRESSURE MEAN (NON-KEY INTEGER NUMBER 999 IN 5)
21* LVSP (NON-KEY INTEGER NUMBER 999 IN 5)
22* LVDP (NON-KEY INTEGER NUMBER 999 IN 5)
23* LVDP PRE ANGIOGRAPHY (NON-KEY INTEGER NUMBER 999 IN 5)
24* LVDP POST ANGIOGRAPHY (NON-KEY INTEGER NUMBER 999 IN 5)
25* AORTIC VALVE GRADIENT (NON-KEY INTEGER NUMBER 999 IN 5)
26* MITRAL VALVE GRADIENT (NON-KEY INTEGER NUMBER 999 IN 5)
27* CARDIAC INDEX (NON-KEY INTEGER NUMBER 999 IN 5)
28* TEAM (RECORD IN 5)

29* ROLE (CHAR X(6) IN 28)
30* MEMBER (CHAR X(6) IN 28)

31* SAM REFERRAL REASONS (RECORD IN 5)
32* SAM REFERRAL REASON (CHAR X(12) IN 31)
33* CLINICAL REASONS (RECORD IN 5)
34* CLINICAL REASON (CHAR X(6) IN 33)
35* ELECTROCARDIOGRAPHIC REASONS (RECORD IN 5)
36* ELECTROCARDIOGRAPHIC REASON (CHAR X(6) IN 35)
37* PROCEDURES USED (RECORD IN 5)
38* PROCEDURE USED (CHAR X(6) IN 37)
39* ANGIOGRAMS COMPLETED (RECORD IN 5)
40* ANGIOGRAM COMPLETED (CHAR X(6) IN 39)
41* TECHNIQUES (RECORD IN 5)
42* APPROACH (CHAR X(6) IN 41)
43* CUTOFF (NON-KEY CHAR X IN 41)
44* REPAIR (CHAR X(6) IN 41)
45* COMPLICATIONS (RECORD IN 5)
46* COMPLICATION (CHAR X(6) IN 45)
47* LV EJECTION FRACTIONS (RECORD IN 5)
48* WORKLOAD (NON-KEY INTEGER NUMBER 9(5) IN 47)
49* METHOD (CHAR X(5) IN 47)
50* LV EJECTION FRACTION (NON-KEY INTEGER NUMBER 99 IN 47)
51* INTERPRETATIONS (RECORD IN 5)
52* READING (DATE IN 51)

Exhibit 7-1: CATH Database Definition (continued)

52* SUPRAVALVULAR AORTOGRAPHY NORMAL (CHAR X IN 51)
53* LEFT VENTRICULOGRAPHY NORMAL (CHAR X IN 51)
54* CORONARY ANGIOGRAPHY NORMAL (CHAR X IN 51)
55* CIRCULATORY PATTERN (CHAR X(6) IN 51)
57* CORONARY CALCIFICATION (NON-KEY CHAR X IN 51)
58* MYOCARDIAL BRIDGE (NON-KEY CHAR X IN 51)
59* CORONARY SPASM (NON-KEY CHAR X IN 51)
60* COLLATERAL PRESENT (NON-KEY CHAR X IN 51)
61* CORONARY ANOMALY (NON-KEY CHAR X IN 51)
56* NUMBER POSTERIOR DESCENDING BRANCHES (NON-KEY INTEGER NUMBER 9 IN 51)

59* TOTAL PCT NARROWED (INTEGER NUMBER 999 IN 51)
61* SUPRAVALVULAR AORTOGRAPHY FINDINGS (RECORD IN 51)
62* SUPRAVALVULAR AORTOGRAPHY FINDING (CHAR X(6) IN 61)
63* LV CONTRACTION ABNORMALITIES (RECORD IN 51)
64* ABNORMAL LV CONTRACTION SITE (CHAR X(6) IN 63)
65* LV CONTRACTION ABNORMALITY (CHAR X(6) IN 63)
66* OTHER LV ABNORMALITIES (RECORD IN 51)
67* OTHER LV ABNORMALITY (CHAR X(6) IN 66)
68* CORONARY CALCIFICATIONS (RECORD IN 51)
69* CORONARY CALCIFICATION SITE (CHAR X(6) IN 68)
70* MYOCARDIAL BRIDGES (RECORD IN 51)
71* MYOCARDIAL BRIDGE SITE (CHAR X(6) IN 70)
72* CORONARY SPASMS (RECORD IN 51)
73* CORONARY SPASM SITE (CHAR X(6) IN 72)
74* CORONARY PLAQUES (RECORD IN 51)
75* CORONARY PLAQUE SITE (CHAR X(6) IN 74)

78* PCT DIAMETER NARROWED (INTEGER NUMBER 999 IN 74)
79* COLLATERALS (RECORD IN 51)
80* COLLATERAL ORIGIN (NON-KEY CHAR XX IN 79)
81* ANASTOMOSIS (NON-KEY CHAR XX IN 79)
82* SEGMENT FILLED (NON-KEY CHAR XX IN 79)
83* CORONARY ANOMALIES (RECORD IN 51)
84* CORONARY ANOMALY SITE (CHAR X(6) IN 83)
85* DIAGNOSES (RECORD IN 51)
86* DIAGNOSIS (CHAR X(6) IN 85)
87* READERS (RECORD IN 51)
89* READER (CHAR X(6) IN 87)

Exhibit 7-2: CATHETERIZATION Sample Forms

20 CATHETERIZATION					
SSAN	NAME	GRADE	CASE NUMBER		
DATE OF BIRTH (Yr, Mo, Day)	HEIGHT (Inches)	WEIGHT (Lbs)	BSA (M ²)	ARTERIAL CATH TIME	
DATE OF CATH (Yr, Mo, Day)	PHYSICIAN IN CHARGE	CATH SEQUENCE NO.	NO. FOR PATIENT		
SECTION 8 - REFERRAL CONSIDERATIONS					
7. REASON(S) FOR SAM REFERRAL (One or more) 1. FLIGHT MEDICINE 2. PSYCHIATRY 3. NEUROLOGY 4. OPHTHALMOLOGY 5. INTERNAL MEDICINE 6. RADIOLOGY					
8. Clinical reasons for cardiac catheterization (one or more) 01 - Abnormal electrocardiographic finding 02 - Angina, definite or suspected 03 - History of ischemic episodes or infarction 04 - Mitral valve disease, suspected 05 - Aortic valve disease, suspected 06 - Pericardial disease, suspected 07 - Risk factor profile suggestive of coronary disease 08 - Abnormal MUGX 09 - Abnormal stress Thallium 10 - Suspected cardiomyopathy, hypertrophic 11 - Suspected cardiomyopathy, congestive 12 - Other					
9. Electrocardiographic reasons for cardiac catheterization (one or more) 01 - None, normal studies 02 - Left bundle branch block 03 - Right bundle branch block 04 - Intraventricular conduction defect 05 - Supraventricular tachycardia 06 - Atrioventricular block - 1st, 2nd, or 3rd degree 07 - Serial T wave changes 08 - Serial ST segment changes 09 - Infarction Pattern, ECG or VCG 10 - Pacemaker dysfunction (e.g. sick sinus syndrome, etc.) 11 - Abnormal ECG response to exercise 12 - Ventricular tachycardia, resting or exercise induced 13 - Other					

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PAGE 1 OF 8 PAGES

Exhibit 7-2: CATHETERIZATION Sample Forms (continued)

SECTION C. CATHETERIZATION PROCEDURES																									
10. Catheterization procedures used (one or more)																									
01 - Intravenous catheter, stand by 02 - Intravenous pacing electrode, stand by 03 - Right heart catheterization 04 - Left heart catheterization, retrograde brachial 05 - Left heart catheterization, retrograde femoral 06 - HIS bundle electrocardiography 07 - HIS bundle electrocardiography with atrial pacing 08 - Cardiac output, fick 09 - Cardiac output, cardiogreen 10 - Cardiac output, thermodilution 11 - Supine bicycle ergometry 12 - Oximetry shunt series 13 - Drug intervention studies 14 - Other	C38 <table border="1"> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </table>																								
11. Angiography completed (one or more)																									
01 - Right atrial angiography 02 - Pulmonary angiography 03 - Forward angiography 04 - Left ventricular angiography 05 - Supraaortic aortography 06 - Coronary angiography, Sones 07 - Coronary angiography, Judkins 08 - Right Ventricular angiography 09 - Other	C40 <table border="1"> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </table>																								
12. Catheterization technique and vessel repair (Enter appropriate number sequences)																									
A 1 - Antecubital vein, right 2 - Saphenous vein, right 3 - Femoral vein, right 4 - Brachial artery, right 5 - Femoral artery, right C42																									
6 - Antecubital vein, left 7 - Saphenous vein, left 8 - Femoral vein, left 9 - Brachial artery, left 0 - Femoral artery, left																									
B 1 - Cutdown — Y 2 - Percutaneous — N C43																									
C 1 - Primary arterial repair 2 - Pursestring arterial repair 3 - Ligation venous 4 - Venous repair 5 - N/A C44																									
<table border="1"> <tr> <th>A</th> <th>B</th> <th>C</th> </tr> <tr> <td></td> <td>Y or N</td> <td></td> </tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> </table>		A	B	C		Y or N																			
A	B	C																							
	Y or N																								

Exhibit 7-2: CATHETERIZATION Sample Forms (continued)

1. Complications of cardiac catheterization (one or more numbers) 01 - None 02 - Death 03 - Myocardial infarction 04 - Ventricular fibrillations 05 - Ventricular tachycardia 06 - Supraventricular tachycardia 07 - Atrioventricular block 08 - Asystole or marked bradycardia 09 - Any arrhythmia leading to discontinuation of the procedure 10 - Profound hypotension 11 - Intramyocardial injection 12 - Myocardial perforation 13 - Perforation of great vessels 14 - Diminished pulse 15 - Loss of pulse without symptoms 16 - Loss of pulse with symptoms 17 - Loss of pulse or arterial damage requiring surgical repair 18 - A-V fistula 19 - Vasovagal reaction requiring treatment 20 - Complete heart block 21 - Extracardiac embolic phenomena 22 - Drug/contrast reaction 23 - Angina 24 - Equipment failure				
SECTION D - CATHETERIZATION HEMODYNAMICS				
14. Aortic pressure (mmHg) - Systolic	C15			
- Diastolic				
15. Aortic pressure (mmHg) - Mean				
16. Left ventricular pressure (mmHg) - Systolic				
- Diastolic				
17. End diastolic pressure (mmHg) (Before Angiography)				
18. End diastolic pressure (mmHg) (After Angiography)				
19. Aortic valve gradient (mmHg)				
20. Mitral valve gradient (mmHg)				
21. Cardiac index: L/Min/M ²	C27			
SECTION E - SUPRAVALVULAR AORTOGRAPHY				
22. Completed (Y-N)				

Exhibit 7-2: CATHETERIZATION Sample Forms (continued)

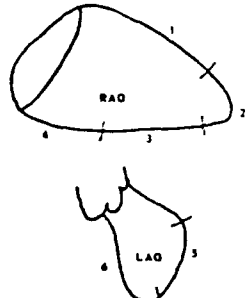
23. Supravulvar aortography (one or more by number) 01 - Normal 02 - Dilatation of aorta 03 - Aneurysm of aorta 04 - Dissection of aorta 05 - Unicuspid aortic valve 06 - Bicuspid aortic valve 07 - Aneurysm sinus valsalva 08 - Aortic regurgitation, Grade I 09 - Aortic regurgitation, Grade II 10 - Aortic regurgitation, Grade III 11 - Aortic regurgitation, Grade IV 12 - Aortic run off lesion, other 13 - Calcium, ascending aorta 14 - Calcium, aortic valve 15 - Other			
SECTION F - LEFT VENTRICULAR ANGIOGRAPHY			
24. Completed (Y-N)			
25. LEFT VENTRICULAR ANGIOGRAPHY (N=Normal, A=Abnormal. If A, complete items 26 and/or 27)			
26. LOCATION AND DEFINITION OF ABNORMAL CONTRACTION PATTERNS (Select appropriate codes)  A 1 - ANTERIOR WALL 2 - APICAL 3 - DIAPHRAGMATIC 4 - POSTERIOR BASAL 5 - POSTEROLATERAL 6 - SEPTAL WALL B 1 - AKINESIS 2 - DYSKINESIS 3 - HYPOKINESIS 4 - ASTHENOCHROMY 662 665			
27. Other Left Ventricular Abnormalities (one or more numbers) 01 - Increased left ventricular wall thickness 02 - Thickened mitral valve 03 - Decreased motion mitral valve 04 - Billowing mitral leaflet, anterior (prolapse) 05 - Billowing mitral leaflet, posterior (prolapse) 06 - Mitral regurgitation, Grade I 07 - Mitral regurgitation, Grade II 08 - Mitral regurgitation, Grade III 09 - Mitral regurgitation, Grade IV 10 - Ventricular septal defect 11 - Calcium, mitral valve 12 - Calcium, mitral annulus 13 - Increased left ventricular size 14 - Other			

Exhibit 7-2: CATHETERIZATION Sample Forms (continued)

SECTION G - CORONARY ANGIOGRAPHY			
28.	Completed (Y-N)		
29.	Coronary angiography (N=Normal, A=Abnormal)	C 54	
32.	Circulatory Pattern 1 - Right dominant 2 - Balanced 3 - Left dominant	C 55	
34.	Number of posterior descending branches (1, 2, etc.)		
36.	CALCIUM (As visualized by Fluoroscopy - identify location by appropriate letter(s) or number(s))	Table looks same as CTS C 59	
37.	MYOCARDIAL BRIDGING (As visualized by Angiography - identify by appropriate letter(s) or number(s))	Identical same as CTS	
38.	CORONARY SPASM (As visualized by Angiography - identify location by appropriate letter(s) or number(s))	Identical same as CTS	
39.	Location and Grading of Angiographic Lesions (if present)	CTS	CTS
		Location	? Obstruction
42.	Coronary Collateral Circulation (P=Present, A=Absent)		
44.	Coronary Anomalies 1 - None 2 - Anomalies of the coronary ostia 3 - Anomalies of the coronary arterial distribution 4 - Other	Valid {	

Exhibit 7-2: CATHETERIZATION Sample Forms (continued)

SECTION H - DIAGNOSIS	
01 - No evidence of organic heart disease	
02 - No evidence of coronary artery disease	
05 - Hypertrophic cardiomyopathy	
06 - Cardiomyopathy, other	
07 - Aortic valve disease, A.R.	
08 - Aortic valve disease, A.S.	
09 - Aortic valve disease, AR-AS	
10 - Mitral valve disease, M.R.	
11 - Mitral valve disease, M.S.	
12 - Mitral valve disease, MR-MS	
16 - Pericardial effusion	
17 - Pericarditis, chronic constrictive	
18 - Hypertensive cardiovascular disease	
19 - Pulmonic stenosis, valvular	
20 - Pulmonic stenosis, infundibular	
21 - Tricuspid valve disease	
22 - Left to right shunt	
23 - Right to left shunt	
24 - Mitral valve prolapse	
25 - Significant coronary artery disease	
26 - Minimal coronary artery disease	
27 - Intimal roughening only	
28 - Normal ventricular function	
29 - Abnormal ventricular function	
30 - Other	

(86)

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Part 7

Chapter 7.1: CASELPERS

Purpose

This step determines whether the current SSAN exists in the CATH data base. If the SSAN exists, CASELEXAM is called to allow the user a choice of exams. If the SSAN does not exist, the user is given the option of adding a person record associated with the SSAN through CAINSPERS.

Called From

This step is entered when the user chooses access to the CATH data base.

Screen

None.

Logic

```
Select CA-PERSON on current SSAN.
If $DATASN = 1,
    go to CASELEXAM.
Else
    If $DATASN = 0,
        go to CAINSPERS.
    Else
        If $DATASN > 1,
            issue msg: "SSAN NOT UNIQUE IN CATH, CALL BILL NIXON";
            go to ECGSELPERS.
```

Validation

None.

Chapter 7.2: CAINSPERS

Purpose

This step allows the user the option of adding a person record associated with the current SSAN.

Called From

CASELPERS.

Screen

CAINSPERS.

Logic

Move PERSON record values to CA-PERSON.

Display screen.

If insert record (insert-person-option field) = Y,
 insert CA-PERSON record after,
 go to CAINSEXAM.

If insert record (insert-person-option field) = N,
 go to ECGMENPERS.

Validation

1. Insert record (insert-person-option field) mandatory,
 table(YESNOTBL, exists).

Exhibit 7-3: CAINSPERS Screen - Insert Person In CATHETER

insert person _			
<ssan>	<name>	<dob> yy/mm/dd	<sex>
__	_____	__/__/__	-

1. All Fields are protected except the insert-person-option field.
2. The SWI name for the 'insert-person' option field is insert record.

Chapter 7.3: CASELEXAM

Purpose

The purpose of CASELEXAM is to decide if there are 0, more than 4, or between 1 and 4 (inclusive) CATHS records (exams) in the CATHETER data base. If there are no CATHS records, CAINSEXAM is called; if there are between 1 and 4 (inclusive) CATHS records, CASELEXAM4 is called; if there are more than 4 CATHS records, CASELEXAM14 is called; There are no screens associated with this step.

CASELEXAM also initializes a flag (CAINS1FLAG) which is used in lower level steps to indicate when an exam record has just been inserted as opposed to having been selected via select steps.

Called From

CASELPERS

Screen

None.

Logic

```
Set CAINS1FLAG = N.                (initializes insert flag)
Select CATHS records on SSAN.
If NODATA,
    go to CAINSEXAM.
If 0 < $DATASN < 4,
    go to CASELEXAM4.
If $DATASN > 4,
    go to CASELEXAM14.
```

Note: CASELEXAM4 is identical to CASELEXAM14
except that it only retrieves up to 4 exams
instead of 14 at a time).

Validation

None.

Chapter 7.4: CASELEXAM4

Purpose

The purpose of CASELEXAM4 is to present up to four CATHS exam records to the user. The user may either select an existing exam for review or modification, choose to insert a new exam, or exit to choose another person.

Called From

This step is entered when the current person has between one and four (inclusive) CATHS records in the data base.

Screen

CASELEXAM4

Logic

1. Retrieve up to four CATHS records, number screen accordingly, and display.
2. If 'select record' (SWI for select-exam option field) =
 - a) '0', go to ECGMENPERS.
 - b) 'n', where $n = \$DATASP$, go to CAMODEXAM.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the CATHS sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODEXAM.
 - d) 'n', where $n > \$DATASN$, go to CAINSEXAM.

Validation

1. The select-exam option field (SWI select record) - mandatory, numeric.

Exhibit 7-4: CASELEXAM4 Screen - Select 4 CATHS Exams From CATHETER

<ssan>	<name>	<dob>	<sex>
select exam _			
type	case no	doe	cath no
			no for patient
1	—	—/—/—	—
2			
3			
4			
0 none of the above			

1. All of the fields on this screen are protected except the select-exam-option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.5: CASELEXAM14

Purpose

The purpose of CASELEXAM14 is to present up to fourteen CATHS exam records to the user at a time. The user may either select an existing exam for review or modification, choose to insert a new exam, or exit to choose another person.

Called From

This step is entered when the current person has more than four CATHS records in the data base.

Screen

CASELEXAM14

Logic

1. Retrieve up to fourteen CATHS records, number screen accordingly, and display.
2. If 'select record' (SWI for select-exam option field) =
 - a) '0', go to ECGMENPERS.
 - b) 'n', where $n = \$DATASP$, go to CAMODEXAM.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the CATHS sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODEXAM.
 - d) 'n', where $n > \$DATASN$, go to CAINSEXAM.

Validation

1. The select-exam option field (SWI select record) - mandatory, numeric.

Exhibit 7-5: CASELEXAM14 Screen - Select 14 Exams From CATHETER

	<ssan>	<name>	<dob>	<sex>
	select exam _			
	type	case no	doe	cath no
				no for patient
1	-	_____	__/__/__	_____
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
0	none of the above			

1. All of the fields on this screen are protected except the select-exam-option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.6: CAMODEXAM

Purpose

To allow the user to modify an existing CATHS record.

Called From

CASELEXAM4 or CASELEXAM14 when the user selects an existing exam or
CAINSEXAM when a new exam is entered.

Screen

CAMODEXAM

Logic

Display screen.

If modify record (SWI for modify-exam-option field) = N,
go to CAMENEXAM.

Else

If modify record (SWI for modify-exam-option field) = Y,
issue a modify CATHS and go to phase 1.

Validation

Modify exam	- mandatory, table (YESNOTBL, exists).
Grade, type and case no	- same as TREADMILL.
Ht and wt	- same as ECG.
Arterial cath time	- range (5-150).
DOE	- range (69/04/23 - \$DATE).
Cath #	- range (1-1400).
No for patient	- range (1-4).
Aortic sbp	- range (70-210).
Aortic dbp	- range (10-140).
Mean	- range (50-150).
Lvsp	- range (70-210).
Lvdp	- range (0-90).
Lvedp pre angio	- range (0-40).
Lvedp post angio	- range (0-50).
Aortic value gradients	- range (0-5).
Mitral value gradients	- range (0-20).
Cardiac index	- range (120-800).
Age	- range (17-60) and compare to DOB.

Exhibit 7-6: CAMODEXAM - Modify CATH Exam Record

<ssan>		<name>		<dob>		<sex>	
modify exam _							
grade	type	case no	ht cm	wt kg	bsa	arterial cath time	
___	___	___	___	___	___	___	
doe		age	cath no	no for patient			
//_		___	___	___			
		left ventricle edp		aortic			
lvsp	lvdp	pre angio	post angio	spb	dbp	mean	
___	___	___	___	___	___	___	
valve gradients				cardiac index			
aortic mitral				___			
___		___		___			

1. Modify record (SWI for modify-exam-option field) is mandatory, table (YESNOTBL, exists).
2. All other fields are unprotected and mandatory.

Chapter 7.7: CAINSEXAM

Purpose

To allow the user to insert a new CATHS exam record.

Called From

This step is called from CASELEXAM when no exams exist for this person, from CASELEXAM4 or CASELEXAM14 when the user chooses to insert a new exam, or from CAINSPERS right after inserting a person.

Screen

CAINSEXAM

Logic

Purge SWIs for CATHS.
Display screen.

If insert record (SWI for insert-exam-option field) = Y,
 set CAINSIFLAG = Y;
 insert CATHS record after;
 go to CAMODEXAM.
If insert record (SWI for insert-exam-option field) = N,
 go to ECGMENPERS.

Validation

Modify exam - mandatory, table (YESNOTBL, exists).

Grade, type and case no - same as TREADMILL.

Ht and wt - same as ECG.

Arterial cath time - range (5-150).

DOE - range (69/04/23 - \$DATE).

Exhibit 7-7: CAINSEXAM - Insert CATHS Exam

<ssan>		<name>		<dob>		<sex>	
insert exam _							
grade	type	case no	ht cm	wt kg	bsa	arterial cath time	
_____	_____	_____	_____	_____	_____	_____	
doe		age	cath no	no for patient			
//_		_____	_____	_____			
		left ventricle edp		aortic			
lvsp	lvdp	pre angio	post angio	spb	dbp	mean	
_____	_____	_____	_____	_____	_____	_____	
valve gradients							
aortic		mitral		cardiac index			
_____		_____		_____			

1. Insert record (SWI for insert-exam-option field) is mandatory, table (YESNOTBL, exists).
2. All other fields are mandatory and unprotected.

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Chapter 7.7

Chapter 7.8: CAMENEXAM

Purpose

To allow the user a choice of which level 2 records to work with. All records dealt with from this menu attach to the current CATHS exam record.

Called From

This step is entered from CAMODEXAM and all steps that it calls.

Screen

CAMENEXAM

Logic

Display Screen.

If the select-next-step option field is set to:

- '1', If CAINSIFLAG = Y,
 perform CACHECK.
 go to ECGSELPERS.
- '2', If CAINSIFLAG = Y,
 perform CACHECK.
 go to ECGMENPERS.
- '3', If CAINSIFLAG = Y,
 perform CACHECK.
 go to CASELEXAM.
- '4', go to CASELTEAM.
- '5', go to CASELSAMRR.
- '6', go to CASELCLINR.
- '7', go to CASELELECR.
- '8', go to CASELPROCU.
- '9', go to CASELANGIO.
- '10', go to CASELTECH.
- '11', go to CASELCOMP.
- '12', go to CASELLVEF.
- '13', go to CASELINTER.
- '0', If CAINSIFLAG = Y,
 perform CACHECK.
 go to \$EXIT.

CACHECK.

```
Select TEAM records where EXAM has SAME and MEMBER exists.
If $DATASN = 0,
    issue msg: 'MUST ENTER TEAM';                go to phase 2.
Select SAM REFERRAL REASONS records
    where EXAM has SAME and SAM REFERRAL REASON exists.
If $DATASN = 0,
    issue msg: 'MUST ENTER SAM REFERRAL REASON';go to phase 2.
Select CLINICAL REASONS records
    where EXAM has SAME and CLINICAL REASON exists.
If $DATASN = 0,
    issue msg: 'MUST ENTER CLINICAL REASON';      go to phase 2.
Select ELECTROCARDIOGRAPHIC REASONS records
    where EXAM has SAME and C36 exists.
If $DATASN = 0,
    issue msg: 'MUST ENTER ELECTROCARDIOGRAPHIC REASON';go to phase 2.
Select PROCEDURES USED records
    where EXAM has SAME and PROCEDURE USED exists.
If $DATASN = 0,
    issue msg: 'MUST ENTER PROCEDURE USED';        go to phase 2.
Select TECHNIQUES records where EXAM has SAME and APPROACH exists.
If $DATASN = 0,
    issue msg: 'MUST ENTER TECHNIQUE';             go to phase 2.
Select COMPLICATIONS records
    where EXAM has SAME and COMPLICATION exists.
If $DATASN = 0,
    issue msg: 'MUST ENTER COMPLICATION';          go to phase 2.
Select INTERPRETATIONS records where EXAM has SAME and READING exists.
If $DATASN = 0,
    issue msg: 'MUST ENTER INTERPRETATION';        go to phase 2.
```

Validation

Select-next-step-option field - mandatory, range (0-12).

NOTE: CAINS1FLAG is set at insert time and checked here to ensure that at least one of each of the following records has been inserted before the user is allowed to exit CAMENEXAM:

C28-TEAM	C37-PROCEDURES USED
C31-SAM REFERRAL REASONS	C41-TECHNIQUES
C33-CLINICAL REASONS	C45-COMPLICATIONS
C35-ELECTROCARDIOGRAPHIC REASONS	C51-INTERPRETATIONS

Exhibit 7-8: CAMENEXAM - MENU For Lower Level CATHS Exam Records

<ssan>	<name>	<dob>	<sex>
select next step ____			
1	select new person		
2	select data base		
3	select caths exam		
4	select team		
5	select sam referral reasons		
6	select clinical reasons		
7	select electrocardiographic reasons		
8	select procedures used		
9	select angiograms completed		
10	select techniques		
11	select complications		
12	select lv ejection fractions		
13	select interpretations		
0	exit		

Select next step option field only unprotected field.

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Chapter 7.9: CASELTEAM

Purpose

The purpose of CASELTEAM is to first determine if any TEAM records exist in the CATHETER data base for the current exam. If there are no TEAM records, CAINSTEAM is called; if any TEAM records exist, CASELTEAM4 is called (there will never be more than 4 TEAM records). There are no screens associated with this step.

Called From

CAMENEXAM.

Screen

None.

Logic

Select TEAM records for current exam.
If NODATA,
 go to CAINSTEAM.
Else
 go to CASELTEAM4.

Validation

None.

Chapter 7.10: CASELTEAM4

Purpose

The purpose of CASELTEAM4 is to present up to four TEAM records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the menu.

Called From

This step is entered when the current exam has at least one TEAM record associated with it in the data base.

Screen

CASELTEAM4

Logic

1. Retrieve up to four TEAM records, number screen accordingly, and display.
2. If 'select record' (SWI for select-team option field) =
 - a) '0', go to CAMENEXAM.
 - b) 'n', where $n = \$DATASP$, go to CAMODTEAM.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the TEAM sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODTEAM.
 - d) 'n', where $n > \$DATASN$, go to CAINSTEAM.

Validation

1. Select-team option field - mandatory, numeric.

Exhibit 7-9: CASELTEAM4 Screen - Select 4 TEAM Records

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>

select team _

	role	member
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____

0 none of the above

1. All of the fields on this screen are protected except the select-team option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.11: CAMODTEAM

Purpose

To allow the user to modify an existing TEAM record.

Called From

CASELTEAM4 when the user selects an existing TEAM record or
CAINSTEAM when a new record is entered.

Screen

CAMODTEAM.

Logic

Display screen.

If modify record (modify-team option field) = N,
go to CAMENEXAM.

Else

If modify record (modify-team option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-team option field) - mandatory, table
(YESNOTBL, exists).

Physician

- table (CAPHYSTBL -

ALLEN	HICKMAN	SCHECHTER
ALPERT	KRYER	SCHWARTZ
BAILEY	LONGO	SCOVILLE
CELIO	MONTGOMERY	THOMPSON
EADES	NEUFELD	TOUCHON
ENGEL	PARKER	UHL
FROELICHER	ROTHMAN	WOOD

).

Role

- table (CAROLETBL -

PHYSICIAN IN CHARGE
NURSE IN CHARGE
ASSISTING PHYSICIAN
TECHNICIAN

).

Exhibit 7-10: CAMODTEAM Screen - Modify TEAM

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>

modify team _

role	member
------	--------

1. The modify-team option field, role field, and member field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.12: CAINSTEAM

Purpose

To allow the user to insert a new TEAM record.

Called From

This step is called from CASELTEAM when no team records exist for the current exam or from CASELTEAM4 when the user chooses to insert a new TEAM record.

Screen

CAINSTEAM.

Logic

Purge SWIs for TEAM.
Display screen.

If insert record (SWI for insert-team option field) = Y,
insert TEAM record after;
go to CAMODTEAM.
If insert record (SWI for insert-team option field) = N,
go to CAMENEXAM.

Validation

Insert record (SWI for insert-team option field) - mandatory, table (YESNOTBL, exists).

Physician

- table (CAPHYSTBL -

ALLEN	HICKMAN	SCHECHTER
ALPERT	KRYER	SCHWARTZ
BAILEY	LONGO	SCOVILLE
CELIO	MONTGOMERY	THOMPSON
EADES	NEUFELD	TOUCHON
ENGEL	PARKER	UHL
FROELICHER	ROTHMAN	WOOD

).

Role

- table (CAROLETBL -

PHYSICIAN IN CHARGE
NURSE IN CHARGE
ASSISTING PHYSICIAN
TECHNICIAN

Exhibit 7-11: CAINSTEAM Screen - Insert TEAM

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
insert team _				
role		member		

1. The insert-team option field, role field, and member field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.12

Chapter 7.13: CASELSAMRR

Purpose

The purpose of CASELSAMRR is to first determine if any SAM REFERRAL REASONS records exist in the CATHETER data base for the current exam. If there are no SAM REFERRAL REASONS records, CAINSSAMRR is called; if any SAM REFERRAL REASONS records exist, CASELSAMRR4 is called (there will never be more than 4 SAM REFERRAL REASONS records). There are no screens associated with this step.

Called From

CAMENEXAM.

Screen

None.

Logic

Select SAM REFERRAL REASONS records for current exam.
If NODATA,
 go to CAINSSAMRR.
Else
 go to CASELSAMRR4.

Validation

None.

Chapter 7.14: CASELSAMRR4

Purpose

The purpose of CASELSAMRR4 is to present up to four SAM REFERRAL REASONS records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the menu.

Called From

This step is entered when the current exam has at least one SAM REFERRAL REASONS records associated with it in the data base.

Screen

CASELSAMRR4

Logic

1. Retrieve up to four SAM REFERRAL REASONS records, number screen accordingly, and display.
2. If 'select record' (SWI for select-sam referral reason option field) =
 - a) '0', go to CAMENEXAM.
 - b) 'n', where $n = \$DATASP$, go to CAMODSAMRR.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the SAM REFERRAL REASONS sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODSAMRR.
 - d) 'n', where $n > \$DATASN$, go to CAINSSAMRR.

Validation

1. Select-sam referral reason option field - mandatory, numeric.

Exhibit 7-12: CASELSAMRR4 Screen - Select 4 REFERRAL REASONS

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>

select sam referral reason _

sam referral reason

1	_____
2	_____
3	_____
4	_____
0	none of the above

1. All of the fields on this screen are protected except the select-sam referral reason option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.15: CAMODSAMRR

Purpose

To allow the user to modify an existing SAM REFERRAL REASONS record.

Called From

CASELSAMRR4 when the user selects an existing SAM REFERRAL REASONS record or CAINSSAMRR when a new record is entered.

Screen

CAMODSAMRR.

Logic

Display screen.

If modify record (modify-sam referral reason option field) = N,
go to CAMENEXAM.

Else

If modify record (modify-sam referral reason option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-sam referral reason option field) -
mandatory, table (YESNOTBL, exists).

Sam referral reason - mandatory, table lookup on input (CASAMRRTBL)
CASAMRRTBL

<u>Col 1</u>	<u>Col 2</u>
1	FLIGHT MEDICINE
2	PSYCHIATRY
3	NEUROLOGY
4	OPHTHALMOLOGY
5	INTERNAL MEDICINE
6	CARDIOLOGY

Exhibit 7-13: CAMODSAMRR Screen - Modify SAM REFERRAL REASON

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>

modify sam referral reason _

sam referral reason

1. The modify-sam referral reason option field and sam referral reason field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.16: CAINSSAMRR

Purpose

To allow the user to insert a new SAM REFERRAL REASONS record.

Called From

This step is called from CASELSAMRR when no referral reasons exist for the current exam or from CASELSAMRR4 when the user chooses to insert a new SAM REFERRAL REASONS record.

Screen

CAINSSAMRR.

Logic

Purge SWIs for SAM REFERRAL REASON
Display screen.

If insert record (SWI for insert-samrr-option field) = Y,
insert SAM REFERRAL REASONS record after;
go to CAMODSAMRR.

If insert record (SWI for insert-samrr-option field) = N,
go to CAMENEXAM.

Validation

Insert record (SWI for insert-sam referral reason option field) -
mandatory, table (YESNOTBL, exists).

Sam referral reason - mandatory, table lookup on input (CASAMRRTBL)
CASAMRRTBL

<u>Col 1</u>	<u>Col 2</u>
1	FLIGHT MEDICINE
2	PSYCHIATRY
3	NEUROLOGY
4	OPHTHALMOLOGY
5	INTERNAL MEDICINE
6	CARDIOLOGY

Exhibit 7-14: CAINSSAMRR Screen - Insert SAM REFERRAL REASON

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>

insert sam referral reason _

sam referral reason

1. The insert-sam referral reason option field and sam referral reason field are mandatory.
2. The SWI name for the option field is insert record.

Chapter 7.17: CASELCLINR

Purpose

The purpose of CASELCLINR is to first decide if there any CLINICAL REASONS records in the CATHETER data base for the current exam. If there are no CLINICAL REASONS records, CAINSCLINR is called; if any CLINICAL REASONS records exist, CASELCLINR4 is called (there will never be more than 4 CLINICAL REASONS records per exam). There are no screens associated with this step.

Called From

CAMENEXAM.

Screen

None.

Logic

Select CLINICAL REASONS records for current exam.
If NODATA,
 go to CAINSCLINR.
Else
 go to CASELCLINR14.

Validation

None.

Chapter 7.18: CASELCLINR4

Purpose

The purpose of CASELCLINR4 is to present up to four CLINICAL REASONS records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the menu.

Called From

This step is entered when the current exam has at least one CLINICAL REASONS records associated with it in the data base.

Screen

CASELCLINR4

Logic

1. Retrieve up to four CLINICAL REASONS records, number screen accordingly, and display.
2. If 'select record' (SWI for select-clinical reason option field) =
 - a) '0', go to CAMENEXAM.
 - b) 'n', where $n = \$DATASP$, go to CAMODCLINR.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the CLINICAL REASONS sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODCLINR.
 - d) 'n', where $n > \$DATASN$, go to CAINSCLINR.

Validation

1. Select-clinical reason option field - mandatory, numeric.

Exhibit 7-15: CASELCLINR4 Screen - Select 4 CLINICAL REASONS

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
select clinical reason _				
clinical reason				
1	_____			
2	_____			
3	_____			
4	_____			
0 none of the above				

1. All of the fields on this screen are protected except the select-clinical reason option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.19: CAMODCLINR

Purpose

To allow the user to modify an existing CLINICAL REASONS record.

Called From

CASELCLINR4 when the user selects an existing CLINICAL REASONS record or CAINSCLINR when a new record is entered.

Screen

CAMODCLINR.

Logic

Display screen.

If modify record (modify-clinical reason option field) = N,
go to CAMENEXAM.

Else

If modify record (modify-clinical reason option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-clinical reason option field) -
mandatory, table (YESNOTBL, exists).

Clinical reason - mandatory, table lookup on input (CACLINRTBL)
CACLINRTBL

<u>Col 1</u>	<u>Col 2</u>
01	ABNORMAL ELECTROCARDIOGRAPHIC FINDING
02	ANGINA, DEFINITE OR SUSPECTED
03	HISTORY OF ISCHEMIC EPISODES OR INFARCTION
04	MITRAL VALVE DISEASE, SUSPECTED
05	AORTIC VALVE DISEASE, SUSPECTED
08	PERICARDIAL DISEASE, SUSPECTED
09	RISK FACTOR PROFILE SUGGESTIVE OF CORONARY DISEASE
11	ABNORMAL MUGX
12	ABNORMAL STRESS THALLIUM
13	CARDIOMYOPATHY, OBSTRUCTIVE, SUSPECTED
14	CARDIOMYOPATHY, NON-OBSTRUCTIVE, SUSPECTED
10	OTHER

Exhibit 7-16: CAMODCLINR Screen - Modify CLINICAL REASON

<ssan>	<name>	<dob>	<sex>
<type>	<case #>	<doe>	<cath no>
		<no. for patient>	

modify clinical reason _

clinical reason

1. The modify-clinical reason option field and clinical reason field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.20: CAINSCLINR

Purpose

To allow the user to insert a new CLINICAL REASONS record.

Called From

This step is called from CASELCLINR when no clinical reasons exist for the current exam or from CASELCLINR4 when the user chooses to insert a new CLINICAL REASONS record.

Screen

CAINSCLINR.

Logic

Purge SWIs for CLINICAL REASON.
Display screen.

If insert record (SWI for insert-clinr-option field) = Y,
insert CLINICAL REASONS record after;
go to CAMODCLINR.
If insert record (SWI for insert-clinr-option field) = N,
go to CAMENEXAM.

Validation

Insert record (SWI for insert-clinical reason option field) -
mandatory, table (YESNOTBL, exists).

Clinical reason - mandatory, table lookup on input (CACLINRTBL)
CACLINRTBL

<u>Col 1</u>	<u>Col 2</u>
01	ABNORMAL ELECTROCARDIOGRAPHIC FINDING
02	ANGINA, DEFINITE OR SUSPECTED
03	HISTORY OF ISCHEMIC EPISODES OR INFARCTION
04	MITRAL VALVE DISEASE, SUSPECTED
05	AORTIC VALVE DISEASE, SUSPECTED
08	PERICARDIAL DISEASE, SUSPECTED
09	RISK FACTOR PROFILE SUGGESTIVE OF CORONARY DISEASE
11	ABNORMAL MUGX
12	ABNORMAL STRESS THALLIUM
13	CARDIOMYOPATHY, OBSTRUCTIVE, SUSPECTED
14	CARDIOMYOPATHY, NON-OBSTRUCTIVE, SUSPECTED
10	OTHER

Exhibit 7-17: CAINSCLINR Screen - Insert CLINICAL REASON

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>

insert clinical reason _

clinical reason

1. The insert-clinical reason option field and clinical reason field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.21: CASELELECR

Purpose

The purpose of CASELELECR is to first decide if there are any ELECTROCARDIOGRAPHIC REASONS records in the CATHETER data base for the current exam. If there are no ELECTROCARDIOGRAPHIC REASONS records, CAINSELECR is called; if there are any ELECTROCARDIOGRAPHIC REASONS records for the current exam, CASELELECR4 is called (there will never be more than 4 ELECTROCARDIOGRAPHIC REASONS records per exam). There are no screens associated with this step.

Called From

CAMENEXAM.

Screen

None.

Logic

Select ELECTROCARDIOGRAPHIC REASONS records for current exam.
If NODATA,
 go to CAINSELECR.
Else
 go to CASELELECR4.

Validation

None.

Chapter 7.22: CASELELECR4

Purpose

The purpose of CASELELECR4 is to present up to four ELECTROCARDIOGRAPHIC REASONS records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the menu.

Called From

This step is entered when the current exam has at least one ELECTROCARDIOGRAPHIC REASONS records associated with it in the data base.

Screen

CASELELECR4

Logic

1. Retrieve up to four ELECTROCARDIOGRAPHIC REASONS records, number screen accordingly, and display.
2. If select record (SWI for select-electrocardiographic reason option field) =
 - a) '0', go to CAMENEXAM.
 - b) 'n', where $n = \$DATASP$, go to CAMODELECR.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the ELECTROCARDIOGRAPHIC REASONS sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODELECR.
 - d) 'n', where $n > \$DATASN$, go to CAINSELECR.

Validation

1. Select-electrocardiographic reason option field - mandatory, numeric.

Exhibit 7-18: CASELELECR4 Screen - Select 4 E-CARDIO REASONS

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
select electrocardiographic reason _				
electrocardiographic reason				
1	_____			
2	_____			
3	_____			
4	_____			
0	none of the above			

1. All of the fields on this screen are protected except the select-electrocardiographic reason option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.23: CAMODELECR

Purpose

To allow the user to modify an existing ELECTROCARDIOGRAPHIC REASONS record.

Called From

CASELELECR4 when the user selects an existing ELECTROCARDIOGRAPHIC REASONS record or CAINSELECR when a new record is entered.

Screen

CAMODELECR.

Logic

Display screen.

If modify record(modify-electrocardiographic reason option field) = N,
go to CAMENEXAM.

Else

If modify record(modify-electrocardiographic reason option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-electrocardiographic reason option field)
- mandatory, table (YESNOTBL, exists).

Electrocardiographic reason - mandatory, table lookup on input:

CAELECRTBL

<u>Col 1</u>	<u>Col 2</u>
01	NONE, NORMAL STUDIES
02	LEFT BUNDLE BRANCH BLOCK
03	RIGHT BUNDLE BRANCH BLOCK
04	INTRAVENTRICULAR CONDUCTION DEFECT
05	SUPRAVENTRICULAR TACHYCARDIA
06	ATRIOVENTRICULAR BLOCK - 1ST, 2ND, OR 3RD DEGREE
07	SERIAL T WAVE CHANGES
08	SERIAL ST SEGMENT CHANGES
09	INFARCTION PATTERN, ECG OR VCG
10	ABNORMAL DOUBLE MASTERS, REFERRED WITH
11	ABNORMAL DOUBLE MASTERS, SAM
12	ABNORMAL TREADMILL STRESS TEST WITH HISTORY OF NORMAL ECG'S
13	ABNORMAL TREADMILL STRESS TEST WITH HISTORY OF REPOLARIZATION ABNORMALITIES
14	PCV'S, VT - RESTING OR EXERCISE INDUCED
15	ABNORMAL SEPTAL Q WAVES
16	ABNORMAL TREADMILL STRESS TEST, REFERRED WITH
17	PACEMAKER DYSFUNCTION (E.G. SICK SINUS SYNDROME, ETC.)
19	ABNORMAL ECG RESPONSE TO EXERCISE
20	VENTRICULAR TACHYCARDIA, RESTING OR EXERCISE INDUCED
18	OTHER

Exhibit 7-19: CAMODELECR Screen - Modify E-CARDIO REASON

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>

modify electrocardiographic reason _

electrocardiographic reason

1. The modify-electrocardiographic reason option field and electrocardiographic reason field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.24: CAINSELECR

Purpose

To allow the user to insert a new ELECTROCARDIOGRAPHIC REASONS record.

Called From

This step is called from CASELELECR when no electrocardiographic reasons exist for the current exam or from CASELELECR4 when the user chooses to insert a new ELECTROCARDIOGRAPHIC REASONS record.

Screen

CAINSELECR.

Logic

Purge SWIs for ELECTROCARDIOGRAPHIC REASON.

Display screen.

If insert record (SWI for insert-electrocardiographic-option field) = Y,
insert ELECTROCARDIOGRAPHIC REASONS record after;
go to CAMODELECR.

If insert record (SWI for insert-electrocardiographic-option field) = N,
go to CAMENEXAM.

Validation

Insert record(SWI for insert-electrocardiographic reason option field)

- mandatory, table (YESNOTBL, exists).

Electrocardiographic reason - mandatory, table lookup on input:

CAELECRTBL:

<u>Col 1</u>	<u>Col 2</u>
01	NONE, NORMAL STUDIES
02	LEFT BUNDLE BRANCH BLOCK
03	RIGHT BUNDLE BRANCK BLOCK
04	INTRAVENTRICULAR CONDUCTION DEFECT
05	SUPRAVENTRICULAR TACHYCARDIA
06	ATRIOVENTRICULAR BLOCK - 1ST, 2ND, OR 3RD DEGREE
07	SERIAL T WAVE CHANGES
08	SERIAL ST SEGMENT CHANGES
09	INFARCTION PATTERN, ECG OR VCG
10	ABNORMAL DOUBLE MASTERS, REFERRED WITH
11	ABNORMAL DOUBLE MASTERS, SAM
12	ABNORMAL TREADMILL STRESS TEST WITH HISTORY OF NORMA L ECG'S
13	ABNORMAL TREADMILL STRESS TEST WITH HISTORY OF REPOLARIZATION ABNORMALITIES
14	PCV'S, VT - RESTING OR EXERCISE INDUCED
15	ABNORMAL SEPTAL Q WAVES
16	ABNORMAL TREADMILL STRESS TEST, REFERRED WITH
17	PACEMAKER DYSFUNCTION (E.G. SICK SINUS SYNDROME, ETC.)
19	ABNORMAL ECG RESPONSE TO EXERCISE
20	VENTRICULAR TACHCARDIA, RESTING OR EXERCISE INDUCED
18	OTHER

Exhibit 7-20: CAINSELECR Screen - Insert E-CARDIO REASON

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath nc>	<no. for patient>

insert electrocardiographic reason _

electrocardiographic reason

1. The insert-electrocardiographic reason option field and electrocardiographic reason field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.25: CASELPROCU

Purpose

The purpose of CASELPROCU is to first determine how many PROCEDURES USED records exist in the CATHETER data base for the current exam. If there are no PROCEDURES USED records, CAINSPROCU is called; if there between 1 and 4 (inclusive) PROCEDURES USED records for the current exam, CASELPROCU4 is called; if there are more than 4 PROCEDURES USED records, CASELPROCU14 is called. There are no screens associated with this step.

Called From

CAMENEXAM.

Screen

None.

Logic

```
Select PROCEDURES USED records for current exam.  
If NODATA,  
    go to CAINSPROCU.  
If 0 < $DATASN <= 4,  
    go to CASELPROCU4.  
If $DATASN > 4,  
    go to CASELPROCU14.
```

Validation

None.

Chapter 7.26: CASELPROCU4

Purpose

The purpose of CASELPROCU4 is to present up to four PROCEDURES USED records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the menu.

Called From

This step is entered when the current exam has between 1 and 4 (inclusive) PROCEDURES USED records associated with it in the data base.

Screen

CASELPROCU4

Logic

1. Retrieve up to four PROCEDURES USED records, number screen accordingly, and display.
2. If select record (SWI for select-procedure-used option field) =
 - a) '0', go to CAMENEXAM.
 - b) 'n', where $n = \$DATASP$, go to CAMODPROCU.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the PROCEDURES USED sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODPROCU.
 - d) 'n', where $n > \$DATASN$, go to CAINSPROCU.

Validation

1. Select-procedure-used option field - mandatory, numeric.

Exhibit 7-21: CASELPROCU4 Screen - Select 4 Procedures Used

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
select procedure used _				
procedure used				
1	_____			
2	_____			
3	_____			
4	_____			
0 none of the above				

1. All of the fields on this screen are protected except the select-procedure-used option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.27: CASELPROCU14

Purpose

The purpose of CASELPROCU14 is to present up to fourteen PROCEDURES USED records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the menu.

Called From

This step is entered when the current exam has more than four PROCEDURES USED records associated with it in the data base.

Screen

CASELPROCU14

Logic

1. Retrieve up to fourteen PROCEDURES USED records, number screen accordingly, and display.
2. If 'select record' (SWI for select-procedure-used option field) =
 - a) '0', go to CAMENEXAM.
 - b) 'n', where $n = \$DATASP$, go to CAMODPROCU.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the PROCEDURES USED sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODPROCU.
 - d) 'n', where $n > \$DATASN$, go to CAINSPROCU.

Validation

1. Select-procedure-used option field (SWI select record) - mandatory, numeric.

Exhibit 7-22: CASELPROCU14 Screen - Select 14 Procedures Used

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
select procedure used _				
procedure used				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
0 none of the above				

1. All of the fields on this screen are protected except the select-procedure-used option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.28: CAMODPROCU

Purpose

To allow the user to modify an existing PROCEDURES USED record.

Called From

CASELPROCU4 or CASELPROCU14 when the user selects an existing PROCEDURES USED record or CAINSPROCU when a new record is entered.

Screen

CAMODPROCU.

Logic

Display screen.

If modify record(modify-procedure-used option field) = N,
go to CAMENEXAM.

Else

If modify record(modify-procedure-used option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-procedure-used option field)
- mandatory, table (YESNOTBL, exists).

Procedure used - mandatory, table(CAPROCUTBL, exists),
input via COL1, validate on COL2.

CAPROCUTBL:

<u>COL1</u>	<u>COL2</u>
01	INTRAVENOUS CATHETER, STAND BY
02	INTRAVENOUS PACING ELECTRODE, STAND BY
03	RIGHT HEART CATHETERIZATION
04	LEFT HEART CATHETERIZATION, RETROGRADE BRACHIAL
05	LEFT HEART CATHETERIZATION, RETROGRADE FEMORAL
06	HIS BUNDLE ELECTROCARDIOGRAPHY
07	HIS BUNDLE ELECTROCARDIOGRAPHY WITH ATRIAL PACING
08	CARDIAC OUTPUT, FICK
09	CARDIAC OUTPUT, CARDIOGREEN
10	CORONARY SINUS METABOLIC STUDIES
11	SUPINE BICYCLE ERGOMETRY
12	CONTRACTILITY STUDIES
13	CARDIAC OUTPUT, THERMODILUTION
14	OXIMETRY SHUNT SERIES
15	DRUG INTERVENTION STUDIES
16	OTHER

Exhibit 7-23: CAMODPROCU Screen - Modify Procedures Used

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
modify procedure used _				
procedure used				

1. The modify-procedure-used option field and procedure used field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.29: CAINSPROCU

Purpose

To allow the user to insert a new PROCEDURES USED record.

Called From

This step is called from CASELPROCU when no PROCEDURES USED records exist for the current exam or from CASELPROCU4 or CASELPROCU14 when the user chooses to insert a new PROCEDURES USED record.

Screen

CAINSPROCU.

Logic

Purge SWIs for PROCEDURE USED.
Display screen.

If insert record (SWI for insert-procedure-used option field) = Y,
 insert PROCEDURES USED record after;
 go to CAMODPROCU.
If insert record (SWI for insert-procedure-used option field) = N,
 go to CAMENEXAM.

Validation

Insert record(SWI for insert-procedure-used option field)
 - mandatory, table (YESNOTBL, exists).

Procedure used - mandatory, table(CAPROCUTBL, exists),
 input via COL1, validate on COL2.

CAPROCUTBL:

<u>COL1</u>	<u>COL2</u>
01	INTRAVENOUS CATHETER, STAND BY
02	INTRAVENOUS PACING ELECTRODE, STAND BY
03	RIGHT HEART CATHETERIZATION
04	LEFT HEART CATHETERIZATION, RETROGRADE BRACHIAL
05	LEFT HEART CATHETERIZATION, RETROGRADE FEMORAL
06	HIS BUNDLE ELECTROCARDIOGRAPHY
07	HIS BUNDLE ELECTROCARDIOGRAPHY WITH ATRIAL PACING
08	CARDIAC OUTPUT, FICK
09	CARDIAC OUTPUT, CARDIOGREEN
10	CORONARY SINUS METABOLIC STUDIES
11	SUPINE BICYCLE ERGOMETRY
12	CONTRACTILITY STUDIES
13	CARDIAC OUTPUT, THERMODILUTION
14	OXIMETRY SHUNT SERIES
15	DRUG INTERVENTION STUDIES
16	OTHER

Exhibit 7-24: CAINSPROCU Screen - Insert Procedures Used

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>

insert procedure used _

procedure used

1. The insert-procedure-used option field and procedure used field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.30: CASELANGIO

Purpose

The purpose of CASELANGIO is to first determine how many ANGIOGRAMS COMPLETED records exist in the CATHETER data base for the current exam. If there are no ANGIOGRAMS COMPLETED records, CAINSANGIO is called; if there between 1 and 4 (inclusive) ANGIOGRAMS COMPLETED records for the current exam, CASELANGIO4 is called; if there are more than 4 ANGIOGRAMS COMPLETED records, CASELANGIO14 is called. There are no screens associated with this step.

Called From

CAMENEXAM.

Screen

None.

Logic

Select ANGIOGRAMS COMPLETED records for current exam.
If NODATA,
 go to CAINSANGIO.
If $0 < \$DATASN < 4$,
 go to CASELANGIO4.
If $\$DATASN > 4$,
 go to CASELANGIO14.

Validation

None.

Chapter 7.31: CASELANGIO4

Purpose

The purpose of CASELANGIO4 is to present up to four ANGIOGRAMS COMPLETED records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the menu.

Called From

This step is entered when the current exam has between 1 and 4 (inclusive) ANGIOGRAMS COMPLETED records associated with it in the data base.

Screen

CASELANGIO4

Logic

1. Retrieve up to four ANGIOGRAMS COMPLETED records, number screen accordingly, and display.
2. If select record (SWI for select-angiograms-completed option field) =
 - a) '0', go to CAMENEXAM.
 - b) 'n', where $n = \$DATASP$, go to CAMODANGIO.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the ANGIOGRAMS COMPLETED sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODANGIO.
 - d) 'n', where $n > \$DATASN$, go to CAINSANGIO.

Validation

1. Select-angiograms-completed option field - mandatory, numeric.

Exhibit 7-25: CASELANGIO4 Screen - Select 4 ANGIOGRAMS COMPLETED

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
select angiograms completed _				
angiograms completed				
1	_____			
2	_____			
3	_____			
4	_____			
0 none of the above				

1. All of the fields on this screen are protected except the select-angiograms-completed option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.32: CASELANGIO14

Purpose

The purpose of CASELANGIO14 is to present up to fourteen ANGIOGRAMS COMPLETED records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the menu.

Called From

This step is entered when the current exam has more than four ANGIOGRAMS COMPLETED records associated with it in the data base.

Screen

CASELANGIO14

Logic

1. Retrieve up to fourteen ANGIOGRAMS COMPLETED records, number screen accordingly, and display.
2. If 'select record'
(SWI for select-angiograms-completed option field) =
 - a) '0', go to CAMENEXAM.
 - b) 'n', where $n = \$DATASP$, go to CAMODANGIO.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the ANGIOGRAMS COMPLETED sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODANGIO.
 - d) 'n', where $n > \$DATASN$, go to CAINSANGIO.

Validation

1. Select-angiograms-completed option field (SWI select record)
- mandatory, numeric.

Exhibit 7-26: CASELANGIO14 Screen-Select 14 ANGIOGRAMS COMPLETED

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
select angiograms completed _				
angiograms completed				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
0 none of the above				

1. All of the fields on this screen are protected except the select-angiograms-completed option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.33: CAMODANGIO

Purpose

To allow the user to modify an existing ANGIOGRAMS COMPLETED record.

Called From

CASELANGIO4 or CASELANGIO14 when the user selects an existing ANGIOGRAMS COMPLETED record or CAINSANGIO when a new record is entered.

Screen

CAMODANGIO.

Logic

Display screen.

If modify record(modify-angiograms-completed option field) = N,
go to CAMENEXAM.

Else

If modify record(modify-angiograms-completed option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-angiograms-completed option field)
- mandatory, table (YESNOTBL, exists).

Angiograms completed - none mandatory, table (CAANGIOTBL) edit on input
via COL1 on COL2.

CAANGIOTBL

<u>COL1</u>	<u>COL2</u>
01	RIGHT ATRIAL ANGIOGRAPHY
02	PULMONARY ANGIOGRAPHY
03	FORWARD ANGIOGRAPHY
04	LEFT VENTRICULAR ANGIOGRAPHY, LEFT VENTRICULOGAM COMPLETED
05	SUPRAVALVULAR AORTOGRAPHY, SUPERVALVULAR AORTOGRAM COMPLETED
06	CORONARY ANGIOGRAPHY, JONES, CORONARY ANGIOGRAM COMPLETED
07	CORONARY ANGIOGRAPHY, JUDKINS, CORONARY ANGIOGRAM COMPLETED
08	CORONARY ANGIOGRAPHY, MIXED
09	RIGHT VENTRICULAR ANGIOGRAPHY
10	OTHER

Exhibit 7-27: CAMODANGIO Screen - Modify ANGIOGRAMS COMPLETED

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>

modify angiograms completed _

angiograms completed

1. The modify-angiograms-completed option field and angiograms completed field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.34: CAINSANGIO

Purpose

To allow the user to insert a new ANGIOGRAMS COMPLETED record.

Called From

This step is called from CASELANGIO when no ANGIOGRAMS COMPLETED record exists for the current exam or from CASELANGIO4 or CASELANGIO14 when the user chooses to insert a new ANGIOGRAMS COMPLETED record.

Screen

CAINSANGIO.

Logic

Purge SWIs for ANGIOGRAMS COMPLETED.
Display screen.

If insert record (SWI for insert-angiograms-completed option field) = Y,
insert ANGIOGRAMS COMPLETED record after;
go to CAMODANGIO.

If insert record (SWI for insert-angiograms-completed option field) = N,
go to CAMENEXAM.

Validation

Insert record (SWI for modify-angiograms-completed option field)
- mandatory, table (YESNOTBL, exists).

Angiograms completed - mandatory, table (CAANGIOTBL) edit on input via
COL1 on COL2.

CAANGIOTBL

<u>COL1</u>	<u>COL2</u>
01	RIGHT ATRIAL ANGIOGRAPHY
02	PULMONARY ANGIOGRAPHY
03	FORWARD ANGIOGRAPHY
04	LEFT VENTRICULAR ANGIOGRAPHY, LEFT VENTRICULOGAM COMPLETED
05	SUPRAVALVULAR AORTOGRAPHY, SUPERVALVULAR AORTOGRAM COMPLETED
06	CORONARY ANGIOGRAPHY, SONES, CORONARY ANGIOGRAM COMPLETED
07	CORONARY ANGIOGRAPHY, JUDKINS, CORONARY ANGIOGRAM COMPLETED
08	CORONARY ANGIOGRAPHY, MIXED
09	RIGHT VENTRICULAR ANGIOGRAPHY
10	OTHER

Exhibit 7-28: CAINSANGIO Screen - Insert ANGIOGRAMS COMPLETED

<ssar>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
insert angiograms completed _				
angiograms completed				

1. The insert-angiograms-completed option field and angiograms completed field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.34

Chapter 7.35: CASELTECH

Purpose

The purpose of CASELTECH is to first determine how many TECHNIQUES records exist in the CATHETER data base for the current exam. If there are no TECHNIQUES records, CAINSTECH is called; if there are any TECHNIQUES records for the current exam, CASELTECH4 is called (there will never be more than 4 TECHNIQUES records per exam). There are no screens associated with this step.

Called From

CAMENEXAM.

Screen

None.

Logic

Select TECHNIQUES records for current exam.
If NODATA,
 go to CAINSTECH.
Else
 go to CASELTECH4.

Validation

None.

Chapter 7.36: CASELTECH4

Purpose

The purpose of CASELTECH4 is to present up to four TECHNIQUES records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the menu.

Called From

This step is entered when the current exam has at least one TECHNIQUES record associated with it in the data base.

Screen

CASELTECH4

Logic

1. Retrieve up to four TECHNIQUES records, number screen accordingly, and display.
2. If select record (SWI for select-techniques option field) =
 - a) '0', go to CAMENEXAM.
 - b) 'n', where $n = \$DATASP$, go to CAMODTECH.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the TECHNIQUES sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODTECH.
 - d) 'n', where $n > \$DATASN$, go to CAINSTECH.

Validation

1. Select-techniques option field - mandatory, numeric.

Exhibit 7-29: CASELTECH4 Screen - Select 4 TECHNIQUES

<ssan>	<name>		<dob>	<sex>
<type>	<case #>	<doe>	<cath no>	<no. for patient>
select techniques _				
	approach	cutdown	repair	
1	_____	_____	_____	
2	_____	_____	_____	
3	_____	_____	_____	
4	_____	_____	_____	
0	none of the above			

1. All of the fields on this screen are protected except the select-techniques option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.37: CAMODTECH

Purpose

To allow the user to modify an existing TECHNIQUES record.

Called From

CASELTECH4 when the user selects an existing TECHNIQUES record or
CAINSTTECH when a new record is entered.

Screen

CAMODTECH.

Logic

Display screen.

If modify record(modify-techniques option field) = N,
go to CAMENEXAM.

Else

If modify record(modify-techniques option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-techniques option field)
- mandatory, table (YESNOTBL, exists).

Approach - mandatory, table lookup on input via COL1, validate on COL2.

CAAPPTBL:

<u>COL1</u>	<u>COL2</u>
01	ANTECUBITAL VEIN, RIGHT
02	SAPHENOUS VEIN, RIGHT
03	FEMORAL VEIN, RIGHT
04	BRACHIAL ARTERY, RIGHT
05	FEMORAL ARTERY, RIGHT
06	ANTECUBITAL VEIN, LEFT
07	SAPHENOUS VEIN, LEFT
08	FEMORAL VEIN, LEFT
09	BRACHIAL ARTERY, LEFT
10	FEMORAL ARTERY, LEFT

Cutdown - mandatory, table (YESNOTBL, exists).

Repair - mandatory, table lookup on input via COL1, validate on COL2.

CAREPTBL

<u>COL1</u>	<u>COL2</u>
01	PRIMARY ARTERIAL REPAIR
02	PURSESTRING ARTERIAL REPAIR
03	LIGATION VENOUS
04	VENOUS REPAIR
05	N/A

Exhibit 7-30: CAMODTECH Screen - Modify TECHNIQUES

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
modify techniques _				
approach		cutdown	repair	

1. The modify-techniques option field, approach field, cutdown field, and repair field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.38: CAINSTECH

Purpose

To allow the user to insert a new TECHNIQUES record.

Called From

This step is called from CASELTECH when no TECHNIQUES records exist for the current exam or from CASELTECH4 when the user chooses to insert a new TECHNIQUES record.

Screen

CAINSTECH.

Logic

Purge SWIs for TECHNIQUES.

Display screen.

If insert record (SWI for insert-techniques option field) = Y,
insert TECHNIQUES record after;
go to CAMODTECH.

If insert record (SWI for insert-techniques option field) = N,
go to CAMENEXAM.

Validation

Insert record(SWI for insert-techniques option field)

- mandatory, table (YESNOTBL, exists).

Approach - mandatory, table lookup on input via COL1, validate on COL2.

CAAPPTBL:

<u>COL1</u>	<u>COL2</u>
01	ANTECUBITAL VEIN, RIGHT
02	SAPHENOUS VEIN, RIGHT
03	FEMORAL VEIN, RIGHT
04	BRACHIAL ARTERY, RIGHT
05	FEMORAL ARTERY, RIGHT
06	ANTECUBITAL VEIN, LEFT
07	SAPHENOUS VEIN, LEFT
08	FEMORAL VEIN, LEFT
09	BRACHIAL ARTERY, LEFT
10	FEMORAL ARTERY, LEFT

Cutdown - mandatory, table (YESNOTBL, exists).

Repair - mandatory, table lookup on input via COL1, validate on COL2.

CAREPTBL:

<u>COL1</u>	<u>COL2</u>
01	PRIMARY ARTERIAL REPAIR
02	PURSESTRING ARTERIAL REPAIR
03	LIGATION VENOUS
04	VENOUS REPAIR
05	N/A

Exhibit 7-31: CAINSTECH Screen - Insert TECHNIQUES

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
insert techniques _				
approach	cutdown	repair		

1. The insert-techniques option field, approach field, cutdown field, and repair field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.38

Chapter 7.39: CASELCOMP

Purpose

The purpose of CASELCOMP is to first determine how many COMPLICATIONS records exist in the CATHETER data base for the current exam. If there are no COMPLICATIONS records, CAINSCOMP is called; if there between 1 and 4 (inclusive) COMPLICATIONS records for the current exam, CASELCOMP4 is called; if there are more than 4 COMPLICATIONS records, CASELCOMP14 is called. There are no screens associated with this step.

Called From

CAMENEXAM.

Screen

None.

Logic

Select COMPLICATIONS records for current exam.
If NODATA,
 go to CAINSCOMP.
If $0 \leq \$DATASN \leq 4$,
 go to CASELCOMP4.
If $\$DATASN > 4$,
 go to CASELCOMP14.

Validation

None.

Chapter 7.40: CASELCOMP4

Purpose

The purpose of CASELCOMP4 is to present up to four COMPLICATIONS records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the menu.

Called From

This step is entered when the current exam has between 1 and 4 (inclusive) COMPLICATIONS records associated with it in the data base.

Screen

CASELCOMP4

Logic

1. Retrieve up to four COMPLICATIONS records, number screen accordingly, and display.
2. If select record (SWI for select-complications option field) =
 - a) '0', go to CAMENEXAM.
 - b) 'n', where $n = \$DATASP$, go to CAMODCOMP.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the COMPLICATIONS sibling chain and retrieve the nth record via $SS2KCOUNT$. Go to CAMODCOMP.
 - d) 'n', where $n > \$DATASN$, go to CAINSCOMP.

Validation

1. Select-complications option field - mandatory, numeric.

Exhibit 7-32: CASELCOMP4 Screen - Select 4 COMPLICATIONS

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
select complications _				
complication				
1	_____			
2	_____			
3	_____			
4	_____			
0	none of the above			

1. All of the fields on this screen are protected except the select-complications option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.41: CASELCOMP14

Purpose

The purpose of CASELCOMP14 is to present up to fourteen COMPLICATIONS records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the menu.

Called From

This step is entered when the current exam has more than four COMPLICATIONS records associated with it in the data base.

Screen

CASELCOMP14

Logic

1. Retrieve up to fourteen COMPLICATIONS records, number screen accordingly, and display.
2. If 'select record'
(SWI for select-complications option field) =
 - a) '0', go to CAMENEXAM.
 - b) 'n', where $n = \$DATASP$, go to CAMODCOMP.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the COMPLICATIONS sibling chain and retrieve the nth record via $SS2KCOUNT$. Go to CAMODCOMP.
 - d) 'n', where $n > \$DATASN$, go to CAINSCOMP.

Validation

1. Select-complications option field (SWI select record) - mandatory, numeric.

Exhibit 7-33: CASELCOMP14 Screen - Select 14 COMPLICATIONS

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
select complications _				
complication				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
0 none of the above				

1. All of the fields on this screen are protected except the select-complications option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.42: CAMODCOMP

Purpose

To allow the user to modify an existing COMPLICATIONS record.

Called From

CASELCOMP4 or CASELCOMP14 when the user selects an existing COMPLICATIONS record or CAINSCOMP when a new record is entered.

Screen

CAMODCOMP.

Logic

Display screen.

If modify record(modify-complications option field) = N,
go to CAMENEXAM.

Else

If modify record(modify-complications option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-complications option field)

- mandatory, table (YESNOTBL, exists).

Complication - mandatory, edit table (CACOMPTBL) lookup on input via
COL1, validate on COL2.

CACOMPTBL:

<u>COL1</u>	<u>COL2</u>
01	NONE
02	DEATH
03	MYOCARDIAL INFARCTION
04	VENTRICULAR FIBRILLATION
05	VENTRICULAR TACHYCARDIA
06	SUPRAVENTRICULAR TACHYCARDIA
07	ATRIOVENTRICULAR BLOCK
08	ASYSTOLE OR MARKED BRADYCARDIA
09	ANY ARRYTHMIA LEADING TO DISCONTINUATION OF THE PROCEDURE
10	PROFOUND HYPOTENSION
11	INTRAMYOCARDIAL INJECTION
12	MYOCARDIAL PERFORATION
13	PERFORATION OF GREAT VESSELS
14	DIMINISHED PULSE
15	LOSS OF PULSE WITHOUT SYMPTOMS
16	LOSS OF PULSE WITH SYMPTOMS
17	LOSS OF PULSE OR ARTERIAL DAMAGE REQUIRING SURGICAL REPAIR
18	A-V FISTULA
19	VASOVAGAL REACTION REQUIRING TREATMENT
20	COMPLETE HEART BLOCK
21	EXTRACARDIAC EMBOLIC PHENOMENA
22	DRUG/CONTRAST REACTION
23	ANGINA
24	EQUIPMENT FAILURE

Exhibit 7-34: CAMODCOMP Screen - Modify COMPLICATIONS

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>

modify complications _

complication

1. The modify-complications option field and complication field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.43: CAINSCOMP

Purpose

To allow the user to insert a new COMPLICATIONS record.

Called From

This step is called from CASELCOMP when no COMPLICATIONS records exist for the current exam or from CASELCOMP4 or CASELCOMP14 when the user chooses to insert a new COMPLICATIONS record.

Screen

CAINSCOMP.

Logic

Purge SWIs for COMPLICATIONS.
Display screen.

If insert record (SWI for insert-complications option field) = Y,
insert COMPLICATIONS record after;
go to CAMODCOMP.

If insert record (SWI for insert-complications option field) = N,
go to CAMENEXAM.

Validation

Insert record(SWI for insert-complications option field)
- mandatory, table (YESNOTBL, exists).

Complication - mandatory, edit table (CACOMPTBL) lookup on input via
COL1, validate on COL2.

CACOMPTBL:

<u>COL1</u>	<u>COL2</u>
01	NONE
02	DEATH
03	MYOCARDIAL INFARCTION
04	VENTRICULAR FIBRILLATION
05	VENTRICULAR TACHYCARDIA
06	SUPRAVENTRICULAR TACHYCARDIA
07	ATRIOVENTRICULAR BLOCK
08	ASYSTOLE OR MARKED BRADYCARDIA
09	ANY ARRHYTHMIA LEADING TO DISCONTINUATION OF THE PROCEDURE
10	PROFOUND HYPOTENSION
11	INTRAMYOCARDIAL INJECTION

- 12 MYOCARDIAL PERFORATION
- 13 PERFORATION OF GREAT VESSELS
- 14 DIMINISHED PULSE
- 15 LOSS OF PULSE WITHOUT SYMPTOMS
- 16 LOSS OF PULSE WITH SYMPTOMS
- 17 LOSS OF PULSE OR ARTERIAL DAMAGE REQUIRING SURGICAL REPAIR
- 18 A-V FISTULA
- 19 VASOVAGAL REACTION REQUIRING TREATMENT
- 20 COMPLETE HEART BLOCK
- 21 EXTRACARDIAC EMBOLIC PHENOMENA
- 22 DRUG/CONTRAST REACTION
- 23 ANGINA
- 24 EQUIPMENT FAILURE

Exhibit 7-35: CAINSCOMP Screen - Insert COMPLICATIONS

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>

insert complications _

complication

1. The insert-complications option field and complication field are mandatory.
2. The SWI name for the option field is insert record.

Chapter 7.44: CASELLVEF

Purpose

The purpose of CASELLVEF is to first determine how many LV EJECTION FRACTIONS records exist in the CATHETER data base for the current exam. If there are no LV EJECTION FRACTIONS records, CAINSLVEF is called; if there are any LV EJECTION FRACTIONS records for the current exam, CASELLVEF4 is called (there will never be more than 4 LV EJECTION FRACTIONS records per exam). There are no screens associated with this step.

Called From

CAMENEXAM.

Screen

None.

Logic

Select LV EJECTION FRACTIONS records for current exam.
If NODATA,
 go to CAINSLVEF.
Else
 go to CASELLVEF4.

Validation

None.

Chapter 7.45: CASELLVEF4

Purpose

The purpose of CASELLVEF4 is to present up to four LV EJECTION FRACTIONS records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the menu.

Called From

This step is entered when the current exam has at least one LV EJECTION FRACTIONS record associated with it in the data base.

Screen

CASELLVEF4

Logic

1. Retrieve up to four LV EJECTION FRACTIONS records, number screen accordingly, and display.
2. If select record (SWI for select-lv ejection fractions option field) =
 - a) '0', go to CAMENEXAM.
 - b) 'n', where $n = \$DATASP$, go to CAMODLVEF.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the LV EJECTION FRACTIONS sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODLVEF.
 - d) 'n', where $n > \$DATASN$, go to CAINSLVEF.

Validation

1. Select-lv ejection fractions option field - mandatory, numeric.

Exhibit 7-36: CASELLVEF4 Screen - Select 4 LV EJECTION FRACTIONS

<ssan>	<name>	<dob>	<sex>
<type>	<case #>	<doe>	<cath no>
		<no. for patient>	

select lv ejection fractions _

	workload	method	ejection fraction
1	_____	_____	_____
2	_____	_____	_____
3	_____	_____	_____
4	_____	_____	_____
0	none of the above		

1. All of the fields on this screen are protected except the select-lv ejection fractions option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.46: CAMODLVEF

Purpose

To allow the user to modify an existing LV EJECTION FRACTIONS record.

Called From

CASELLVEF4 when the user selects an existing LV EJECTION FRACTIONS record or CAINSLVEF when a new record is entered.

Screen

CAMODLVEF.

Logic

Display screen.

If modify record(modify-lv ejection fractions option field) = N,
go to CAMENEXAM.

Else

If modify record(modify-lv ejection fractions option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-lv ejection fractions option field)
- mandatory, table (YESNOTBL, exists).

Workload - mandatory, range (0-20000).

Method - mandatory, table (CAMETHODTBL-
DODGE AREA-LENGTH
SIMPSON).

Ejection fraction - mandatory, range (10-80).

Exhibit 7-37: CAMODLVEF Screen - Modify LV EJECTION FRACTIONS

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>

modify lv ejection fractions _

workload	method	ejection fraction
_____	_____	_____

1. The modify-lv ejection fractions option field, workload field, method field, and ejection fraction field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.47: CAINSLVEF

Purpose

To allow the user to insert a new LV EJECTION FRACTIONS record.

Called From

This step is called from CASELLVEF when no LV EJECTION FRACTIONS records exist for the current exam or from CASELLVEF4 when the user chooses to insert a new LV EJECTION FRACTIONS record.

Screen

CAINSLVEF.

Logic

Purge SWIs for workload, method, and ejection fractions.
Display screen.

If insert record (SWI for insert-lv ejection fractions option field)= Y,
insert LV EJECTION FRACTIONS record after;
go to CAMODLVEF.

If insert record (SWI for insert-lv ejection fractions option field)= N,
go to CAMENEXAM.

Validation

Insert record (SWI for insert-lv ejection fractions option field)
- mandatory, table (YESNOTBL, exists).

Workload - mandatory, range (0-20000).

Method - mandatory, table (CAMETHODBL-
DODGE AREA-LENGTH
SIMPSON).

Ejection fraction - mandatory, range (10-80).

Exhibit 7-38: CAINSLVEF Screen - Insert LV EJECTION FRACTIONS

<ssan>	<name>	<dob>	<sex>
<type>	<case #>	<doe>	<cath no>
		<no. for patient>	

insert lv ejection fractions _

workload	method	ejection fraction
_____	_____	_____

1. The insert-lv ejection fractions option field, workload field, method field, and ejection fraction field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.48: CASELINTER

Purpose

The purpose of CASELINTER is to first determine how many INTERPRETATIONS records exist in the CATHETER data base for the current exam. If there are no INTERPRETATIONS records, CAINSINTER is called; if there are any INTERPRETATIONS records for the current exam, CASELINTER4 is called (there will never be more than 4 INTERPRETATIONS records per exam). There are no screens associated with this step.

The "interpretations" steps are a little bit different than previous processing due to the complexity in the organization of records. As a result, this set of steps will have two modify steps. The first modify step will be the conventional modify step associated with any selection or insert. The second modify step will allow the user to view updated INTERPRETATIONS data including data that the transaction has update control over based on the insertion of specific lower level descendants to the INTERPRETATIONS record.

Called From

CAMENEXAM.

Screen

None.

Logic

Select INTERPRETATIONS records for current exam.
If NODATA,
 go to CAINSINTER.
Else
 go to CASELINTER4.

Validation

None.

Chapter 7.49: CASELINTER4

Purpose

The purpose of CASELINTER4 is to present up to four existing INTERPRETATIONS records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the menu. Due to the size of the component names in the record, only four are presented to base the selection on.

Called From

This step is called from CASELINTER when the current exam has at least one INTERPRETATIONS record associated with it in the data base.

Screen

CASELINTER4

Logic

1. Retrieve up to four INTERPRETATIONS records, number screen accordingly, and display.
2. If select record (SWI for select-interpretations option field) =
 - a) '0', go to CAMENEXAM.
 - b) 'n', where $n = \$DATASP$, go to CAMODINTER.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the INTERPRETATIONS sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODINTER.
 - d) 'n', where $n > \$DATASN$, go to CAINSINTER.

Validation

1. Select-interpretations option field - mandatory, numeric.

Exhibit 7-39: CASELINTER4 Screen - Select 4 INTERPRETATIONS

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>

select interpretations _

	reading mm/dd/yy	left ventriculography normal	coronary angiography normal	total percent narrowed
1	___/___/___	—	—	—
2	___/___/___	—	—	—
3	___/___/___	—	—	—
4	___/___/___	—	—	—

0 none of the above

1. All of the fields on this screen are protected except the select-interpretations option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.50: CAMODINTER

Purpose

To allow the user to modify certain fields in an existing INTERPRETATIONS record. Modification of other fields is controlled by the transaction and is a direct result of descendant records inserted.

Called From

CASELINTER4 when the user selects an existing INTERPRETATIONS record or CAINSINTER when a new record is entered.

Screen

CAMODINTER.

Logic

Display screen.

If modify record(modify-interpretations option field) = N,
go to CAMENINTER.

Else

If modify record(modify-interpretations option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-interpretations option field)
- mandatory, table (YESNOTBL, exists).

Reading - mandatory, defaults to DOE.

Circulatory pattern - mandatory, table(CACIRCTBL); edit on COL1 and
validate on COL2.

CACIRCTBL:

<u>COL1</u>	<u>COL2</u>
1	RIGHT DOMINANT
2	BALANCED
3	LEFT DOMINANT

Number of posterior descending branches - range (0-4).

Exhibit 7-40: CAMODINTER Screen - Modify INTERPRETATIONS

```
<ssan>          <name>          <dob>      <sex>  
<type>    <case #>  <doe>    <cath no>  <no. for patient>
```

modify interpretations _

```
reading __/__/__  
supervalvular aortography normal _  
left ventriculography normal _  
coronary angiography normal _  
circulatory pattern _  
coronary calcification _  
myocardial bridges _  
coronary spasm _  
collateral present _  
coronary anomaly _  
number of posterior descending branches _  
total pct narrowed _
```

1. The modify-interpretations option field, the reading field, the circulatory pattern field, and the number of posterior descending branches field are unprotected and mandatory.
2. All other fields on the screen are protected.
3. The SWI name for the option field is modify record.

Chapter 7.51: CAINSINTER

Purpose

To allow the user to insert a new INTERPRETATIONS record.

Called From

This step is called from CASELINTER when no INTERPRETATIONS records exist for the current exam or from CASELINTER4 when the user chooses to insert a new INTERPRETATIONS record.

Screen

CAINSINTER.

Logic

Purge SWIs for INTERPRETATIONS record.
Display screen.

If insert record (SWI for insert-interpretations option field) = Y,
insert INTERPRETATIONS record after;
go to CAMODINTER.

If insert record (SWI for insert-interpretations option field) = N,
go to CAMENEXAM.

Validation

Insert record (SWI for modify-interpretations option field)
- mandatory, table (YESNOTBL, exists).

Reading - mandatory, defaults to DOE.

Circulatory pattern - mandatory, table(CACIRCTBL); edit on COL1 and
validate on COL2.

CACIRCTBL:

<u>COL1</u>	<u>COL2</u>
1	RIGHT DOMINANT
2	BALANCED
3	LEFT DOMINANT

Number of posterior descending branches - range (0-4).

Exhibit 7-41: CAINSINTER Screen - Insert INTERPRETATIONS

```
<ssan>          <name>          <dob>      <sex>  
<type>    <case #>  <doe>    <cath no>  <no. for patient>
```

insert interpretations _

```
reading __/__/__  
supervalvular aortography normal  
left ventriculography normal ~  
coronary angiography normal ~  
circulatory pattern _____  
coronary calcification ~  
myocardial bridges ~  
coronary spasm ~  
collateral present ~  
coronary anomaly ~  
number of posterior descending branches _  
total pct narrowed _____
```

1. The insert-interpretations option field, the reading field, the circulatory pattern field, and the number of posterior descending branches field are unprotected and mandatory.
2. All other fields on the screen are protected.
3. The SWI name for the option field is insert record.

Chapter 7.52: CAMENINTER

Purpose

To allow the user a choice of which level 3 records to work with. All records dealt with from this menu attach to the current INTERPRETATIONS record. All lower level steps return to menu. Upon exiting the menu, CAMODINTERF (final modification to INTERPRETATIONS record) is called.

Called From

This step is entered from CAMODINTER and all steps that the menu calls.

Screen

CAMENINTER

sk

Logic

Display Screen.

If the select-next-step option field is set to:

- '1', go to CASELSUPRA.
- '2', go to CASELLVCA.
- '3', go to CASELLOLVA.
- '4', go to CASELCOROC.
- '5', go to CASELMYOCB.
- '6', go to CASELCOROS.
- '7', go to CASELCOROP.
- '8', go to CASELCOLL.
- '9', go to CASELCOROA.
- '10', go to CASELDIAG.
- '11', go to CASELREAD.

- '0', go to CAMODINTERF. (final modification step prior to exiting the interpretations steps)

Validation

Select-next-step-option field - mandatory, range (0-11).

Exhibit 7-42: CAMENINTER - MENU For INTERPRETATIONS Child Records

```
<ssan>          <name>          <dob>          <sex>  
<:type>    <case #>    <doe>    <cath no>    <no. for patient>  
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

select next step __

- 1 select supervalvular aortography findings
- 2 select lv contraction abnormalities
- 3 select other lv abnormalities
- 4 select coronary calcifications
- 5 select myocardial bridges
- 6 select coronary spasms
- 7 select coronary plaques
- 8 select collaterals
- 9 select coronary anomalies
- 10 select diagnosis
- 11 select readers

0 exit - view final interpretations record

1. Select next step option field only unprotected field.

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Chapter 7.53: CASELSUPRA

Purpose

The purpose of CASELSUPRA is to first determine how many SUPRAVALVULAR AORTOGRAPHY FINDINGS (hereafter referred to as SAF) records exist in the CATHETER data base for the current interpretation. If there are no SAF records, CAINSSUPRA is called; if there are any SAF records for the current interpretation, CASELSUPRA4 is called (there will never be more than 4 SAF records per interpretation). There are no screens associated with this step.

Called From

CAMENINTER.

Screen

None.

Logic

Select SAF records for current interpretation.
If NODATA,
 go to CAINSSUPRA.
Else
 go to CASELSUPRA4.

Validation

None.

Chapter 7.54: CASELSUPRA4

Purpose

The purpose of CASELSUPRA4 is to present up to four SAF records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the interpretations menu.

Called From

This step is entered when the current interpretation has at least one SAF record associated with it in the data base.

Screen

CASELSUPRA4

Logic

1. Retrieve up to four SAF records, number screen accordingly, and display.
2. If select record (SWI for select-saf option field) =
 - a) '0', go to CAMENINTER.
 - b) 'n', where $n = \$DATASP$, go to CAMODSUPRA.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the SAF sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODSUPRA.
 - d) 'n', where $n > \$DATASN$, go to CAINSSUPRA.

Validation

1. Select-saf option field - mandatory, numeric.

Exhibit 7-43: CASELSUPRA4 Screen - Select 4 SAF Records

```
<ssan>          <name>          <dob>          <sex>
<type>    <case #>    <doe>    <cath no>    <no. for patient>
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

select supravallvular aortography findings _

supravallvular aortography finding

```
1 _____
2 _____
3 _____
4 _____
```

0 none of the above

1. All of the fields on this screen are protected except the select-saf option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.55: CAMODSUPRA

Purpose

To allow the user to modify an existing SAF record.

Called From

CASELSUPRA4 when the user selects an existing SAF record or
CAINSSUPRA when a new record is entered.

Screen

CAMODSUPRA.

Logic

Display screen.

If modify record(modify-saf option field) = N,
go to CAMENINTER.

Else

If modify record(modify-saf option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-saf option field)
- mandatory, table (YESNOTBL, exists).

Supravalvular aortography finding - mandatory, table(CASUPRATBL)
input on COL1 and edit to COL2.

CASUPRATBL:

<u>COL1</u>	<u>COL2</u>
01	NORMAL
02	DILITATION OF AORTA
03	ANEURYSM OF AORTA
04	DISSECTION OF AORTA
05	UNICUSPID AORTIC VALVE
06	BICUSPID AORTIC VALVE
07	ANEURYSM SINUS VALSALVA
08	AORTIC REGURGITATION, GRADE I
09	AORTIC REGURGITATION, GRADE II
10	AORTIC REGURGITATION, GRADE III
11	AORTIC REGURGITATION, GRADE IV
12	AORTIC RUN OFF LESION, OTHER
13	CALCIUM, ASCENDING AORTA
14	CALCIUM, AORTIC VALVE
15	OTHER

Exhibit 7-44: CAMODSUPRA Screen - Modify SAF Record

```
<ssan>          <name>          <dob>          <sex>  
<type>    <case #>  <doe>    <cath no>    <no. for patient>  
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

modify supravalvular aortography findings _

supravalvular aortography finding

1. The modify-saf option field and saf field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.56: CAINSSUPRA

Purpose

To allow the user to insert a new SAF record.

Called From

This step is called from CASELSUPRA when no SAF record exist for the current interpretation or from CASELSUPRA4 when the user chooses to insert a new SAF record.

Screen

CAINSSUPRA.

Logic

Purge SWIs for SAF.

Display screen.

If insert record (SWI for insert-saf option field) = Y,
 insert SAF record after;
 modify SUPRAVALVULAR AORTOGRAPHY NORMAL
 in parent INTERPRETATIONS record to N;(indicates descendant)
 go to CAMODSUPRA.
If insert record (SWI for insert-saf option field) = N,
 go to CAMENINTER.

Validation

Insert record(SWI for insert-saf option field)
 - mandatory, table (YESNOTBL, exists).

Supravalvular aortography finding - mandatory, table(CASUPRATBL)
input on COL1 edit to COL2.

CASUPRATBL:

<u>COL1</u>	<u>COL2</u>
01	NORMAL
02	DILITATION OF AORTA
03	ANEURYSM OF AORTA
04	DISSECTION OF AORTA
05	UNICUSPID AORTIC VALVE
06	BICUSPID AORTIC VALVE
07	ANEURYSM SINUS VALSALVA
08	AORTIC REGURGITATION, GRADE I
09	AORTIC REGURGITATION, GRADE II
10	AORTIC REGURGITATION, GRADE III
11	AORTIC REGURGITATION, GRADE IV
12	AORTIC RUN OFF LESION, OTHER
13	CALCIUM, ASCENDING AORTA
14	CALCIUM, AORTIC VALVE
15	OTHER

Exhibit 7-45: CAINSSUPRA Screen - Insert SAF

<ssan> <name> <dob> <sex>
<type> <case #> <doe> <cath no> <no. for patient>
<reading> <lv normal> <coronary angiography normal> <total % narrowed>

insert supravulvular aortography findings _

supravulvular aortography finding

1. The insert-saf option field and saf field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.57: CASELLVCA

Purpose

The purpose of CASELLVCA is to first determine how many LV CONTRACTION ABNORMALITIES (hereafter referred to as LVCA) records exist in the CATHETER data base for the current interpretation. If there are no LVCA records, CAINSLVCA is called; if there are any LVCA records for the current interpretation, CASELLVCA4 is called (there will never be more than 4 LVCA records per interpretation). There are no screens associated with this step.

Called From

CAMENINTER.

Screen

None.

Logic

Select LVCA records for current interpretation.
If NODATA,
 go to CAINSLVCA.
Else
 go to CASELLVCA4.

Validation

None.

Chapter 7.58: CASELLVCA4

Purpose

The purpose of CASELLVCA4 is to present up to four LV CONTRACTION ABNORMALITIES (hereafter referred to as LVCA) records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the interpretations menu.

Called From

This step is entered when the current interpretation has at least one LVCA record associated with it in the data base.

Screen

CASELLVCA4

Logic

1. Retrieve up to four LVCA records, number screen accordingly, and display.
2. If select record (SWI for select-lvca option field) =
 - a) '0', go to CAMENINTER.
 - b) 'n', where $n = \$DATASP$, go to CAMODLVCA.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the LVCA sibling chain and retrieve the nth record via $SS2KCOUNT$. Go to CAMODLVCA.
 - d) 'n', where $n > \$DATASN$, go to CAINSLVCA.

Validation

1. Select-lvca option field - mandatory, numeric.

Exhibit 7-46: CASELLVCA4 Screen - Select 4 LVCA Records

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
<reading>	<lv normal>	<coronary angiography normal>	<total % narrowed>	

select lv contraction abnormalities _

	abnormal lv contraction site	lv contraction abnormality
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____

0 none of the above

1. All of the fields on this screen are protected except the select-lvca option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.59: CAMODLVCA

Purpose

To allow the user to modify an existing LVCA record.

Called From

CASELLVCA4 when the user selects an existing LVCA record or
CAINSLVCA when a new record is entered.

Screen

CAMODLVCA.

Logic

Display screen.

If modify record(modify-lvca option field) = N,
go to CAMENINTER.

Else

If modify record(modify-lvca option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-lvca option field)

- mandatory, table (YESNOTBL, exists).

Abnormal lv contraction site - mandatory, table(CAALVCSTBL),
input on COL1 edit to COL2.

CAALVCSTBL:

<u>COL1</u>	<u>COL2</u>
1	ANTERIOR WALL
2	APEX
3	DIAPHRAGMATIC
4	POSTEROBASAL
5	POSTEROLATERAL
6	SEPTAL WALL

Lv contraction abnormality - mandatory, table(CALVCATBL)
input on COL1 edit to COL2.

CALVCATBL:

<u>COL1</u>	<u>COL2</u>
1	AKINESIS
2	DYSKINESIS
3	HYPOKINESIS
4	ASYNCHRONY

Exhibit 7-47: CAMODLVCA Screen - Modify LVCA Records

```
<ssan>          <name>          <dob>          <sex>
<type>    <case #>    <doe>    <cath no>    <no. for patient>
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

modify lv contraction abnormalities _

abnormal lv contraction site lv contraction abnormality

1. The modify-lv-contraction-abnormalities option field, abnormal lv contraction site field, and lv contraction abnormality field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.60: CAINSLVCA

Purpose

To allow the user to insert a new LVCA record.

Called From

This step is called from CASELLVCA when no LVCA records exist for the current interpretation or from CASELLVCA4 when the user chooses to insert a new LVCA record.

Screen

CAINSLVCA.

Logic

Purge SWIs for abnormal lv contraction site and lv contraction abnormality data.

Display screen.

If insert record (SWI for insert-lvca option field) = Y,
 insert LVCA record after;
 modify LEFT VETRICULOGRAPHY NORMAL
 in parent INTERPRETATIONS record to N; (indicates descendant)
 go to CAMODLVCA.

If insert record (SWI for insert-lvca option field) = N,
 go to CAMENINTER.

Validation

Insert record(SWI for insert-lvca option field)
 - mandatory, table (YESNOTBL, exists).

Abnormal lv contraction site - mandatory, table(CAALVCSTBL),
input on COL1 edit to COL2.

CAALVCSTBL:

<u>COL1</u>	<u>COL2</u>
1	ANTERIOR WALL
2	APEX
3	DIAPHRAGMATIC
4	POSTEROBASAL
5	POSTEROLATERAL
6	SEPTAL WALL

Lv contraction abnormality - mandatory, table(CALVCATBL)
input on COL1 edit to COL2.

CALVCATBL:

<u>COL1</u>	<u>COL2</u>
1	AKINESIS
2	DYSKINESIS
3	HYPOKINESIS
4	ASYNCHRONY

Exhibit 7-48: CAINSLVCA Screen - Insert LVCA Records

```
<ssan>          <name>                <dob>      <sex>  
<type>    <case #>  <doe>    <cath no>    <no. for patient>  
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

insert lv contraction abnormalities _

abnormal lv contraction site	lv contraction abnormality
_____	_____

1. The insert-lv contraction abnormalities option field and lv contraction abnormalities field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.61: CASELOLVA

Purpose

The purpose of CASELOLVA is to first determine how many OTHER LV ABNORMALITIES (hereafter referred to as OLVA) records exist in the CATHETER data base for the current interpretation. If there are no OLVA records, CAINSOLVA is called; if there are any OLVA records for the current interpretation, CASELOLVA4 is called (there will never be more than 4 OLVA records per interpretation). There are no screens associated with this step.

Called From

CAMENINTER.

Screen

None.

Logic

Select OLVA records for current interpretation.
If NODATA,
 go to CAINSOLVA.
Else
 go to CASELOLVA4.

Validation

None.

Chapter 7.62: CASELOLVA4

Purpose

The purpose of CASELOLVA4 is to present up to four OTHER LV ABNORMALITIES (hereafter referred to as OLVA) records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the interpretations menu.

Called From

This step is entered when the current interpretation has at least one OLVA record associated with it in the data base.

Screen

CASELOLVA4

Logic

1. Retrieve up to four OLVA records, number screen accordingly, and display.
2. If select record (SWI for select-olva option field) =
 - a) '0', go to CAMENINTER.
 - b) 'n', where $n = \$DATASP$, go to CAMODOLVA.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the OLVA sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODOLVA.
 - d) 'n', where $n > \$DATASN$, go to CAINSOLVA.

Validation

1. Select-olva option field - mandatory, numeric.

Exhibit 7-49: CASELOLVA4 Screen - Select 4 OLVA Records

```
<ssan>          <name>          <dob>          <sex>
<type>    <case #>    <doe>    <cath no>    <no. for patient>
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

select other lv abnormalities _

other lv abnormality

1 _____
2 _____
3 _____
4 _____

0 none of the above

1. All of the fields on this screen are protected except the select-olva option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.63: CAMODOLVA

Purpose

To allow the user to modify an existing OLVA record.

Called From

CASELOLVA4 when the user selects an existing OLVA record or
CAINSOLVA when a new record is entered.

Screen

CAMODOLVA.

Logic

Display screen.

If modify record(modify-olva option field) = N,
go to CAMENINTER.

Else

If modify record(modify-olva option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-olva option field)

- mandatory, table (YESNOTBL, exists).

Other lv abnormality

- mandatory, table(CAOLVATBL),

input on COL1 edit to COL2.

CAOLVATBL:

<u>COL1</u>	<u>COL2</u>
01	INCREASED LEFT VENTRICULAR WALL THICKNESS
02	THICKENED MITRAL VALVE
03	DECREASED MOTION MITRAL VALVE
04	BILLOWING MITRAL LEAFLET, ANTERIOR (PROLAPSE)
05	BILLOWING MITRAL LEAFLET, POSTERIOR (PROLAPSE)
06	MITRAL REGURGITATION, GRADE I
07	MITRAL REGURGITATION, GRADE II
08	MITRAL REGURGITATION, GRADE III
09	MITRAL REGURGITATION, GRADE IV
10	VENTRICULAR SEPTAL DEFECT
11	CALCIUM, MITRAL VALVE
12	CALCIUM, MITRAL ANNULUS
13	INCREASED LEFT VENTRICULAR SIZE
14	OTHER

Exhibit 7-50: CAMODOLVA Screen - Modify OLVA Records

```
<ssan>          <name>          <dob>          <sex>  
<type>    <case #>    <doe>    <cath no>    <no. for patient>  
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

modify other lv abnormalities _

other lv abnormality

1. The modify-olva option field and other lv abnormality field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.64: CAINSOLVA

Purpose

To allow the user to insert a new OLVA record.

Called From

This step is called from CASELOLVA when no OLVA records exist for the current interpretation or from CASELOLVA4 when the user chooses to insert a new OLVA record.

Screen

CAINSOLVA.

Logic

Purge SWIs for other lv abnormality.

Display screen.

If insert record (SWI for insert-olva option field) = Y,
 insert OLVA record after;
 modify LEFT VETRICULOGRAPHY NORMAL
 in parent INTERPRETATIONS record to N; (indicates descendant)
 go to CAMODOLVA.

If insert record (SWI for insert-olva option field) = N,
 go to CAMENINTER.

Validation

Insert record(SWI for insert-olva option field)
 - mandatory, table (YESNOTBL, exists).

Other lv abnormality - mandatory, table(CAOLVATBL),
input on COL1 edit to COL2.

CAOLVATBL:

<u>COL1</u>	<u>COL2</u>
01	INCREASED LEFT VENTRICULAR WALL THICKNESS
02	THICKENED MITRAL VALVE
03	DECREASED MOTION MITRAL VALVE
04	BILLOWING MITRAL LEAFLET, ANTERIOR (PROLAPSE)
05	BILLOWING MITRAL LEAFLET, POSTERIOR (PROLAPSE)
06	MITRAL REGURGITATION, GRADE I
07	MITRAL REGURGITATION, GRADE II
08	MITRAL REGURGITATION, GRADE III
09	MITRAL REGURGITATION, GRADE IV
10	VENTRICULAR SEPTAL DEFECT
11	CALCIUM, MITRAL VALVE
12	CALCIUM, MITRAL ANNULUS
13	INCREASED LEFT VENTRICULAR SIZE
14	OTHER

Exhibit 7-51: CAINSOLVA Screen - Insert OLVA Records

```
<ssan>          <name>          <dob>          <sex>  
<type>  <case #>  <doe>    <cath no>  <no. for patient>  
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

insert other lv abnormalities _

other lv abnormality

1. The insert-olva option field and other lv abnormality field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.65: CASELCOROC

Purpose

The purpose of CASELCOROC is to first determine how many CORONARY CALCIFICATIONS records exist in the CATHETER data base for the current interpretation. If there are no CORONARY CALCIFICATIONS records, CAINSCOROC is called; if there are any CORONARY CALCIFICATIONS records for the current interpretation, CASELCOROC4 is called (there will never be more than 4 CORONARY CALCIFICATIONS records per interpretation). There are no screens associated with this step.

Called From

CAMENINTER.

Screen

None.

Logic

Select CORONARY CALCIFICATIONS records for current interpretation.
If NODATA,
 go to CAINSCOROC.
Else
 go to CASELCOROC4.

Validation

None.

Chapter 7.66: CASELCOROC4

Purpose

The purpose of CASELCOROC4 is to present up to four CORONARY CALCIFICATIONS records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the interpretations menu.

Called From

This step is entered when the current interpretation has at least one CORONARY CALCIFICATIONS record associated with it in the data base.

Screen

CASELCOROC4

Logic

1. Retrieve up to four CORONARY CALCIFICATIONS records, number screen accordingly, and display.
2. If select record(SWI for select-coronary-calcifications option field) =
 - a) '0', go to CAMENINTER.
 - b) 'n', where $n = \$DATASP$, go to CAMODCOROC.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the CORONARY CALCIFICATIONS sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODCOROC.
 - d) 'n', where $n > \$DATASN$, go to CAINSCOROC.

Validation

1. Select-coronary-calcifications option field - mandatory, numeric.

Exhibit 7-52: CASELCOROC4 Screen - Select 4 CORONARY CALCIFICATIONS

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
<reading>	<lv normal>	<coronary angiography normal>	<total % narrowed>	

select coronary calcifications _

coronary calcification site

1	_____
2	_____
3	_____
4	_____

0 none of the above

1. All of the fields on this screen are protected except the select-coronary-calcifications option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.67: CAMODCOROC

Purpose

To allow the user to modify an existing CORONARY CALCIFICATIONS record.

Called From

CASELCOROC4 when the user selects an existing CORONARY CALCIFICATIONS record or CAINSCOROC when a new record is entered.

Screen

CAMODCOROC.

Logic

Display screen.

If modify record(modify-coronary-calcifications option field) = N,
go to CAMENINTER.

Else

If modify record(modify-coronary-calcifications option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-coronary-calcifications option field)
- mandatory, table (YESNOTBL, exists).

Coronary calcification site - mandatory, table (CACOSITETBL-

AO	E	J2	P	U
A	F	K	Q1	1
B	G	L	Q2	2
C	H	M	R	3
D1	I	N	S	4
D2	J1	O	T	5).

Exhibit 7-53: CAMODCOROC Screen - Modify CORONARY CALCIFICATIONS

```
<ssan>      <name>      <dob>      <sex>  
<type>      <case #>    <doe>      <cath no>  <no. for patient>  
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

modify coronary calcifications _

coronary calcification site

1. The modify-coronary-calcifications option field and coronary calcification site field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.68: CAINSCOROC

Purpose

To allow the user to insert a new CORONARY CALCIFICATIONS record.

Called From

This step is called from CASELCOROC when no CORONARY CALCIFICATIONS records exist for the current interpretation or from CASELCOROC4 when the user chooses to insert a new CORONARY CALCIFICATIONS record.

Screen

CAINSCOROC.

Logic

Purge SWIs for coronary calcification site.
Display screen.

If insert record(SWI for insert-coronary-calcifications option field)=Y,
 insert CORONARY CALCIFICATIONS record after;
 modify CORONARY CALCIFICATION
 in parent INTERPRETATIONS record to Y; (indicates descendant)
 go to CAMODCOROC.
If insert record(SWI for insert-coronary-calcifications option field)=N,
 go to CAMENINTER.

Validation

Insert record(SWI for insert-coronary-calcifications option field)
 - mandatory, table (YESNOTBL, exists).

Coronary calcification site - mandatory, table (CACOSITETBL-
 AO E J2 P U
 A F K Q1 1
 B G L Q2 2
 C H M R 3
 D1 I N S 4
 D2 J1 O T 5).

Exhibit 7-54: CAINSCOROC Screen - Insert CORONARY CALCIFICATION

```
<ssan>          <name>          <dob>          <sex>  
<type>    <case #>    <doe>    <cath no>    <no. for patient>  
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

```
insert coronary calcifications _  
coronary calcification site  
_____
```

1. The insert-coronary-calcifications option field and coronary calcification site field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.68

Chapter 7.69: CASELMYOCB

Purpose

The purpose of CASELMYOCB is to first determine how many MYOCARDIAL BRIDGES records exist in the CATHETER data base for the current interpretation. If there are no MYOCARDIAL BRIDGES records, CAINSMYOCB is called; if there are any MYOCARDIAL BRIDGES records for the current interpretation, CASELMYOCB4 is called (there will never be more than 4 MYOCARDIAL BRIDGES records per interpretation). There are no screens associated with this step.

Called From

CAMENINTER.

Screen

None.

Logic

Select MYOCARDIAL BRIDGES records for current interpretation.
If NODATA,
 go to CAINSMYOCB.
Else
 go to CASELMYOCB4.

Validation

None.

Chapter 7.70: CASELMYOCB4

Purpose

The purpose of CASELMYOCB4 is to present up to four MYOCARDIAL BRIDGES records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the interpretations menu.

Called From

This step is entered when the current interpretation has at least one MYOCARDIAL BRIDGES record associated with it in the data base.

Screen

CASELMYOCB4

Logic

1. Retrieve up to four MYOCARDIAL BRIDGES records, number screen accordingly, and display.
2. If select record (SWI for select-myocardial-bridges option field) =
 - a) '0', go to CAMENINTER.
 - b) 'n', where $n = \$DATASP$, go to CAMODMYOCB.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the MYOCARDIAL BRIDGES sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODMYOCB.
 - d) 'n', where $n > \$DATASN$, go to CAINSMYOCB.

Validation

1. Select-myocardial-bridges option field - mandatory, numeric.

Exhibit 7-55: CASELMYOCB4 Screen - Select 4 MYOCARDIAL BRIDGES

```
<ssan>          <name>          <dob>          <sex>
<type>   <case #>   <doe>   <cath no>   <no. for patient>
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

select myocardial bridges _

myocardial bridge site

```
1  _____
2  _____
3  _____
4  _____
```

0 none of the above

1. All of the fields on this screen are protected except the select-myocardial-bridges option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.71: CAMODMYOCB

Purpose

To allow the user to modify an existing MYOCARDIAL BRIDGES record.

Called From

CASELMYOCB4 when the user selects an existing MYOCARDIAL BRIDGES record or CAINSMYOCB when a new record is entered.

Screen

CAMODMYOCB.

Logic

Display screen.

If modify record(modify-myocardial-bridges option field) = N,
go to CAMENINTER.

Else

If modify record(modify-myocardial-bridges option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-myocardial-bridges option field)
- mandatory, table (YESNOTBL, exists).

Myocardial bridge site - mandatory, table (CACOSITETBL-
AO E J2 P U
A F K Q1 1
B G L Q2 2
C H M R 3
D1 I N S 4
D2 J1 O T 5).

Exhibit 7-56: CAMODMYOCB Screen - Modify MYOCARDIAL BRIDGES

```
<ssan>          <name>          <dob>          <sex>
<type>    <case #>    <doe>    <cath no>    <no. for patient>
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

modify myocardia bridges _

myocardial bridge site

1. The modify-myocardial-bridges option field and myocardial bridge site field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.72: CAINSMYOCB

Purpose

To allow the user to insert a new MYOCARDIAL BRIDGES record.

Called From

This step is called from CASELMYOCB when no MYOCARDIAL BRIDGES exist for the current interpretation or from CASELMYOCB4 when the user chooses to insert a new MYOCARDIAL BRIDGES record.

Screen

CAINSMYOCB.

Logic

Purge SWIs for myocardial bridge site.
Display screen.

If insert record (SWI for insert-myocardial-bridges option field) = Y,
 insert MYOCARDIAL BRIDGES record after;
 modify MYOCARDIAL BRIDGE
 in parent INTERPRETATIONS record to Y; (indicates descendant)
 go to CAMODMYOCB.
If insert record (SWI for insert-myocardial-bridges option field) = N,
 go to CAMENINTER.

Validation

Insert record(SWI for insert-myocardial-bridges option field)
 - mandatory, table (YESNOTBL, exists).

Myocardial bridge site - mandatory, table (CACOSITETBL-
 AO E J2 P U
 A F K Q1 1
 B G L Q2 2
 C H M R 3
 D1 I N S 4
 D2 J1 O T 5).

Exhibit 7-57: CAINSMYOCB Screen - Insert MYOCARDIAL BRIDGES

```
<ssan>          <name>          <dob>      <sex>  
<type>    <case #>  <doe>    <cath no>  <no. for patient>  
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

```
insert myocardial bridges _  
myocardial bridge site
```

1. The insert-myocardial-bridges option field and myocardial bridge site field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.72

Chapter 7.73: CASELCOROS

Purpose

The purpose of CASELCOROS is to first determine how many CORONARY SPASMS records exist in the CATHETER data base for the current interpretation. If there are no CORONARY SPASMS records, CAINSCOROS is called; if there are any CORONARY SPASMS records for the current interpretation, CASELCOROS4 is called (there will never be more than 4 CORONARY SPASMS records per interpretation). There are no screens associated with this step.

Called From

CAMENINTER.

Screen

None.

Logic

Select CORONARY SPASMS records for current interpretation.
If NODATA,
 go to CAINSCOROS.
Else
 go to CASELCOROS4.

Validation

None.

Chapter 7.74: CASELCOROS4

Purpose

The purpose of CASELCOROS4 is to present up to four CORONARY SPASMS records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the interpretations menu.

Called From

This step is entered when the current interpretation has at least one CORONARY SPASMS record associated with it in the data base.

Screen

CASELCOROS4

Logic

1. Retrieve up to four CORONARY SPASMS records, number screen accordingly, and display.
2. If select record (SWI for select-coronary-spasms option field) =
 - a) '0', go to CAMENINTER.
 - b) 'n', where $n = \$DATASP$, go to CAMODCOROS.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the CORONARY SPASMS sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODCOROS.
 - d) 'n', where $n > \$DATASN$, go to CAINSCOROS.

Validation

1. Select-coronary-spasms option field - mandatory, numeric.

Exhibit 7-58: CASELCOROS4 Screen - Select 4 CORONARY SPASMS

```
<ssan>          <name>          <dob>      <sex>
<type>    <case #>    <doe>    <cath no>    <no. for patient>
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

select coronary spasms _

coronary spasm site

```
1 _____
2 _____
3 _____
4 _____
```

0 none of the above

1. All of the fields on this screen are protected except the select-coronary-spasms option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.75: CAMODCOROS

Purpose

To allow the user to modify an existing CORONARY SPASMS record.

Called From

CASELCOROS4 when the user selects an existing CORONARY SPASMS record or CAINSCOROS when a new record is entered.

Screen

CAMODCOROS.

Logic

Display screen.

If modify record(modify-coronary-spasms option field) = N,
go to CAMENINTER.

Else

If modify record(modify-coronary-spasms option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-coronary-spasms option field)
- mandatory, table (YESNOTBL, exists).

Coronary spasm site - mandatory, table (CACOSITETBL-
AO E J2 P U
A F K Q1 1
B G L Q2 2
C H M R 3
D1 I N S 4
D2 J1 O T 5).

Exhibit 7-59: CAMODCOROS Screen - Modify CORONARY SPASMS

```
<ssan>          <name>          <dob>          <sex>
<type>    <case #>    <doe>    <cath no>    <no. for patient>
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

modify coronary spasms _

coronary spasm site

1. The modify-coronary-spasms option field and coronary spasm site field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.76: CAINSCOROS

Purpose

To allow the user to insert a new CORONARY SPASMS record.

Called From

This step is called from CASELCOROS when no CORONARY SPASMS records exist for the current interpretation or from CASELCOROS4 when the user chooses to insert a new CORONARY SPASMS record.

Screen

CAINSCOROS.

Logic

Purge SWIs for coronary spasm site.
Display screen.

If insert record (SWI for insert-coronary-spasms option field) = Y,
 insert CORONARY SPASMS record after;
 modify CORONARY SPASM
 in parent INTERPRETATIONS record to Y; (indicates abnormal)
 go to CAMODCOROS.
If insert record (SWI for insert-coronary-spasms option field) = N,
 go to CAMENINTER.

Validation

Insert record(SWI for insert-coronary-spasms option field)
 - mandatory, table (YESNOTBL, exists).

Coronary spasm site
 - mandatory, table (CACOSITETBL-
 AO E J2 P U
 A F K Q1 1
 B G L Q2 2
 C H M R 3
 D1 I N S 4
 D2 J1 O T 5).

Exhibit 7-60: CAINSCOROS Screen - Insert CORONARY SPASMS

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
<reading>	<lv normal>	<coronary angiography normal>	<total % narrowed>	

insert coronary spasms _

coronary spasm site

1. The insert-coronary-spasms option field and coronary spasm site field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.77: CASELCOROP

Purpose

The purpose of CASELCOROP is to first determine how many CORONARY PLAQUES records exist in the CATHETER data base for the current interpretation. If there are no CORONARY PLAQUES records, CAINSCOROP is called; if there between 1 and 4 (inclusive) CORONARY PLAQUES records for the current interpretation, CASELCOROP4 is called; if there are more than 4 CORONARY PLAQUES records, CASELCOROP14 is called. There are no screens associated with this step.

Called From

CAMENINTER.

Screen

None.

Logic

Select CORONARY PLAQUES records for current interpretation.
If NODATA,
 go to CAINSCOROP.
If $0 \leq \$DATASN \leq 4$,
 go to CASELCOROP4.
If $\$DATASN > 4$,
 go to CASELCOROP14.

Validation

None.

Chapter 7.78: CASELCOROP4

Purpose

The purpose of CASELCOROP4 is to present up to four CORONARY PLAQUES records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the interpretations menu.

Called From

This step is entered when the current interpretation has between 1 and 4 (inclusive) CORONARY PLAQUES records associated with it in the data base.

Screen

CASELCOROP4

Logic

1. Retrieve up to four CORONARY PLAQUES records, number screen accordingly, and display.
2. If select record (SWI for select-coronary-plaques option field) =
 - a) '0', go to CAMENINTER.
 - b) 'n', where $n = \$DATASP$, go to CAMODCOROP.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the CORONARY PLAQUES sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODCOROP.
 - d) 'n', where $n > \$DATASN$, go to CAINSCOROP.

Validation

1. Select-coronary-plaques option field - mandatory, numeric.

Exhibit 7-61: CASELCOROP4 Screen - Select 4 CORONARY PLAQUES

<ssn>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
<reading>	<lv normal>	<coronary angiography normal>	<total % narrowed>	

select coronary plaques _

	coronary plaque site	pct diameter narrowed
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
0	none of the above	

1. All of the fields on this screen are protected except the select-coronary-plaques option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.79: CASELCOROP14

Purpose

The purpose of CASELCOROP14 is to present up to fourteen CORONARY PLAQUES records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the interpretations menu.

Called From

This step is entered when the current interpretation has more than four CORONARY PLAQUES records associated with it in the data base.

Screen

CASELCOROP14

Logic

1. Retrieve up to fourteen CORONARY PLAQUES records, number screen accordingly, and display.
2. If 'select record' (SWI for select-coronary-plaques option field) =
 - a) '0', go to CAMENINTER.
 - b) 'n', where $n = \$DATASP$, go to CAMODCOROP.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the CORONARY PLAQUES sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODCOROP.
 - d) 'n', where $n > \$DATASN$, go to CAINSCOROP.

Validation

1. Select-coronary-plaques option field (SWI is select record)
 - mandatory, numeric.

Exhibit 7-62: CASELCOROP14 Screen - Select 14 CORONARY PLAQUES

```
<ssan>          <name>          <dob>          <sex>
<type>    <case #>    <doe>    <cath no>    <no. for patient>
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

select coronary plaques _

	coronary plaque site	pct diameter narrowed
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____
6	_____	_____
7	_____	_____
8	_____	_____
9	_____	_____
10	_____	_____
11	_____	_____
12	_____	_____
13	_____	_____
14	_____	_____
0	none of the above	

1. All of the fields on this screen are protected except the select-coronary-plaques option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.80: CAMODCOROP

Purpose

To allow the user to modify an existing CORONARY PLAQUES record.

Called From

CASELCOROP4 or CASELCOROP14 when the user selects an existing CORONARY PLAQUES record or CAINSCOROP when a new record is entered.

Screen

CAMODCOROP.

Logic

Save data base value of pct diameter narrowed in SAVEPDN.

Display screen.

If modify record(modify-coronary-plaques option field) = N,
go to CAMENINTER.

Else

If modify record(modify-coronary-plaques option field) = Y,
issue a modify of CORONARY PLAQUES record;

If new pct diameter narrowed (SWIPDN) $\neq$ SAVEPDN,
retrieve parent INTERPRETATIONS record;

subtract SAVEPDN from SWIPDN;

add the result (SWIPDN - SAVEPDN) to SWI for TOTAL PCT NARROWED;

If SWI for TOTAL PCT NARROWED = 0,

modify DBI for TOTAL PCT NARROWED to null;

Else

modify DBI for TOTAL PCT NARROWED to SWI for TOTAL PCT NARROWOWED;

go to phase 1.

Validation

Modify record (SWI for modify-coronary-plaques option field)

- mandatory, table (YESNOTBL, exists).

Coronary plaque site

- mandatory, table (CACOSITETBL-

AO	E	J2	P	U
A	F	K	Q1	1
B	G	L	Q2	2
C	H	M	R	3
D1	I	N	S	4
D2	J1	O	T	5).

Pct diameter narrowed

- mandatory, numeric range (0-100).

Exhibit 7-63: CAMODCOROP Screen - Modify CORONARY PLAQUES

```
<ssan>          <name>          <dob>          <sex>  
<type>   <case #>   <doe>   <cath no>   <no. for patient>  
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

modify coronary plaques _

coronary plaque site	pct diameter narrowed
_____	_____

1. The modify-coronary-plaques option field, coronary plaque site field, and the pct diameter narrowed field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.81: CAINSCOROP

Purpose

To allow the user to insert a new CORONARY PLAQUES record.

Called From

This step is called from CASELCOROP when no CORONARY PLAQUES records exist for the current interpretation or from CASELCOROP4 or CASELCOROP14 when the user chooses to insert a new CORONARY PLAQUES record.

Screen

CAINSCOROP.

Logic

Purge SWIs for coronary plaque site and pct diameter narrowed.
Display screen.

If insert record (SWI for insert-coronary-plaques option field) = Y,
 insert CORONARY PLAQUES record after;
 retrieve parent INTERPRETATIONS record;
 modify CORONARY ANGIOGRAPHY NORMAL to N; (indicates abnormal)
If DBI for TOTAL PCT NARROWED is null,
 initialize DBI for TOTAL PCT NARROWED to zero.
 add pct diameter narrowed (input) to SWI for TOTAL PCT NARROWED;
 modify TOTAL PCT NARROWED in INTERPRETATIONS record;
 go to CAMODCOROP.

If insert record (SWI for insert-coronary-plaques option field) = N,
 go to CAMENINTER.

Validation

Insert record(SWI for insert-coronary-plaques option field)
 - mandatory, table (YESNOTBL, exists).

Coronary plaque site - mandatory, table (CACOSITETBL-
 AO E J2 P U
 A F K Q1 1
 B G L Q2 2
 C H M R 3
 D1 I N S 4
 D2 J1 O T 5).

Pct diameter narrowed - mandatory, numeric range (0-100).

Exhibit 7-64: CAINSCOROP Screen - Insert CORONARY PLAQUES

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
<reading>	<lv normal>	<coronary angiography normal>	<total % narrowed>	
insert coronary plaques _				
coronary plaque site		pct diameter narrowed		
_____		_____		

1. The insert-coronary-plaques option field, coronary plaque site, and pct diameter narrowed field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.81

Chapter 7.82: CASELCOLL

Purpose

The purpose of CASELCOLL is to first determine how many COLLATERALS records exist in the CATHETER data base for the current interpretation. If there are no COLLATERALS records, CAINSCOLL is called; if there between 1 and 4 (inclusive) COLLATERALS records for the current interpretation, CASELCOLL4 is called; if there are more than 4 COLLATERALS records, CASELCOLL14 is called. There are no screens associated with this step.

Called From

CAMENINTER.

Screen

None.

Logic

Select COLLATERALS records for current interpretation.
If NODATA,
 go to CAINSCOLL.
If $0 < \$DATASN < 4$,
 go to CASELCOLL4.
If $\$DATASN > 4$,
 go to CASELCOLL14.

Validation

None.

Chapter 7.83: CASELCOLL4

Purpose

The purpose of CASELCOLL4 is to present up to four COLLATERALS records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the interpretations menu.

Called From

This step is entered when the current interpretation has between 1 and 4 (inclusive) COLLATERALS records associated with it in the data base.

Screen

CASELCOLL4

Logic

1. Retrieve up to four COLLATERALS records, number screen accordingly, and display.
2. If select record (SWI for select-collaterals option field) =
 - a) '0', go to CAMENINTER.
 - b) 'n', where $n = \$DATASP$, go to CAMODCOLL.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the COLLATERALS sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODCOLL.
 - d) 'n', where $n > \$DATASN$, go to CAINSCOLL.

Validation

1. Select-collaterals option field - mandatory, numeric.

Exhibit 7-65: CASELCOLL4 Screen - Select 4 COLLATERALS

```
<ssan>          <name>          <dob>          <sex>
<type>    <case #>    <doe>    <cath no>    <no. for patient>
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

select collaterals _

	collateral origin	anastomosis	segment filled
1	—	—	—
2	—	—	—
3	—	—	—
4	—	—	—
0	none of the above		

1. All of the fields on this screen are protected except the select-collaterals option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.84: CASELCOLL14

Purpose

The purpose of CASELCOLL14 is to present up to fourteen COLLATERALS records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the interpretations menu.

Called From

This step is entered when the current interpretation has more than four COLLATERALS records associated with it in the data base.

Screen

CASELCOLL14

Logic

1. Retrieve up to fourteen COLLATERALS records, number screen accordingly, and display.
2. If 'select record' (SWI for select-collaterals option field) =
 - a) '0', go to CAMENINTER.
 - b) 'n', where $n = \$DATASP$, go to CAMODCOLL.
 - c) 'n', where $1 < n < \$DATASN$, rewind the COLLATERALS sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODCOLL.
 - d) 'n', where $n > \$DATASN$, go to CAINSCOLL.

Validation

1. Select-collaterals option field (SWI is select record)
 - mandatory, numeric.

Exhibit 7-66: CASELCOLL14 Screen - Select 14 COLLATERALS

<ssan>	<name>	<dob>	<sex>
<type>	<case #>	<doe>	<cath no>
<reading>	<lv normal>	<coronary angiography normal>	<total % narrowed>
select collaterals _			
	collateral origin	anastomosis	segment filled
1	—	—	—
2	—	—	—
3	—	—	—
4	—	—	—
5	—	—	—
6	—	—	—
7	—	—	—
8	—	—	—
9	—	—	—
10	—	—	—
11	—	—	—
12	—	—	—
13	—	—	—
14	—	—	—
0 none of the above			

1. All of the fields on this screen are protected except the select-collaterals option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.85: CAMODCOLL

Purpose

To allow the user to modify an existing COLLATERALS record.

Called From

CASELCOLL4 or CASELCOLL14 when the user selects an existing COLLATERALS record or CAINSCOLL when a new record is entered.

Screen

CAMODCOLL.

Logic

Display screen.

If modify record(modify-collaterals option field) = N,
go to CAMENINTER.

Else

If modify record(modify-collaterals option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-collaterals option field)

- mandatory, table (YESNOTBL, exists).

Collateral origin

- mandatory, table (CACOSITETBL-

AO	E	J2	P	U
A	F	K	Q1	1
B	G	L	Q2	2
C	H	M	R	3
D1	I	N	S	4
D2	J1	O	T	5).

Anastomosis

- mandatory, table (CACOSITETBL-

AO	E	J2	P	U
A	F	K	Q1	1
B	G	L	Q2	2
C	H	M	R	3
D1	I	N	S	4
D2	J1	O	T	5).

Segment filled

- mandatory, table (CACOSITETBL-

AO	E	J2	P	U
A	F	K	Q1	1
B	G	L	Q2	2
C	H	M	R	3
D1	I	N	S	4
D2	J1	O	T	5).

Exhibit 7-67: CAMODCOLL Screen - Modify COLLATERALS

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
<reading>	<lv normal>	<coronary angiography normal>	<total % narrowed>	
modify collaterals _				
collateral origin	anastomosis	segment filled		
—	—	—		

1. The modify-collaterals option field, collateral origin field, anastomosis field, and segment filled field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.86: CAINSCOLL

Purpose

To allow the user to insert a new COLLATERALS record.

Called From

This step is called from CASELCOLL when no COLLATERALS records exist for the current interpretation or from CASELCOLL4 or CASELCOLL14 when the user chooses to insert a new COLLATERALS record.

Screen

CAINSCOLL.

Logic

Purge SWIs for collateral origin, anastomosis, and segment filled.

Display screen.

If insert record (SWI for insert-collaterals option field) = Y,
 insert COLLATERALS record after;
 modify COLLATERAL PRESENT
 in parent INTERPRETATIONS record to Y; (indicates descendant
 COLLATERALS record)

 go to CAMODCOLL.

If insert record (SWI for insert-collaterals option field) = N,
 go to CAMENINTER.

Validation

Insert record(SWI for insert-collaterals option field)
 - mandatory, table (YESNOTBL, exists).

Collateral origin - mandatory, table (CACOSITETBL-
 AO E J2 P U
 A F K Q1 1
 B G L Q2 2
 C H M R 3
 D1 I N S 4
 D2 J1 O T 5).

Anastomosis - mandatory, table (CACOSITETBL-
 AO E J2 P U
 A F K Q1 1
 B G L Q2 2
 C H M R 3
 D1 I N S 4
 D2 J1 O T 5).

Segment filled - mandatory, table (CACOSITETBL-
 AO E J2 P U
 A F K Q1 1
 B G L Q2 2
 C H M R 3
 D1 I N S 4
 D2 J1 O T 5).

Exhibit 7-68: CAINSCOLL Screen - Insert COLLATERALS

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
<reading>	<lv normal>	<coronary angiography normal>	<total % narrowed>	
insert collaterals _				
collateral origin	anastomosis	segment filled		
—	—	—		

1. The insert-collaterals option field, collateral origin field, anastomosis field, and segment filled field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.86

Chapter 7.87: CASELCOROA

Purpose

The purpose of CASELCOROA is to first determine how many CORONARY ANOMALIES records exist in the CATHETER data base for the current interpretation. If there are no CORONARY ANOMALIES records, CAINSCOROA is called; if there are any CORONARY ANOMALIES records for the current interpretation, CASELCOROA4 is called (there will never be more than 4 CORONARY ANOMALIES records per interpretation). There are no screens associated with this step.

Called From

CAMENINTER.

Screen

None.

Logic

Select CORONARY ANOMALIES records for current interpretation.
If NODATA,
 go to CAINSCOROA.
Else
 go to CASELCOROA4.

Validation

None.

Chapter 7.88: CASELCOROA4

Purpose

The purpose of CASELCOROA4 is to present up to four CORONARY ANOMALIES records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the interpretations menu.

Called From

This step is entered when the current interpretation has at least one CORONARY ANOMALIES record associated with it in the data base.

Screen

CASELCOROA4

Logic

1. Retrieve up to four CORONARY ANOMALIES records, number screen accordingly, and display.
2. If select record (SWI for select-coronary-anomalies option field) =
 - a) '0', go to CAMENINTER.
 - b) 'n', where $n = \$DATASP$, go to CAMODCOROA.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the CORONARY ANOMALIES sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODCOROA.
 - d) 'n', where $n > \$DATASN$, go to CAINSCOROA.

Validation

1. Select-coronary-anomalies option field - mandatory, numeric.

Exhibit 7-69: CASELCOROA4 Screen - Select 4 CORONARY ANOMALIES

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
<reading>	<lv normal>	<coronary angiography normal>	<total % narrowed>	
select coronary anomalies _				
coronary anomaly site				
1	_____			
2	_____			
3	_____			
4	_____			
0	none of the above			

1. All of the fields on this screen are protected except the select-coronary-anomalies option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.89: CAMODCOROA

Purpose

To allow the user to modify an existing CORONARY ANOMALIES record.

Called From

CASELCOROA4 when the user selects an existing CORONARY ANOMALIES record or CAINSCOROA when a new record is entered.

Screen

CAMODCOROA.

Logic

Display screen.

If modify record(modify-coronary-anomalies option field) = N,
go to CAMENINTER.

Else

If modify record(modify-coronary-anomalies option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-coronary-anomalies option field)
- mandatory, table (YESNOTBL, exists).

Coronary anomaly site - mandatory, table (CACOROATBL)

CACOROATBL

<u>COL1</u>	<u>COL2</u>
01	NONE
02	ANOMALIES OF THE CORONARY OSTIA
03	ANOMALIES OF THE CORONARY ARTERIAL DISTRIBUTION
04	OTHER

Exhibit 7-70: CAMODCOROA Screen - Modify CORONARY ANOMALIES

```
<ssan>          <name>          <dob>          <sex>  
<type>    <case #>    <doe>    <cath no>    <no. for patient>  
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

modify coronary anomalies _

coronary anomaly site

1. The modify-coronary-anomalies option field and coronary anomaly site field are mandatory.
2. The SWI name for the option field is modify record.

Exhibit 7-71: CAINSCOROA Screen - Insert CORONARY ANOMALIES

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
<reading>	<lv normal>	<coronary angiography normal>	<total % narrowed>	

insert coronary anomalies _

coronary anomaly site

1. The insert-coronary-anomalies option field and coronary anomaly site field are mandatory.
2. The SWI name for the option field is insert record.

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Chapter 7.91: CASELDIAG

Purpose

The purpose of CASELDIAG is to first determine how many DIAGNOSES records exist in the CATHETER data base for the current interpretation. If there are no DIAGNOSES records, CAINSDIAG is called; if there between 1 and 4 (inclusive) DIAGNOSES records for the current interpretation, CASELDIAG4 is called; if there are more than 4 DIAGNOSES records, CASELDIAG14 is called. There are no screens associated with this step.

Called From

CAMENINTER.

Screen

None.

Logic

Select DIAGNOSES records for current interpretation.
If NODATA,
 go to CAINSDIAG.
If $0 < \$DATASN < 4$,
 go to CASELDIAG4.
If $\$DATASN > 4$,
 go to CASELDIAG14.

Validation

None.

Chapter 7.92: CASELDIAG4

Purpose

The purpose of CASELDIAG4 is to present up to four DIAGNOSES records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the interpretations menu.

Called From

This step is entered when the current interpretation has between 1 and 4 (inclusive) DIAGNOSES records associated with it in the data base.

Screen

CASELDIAG4

Logic

1. Retrieve up to four DIAGNOSES records, number screen accordingly, and display.
2. If select record (SWI for select-diagnoses option field) =
 - a) '0', go to CAMENINTER.
 - b) 'n', where $n = \$DATASP$, go to CAMODDIAG.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the DIAGNOSES sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODDIAG.
 - d) 'n', where $n > \$DATASN$, go to CAINSDIAG.

Validation

1. Select-diagnoses option field - mandatory, numeric.

Exhibit 7-72: CASELDIAG4 Screen - Select 4 DIAGNOSES

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
<reading>	<lv normal>	<coronary angiography normal>	<total % narrowed>	

select diagnoses _

diagnosis

1 _____

2 _____

3 _____

4 _____

0 none of the above

1. All of the fields on this screen are protected except the select-diagnoses option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.93: CASELDIAG14

Purpose

The purpose of CASELDIAG14 is to present up to fourteen DIAGNOSES records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the interpretations menu.

Called From

This step is entered when the current interpretation has more than four DIAGNOSES records associated with it in the data base.

Screen

CASELDIAG14

Logic

1. Retrieve up to fourteen DIAGNOSES records, number screen accordingly, and display.
2. If 'select record'
(SWI for select-diagnoses option field) =
 - a) '0', go to CAMENINTER.
 - b) 'n', where $n = \$DATASP$, go to CAMODDIAG.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the DIAGNOSES sibling chain and retrieve the nth record via $SS2KCOUNT$. Go to CAMODDIAG.
 - d) 'n', where $n > \$DATASN$, go to CAINSDIAG.

Validation

1. Select-diagnoses option field (SWI is select record)
- mandatory, numeric.

Exhibit 7-73: CASELDIAG14 Screen - Select 14 DIAGNOSES

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
<reading>	<lv normal>	<coronary angiography normal>	<total % narrowed>	
select diagnoses _				
diagnosis				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
0 none of the above				

1. All of the fields on this screen are protected except the select-diagnoses option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.94: CAMODDIAG

Purpose

To allow the user to modify an existing DIAGNOSES record.

Called From

CASELDIAG4 or CASELDIAG14 when the user selects an existing DIAGNOSES record or CAINSDIAG when a new record is entered.

Screen

CAMODDIAG.

Logic

Display screen.

If modify record(modify-diagnoses option field) = N,
go to CAMENINTER.

Else

If modify record(modify-diagnoses option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-diagnoses option field)
- mandatory, table (YESNOTBL, exists).

Diagnosis - mandatory, table, (CADIAGTBL)

CADIAGTBL:

COL1	CCL2
01	NO EVIDENCE OF ORGANIC HEART DISEASE
02	NO EVIDENCE OF CORONARY ARTERY DISEASE
05	HYPERTROPHIC CARDIOMYOPATHY
06	CARDIOMYOPATHY, OTHER
07	AORTIC VALVE DISEASE, A.R.
08	AORTIC VALVE DISEASE, A.S.
09	AORTIC VALVE DISEASE, AR-AS
10	AORTIC VALVE DISEASE, M.R.
11	AORTIC VALVE DISEASE, M.S.
12	AORTIC VALVE DISEASE, MR-MS
16	PERICARDIAL EFFUSION
17	PERICARDITIS, CHRONIC CONSTRICTIVE
18	HYPERTENSIVE CARDIOVASCULAR DISEASE
19	PULMONIC STENOSIS, VALVULAR
20	PULMONIC STENOSIS, INFUNDIBULAR
21	TRICUSPID VALVE DISEASE
22	LEFT TO RIGHT SHUNT
23	RIGHT TO LEFT SHUNT
24	MITRAL VALVE PROLAPSE
25	SIGNIFICANT CORONARY ARTERY DISEASE
26	MINIMAL CORONARY ARTERY DISEASE
27	INTIMAL ROUGHENING ONLY
28	NORMAL VENTRICULAR FUNCTION
29	ABNORMAL VENTRICULAR FUNCTION
30	OTHER

Exhibit 7-74: CAMODDIAG Screen - Modify DIAGNOSES

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
<reading>	<lv normal>	<coronary angiography normal>	<total % narrowed>	

modify diagnoses _

diagnosis

1. The modify-diagnoses option field and diagnosis field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.95: CAINSDIAG

Purpose

To allow the user to insert a new DIAGNOSES record.

Called From

This step is called from CASELDIAG when no DIAGNOSES records exist for the current interpretation or from CASELDIAG4 or CASELDIAG14 when the user chooses to insert a new DIAGNOSES record.

Screen

CAINSDIAG.

Logic

Purge SWIs for diagnosis.

Display screen.

If insert record (SWI for insert-diagnoses option field) = Y,
insert DIAGNOSES record after;
go to CAMODDIAG.

If insert record (SWI for insert-diagnoses option field) = N,
go to CAMENINTER.

Validation

Insert record(SWI for insert-diagnoses option field)

- mandatory, table (YESNOTBL, exists).

Diagnosis

- mandatory, table, (CADIAGTBL)

CADIAGTBL:

COL1	COL2
01	NO EVIDENCE OF ORGANIC HEART DISEASE
02	NO EVIDENCE OF CORONARY ARTERY DISEASE
05	HYPERTROPHIC CARDIOMYOPATHY
06	CARDIOMYOPATHY, OTHER
07	AORTIC VALVE DISEASE, A.R.
08	AORTIC VALVE DISEASE, A.S.
09	AORTIC VALVE DISEASE, AR-AS
10	AORTIC VALVE DISEASE, M.R.
11	AORTIC VALVE DISEASE, M.S.
12	AORTIC VALVE DISEASE, MR-MS
16	PERICARDIAL EFFUSION
17	PERICARDITIS, CHRONIC CONSTRICTIVE
18	HYPERTENSIVE CARDIOVASCULAR DISEASE
19	PULMONIC STENOSIS, VALVULAR
20	PULMONIC STENOSIS, INFUNDIBULAR
21	TRICUSPID VALVE DISEASE
22	LEFT TO RIGHT SHUNT
23	RIGHT TO LEFT SHUNT
24	MITRAL VALVE PROLAPSE
25	SIGNIFICANT CORONARY ARTERY DISEASE
26	MINIMAL CORONARY ARTERY DISEASE
27	INTIMAL ROUGHENING ONLY
28	NORMAL VENTRICULAR FUNCTION
29	ABNORMAL VENTRICULAR FUNCTION
30	OTHER

Exhibit 7-75: CAINSDIAG Screen - Insert DIAGNOSES

```
<ssan>          <name>          <dob>          <sex>  
<type>    <case #>    <doe>    <cath no>    <no. for patient>  
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

insert diagnoses _

diagnosis

1. The insert-diagnoses option field and diagnosis field are mandatory.
2. The SWI name for the option field is insert record.

Chapter 7.96: CASELREAD

Purpose

The purpose of CASELREAD is to first determine how many READERS records exist in the CATHETER data base for the current interpretation. If there are no READERS records, CAINSREAD is called; if there between 1 and 4 (inclusive) READERS records for the current interpretation, CASELREAD4 is called; if there are more than 4 READERS records, CASELREAD14 is called. There are no screens associated with this step.

Called From

CAMENINTER.

Screen

None.

Logic

```
Select READERS records for current interpretation.  
If NODATA,  
    go to CAINSREAD.  
If 0 < $DATASN < 4,  
    go to CASELREAD4.  
If $DATASN > 4,  
    go to CASELREAD14.
```

Validation

None.

Chapter 7.97: CASELREAD4

Purpose

The purpose of CASELREAD4 is to present up to four READERS records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the interpretations menu.

Called From

This step is entered when the current interpretation has between 1 and 4 (inclusive) READERS records associated with it in the data base.

Screen

CASELREAD4

Logic

1. Retrieve up to four READERS records, number screen accordingly, and display.
2. If select record (SWI for select-readers option field) =
 - a) '0', go to CAMENINTER.
 - b) 'n', where $n = \$DATASP$, go to CAMODREAD.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the READERS sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODREAD.
 - d) 'n', where $n > \$DATASN$, go to CAINSREAD.

Validation

1. Select-readers option field - mandatory, numeric.

Exhibit 7-76: CASELREAD4 Screen - Select 4 READERS

<ssan>	<name>	<dob>	<sex>	
<type>	<case #>	<doe>	<cath no>	<no. for patient>
<reading>	<lv normal>	<coronary angiography normal>	<total % narrowed>	
select readers _				
reader				
1				
2				
3				
4				
0	none of the above			

1. All of the fields on this screen are protected except the select-readers option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.98: CASELREAD14

Purpose

The purpose of CASELREAD14 is to present up to fourteen READERS records to the user. The user may either select an existing record for review or modification, choose to insert a new record, or exit to return to the interpretations menu.

Called From

This step is entered when the current interpretation has more than four READERS records associated with it in the data base.

Screen

CASELREAD14

Logic

1. Retrieve up to fourteen READERS records, number screen accordingly, and display.
2. If 'select record' (SWI for select-readers option field) =
 - a) '0', go to CAMENINTER.
 - b) 'n', where $n = \$DATASP$, go to CAMODREAD.
 - c) 'n', where $1 \leq n \leq \$DATASN$, rewind the READERS sibling chain and retrieve the nth record via $\$S2KCOUNT$. Go to CAMODREAD.
 - d) 'n', where $n > \$DATASN$, go to CAINSREAD.

Validation

1. Select-readers option field (SWI is select record)
- mandatory, numeric.

Exhibit 7-77: CASFLREAD14 Screen - Select 14 READERS

```
<ssan>          <name>          <dob>          <sex>
<type>    <case #>    <doe>    <cath no>    <no. for patient>
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

select readers _

	reader
1	_____
2	_____
3	_____
4	_____
5	_____
6	_____
7	_____
8	_____
9	_____
10	_____
11	_____
12	_____
13	_____
14	_____

0 none of the above

1. All of the fields on this screen are protected except the select-readers option field.
2. The SWI name for the option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 7.99: CAMODREAD

Purpose

To allow the user to modify an existing READERS record.

Called From

CASELREAD4 or CASELREAD14 when the user selects an existing READERS record or CAINSREAD when a new record is entered.

Screen

CAMODREAD.

Logic

Display screen.

If modify record(modify-readers option field) = N,
go to CAMENINTER.

Else

If modify record(modify-readers option field) = Y,
issue a modify and go to phase 1.

Validation

Modify record (SWI for modify-readers option field)

- mandatory, table (YESNOTBL, exists).

Reader

- table (CAPHYSTBL -

ALLEN	HICKMAN	SCHECHTER
ALPERT	KRYER	SCHWARTZ
BAILEY	LONGO	SCOVILLE
CELIO	MONTGOMERY	THOMPSON
EADES	NEUFELD	TOUCHON
ENGEL	PARKER	UHL
FROELICHER	ROTHMAN	WOOD

).

Exhibit 7-78: CAMODREAD Screen - Modify READERS

```
<ssan>          <name>          <dob>          <sex>
<type>    <case #>    <doe>    <cath no>    <no. for patient>
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

modify readers _

reader

1. The modify-readers option field and reader field are mandatory.
2. The SWI name for the option field is modify record.

Chapter 7.100: CAINSREAD

Purpose

To allow the user to insert a new READERS record.

Called From

This step is called from CASELREAD when no READERS records exist for the current interpretation or from CASELREAD4 or CASELREAD14 when the user chooses to insert a new READERS record.

Screen

CAINSREAD.

Logic

Purge SWIs for reader.
Display screen.

If insert record (SWI for insert-readers option field) = Y,
 insert READERS record after;
 go to CAMODREAD.

If insert record (SWI for insert-readers option field) = N,
 go to CAMENINTER.

Validation

Insert record(SWI for insert-readers option field)
 - mandatory, table (YESNOTBL, exists).

Reader

- table (CAPHYSTBL -
 ALLEN HICKMAN SCHECHTER
 ALPERT KRYER SCHWARTZ
 BAILEY LONGO SCOVILLE
 CELIO MONTGOMERY THOMPSON
 EADES NEUFELD TOUCHON
 ENGEL PARKER UHL
 FROELICHER ROTHMAN WOOD).

Exhibit 7-79: CAINSREAD Screen - Insert READERS

```
<ssan>          <name>          <dob>          <sex>  
<type>    <case #>    <doe>    <cath no>    <no. for patient>  
<reading> <lv normal> <coronary angiography normal> <total % narrowed>
```

insert readers _

reader

1. The insert-readers option field and reader field are mandatory.
2. The SWI name for the option field is insert record.

Chapter 7.101: CAMODINTERF

Purpose

Certain fields in the INTERPRETATIONS record indicate existence (or non-existence) of an associated descendent record. Also, in the case of PCT DIAMETER NARROWED, the field indicates the sum of the associated individual components in the descendent records.

As a result, CAMODINTERF provides the means for a user to modify the INTERPRETATIONS record and thereby indicate certain conditions prior to exiting the steps which update INTERPRETATIONS descendents.

Since steps called by CAMENINTER update the values of components in the INTERPRETATIONS record, the user's ability to modify fields is conditional on the present value. For example, no modify will be allowed to any field updated as a result of inserting or modifying descendent records. Furthermore, no modify will be allowed which would falsely indicate the existence of descendent records (modification of components to indicate descendent records must be controlled by the steps which insert and/or modify the descendent records). Finally, no modify is allowed to a component which is a result of accumulating individual descendent record values. (see validation section for permissible updates)

Called From

CAMENINTER when the user chooses to exit the steps which update the descendants to the INTERPRETATIONS record.

Screen

CAMODINTERF.

Logic

Save all dependent data values in SWIs. (SAVE-CASUPRA, etc.)
(SWI-CASUPRA, etc. for screen values)

Display screen.

If modify record(modify-interpretations option field) = N,
go to CAMENEXAM.

Else

If modify record (modify-interpretations option field) = Y,

* SUPRAVENTRICULAR AORTOGRAPHY NORMAL value indicates whether a *
* descendant record exists(N=abnormal-descendant exists; Y=normal-*
* no descendant record exists;'blank' indicates test not run). *
* Valid SUPRAVENTRICULAR AORTOGRAPHY NORMAL values in this modify *
* are dependent on the existing value of the component: *
* existing 'blank' can be modified to Y *
* existing Y can be modified to 'blank' *
* existing N can not be modified *

```

If SWI-CASUPRA ≠ SAVE-CASUPRA,
  If SWI-CASUPRA = N,      move SAVE-CASUPRA to SWI-SUPRA,
    issue error msg:
      'ILLEGAL MODIFY TO SUPRAVENTRICULAR AORTOGRAPHY NORMAL'
    go to phase 2.
  If SWI-CASUPRA = 'blank',
    If SAVE-CASUPRA = N,  move SAVE-CASUPRA to SWI-SUPRA,
      issue error msg:
        'ILLEGAL MODIFY TO SUPRAVENTRICULAR AORTOGRAPHY NORMAL'
      go to phase 2.
  If SWI-CASUPRA = Y,
    If SAVE-CASUPRA = N,  move SAVE-CASUPRA to SWI-SUPRA,
      issue error msg:
        'ILLEGAL MODIFY TO SUPRAVENTRICULAR AORTOGRAPHY NORMAL'
      go to phase 2.
*****
* Valid LEFT VENTRICULOGRAPHY NORMAL values in this modify are *
* dependent on the existing value of the component:           *
* existing 'blank'      can be modified to Y                  *
* existing   Y          can be modified to 'blank'            *
* existing   N          can not be modified                   *
*****
If SWI-CALVNORM ≠ SAVE-CALVNORM,
  If SWI-CALVNORM = N,      move SAVE-CALVNORM to SWI-CALVNORM,
    issue error msg:
      'ILLEGAL MODIFY TO LEFT VENTRICULOGRAPHY NORMAL'
    go to phase 2.
  If SWI-CALVNORM = 'blank',
    If SAVE-CALVNORM = N,  move SAVE-CALVNORM to SWI-CALVNORM,
      issue error msg:
        'ILLEGAL MODIFY TO LEFT VENTRICULOGRAPHY NORMAL'
      go to phase 2.
  If SWI-CALVNORM = Y,
    If SAVE-CALVNORM = N,  move SAVE-CALVNORM to SWI-CALVNORM,
      issue error msg:
        'ILLEGAL MODIFY TO LEFT VENTRICULOGRAPHY NORMAL'
      go to phase 2.
*****
* Valid CORONARY ANGIOGRAPHY NORMAL values in this modify are *
* dependent on the existing value of the component:           *
* existing 'blank'      can be modified to Y                  *
* existing   Y          can be modified to 'blank'            *
* existing   N          can not be modified                   *
*****

```

```

If SWI-CACNORM ≠ SAVE-CACNORM,
  If SWI-CACNORM = N,      move SAVE-CACNORM to SWI-CACNORM,
    issue error msg:
      'ILLEGAL MODIFY TO CORONARY ANGIOGRAPHY NORMAL'
    go to phase 2.
  If SWI-CACNORM = 'blank',
    If SAVE-CACNORM = N, move SAVE-CACNORM to SWI-CACNORM,
      issue error msg:
        'ILLEGAL MODIFY TO CORONARY ANGIOGRAPHY NORMAL'
      go to phase 2.
  If SWI-CACNORM = Y,
    If SAVE-CACNORM = N, move SAVE-CACNORM to SWI-CACNORM,
      issue error msg:
        'ILLEGAL MODIFY TO CORONARY ANGIOGRAPHY NORMAL'
      go to phase 2.
*****
* CORONARY CALCIFICATION value indicates whether a descendant rec *
* exists (Y=yes - it exists; N=no it does not exist; 'blank'      *
* indicates test not run). This is opposite of the 'normal'      *
* indicators in previous components.                               *
* Valid CORONARY CALCIFICATION values in this modify are         *
* dependent on the existing value of the component:               *
*   existing 'blank'          can be modified to N                *
*   existing  N               can be modified to 'blank'          *
*   existing  Y               can not be modified                 *
*****
If SWI-CACALCIF ≠ SAVE-CACALCIF,
  If SWI-CACALCIF = Y,      move SAVE-CACALCIF to SWI-CACALCIF,
    issue error msg:
      'ILLEGAL MODIFY TO CORONARY CALCIFICATION'
    go to phase 2.
  If SWI-CACALCIF = 'blank',
    If SAVE-CACALCIF = Y, move SAVE-CACALCIF to SWI-CACALCIF,
      issue error msg:
        'ILLEGAL MODIFY TO CORONARY CALCIFICATION'
      go to phase 2.
  If SWI-CACALCIF = N,
    If SAVE-CACALCIF = Y, move SAVE-CACALCIF to SWI-CACALCIF,
      issue error msg:
        'ILLEGAL MODIFY TO CORONARY CALCIFICATION'
      go to phase 2.

```

```
*****
* Valid MYOCARDIAL BRIDGE values in this modify are      *
* dependent on the existing value of the component:      *
*   existing 'blank'          can be modified to N       *
*   existing   N              can be modified to 'blank'  *
*   existing   Y              can not be modified         *
*****
```

```
If SWI-CAMYOCB ≠ SAVE-CAMYOCB,
  If SWI-CAMYOCB = N, move SAVE-CAMYOCB to SWI-CAMYOCB
    issue error msg:
      'ILLEGAL MODIFY TO MYOCARDIAL BRIDGE'
    go to phase 2.
  If SWI-CAMYOCB = 'blank',
    If SAVE-CAMYOCB = N, move SAVE-CAMYOCB to SWI-CAMYOCB
      issue error msg:
        'ILLEGAL MODIFY TO MYOCARDIAL BRIDGE'
      go to phase 2.
  If SWI-CAMYOCB = Y,
    If SAVE-CAMYOCB = N, move SAVE-CAMYOCB to SWI-CAMYOCB
      issue error msg:
        'ILLEGAL MODIFY TO MYOCARDIAL BRIDGE'
      go to phase 2.
```

```
*****
* Valid CORONARY SPASM values in this modify are        *
* dependent on the existing value of the component:      *
*   existing 'blank'          can be modified to N       *
*   existing   N              can be modified to 'blank'  *
*   existing   Y              can not be modified         *
*****
```

```
If SWI-CACOROS ≠ SAVE-CACOROS,
  If SWI-CACOROS = N, move SAVE-CACOROS to SWI-CACOROS
    issue error msg:
      'ILLEGAL MODIFY TO CORONARY SPASM'
    go to phase 2.
  If SWI-CACOROS = 'blank',
    If SAVE-CACOROS = N, move SAVE-CACOROS to SWI-CACOROS
      issue error msg:
        'ILLEGAL MODIFY TO CORONARY SPASM'
      go to phase 2.
  If SWI-CACOROS = Y,
    If SAVE-CACOROS = N, move SAVE-CACOROS to SWI-CACOROS
      issue error msg:
        'ILLEGAL MODIFY TO CORONARY SPASM'
      go to phase 2.
```

```

*****
* Valid COLLATERAL PRESENT values in this modify are *
* dependent on the existing value of the component: *
* existing 'blank' can be modified to N *
* existing N can be modified to 'blank' *
* existing Y can not be modified *
*****
If SWI-CACOLL ≠ SAVE-CACOLL,
  If SWI-CACOLL = N, move SAVE-CACOLL to SWI-CACOLL
  issue error msg:
    'ILLEGAL MODIFY TO COLLATERAL PRESENT'
  go to phase 2.
  If SWI-CACOLL = 'blank',
    If SAVE-CACOLL = N, move SAVE-CACOLL to SWI-CACOLL
    issue error msg:
      'ILLEGAL MODIFY TO COLLATERAL PRESENT'
    go to phase 2.
  If SWI-CACOLL = Y,
    If SAVE-CACOLL = N, move SAVE-CACOLL to SWI-CACOLL
    issue error msg:
      'ILLEGAL MODIFY TO COLLATERAL PRESENT'
    go to phase 2.
*****
* Valid CORONARY ANOMALY values in this modify are *
* dependent on the existing value of the component: *
* existing 'blank' can be modified to N *
* existing N can be modified to 'blank' *
* existing Y can not be modified *
*****
If SWI-CACOROA ≠ SAVE-CACOROA,
  If SWI-CACOROA = N, move SAVE-CACOROA to SWI-CACOROA,
  issue error msg:
    'ILLEGAL MODIFY TO CORONARY ANOMALY '
  go to phase 2.
  If SWI-CACOROA = 'blank',
    If SAVE-CACOROA = N, move SAVE-CACOROA to SWI-CACOROA,
    issue error msg:
      'ILLEGAL MODIFY TO CORONARY ANOMALY '
    go to phase 2.
  If SWI-CACOROA = Y,
    If SAVE-CACOROA = N, move SAVE-CACOROA to SWI-CACOROA,
    issue error msg:
      'ILLEGAL MODIFY TO CORONARY ANOMALY '
    go to phase 2.
issue a modify and go to phase 1.

```

Validation

Modify record (SWI for modify-interpretations option field)

- mandatory, table (YESNOTBL, exists).

Reading

- mandatory, defaults to DOE, standard date validation.

Circulatory pattern - mandatory, table(CACIRCTBL); edit on COL1 and validate on COL2.

CACIRCTBL:

<u>COL1</u>	<u>COL2</u>
1	RIGHT DOMINANT
2	BALANCED
3	LEFT DOMINANT

Number of posterior descending branches - range (0-4).

SUPRAVALVULAR AORTOGRAPHY NORMAL - optional, table (YESNOTBL, exists).
table (CASTATUSTBL, exists). CASTATUSTBL (Y,N,'blank').

LEFT VENTRICULOGRAPHY NORMAL - optional, table (YESNOTBL, exists).
table (CASTATUSTBL, exists). CASTATUSTBL (Y,N,'blank').

CORONARY ANGIOGRAPHY NORMAL - optional, table (YESNOTBL, exists).
, table (CASTATUSTBL, exists). CASTATUSTBL (Y,N,'blank').

CORONARY CALCIFICATION - optional, table (YESNOTBL, exists).
, table (CASTATUSTBL, exists). CASTATUSTBL (Y,N,'blank').

MYOCARDIAL BRIDGE - optional, table (YESNOTBL, exists).
, table (CASTATUSTBL, exists). CASTATUSTBL (Y,N,'blank').

CORONARY SPASM - optional, table (YESNOTBL, exists).
, table (CASTATUSTBL, exists). CASTATUSTBL (Y,N,'blank').

COLLATERAL PRESENT - optional, table (YESNOTBL, exists).
, table (CASTATUSTBL, exists). CASTATUSTBL (Y,N,'blank').

CORONARY ANOMALY - optional, table (YESNOTBL, exists).
, table (CASTATUSTBL, exists). CASTATUSTBL (Y,N,'blank').

Exhibit 7-80: CAMODINTERF Screen - Modify INTERPRETATIONS - Final

```
<ssan>          <name>          <dob>      <sex>  
<type>    <case #>    <doe>    <cath no>    <no. for patient>
```

```
modify interpretations _  
  
reading __/__/__  
supervalvular aortography normal _  
left ventriculography normal _  
coronary angiography normal _  
circulatory pattern _____  
coronary calcification _  
myocardial bridges _  
coronary spasm _  
collateral present _  
coronary anomaly _  
number of posterior descending branches _  
total pct narrowed _
```

1. The modify-interpretations option field, the reading field, the circulatory pattern field, and the number of posterior descending branches field are unprotected and mandatory.
2. The supervalvular aortography normal field, left ventriculography normal field, coronary angiography normal field, coronary calcification field, myocardial bridges field, coronary spasm field, collateral present field, and coronary anomaly field are unprotected and optional (value will be refreshed if invalid modify attempted).
3. All other fields on the screen are protected.
4. The SWI name for the option field is modify record.

PART 8: THE LAB DATABASE

The LAB data base contains a PERSON record and data associated with different types of laboratory tests. The LAB part of the transaction system allows selection of persons within the LAB data base and if located, the insertion of new or modification of old test data. Actual person data can only be modified through the ECG transaction.

For each person in the data base, there exists different PANELS records, one for each panel of tests. Each panel contains a particular group of tests, so descendent to PANELS are the TESTS records, one for each test performed and associated with the panel under which the test falls. Finally, VALUES records, which are descendent to TESTS, contain actual test data.

Data inserted in the LAB data base comes from a series of test batteries (for example: Electrophoresis Battery, Lipids Battery, etc.) run against a particular patient. Within a particular battery, there are several tests which may or may not fall into one panel. Since the user will be allowed to enter data by battery or by individual test, special care has been taken to ensure that the integrity of the data and the logical order in which the data has been entered is maintained. For example, inserting new VALUES records before the last VALUES record for a test shall not be permitted. Furthermore, the user will not be allowed to modify C18 through C23 in existing records. If insertion of old VALUES data or modification of protected components is required, a programmer will have to do it.

The aforementioned view is for the lab technician. A second view is provided for the lab chief identical in all respects to the lab technician view except that validation for the chief is less stringent than for that of the lab technician. For example, when entering and modifying test values, the lab chief can exceed AMIN and AMAX boundaries. The lab chief will have a different validation table than for the technician.

The LAB data base definition is shown in Exhibit 5-1 followed by the primary data input forms in Exhibit 5-2. The steps that perform updates to the LAB data base are presented in the chapters following the exhibits.

Exhibit 6-1: LAB Database Definition

DESCRIBE:	
SYSTEM RELEASE NUMBER	2.95B
DATA BASE NAME IS LAB	
DEFINITION NUMBER	11
DATA BASE CYCLE	9365
0* PERSON	
1* SSAN (CHAR X(9))	
2* NAME (CHAR X(19))	
3* DOB (DATE)	
4* SEX (NON-KEY CHAR X)	
5* ACTIVE (CHAR X)	
6* TESTS PENDING (INTEGER NUMBER 99)	
7* UNREPORTED DATA (CHAR X)	
8* VARIABLE (NON-KEY DECIMAL NUMBER 9(6).999)	
29* LATEST TYPE (NON-KEY CHAR X)	
30* LATEST CASE NO (INTEGER NUMBER 9(5))	
31* LATEST EXAM NO (NON-KEY INTEGER NUMBER 99)	
32* LATEST DAY (NON-KEY INTEGER NUMBER 99)	
33* LATEST SPECIMEN (NON-KEY DATE)	
34* X (CHAR X)	
9* PANELS (RECORD)	
10* PANEL (CHAR X(6) IN 9)	
11* TESTS (RECORD IN 9)	
12* CODE (CHAR XXX IN 11)	
13* TEST (CHAR X(13) IN 11)	
14* ACCURACY (NON-KEY INTEGER NUMBER 9 IN 11)	
15* HEALTHY (NON-KEY CHAR X(13) IN 11)	
16* METHOD (CHAR X(6) IN 11)	
17* VALUES (RECORD IN 11)	
18* TYPE (NON-KEY CHAR X IN 17)	
19* CASE NO (NON-KEY INTEGER NUMBER 9(5) IN 17)	
20* EXAM NO (NON-KEY INTEGER NUMBER 99 IN 17)	
21* LATEST EXAM (NON-KEY CHAR X IN 17)	
22* DAY (NON-KEY INTEGER NUMBER 99 IN 17)	
23* SPECIMEN (NON-KEY DATE IN 17)	
24* VALUE (NON-KEY DECIMAL NUMBER 9(6).999 IN 17)	
25* RESULT (NON-KEY CHAR X(8) IN 17)	
26* FLAG (CHAR X IN 17)	
27* COMMENTS (RECORD IN 17)	
28* COMMENT (NON-KEY CHAR X(42) IN 27)	

Exhibit 8-2: LAB Sample Data

See Appendix A

Chapter 8.1: LABSELPERS

Purpose

When a person is selected from ECG and then the LAB data base is chosen, LABSELPERS is called to first determine whether the person exists in the LAB data base. If the person exists, LABSELPERS calls LABMENPERS; otherwise, LABSELPERS calls LABINSPERS.

Called From

LABSELPERS is called from ECGMENPERS (data base menu).

Screen

None.

Logic

1. Select LABPERSON on current SSAN. If found, go to LABMENPER.
2. Else, call LABINSPERS.

Validation None.

Chapter 8.2: LABINSPERSPurpose

The purpose of LABINSPERS is to allow the user the option to insert a new PERSON (LABPERSON) record into the LAB data base. There is no modification phase since PERSON data can only be modified in ECG (it is then automatically copied to the other data bases).

Called From

LABSELPERS (when no person exists in the LAB data base).

Screen

LABINSPERS

Logic

1. Move PERSON values to LABPERSON and display LABINSPERS.
2. If insert record (SWI for insert-person option field) = 'Y',
 set ACTIVE = null;
 set TESTS PENDING = 0;
 set LATEST TYPE = null;
 set LATEST CASE NO = null;
 set LATEST EXAM NO = 0;
 set LATEST DAY = 0;
 set SPECIMEN = null;
 insert LABPERSON after;
 go to LABMENPERS.
3. If insert record (SWI for insert-person option field) = 'N',
 go to ECGMENPERS.

Validation

1. The insert-person option field (SWI is insert record) is mandatory, table(YESNOTBL, exists)
2. All other fields are protected. The transaction inserts a record containing fields with identical data to ECG PERSON data or none at all.

Exhibit 8-3: LABINSPERS Screen - Insert Person In LAB

insert person _			
<ssan>	<name>	<dob> yy/mm/dd	<sex>
_ _ _	_____	_/_/_	_

1. All Fields are protected except the 'insert-person' option field.
2. The SWI name for the 'insert-person' option field is insert record.

Chapter 8.3: LABMENPERS

Purpose

This step allows the user to choose whether to locate another person (by calling ECGSELPERS), database (by calling ECGMENPERS), or in the case of LAB which update method is desired. If the user chooses to exit LAB either through the exit option or by choosing to get another person or access another data base, a modify will be issued to LAB to ensure that the data in level 0 is current.

Called From

This step is entered after a new person has been entered in LABINSPERS and from all other menus in lower level processes.

Screen

LABMENPERS Logic

1. Set SPECIMEN to null(for following steps involving BATTERY database).
2. Display screen.
3. If the select-next-step option field is set to:
 - a) '0', remove LATEST EXAM on SSAN and CASE NO < LATEST CASE NO; exit.
 - b) '1', remove LATEST EXAM on SSAN and CASE NO < LATEST CASE NO; go to ECGSELPERS.
 - c) '2', remove LATEST EXAM on SSAN and CASE NO < LATEST CASE NO; go to ECGMENPERS.
 - d) '3', go to LABSPCBAT1.
 - e) '4', go to LABSELPAN.
 - f) '5', go to LABMODPERS.

Validation

1. Option - mandatory, range (0-5).

Exhibit 8-4: **LARMENPERS**

<ssan>	<name>	<dob>	<sex>
select next step _			
	1	person	
	2	data base	
	3	update by battery	
	4	update single test	
	5	change active status	
	0	exit	

1. First row is protected.
2. Select-next-step option field is unprotected.

Chapter 8.4: LABSPCBAT1

Purpose

The purpose of LABSPCBAT1 is to allow the user to view the latest TYPE, CASENO and SPECIMEN date when updating by battery. It, of course, allows the user to enter new TYPE, CASENO, and SPECIMEN (date) data if none exists. This step calculates EXAMNO and DAY. Finally, this step allows the user to specify the battery to update.

Called From

LABMENPERS

Screen

LABSPCBAT1

Logic

In Phase 1:

```
IF SPECIMEN exists,      Note: SPECIMEN was made null in the
    continue.           LABMENPERS step.
ELSE
    set SPECIMEN = $DATE;
    If SPECIMEN = C33,
        set DAY = C32.
    If SPECIMEN ≥ C33 and SPECIMEN ≤ (C33 + 30),
        set TYPE = C29, CASENO = C30, EXAMNO = C31;
        If SPECIMEN > C33,
            set DAY = (C32 + 1).
    If SPECIMEN > (C33 + 30),
        blank TYPE, CASENO,
        set EXAMNO = (C31 + 1), DAY = 1.
                                Note: To calculate C33 + 30, increment
                                    the month from C33 by 1.
```

In Phase 2:

Display LABSPCBAT1.

In Phase 3:

```
If SELECTBAT (select-battery option field) = 0,  
    go to LABMENPERS.  
If SELECTBAT (select-battery option field) > 0 and ≤ 10,  
    If SPECIMEN < C33,  
        ring bell, issue message:  
            "OLD DATA CAN BE ENTERED ONLY BY NGS";  
        go to LABMENPERS.  
    If SPECIMEN > $DATE,  
        issue message:  
            "INVALID SPECIMEN DATE";  
        go to Phase 2.  
    If SPECIMEN < (C33 + 30) and TYPE ≠ C29,  
        ring bell, issue message:  
            "TYPE DIFFERS FROM LAST ENTRY";  
        go to Phase 2.  
    If SPECIMEN < (C33 + 30) and CASENO ≠ C30,  
        ring bell, issue message:  
            "CASENO DIFFERS FROM LAST ENTRY";  
        go to Phase 2.  
    If SPECIMEN > (C33 + 30) and CASENO ≤ C30,  
        ring bell, issue message:  
            "CASENO INCONSISTENT WITH LAST ENTRY";  
        go to Phase 2.  
    If SPECIMEN = C33 and TYPE = C29 and CASENO = C30,  
        set EXAMNO = C31, DAY = C32;  
        go to LABSPCBAT2.  
    If SPECIMEN > C33 and TYPE = C29 and CASENO = C30,  
        set EXAMNO = C31, DAY = (C32 + 1);  
        go to LABSPCBAT2.  
    If SPECIMEN > C33 and CASENO > C30,  
        set EXAMNO = (C31 + 1), DAY = 1;  
        go to LABSPCBAT2.  
Set LATEST EXAM = Y.
```

Validation

TYPE - mandatory, table (TYPETBL, previously defined).

CASENO - mandatory, range (1-25000).

SPECIMEN - mandatory, defaults to \$DATE, range(1Jan57 thru \$DATE).

SELECTBAT - mandatory, range(0-10).

Exhibit 8-5: LABSPCBAT1

<ssan>	<name>	<dob>	<sex>
<type>	<case no>	<specimen> yy/mm/dd __/__/__	
—	—	—/—/—	
select battery __			
1 hematology battery			
2 autoanalyzer battery			
3 enzymology battery			
4 electrophoresis battery			
5 lipids battery			
6 urinalysis battery			
7 24 hr urine battery			
8 three glass urinalysis battery			
9 miscellaneous battery			
10 thyroid profile battery			
0 none of the above			

1. First row is protected.
2. Type, case no, and specimen are unprotected and mandatory.
3. SELECTBAT (SWI for select-battery option field) is unprotected and mandatory.

Chapter 8.5: LABSPCBAT2

Purpose

The purpose of LABSPCBAT2 is to allow the user to update test data in LAB by battery for a particular patient. The data updated is fully validated. Test batteries data is kept in a separate data base - BATTERY. The BATTERY data base definition and the data to populate it can be found in Appendix A: BATTERY Data Base.

Called From

LABSPCBAT1 and returned to from many lower level steps.

Screen

None.

Logic NOTE: To help clarify which values are referenced, 'B' will precede any reference to values from the BATTERY data base (for example, BCODE is the SWI for CODE in the BATTERY data base), and values from LAB data base will carry no such tag (for example, CODE represents the SWI for CODE from LAB).

Open the BATTERY data base.

Select BATTERIES records where BAT NUM = SELECTBAT.

Retrieve first TESTS record.

<continued next page>

CYCLE-THROUGH-TESTS-POINT.

Set BCODE = C11, BTEST = C12, BACCURACY = C13, BHEALTHY = C14, BHMIN = C15, BHMAX = C16, BAMIN = C17, BAMAX = C18, BPANEL = C19, and BMETHOD = C20.

Select LAB PANELS records (on SSAN and PANEL = BPANEL).

IF NODATA,

move BPANEL to PANEL;

insert PANELS record (PANELS records should be in alphabetical order: see LABINSPAN);

move BCODE to CODE, BTEST to TEST, BACCURACY to ACCURACY, BHEALTHY to HEALTHY and BMETHOD to METHOD;

insert TESTS record (TESTS records should be in alphabetical order by CODE: see LABINTEST);

IF BACCURACY exists,

go to LABINSVALV (insert 'value' type VALUES record);

ELSE

go to LABINSVALR (insert 'result' type VALUES record);

ELSE

Select TESTS record on SSAN and where PANEL=BPANEL, CODE=BCODE, TEST=BTEST, ACCURACY=BACCURACY, HEALTHY=BHEALTHY, and METHOD = BMETHOD.

IF NODATA,

move BCODE to CODE, BTEST to TEST, BACCURACY to ACCURACY, BHEALTHY to HEALTHY, and BMETHOD to METHOD.

insert TESTS record (TESTS records should be in alphabetical order by CODE: see LABINTEST);

IF BACCURACY exists,

go to LABINSVALV (see above);

ELSE

go to LABINSVALR (see above).

ELSE

Select VALUES record where PANEL=BPANEL, CODE=BCODE, TEST=BTEST, ACCURACY=BACCURACY, HEALTHY=BHEALTHY, METHOD = BMETHOD, and SPECIMEN = SPECIMEN(entered).

IF NODATA,

IF ACCURACY exists,

go to LABINSVALV (see above);

ELSE

go to LABINSVALR (see above).

ELSE IF \$DATASN = 1,

retrieve VALUES record;

IF ACCURACY exists,

go to LABMODVALV (modify located record);

ELSE

go to LABMODVALR (modify located record).

ELSE IF \$DATASN > 1

ring bell;

issue msg: "DOUBLE ENTRY FOUND-CALL NGS";

close BATTERY data base.

go to LABMENPERS.

RETURN-FROM-LOWER-LEVEL-STEPS-POINT.

Retrieve next TESTS record from BATTERY.

ON EOD, close BATTERY data base; go to LABSPCBAT1.

Go to CYCLE-THROUGH-TESTS-POINT.

Chapter 8.6: LABSELPAN

Purpose

LABSELPAN is where the process starts for updating single tests. This step is transparent to the user. The purpose of LABSELPAN is to first determine how many PANELS records exist. If no PANELS records exist, LABINSPAN is called; if one to four exist (inclusive), LABSELPAN4 is called; and, if more than four exist, LABSELPAN14. Calls are made to the appropriate step for the purpose of locating PANELS records for access to lower level tests or inserting new PANELS records.

Called From

LABSELPAN is called from LABMENPERS when the option is chosen to update by single test, and from LABMENPAN and LABMENTEST when the user wishes to add additional panels from lower level menus.

Screen

None.

Logic

1. Set SELECTBAT (SWI) to \$NULL.

Note: This is set to determine whether or not you came from LABSPCBAT2 or LABSELPAN in steps LABSELVAL, LABINSVALV, LABINSVALR, LABMODVALV, and LABMODVALR for return purposes. When null, you are updating by single test; when numeric, you are updating by battery.

2. Select PANELS records on SSAN (entered).
3. IF NODATA,
 go to LABINSPAN.
4. IF \$DATASN $\geq$ 1 and \$DATASN $\leq$ 4,
 go to LABSELPAN4.
5. IF \$DATASN $\geq$ 4,
 go to LABSELPAN14.

Validation

None.

Chapter 8.7: LABSELPAN4

Purpose

To present the user with up to 4 LAB PANELS records for the current person. The user may select a panel for review and access to lower level tests records or choose to insert a new panel. or exit to select another option. If this step is called, there are no more than 4 PANELS records.

Called From

LABSELPAN4 is called from LABSELPAN.

Screen

LABSELPAN4

Logic

1. Retrieve up to four PANELS records, number screen accordingly, and display.
2. If 'select record' (SWI for select-panel option field) =
 - a) '0',
go to LABMENPERS
 - b) 'n', where $n = \$DATASP$,
go to LABMENPAN (NOTE: Panels shall not be modified).
 - c) 'n', where $1 \leq n \leq \$DATASN$,
rewind the LABPANELS sibling chain;
retrieve the nth record via \$\$2KCOUNT;
go to LABMENPAN (NOTE: Panels shall not be modified).
 - d) 'n', where $n > \$DATASN$,
go to LABINSPAN.

Validation

1. The select-panel option field (SWI select record) -
mandatory, numeric.

Exhibic 8-6: LABSELPAN4 Screen - Select 4 PANELS from LAB

<ssan>	<name>	<dob>	<sex>	<race>
select panel _				
	panel			
1	_____			
2	_____			
3	_____			
4	_____			
0	none of the above			

1. All data on the screen is protected except for the 'select-panel' option field.
2. The SWI name for the 'select-panel' option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 8.8: LABSELPAN14

Purpose

To present the user with LAB PANELS records up to 14 at a time for the current person. The user may select a panel for review and access to lower level tests records or choose to insert a new panel, or exit to select another option.

Called From

This step is called from LABSELPAN (when more than 4 LAB PANELS records are located for a particular person).

Screen

LABSELPAN14

Logic

1. Retrieve up to 14 PANELS records.
Number screen accordingly, and display.
If \$DATASP < \$DATASN, then issue message:
 "Press Return To See More Records".
If \$DATASP = \$DATASN and \$DATASN > 14, then issue message:
 "Press Return To See Prior Records".
2. If 'select record' (SWI for select-panel option field) is
 - a) blanks,
 if \$DATASP = \$DATASN, rewind locate file.
 go to phase 1.
 - b) '0', go to LABMENPERS.
 - c) 'n', where $n = \$DATASP$,
 go to LABMENPAN (NOTE: Panels shall not be modified).
 - d) 'n', where $1 \leq n \leq \$DATASN$,
 rewind the sibling chain;
 retrieve the nth record via \$\$2KCOUNT;
 go to LABMENPAN (NOTE: Panels shall not be modified).
 - e) 'n', where $n > \$DATASN$,
 go to LABINSPAN.

Validation

1. The select-panel option field (SWI select record) - numeric, if present.

Exhibit 8-7: LABSELPAN14 Screen - Select 14 PANELS From LAB

<ssan>	<name>	<dob>	<sex>	<race>
select panel __				
	panel			
1	_____			
2	_____			
3	_____			
4	_____			
5	_____			
6	_____			
7	_____			
8	_____			
9	_____			
10	_____			
11	_____			
12	_____			
13	_____			
14	_____			
0 none of the above				

1. This screen is identical to LABSELPAN4 except that it will accommodate up to 14 panels per screen.
2. All data on the screen is protected except for the select-panel option field.
3. The SWI name for the select-panel option field is select record.
4. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 8.9: LABINSPAN

Purpose

The purpose of this step is to allow users to insert additional PANELS records into the LAB data base.

Called From

LABSELPAN, LABSELPAN4 or LABSELPAN14.

Screen

LABINSPAN

Logic

1. Display Screen.
2. If insert record (SWI for insert-panel option field) = N,
go to LABMENPERS.
3. If insert record (SWI for insert-panel option field) = Y,
edit PANEL to long value if code, validate panel;
insert record in alphabetical order with the rest of the PANELS
records (in order to do this, retrievals after a locate can
compare the PANEL component in each of the retrieved records
to the PANEL component in the record to be inserted; when the
PANEL component in the retrieved record is greater than the
PANEL component in the record to be inserted, the record can
then be inserted before; NOTE: If PANEL component in the
retrieved record = PANEL component in the record to be
inserted, issue message: "PANEL ALREADY EXISTS" and go to
LABSELPAN - This will ensure no duplicate PANELS records and
all records will stay in alphabetical order).
go to LABMENPAN (modifying the PANELS records is not allowed
since this would jeopardize the integrity of all lower level
test data).

Validation

1. Insert record (SWI for insert-panel option field) is
mandatory, table (YESNOTBL, exists).
2. Panel validation is table (LABPANTBL) in Appendix A. Panel
SWI is validated to be A-Z2, COL1, if code, then edited from
COL1 (codes) to COL2 (long values), validate on COL2.

Exhibit 8-8: LABINSPAN Screen - Insert PANELS Record In LAB

<ssan>	<name>	<dob>	<sex>	<race>
insert panel _				
panel - code or long name				

1. Row 1 is protected.
2. The SWI name for the insert-panel option field is insert record.
3. The panel can be entered in as a code or by the long name.
4. All unprotected fields are mandatory.

Chapter 8.10: LABMENPAN

Purpose

The purpose of this step is to allow the user to choose whether to exit LAB, proceed to a menu that will allow the user to choose another person (ECGSELPERS), proceed to a menu that will allow the user to choose another data base (ECGMENPERS), proceed to a menu that will allow the user to choose another type of update to LAB (LABMENPERS), allow the user to select another PANELS record (LABSELPAN), or select to upadte by test.

Called From

LABSELPAN4, LABSELPAN14, LABINSPAN, or any lower level menu.

Screen

LABMENPAN

Logic

1. Display screen.
2. If the select-next-step option field is set to:
 - a) '0',
remove LATEST EXAM on SSAN and CASE NO < LATEST CASE NO;
exit.
 - b) '1',
remove LATEST EXAM on SSAN and CASE NO < LATEST CASE NO;
go to ECGSELPERS.
 - c) '2',
remove LATEST EXAM on SSAN and CASE NO < LATEST CASE NO;
go to ECGMENPERS.
 - d) '3', go to LABMENPERS
 - e) '4', go to LABSELPAN.
 - f) '5', go to LABSELTEST.

Validation

1. Option - mandatory, range (0-5).

Exhibit 8-9: LAMENPAN

<ssan> <panel>	<name>	<dob>	<sex>
select next step _			
	1 person		
	2 data base		
	3 lab menu		
	4 update additional panels		
	5 update single test		
	0 exit		

1. First two rows are protected.
2. SWI for select-next-step option field is unprotected.

Chapter 8.11: LABSELTEST

Purpose

LABSELTEST is transparent to the user. The purpose of LABSELTEST is to first determine how many TESTS records exist. If no TESTS records exist, LABINTEST is called; if one to four exist (inclusive), LABSELTEST4 is called; and, if more than four exist, LABSELTEST14 is called. Calls are made to the appropriate step for the purpose of locating TESTS records for access to lower level VALUES records, or inserting new TESTS records.

Called From

LABSELTEST is called from LABMENPAN when the option is chosen to continue updating via single tests. This step is also called from LABINTEST when a duplicate test is found upon attempting an insert.

Screen

None.

Logic

1. Select TESTS records on SSAN and PANEL.
2. IF NODATA,
 go to LABINTEST.
3. IF \$DATASN $\geq$ 1 and \$DATASN $\leq$ 4,
 go to LABSELTEST4.
4. IF \$DATASN $\geq$ 4,
 go to LABSELTEST14.

Validation

None.

Chapter 8.12: LABSELTEST4

Purpose

To present the user with up to 4 LAB TESTS records for the current person. The user may select a test for review and access to lower level values records or choose to insert a new test, or exit to select another option. If LABSELTEST4 is called, there are no more than 4 TESTS records.

Called From

LABSELTEST4 is called from LABSELTEST.

Screen

LABSELTEST4

Logic

1. Retrieve up to 4 TESTS records,
number screen accordingly, and display.
2. If 'select record' (SWI for select-test option field) =
 - a) '0',
go to LABMENPAN.
 - b) 'n', where $n = \$DATASP$,
go to LABSELVAL (NOTE: tests shall not be modified).
 - c) 'n', where $1 \leq n \leq \$DATASN$,
rewind the LABTESTS sibling chain;
retrieve the nth record via $\$S2KCOUNT$;
go to LABSELVAL (NOTE: tests shall not be modified).
 - d) 'n', where $n > \$DATASN$,
go to LABINSTEST.

Validation

1. The select-test option field (SWI select record) -
mandatory, numeric.

Exhibit 8-10: LABSELTEST4 Screen - Select 4 TESTS from LAB

<ssan>	<name>	<dob>	<sex>	<race>
<panel>				
select test _				
code	test	accuracy	healthy	method
1	_____	-	_____	_____
2	_____	-	_____	_____
3	_____	-	_____	_____
4	_____	-	_____	_____
0 none of the above				

1. All data on the screen is protected except for the 'select-test' option field.
2. The SWI name for the 'select-test' option field is select record.
3. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 8.13: LABSELTTEST14

Purpose

To present the user with LAB TESTS records up to 14 at a time for the current person. The user may select a test for review and access to lower level tests records or choose to insert a new test, or exit to select another option.

Called From

This step is called from LABSELTEST (when more than 4 LAB TESTS records are located for a particular person).

Screen

LABSELTEST14

Logic

- ```

1. Retrieve up to 14 TESTS records and number screen accordingly.
 Display screen.
 If $DATASP < $DATASN, then issue message:
 "Press Return To See More Records".
 If $DATASP = $DATASN and $DATASN > 14, then issue message:
 "Press Return To See Prior Records".

2. If 'select record' (SWI for select-test option field) is
 a) blanks,
 if $DATASP = $DATASN,
 rewind locate file;
 go to phase 1.
 b) '0',
 go to LABMENPAN.
 c) 'n', where n = $DATASP,
 go to LABSELVAL (NOTE: tests shall not be modified).
 d) 'n', where $1 \leq n \leq \$DATASN$,
 rewind the sibling chain;
 retrieve the nth record via $$2KCOUNT;
 go to LABSELVAL (NOTE: tests shall not be modified).
 e) 'n', where n > $DATASN,
 go to LABINSTEST.

```

## Validation

1. Select-test option field must be numeric, if present.

Exhibit 8-11: LABSELTEST14 Screen - Select 14 TESTS From LAB

| <ssan><br><panel>   | <name> | <dob>    | <sex>   | <race> |
|---------------------|--------|----------|---------|--------|
| select test _       |        |          |         |        |
| code                | test   | accuracy | healthy | method |
| 1                   | _____  | —        | _____   | _____  |
| 2                   | _____  | —        | _____   | _____  |
| 3                   | _____  | —        | _____   | _____  |
| 4                   | _____  | —        | _____   | _____  |
| 5                   | _____  | —        | _____   | _____  |
| 6                   | _____  | —        | _____   | _____  |
| 7                   | _____  | —        | _____   | _____  |
| 8                   | _____  | —        | _____   | _____  |
| 9                   | _____  | —        | _____   | _____  |
| 10                  | _____  | —        | _____   | _____  |
| 11                  | _____  | —        | _____   | _____  |
| 12                  | _____  | —        | _____   | _____  |
| 13                  | _____  | —        | _____   | _____  |
| 14                  | _____  | —        | _____   | _____  |
| 0 none of the above |        |          |         |        |

1. This screen is identical to LABSELTEST4 except that it will accommodate up to 14 tests per screen.
2. All data on the screen is protected except for the select-test option field.
3. The SWI name for the select-test option field is select record.
4. The numbers on the left of each record are SWIs that are computed by the step and are only displayed when a record of that number occurs.

Chapter 8.14: LABINTEST

Purpose

The purpose of this step is to allow users to insert additional TESTS records into the LAB data base.

Called From

LABSELTEST, LABSELTEST4, or LABSELTEST14.

Screen

LABINTEST

Logic

NOTE: If BACCURACY is null, VALUES record will be a 'result'.  
If BACCURACY exists, VALUES record will be a 'value'.)

Display Screen.

If insert record (SWI for insert-tests option field) = N,  
go to LABMENPAN.

(continued on next page)

LABINTEST Logic (continued)

If insert record (SWI for insert-tests option field) = Y,

    If CODE fails and TEST fails,  
        issue msg: "MUST ENTER CODE OR TEST";  
        go to phase 2.

    If CODE exists,  
        select BATTERY TESTS records on CODE;  
        If NODATA,  
            issue msg: "INVALID CODE";  
            go to phase 2.  
        If \$DATASN = 1,  
            If METHOD fails,  
                set METHOD = BMETHOD.  
            If METHOD exists,  
                If BMETHOD ≠ METHOD,  
                    issue msg: "METHOD INCONSISTENT WITH CODE";  
                    go to phase 2.

        If TEST fails,  
            set TEST = BTEST.  
        If TEST exists,  
            If BTEST ≠ TEST,  
                issue msg: "TEST INCONSISTENT WITH CODE";  
                go to phase 2.

    If \$DATASN > 1,  
        If METHOD fails,  
            issue msg: "NEED METHOD";  
            go to phase 2.  
        If METHOD exists,  
            select BATTERY TESTS records on CODE and METHOD,  
            If \$DATASN = 0,  
                issue msg: "METHOD NOT DEFINED FOR CODE";  
                go to phase 2.  
            If \$DATASN = 1,  
                If TEST fails,  
                    set TEST = BTEST.  
                If TEST exists,  
                    If BTEST ≠ TEST,  
                        issue message: "TEST INCONSISTENT WITH CODE";  
                        go to phase 2.

(continued on next page)

LABINSTEEST Logic (continued)

```
If CODE fails,
 select BATTERY TESTS records on TEST;
 If NODATA,
 issue message: "INVALID TEST" and go to phase 2.
 If $DATASN = 1,
 If METHOD fails,
 set METHOD = BMETHOD.
 If METHOD exists,
 If BMETHOD ≠ METHOD,
 issue message: "METHOD INCONSISTENT WITH TEST";
 go to phase 2.
 set CODE = BCODE.
 If $DATASN > 1,
 If METHOD fails,
 issue message: "NEED METHOD" and go to phase 2.
 If METHOD exists,
 select BATTERY TESTS records on TEST and METHOD,
 If $DATASN = 0,
 issue message: "METHOD NOT DEFINED FOR TEST";
 go to phase 2.
 If $DATASN = 1,
 set CODE = BCODE.
 set ACCURACY = BACCURACY, HEALTHY = BHEALTHY.
 locate LAB TESTS records on SSAN and PANEL.
 retrieve first LAB TESTS record.
 on EOD,
 insert TESTS record after;
 go to LABSELVAL.
CYCLE-POINT.
 If CODE of retrieved record > CODE of record being inserted,
 insert TESTS record before and go to LABSELVAL.
 If retrieved CODE = CODE of record to be inserted,
 If retrieved METHOD = METHOD of record being inserted,
 issue message: "TEST ALREADY EXISTS" and go to LABSELTESTS.
 If retrieved METHOD ≠ METHOD being inserted,
 retrieve next LAB TESTS record;
 on EOD,
 insert TESTS record after and go to LABSELVAL.
 go to CYCLE-POINT.
 retrieve next LAB TESTS record.
 on EOD,
 insert TESTS record after and go to LABSELVAL.
 go to CYCLE-POINT.
```

Validation

1. Insert record (SWI for insert-tests option field) is mandatory, table (YESNOTBL, exists).
2. CODE, TEST, and METHOD are optional.

Exhibit 8-12: LABINTEST Screen - Insert TESTS Record In LAB

|                   |        |        |       |        |
|-------------------|--------|--------|-------|--------|
| <ssan><br><panel> | <name> | <dob>  | <sex> | <race> |
| insert test _     |        |        |       |        |
| code              | test   | method |       |        |
| _____             | _____  | _____  |       |        |

1. First two rows are protected.
2. The SWI name for the insert-test option field is insert record.
3. All unprotected fields are optional.

Chapter 8.15: LABMENTEST

Purpose The purpose of this step is to allow the user to choose whether to exit, allow the user to choose another person (ECGSELPERS), proceed to a menu that will allow the user to choose another data base (ECGMENPERS), proceed to a menu that will allow the user to choose another type of update to LAB (LABMENPERS), allow the user to update additional panels (LABSELPAN), allow the user to select other TESTS records (LABSELTEST), or allow the user to select or insert VALUES records for the current TESTS record (LABSELVAL).

Called From LABSELTEST4, LABSELTEST14, LABINTEST, and any lower level menu.

Screen LABMENTEST

Logic

1. Display screen.
2. If the select-next-step option field is set to:
  - a) '0',  
remove LATEST EXAM on SSAN and CASE NO < LATEST CASE NO;  
go to exit.
  - b) '1',  
remove LATEST EXAM on SSAN and CASE NO < LATEST CASE NO;  
go to ECGSELPERS.
  - c) '2',  
remove LATEST EXAM on SSAN and CASE NO < LATEST CASE NO;  
go to ECGMENPERS.
  - d) '3', go to LABMENPERS
  - e) '4', go to LABSELPAN.
  - f) '5', go to LABSELTEST.
  - g) '6', go to LABSELVAL.

Validation

1. Select next step option field - mandatory, range (0-6).

Exhibit 8-13: **LABMENTEST**

| <ssan>             | <name>                   | <dob>      | <sex>     |          |
|--------------------|--------------------------|------------|-----------|----------|
| <panel>            |                          |            |           |          |
| <code >            | <test>                   | <accuracy> | <healthy> | <method> |
|                    |                          |            |           |          |
| select next step _ |                          |            |           |          |
| 1                  | person                   |            |           |          |
| 2                  | data base                |            |           |          |
| 3                  | lab menu                 |            |           |          |
| 4                  | update additional panels |            |           |          |
| 5                  | update additional test   |            |           |          |
| 6                  | update single test       |            |           |          |
| 0                  | exit                     |            |           |          |

1. First three rows are protected.
2. SWI for select-next-step option field is mandatory and unprotected.

## Chapter 8.16: LABSELVAL

### Purpose

This step is transparent to the user. The purpose of this step is to determine the number of VALUES records for a particular test and, if present, whether the records are "value" type records or "result" type records. If ACCURACY exists for the test, the VALUES records are "values"; if ACCURACY does not exist, the records are "results". If no VALUES records exist, either LABINSVALV or LABINSVALR is called; if one to four exist (inclusive), either LABSELVALV4 or LABSELVALR4 is called; and, if more than four exist, either LABSELVALV14 or LABSELVALR14 is called. The step called in the above cases is dependent on whether it is a value or result.

### Called From

This step is entered from LABMENTEST and LABSPCBAT2. If duplicate VALUE records found, this step is also called from LABINSVALV and LABINSVALR.

### Screen

None.

### Logic

1. Select VALUES records on SSAN, PANEL, CODE, and METHOD  
where C23 (LAB) = SPECIMEN (entered).
2. If NODATA,  
    If ACCURACY exists,  
        go to LABINSVALV;  
    Else  
        go to LABINSVALR.
3. If \$DATASN  $\geq$  1 and \$DATASN  $\leq$  4,  
    If ACCURACY exists,  
        go to LABSELVALV4;  
    Else  
        go to LABSELVALR4.
4. If \$DATASN  $>$  4,  
    If ACCURACY exists,  
        go to LABSELVALV14;  
    Else  
        go to LABSELVALR14.

### Validation

None.

**Chapter 8.17: LABSELVALV4**

Purpose

To allow the user to select existing value-type VALUES record for modification or to insert a new value-type VALUES record.

Called From

This step is called from LABSELVAL when between 1 and 4 (inclusive) VALUES records for this test were located and ACCURACY exists.

Screen

LABSELVALV4

Logic

1. Retrieve up to 4 VALUES records, ordered by SPECIMEN; number screen accordingly, and display.
2. If 'select record' (SWI for select-value option field) =
  - a) '0', go to LABMENTEST.
  - b) 'n', where  $n = \$DATASP$ ,  
go to LABMODVALV.
  - c) 'n', where  $1 \leq n \leq \$DATASN$ ,  
rewind the LAB TESTS sibling chain;  
retrieve the nth record via  $\$S2KCOUNT$ ;  
go to LABMODVALV.
  - d) 'n', where  $n > \$DATASN$ ,  
go to LABINSVALV.

Validation

1. Select-value option field - mandatory, numeric.

Exhibit 8-14: LABSELVALV4 - Select 4 Value-Type VALUE Records

|                     |        |            |         |       |                      |          |      |
|---------------------|--------|------------|---------|-------|----------------------|----------|------|
| <ssan>              | <name> |            |         | <dob> | <sex>                |          |      |
| <panel>             |        |            |         |       |                      |          |      |
| <code>              | <test> | <accuracy> |         |       | <healthy>            | <method> |      |
| select value _      |        |            |         |       |                      |          |      |
|                     | type   | case no    | exam no | day   | specimen<br>yy/mm/dd | value    | flag |
| 1                   | -      | _____      | ___     | ___   | ___/___/___          | _____    | -    |
| 2                   | -      | _____      | ___     | ___   | ___/___/___          | _____    | -    |
| 3                   | -      | _____      | ___     | ___   | ___/___/___          | _____    | -    |
| 4                   | -      | _____      | ___     | ___   | ___/___/___          | _____    | -    |
| 0 none of the above |        |            |         |       |                      |          |      |

1. All items are protected except select value option field (SWI is select record).
2. Screen LABSELVALV4 is identical to LABSELVALR4 except the two occurrences of the literal 'value' are replaced with 'result' (see screen LABSELVALR4).
3. Screen LABSELVALV4 is identical to LABSELVALV14 except LABSELVALV4 only allows a choice of up to 4 VALUES records at a time.

Chapter 8.18: LABSELVALV14

Purpose

To allow the user to select existing value-type VALUES record for modification or to insert a new value-type VALUES record.

Called From

This step is called from LABSELVAL when more than 4 VALUES records for this test were located and ACCURACY exists.

Screen

LABSELVALV14

Logic

Retrieve up to 14 VALUES records, ordered by SPECIMEN;  
Number screen accordingly, and display.

If \$DATASP < \$DATASN,  
    issue message: "Press Return To See More Records".

If \$DATASP = \$DATASN and \$DATASN > 14,  
    issue message: "Press Return To See Prior Records".

If select record (SWI for select-value option field) =

    '0', go to LABMENTEST.

    'n', where n = \$DATASP,  
        go to LABMODVALV.

    'n', where  $1 \leq n \leq \$DATASN$ ,  
        rewind the LAB TESTS sibling chain;  
        retrieve the nth record via \$\$2KCOUNT;  
        go to LABMODVALV.

    'n', where n > \$DATASN,  
        go to LABINSVALV.

Validation

1. Select value option field is optional, numeric if present.

Exhibit 8-15: LABSELVALV14 - Select From 14 LAB Values

| <ssan>               | <name>   | <dob>   | <sex>      |
|----------------------|----------|---------|------------|
| <panel>              | <code>   | <test>  | <accuracy> |
| <healthy>            | <method> |         |            |
| select value _       |          |         |            |
| type                 | case no  | exam no | day        |
| specimen<br>yy/mm/dd | value    | flag    |            |
| 1                    | —        | —       | —          |
| 2                    | —        | —       | —          |
| 3                    | —        | —       | —          |
| 4                    | —        | —       | —          |
| 5                    | —        | —       | —          |
| 6                    | —        | —       | —          |
| 7                    | —        | —       | —          |
| 8                    | —        | —       | —          |
| 9                    | —        | —       | —          |
| 10                   | —        | —       | —          |
| 11                   | —        | —       | —          |
| 12                   | —        | —       | —          |
| 13                   | —        | —       | —          |
| 14                   | —        | —       | —          |
| 0 none of the above  |          |         |            |

1. All items are protected except select value option field.
2. Screen LABSELVALV14 is identical to LABSELVALV4 except LABSELVALV14 allows a choice of 14 VALUES records at a time.

**Chapter 8.19: LABSELVALR4**

Purpose

To allow the user to select existing result-type VALUES record for modification or to insert a new result-type VALUES record.

Called From

This step is called from LABSELVAL when between 1 and 4 (inclusive) VALUES records for this test were located and ACCURACY fails.

Screen

LABSELVALR4

Logic

1. Retrieve up to 4 VALUES records, ordered by SPECIMEN; number screen accordingly, and display.
2. If 'select record' (SWI for select-result option field) =
  - a) '0', go to LABMENTEST.
  - b) 'n', where n = \$DATASP,  
go to LABMODVALR.
  - c) 'n', where  $1 \leq n \leq \$DATASN$ ,  
rewind the LAB TESTS sibling chain;  
retrieve the nth record via \$S2KCOUNT;  
go to LABMODVALR.
  - d) 'n', where  $n > \$DATASN$ ,  
go to LABINSVALR.

Validation

1. Select-value option field - mandatory, numeric.

Exhibit 8-16: LABSELVALR4 - Select 4 Result-Type LAB VALUE Records

| <ssan>          | <name>            | <dob>   | <sex>      |
|-----------------|-------------------|---------|------------|
| <panel>         | <code>            | <test>  | <accuracy> |
| <healthy>       | <method>          |         |            |
| select result _ |                   |         |            |
| type            | case no           | exam no | day        |
| specimen        | result            | flag    |            |
| yy/mm/dd        |                   |         |            |
| 1               | ---               | ---     | ---        |
| 2               | ---               | ---     | ---        |
| 3               | ---               | ---     | ---        |
| 4               | ---               | ---     | ---        |
| 0               | none of the above |         |            |

1. All items are protected except select result option field (SWI is select record).
2. Screen LABSELVALR4 is identical to LABSELVALV4 except two occurrences of 'value' are replaced with 'result'.
3. Screen LABSELVALR14 and LABSELVALV14 are identical to LABSELVALR4 and LABSELVALV4 respectively, except they display 14 records at a time instead of 4.

**Chapter 8.20: LABSELVALR14**

Purpose

To allow the user to select existing result-type VALUES record for modification or to insert a new result-type VALUES record.

Called From

This step is called from LABSELVAL when more than 4 VALUES records for this test were located and ACCURACY fails.

Screen

LABSELVALR14

Logic

Retrieve up to 14 VALUES records, ordered by SPECIMEN;  
Number screen accordingly, and display.

If \$DATASP < \$DATASN,

    issue message: "Press Return To See More Records".

If \$DATASP = \$DATASN and \$DATASN > 14,

    issue message: "Press Return To See Prior Records".

If 'select record' (SWI for select-result option field) =

    '0', go to LABMENTEST.

    'n', where n = \$DATASP,  
        go to LABMODVALR.

    'n', where  $1 \leq n \leq$  \$DATASN,  
        rewind the LAB TESTS sibling chain;  
        retrieve the nth record via \$S2KCOUNT;  
        go to LABMODVALR.

    'n', where n > \$DATASN,  
        go to LABINSVALR.

Validation

1. Select-result option field is optional, numeric if present.

Exhibit 8-17: LABSELVALR14 - Select 14 Result-Type LAB Values

| <ssan>               | <name>  | <dob>      | <sex>     |
|----------------------|---------|------------|-----------|
| <panel>              |         |            |           |
| <code>               | <test>  | <accuracy> | <healthy> |
|                      |         |            | <method>  |
| select result _      |         |            |           |
| type                 | case no | exam no    | day       |
| specimen<br>yy/mm/dd | result  | flag       |           |
| 1                    | —       | —          | —         |
| 2                    | —       | —          | —         |
| 3                    | —       | —          | —         |
| 4                    | —       | —          | —         |
| 5                    | —       | —          | —         |
| 6                    | —       | —          | —         |
| 7                    | —       | —          | —         |
| 8                    | —       | —          | —         |
| 9                    | —       | —          | —         |
| 10                   | —       | —          | —         |
| 11                   | —       | —          | —         |
| 12                   | —       | —          | —         |
| 13                   | —       | —          | —         |
| 14                   | —       | —          | —         |
| 0 none of the above  |         |            |           |

1. All items are protected except select-result option field.
2. Screen LABSELVALR14 is identical to LABSELVALR4 except LABSELVALR14 allows a choice of 14 VALUES records at a time (result-type).

**Chapter 8.21: LABINSVALV**

Purpose

To allow the user to insert a numeric test value.

Called From

This step is entered from LABSPCBAT2 when updating by battery, LABSELVAL when no VALUES records exist, and LABSELVALV4 and LABSELVALV14 when selection is made beyond the list provided.

Screen

LABINSVALV

Logic

In Phase 1:

IF SPECIMEN (SWI) exists,                      Note: SPECIMEN was made null  
    continue.                                      in the LABMENPERS step.

ELSE

    set SPECIMEN = \$DATE;  
    If SPECIMEN > C33 and SPECIMEN < (C33 + 30),  
        set TYPE = C29, CASENO = C30, EXAMNO = C31;  
    If SPECIMEN > (C33 + 30),  
        blank TYPE, CASENO.

                    Note: To calculate C33 + 30, increment  
                            the month from C33 by 1.

Blank VALUE, RESULT, FLAG, COMMENT, insert-value option field.

In Phase 2:

Display screen.

Phase 3 Logic  
In Phase 3:

```
IF insert-record option field = N,
 If SELECTBAT fails, (came from labsselval)
 go to LABSELVAL;
 Else (came from labspcbat)
 go to LABSPCBAT2 (RETURN-FROM-LOWER-LEVEL-STEPS-POINT).
IF insert-record option field = Y,
 If CASE NO < LATEST CASE NO,
 issue msg: "OLD DATA CAN ONLY BE ENTERED BY NGS";
 go to phase 2.
 If CASE NO = LATEST CASE NO,
 If SPECIMEN > LATEST SPECIMEN + 30,
 issue msg: "MORE THAN 30 DAYS SINCE LAST ENTRY
 FOR THIS CASE NO" and go to phase 2.
 If SPECIMEN < LATEST SPECIMEN,
 issue msg: "OLD DATA CAN ONLY BE ENTERED BY NGS";
 go to phase 2.
 If TYPE ≠ LATEST TYPE,
 issue msg: "TYPE DIFFERS FROM LAST ENTRY";
 go to phase 2.
 If SPECIMEN > LATEST SPECIMEN,
 set LATEST DAY = LATEST DAY + 1;
 If CASE NO > LATEST CASE NO,
 If SPECIMEN < LATEST SPECIMEN,
 issue msg: "CASE NO INCONSISTENT WITH LAST ENTRY";
 go to phase 2.
 Set LATEST TYPE = TYPE; LATEST CASE NO = CASE NO;
 LATEST EXAM NO = LATEST EXAM NO + 1; LATEST DAY = 1;
 Set LATEST SPECIMEN = SPECIMEN.
 Set EXAM NO = LATEST EXAM NO; DAY = LATEST DAY; LATEST EXAM = Y.
 If COMMENT occurrence 1 or occurrence 2 exist,
 set FLAG = 9 (overwriting any other flag).
 If VALUE fails and FLAG fails, (no value, flag, or comment)
 ring bell, issue message:
 "NO DATA TO INSERT";
 go to Phase 2.
 If VALUE exists,
 If VALUE < AMIN or VALUE > AMAX, (extreme value)
 ring bell, issue message:
 "EXTREME VALUE - CALL LAB CHIEF STAT";
 go to Phase 2.
 If FLAG fails and (VALUE < HMIN or VALUE > HMAX),
 set FLAG = 1.
```

Phase 3 Logic (continued)

Retrieve last VALUES record.  
Insert VALUES record after. (insert values record)

If COMMENT occurrence 1 exists,  
    move COMMENT to C28;  
    append COMMENTS record; (add comments record)

If COMMENT occurrence 2 exists,  
    move COMMENT to C28;  
    append COMMENTS record.

Set UNREPORTED DATA = Y.

If FLAG = 7 and TESTS PENDING fails,  
    set TESTS PENDING = 0.

If FLAG = 7,  
    set TESTS PENDING = TESTS PENDING + 1.

Modify PERSON record.  
Retrieve last VALUES record.  
go to LABMODVALV.

Validation

1. Insert value option field - mandatory, table (YESNOTBL, exists).
2. TYPE - mandatory, table(TYPETBL, exists).
3. CASE NO - mandatory, range 1 - 25,000.
4. SPECIMEN - date, range 1 Jan 57 to \$TODAY.
5. VALUE - range (0 - 999,999.999).
6. FLAG - table (LABINSFLAGTBL = 1, 2, 3, 7, 9).

Note: For technician's view, '8' is not a valid FLAG at insert time. For the Chief's view, LABMODFLAGTBL is used (see LABMODVALV) to validate flag at insert.

Exhibit 8-18: LABINSVALV - Insert Value-Type Values Record

|         |        |           |       |
|---------|--------|-----------|-------|
| <ssan>  | <name> | <dob>     | <sex> |
| <panel> |        |           |       |
| <code>  | <test> | <healthy> |       |

insert value \_

|            |         |                      |       |      |
|------------|---------|----------------------|-------|------|
| type       | case no | specimen<br>yy/mm/dd | value | flag |
| comment    |         | / /                  |       |      |
| (72 chars) |         |                      |       |      |
| comment    |         |                      |       |      |
| (72 chars) |         |                      |       |      |

1. First three rows are protected.
2. Screen LABINSVALV is identical to LABINSVALR except the two literals of 'value' are replaced with 'result', and both the literal 'decimals' and the DBI for decimals (ACCURACY) are deleted.
3. Screens LABMODVALV and LABMODVALR are identical to LABINSVALV and LABINSVALR respectively, except 'insert' is replaced with 'modify'.

## Chapter 8.22: LAB INSVLR

### Purpose

To allow the user to insert an alphanumeric test result.

Called From

This step is entered from LABSPCBAT2 when updating by battery, LABSELVAL when no result-type VALUES records exist, and LABSELVALR4 and LABSELVALR14 when selection is made beyond the list provided.

## Screen

**LABINSVALR.**

## Logic

**In Phase 1:**

IF SPECIMEN (SWI) exists,            Note: SPECIMEN was made null  
     continue.                          in the LABMENPERS step.

**ELSE**

```

set SPECIMEN = $DATE;
If SPECIMEN > C33 and SPECIMEN < (C33 + 30),
 set TYPE = C29, CASENO = C30;
If SPECIMEN > (C33 + 30),
 blank TYPE, CASENO.

```

Note: To calculate C33 + 30, increment the month from C33 by 1.

Blank VALUE, RESULT, FLAG, COMMENT, insert-result option field.

**In Phase 2:**

Display screen.

**In Phase 3:**

```

IF insert-record option field = N,
 If SELECTBAT fails, (came from labselval)
 go to LABSELVAL;
Else (came from labspcbat)
 go to LABSPCBAT2
 (RETURN-FROM-LOWER-LEVEL-STEPS-POINT).

```

• pa

### Phase 3 Logic (continued)

```

IF insert-result option field = Y,
 If CASE NO < LATEST CASE NO,
 issue msg: "OLD DATA CAN ONLY BE ENTERED BY NGS";
 go to phase 2.
 If CASE NO = LATEST CASE NO,
 If SPECIMEN > LATEST SPECIMEN + 30,
 issue msg: "MORE THAN 30 DAYS SINCE LAST ENTRY
 FOR THIS CASE NO" and go to phase 2.

```

```

If SPECIMEN < LATEST SPECIMEN,
 issue msg: "OLD DATA CAN ONLY BE ENTERED BY NGS";
 go to phase 2.
If TYPE ≠ LATEST TYPE,
 issue msg: "TYPE DIFFERS FROM LAST ENTRY";
 go to phase 2.
If SPECIMEN > LATEST SPECIMEN,
 set LATEST DAY = LATEST DAY + 1;
If CASE NO > LATEST CASE NO,
 If SPECIMEN < LATEST SPECIMEN,
 issue msg: "CASE NO INCONSISTENT WITH LAST ENTRY";
 go to phase 2.
 Set LATEST TYPE = TYPE; LATEST CASE NO = CASE NO;
 LATEST EXAM NO = LATEST EXAM NO + 1; LATEST DAY = 1;
Set LATEST SPECIMEN = SPECIMEN.
Set EXAM NO = LATEST EXAM NO; DAY = LATEST DAY; LATEST EXAM = Y.

If COMMENT occurrence 1 or occurrence 2 exist,
 set FLAG = 9.
If RESULT fails and FLAG fails(no result,flag,or comment),
 ring bell, issue message: "NO DATA TO INSERT";
 go to Phase 2.
If RESULT = N,
 set RESULT = HEALTHY.
If RESULT = A and HEALTHY = NORMAL,
 set RESULT = ABNORMAL.
If RESULT = P and HEALTHY = NEGATIVE,
 set RESULT = POSITIVE.
If RESULT = T and HEALTHY = NEGATIVE,
 set RESULT = TRACE.
If HEALTHY exists and FLAG fails and HEALTHY ≠ RESULT,
 set FLAG = 1.
```

Phase 3 Logic (continued)

Retrieve last VALUES record.  
Insert VALUES record after. (add result-type values record)

If COMMENT occurrence 1 exists,  
    move COMMENT to C28;  
    append COMMENTS record; (add comments record)

If COMMENT occurrence 2 exists,  
    move COMMENT to C28;  
    append COMMENTS record.

Set UNREPORTED DATA = Y.  
If FLAG = 7 and TESTS PENDING fails,  
    set TESTS PENDING = 0.  
If FLAG = 7,  
    set TESTS PENDING = TESTS PENDING + 1.  
Modify PERSON record.  
Retrieve last VALUES record.  
go to LABMODVALR.

Validation

1. Insert result option field - mandatory, table (YESNOTBL, exists).
2. FLAG - table (LABINSFLAGTBL).

Exhibit 8-19: LABINSVALR - Insert Result-Type Values Record

|         |        |           |       |
|---------|--------|-----------|-------|
| <ssan>  | <name> | <dob>     | <sex> |
| <panel> |        |           |       |
| <code>  | <test> | <healthy> |       |

insert result \_

|      |         |                      |        |      |
|------|---------|----------------------|--------|------|
| type | case no | specimen<br>yy/mm/dd | result | flag |
| —    | —       | —/—/—                | —      | —    |

comment

\_\_\_\_\_ (72 chars) \_\_\_\_\_

comment

\_\_\_\_\_ (72 chars) \_\_\_\_\_

1. First three rows are protected.
2. Screen LABINSVALR is identical to LABINSVALV except the two literals of 'result' are replaced with 'value', and both the literal 'decimals' and the DBI for decimals (ACCURACY) are added.
3. Screens LABMODVALR and LABMODVALV are identical to LABINSVALR and LABINSVALV respectively, except 'insert' is replaced with 'modify'.

**Chapter 8.23: LABMODVALV**

Purpose

To allow the user to modify an existing value-type VALUES record.

Called From

This step is called from LABSPCBAT2, LABSELVALV4, LABSELVALV14, and LABINSVALV.

Screen

LABMODVALV.

Logic

Blank modify-value option field.

Set OLDVALUE = VALUE, OLDFLAG = FLAG,

OLDCOMMENT1 = COMMENT first occurrence, OLDCOMMENT2 = COMMENT  
second occurrence.

Retrieve two COMMENTS records. Display screen.

IF modify-value option field = N,

  If SELECTBAT fails, (came from labselval)

    go to LABMENTEST.

  Else (came from labspcbat)

    go to LABSPCBAT2

      (RETURN-FROM-LOWER-LEVEL-STEPS-POINT).

```
IF modify-value option field = Y,
 If OLDFLAG = 8,
 ring bell;
 issue message: "CALL LAB CHIEF TO MODIFY DATA";
 go to phase 2.
 If OLDVALUE=VALUE, OLDFLAG=FLAG, OLDCOMMENT1=COMMENT occurrence1
 and OLDCOMMENT2=COMMENT occurrence2,
 issue message: "NO DATA TO MODIFY",
 go to Phase 2.
 If FLAG=9, COMMENT occurrence1=null and COMMENT occurrence2=null,
 blank FLAG.
 If VALUE fails and FLAG fails,
 go to phase 2.
 If VALUE exists,
 If VALUE < AMIN or VALUE > AMAX, (extreme value)
 ring bell, issue message:
 "EXTREME VALUE - CALL LAB CHIEF STAT";
 go to Phase 2.
 If FLAG fails and (VALUE < HMIN or VALUE > HMAX),
 set FLAG = 1.
 If OLDVALUE ≠ VALUE or OLDFLAG ≠ FLAG,
 modify VALUES record.
 If OLDCOMMENT1 exists and OLDCOMMENT1 ≠ COMMENT occurrence1,
 modify first COMMENTS record.
 If OLDCOMMENT2 exists and OLDCOMMENT2 ≠ COMMENT occurrence2,
 modify second COMMENTS record.
 If OLDCOMMENT1 fails and COMMENT occurrence 1 exists,
 append first COMMENTS record.
 If OLDCOMMENT2 fails and COMMENT occurrence 2 exists,
 append second COMMENTS record.
 If FLAG = 7,
 If TESTS PENDING fails,
 set TESTS PENDING = 0;
 Set TESTS PENDING = TESTS PENDING + 1.
 If OLDFLAG = 7 and FLAG ≠ 7,
 set TESTS PENDING = TESTS PENDING - 1.
 If TESTS PENDING = 0,
 remove TESTS PENDING.
 If SELECTBAT exists,
 go to LABSPCBAT2 (RETURN-FROM-LOWER-LEVEL-STEPS-POINT).
 Else,
 go to LABMENTEST.
```

Validation

Modify-value option field - mandatory, table(YESNOTBL,exists).

VALUE - range (0 - 999,999.999).

FLAG - table(LABMODFLAGTBL = 1, 2, 3, 7, 8, 9).

Exhibit 8-20: LABMODVALV - Modify Value-Type Values Record

|         |        |           |       |
|---------|--------|-----------|-------|
| <ssan>  | <name> | <dob>     | <sex> |
| <panel> |        |           |       |
| <code>  | <test> | <healthy> |       |

modify value \_

| type | case no | specimen<br>yy/mm/dd | value | flag |
|------|---------|----------------------|-------|------|
| _    | _____   | __/__/__             | _____ | _    |

comment

\_\_\_\_\_ (72 chars) \_\_\_\_\_

comment

\_\_\_\_\_ (72 chars) \_\_\_\_\_

1. First three rows are protected.
2. Screens LABMODVALV and LABMODVALR are identical to LABINSVALV and LABINSVALR respectively, except 'insert' is replaced with 'modify'.
3. TYPE, CASE NO, and SPECIMEN are all protected fields.

Chapter 8.24: LABMODVALR

Purpose

To allow the user to modify an existing result-type VALUES record.

Called From

This step is called from LABSPCBAT2, LABSELVALR4, LABSELVALR14, and LABINSVALR.

Screen

LABMODVALR.

Logic

Blank modify-result option field.

Set OLDRESULT = RESULT, OLDFLAG = FLAG, OLDCOMMENT1 = COMMENT  
occurrence1, OLDCOMMENT2 = COMMENT occurrence2.

Retrieve two COMMENTS records.

Display screen.

IF modify-result option field = N,

    If SELECTBAT fails, (came from labselval)  
        go to LABMENTEST.

    Else (came from labspcbat)  
        go to LABSPCBAT2 (RETURN-FROM-LOWER-LEVEL-STEPS-POINT).

```
IF modify-result option field = Y,
 If OLDRESULT=RESULT, OLDFLAG=FLAG, OLDCOMMENT1=COMMENT occurrence1
 and OLDCOMMENT2=COMMENT occurrence2,
 issue message: "NO DATA TO MODIFY",
 go to Phase 2.
 If FLAG=9, COMMENT occurrence1=null and COMMENT occurrence2=null,
 blank FLAG.
 If RESULT fails and FLAG fails and both comments fail,
 go to phase 2.
 If OLDRESULT ≠ RESULT or OLDFLAG ≠ FLAG,
 modify VALUES record.
 If OLDCOMMENT1 exists and OLDCOMMENT1 ≠ COMMENT occurrence1,
 modify first COMMENTS record.
 If OLDCOMMENT2 exists and OLDCOMMENT2 ≠ COMMENT occurrence2,
 modify second COMMENTS record.
 If OLDCOMMENT1 fails and COMMENT occurrence 1 exists,
 append first COMMENTS record.
 If OLDCOMMENT2 fails and COMMENT occurrence 2 exists,
 append second COMMENTS record.
 If FLAG = 7,
 If TESTS PENDING fails,
 set TESTS PENDING = 0;
 Set TESTS PENDING = TESTS PENDING + 1.
 If OLDFLAG = 7 and FLAG ≠ 7,
 set TESTS PENDING = TESTS PENDING - 1.
 If TESTS PENDING = 0,
 remove TESTS PENDING.
 If SELECTBAT exists,
 go to LABSPCBAT2 (RETURN-FROM-LOWER-LEVEL-STEPS-POINT).
 Else,
 go to LABMENTEST.
```

Validation

Modify-result option field - mandatory, table (YESNOTBL, exists).

RESULT - range (0 - 999,999.999).

FLAG - table (LABMODFLAGTBL = 1, 2, 3, 7, 9).

Exhibit 8-21: LABMODVALR - Modify Result-Type Values Record

|         |        |           |       |
|---------|--------|-----------|-------|
| <ssan>  | <name> | <dob>     | <sex> |
| <panel> |        |           |       |
| <code>  | <test> | <healthy> |       |

modify result \_

|      |         |                      |        |      |
|------|---------|----------------------|--------|------|
| type | case no | specimen<br>yy/mm/dd | result | flag |
| —    | —       | —/—/—                | —      | —    |

comment

\_\_\_\_\_ (72 chars) \_\_\_\_\_

comment

\_\_\_\_\_ (72 chars) \_\_\_\_\_

1. First three rows are protected.
2. Screens LABMODVALV and LABMODVALR are identical to LABINSVALV and LABINSVALR respectively, except 'insert' is replaced with 'modify'.

**Chapter 8.25: LABMODPERS**

Purpose

To allow user to modify a patient's active status.

Called From

LABMENPERS

Screen

LABMODPERS

Logic

1. Display screen.
2. IF modify record option field = N,  
    go to LABMENPERS.
3. IF modify record option field =Y,  
    If ACTIVE is null,  
        set ACTIVE = Y;  
    Else  
        remove ACTIVE.
4. Modify PERSON record, then go to phase 2.  
    go to Phase 2.

Validation

Modify record option field mandatory, table (YESNOTBL,exists).

Exhibit 8-22: **LAE**MODPERS - Modify Patient's Active Status

```

<ssan> <name> <dob> <sex> <race>

active _
change active status _

```

1. First two rows are protected.



APPENDIX A: BATTERY DATA BASE

# BATTERY Data Base Definition

## Definition:

0\* BATTERIES:  
1\* BAT NUM (INT99):  
2\* BATTERY (NK CHAR X(34)):  
10\* TESTS (SR):  
11\* CODE (CHAR XXX IN 10):  
12\* TEST (CHAR X(24) IN 10):  
13\* ACCURACY (NK INT 9 IN 10):  
14\* HEALTHY (NK CHAR X(13) IN 10):  
15\* HMIN (NK DEC 9(6).999 IN 10):  
16\* HMAX (NK DEC 9(6).999 IN 10):  
17\* AMIN (NK DEC 9(6).999 IN 10):  
18\* AMAX (NK DEC 9(6).999 IN 10):  
19\* PANEL (NK CHAR X(37) IN 10):  
20\* METHOD (NK CHAR X(6) IN 10):

1. The LABTESTS data base shall be populated with the data which follows.

Battery Reference to Tests

HEMOTOLOGY BATTERY

Example:

PATIENT: BURDELL GEORGE P.      FILE: M12345.01  
COMMAND → BATTERY 01

CONTENTS:

TEST

|    |                         |
|----|-------------------------|
| AA | HEMATOCRIT              |
| AB | HEMOGLOBIN              |
| AC | RBC                     |
| AD | MCV                     |
| AE | MCH                     |
| AF | MCHC                    |
| AG | WBC                     |
| CA | SEDIMENTATION RATE      |
| AH | NEUTROPHILS             |
| AI | BANDS                   |
| AJ | LYMPHOCYTES             |
| AK | MONOCYTES               |
| AL | MOSINOPHILS             |
| AM | BASOPHILS               |
| OA | PLATELET COUNT          |
| BA | RETICULOCYTE COUNT      |
| AH | TOTAL EOSINOPHIL COUNT  |
| AO | RBC MORPHOLOGY          |
| AP | LYMPHOCYTE MORPHOLOGY   |
| AQ | ATYPICAL                |
| AR | MONOCYTE MORPHOLOGY     |
| AS | NEUTROPHIL MORPHOLOGY   |
| AT | MONO SPOT TEST          |
| OB | PROTHROMBIN TIME 1. PAT |
| OC | 2. CON                  |
| OD | PART THROMB TIME 1. PAT |
| OE | 2. CON                  |

AUTOANALYZER BATTERY

Example:

PATIENT: BURDELL GEORGE P.      FILE: M12345.01  
COMMAND → BATTERY 02

CONTENTS:

TEST

|    |                       |
|----|-----------------------|
| CB | HAPTOGLOBIN           |
| CC | TOTAL PROTEIN         |
| EE | EXCRETORY 2.BILI TOT  |
| FP | CREATININE            |
| HC | INORGANIC PHOSPHOROUS |
| IA | SODIUM                |
| IB | POTASium              |
| ID | CHLORIDE              |
| IC | CO2                   |
| HE | SERUM MAGNESIUM       |

ENZYMOLGY BATTERY

Example:

PATIENT: BURDELL GEORGE P.      FILE: M12345.01  
COMMAND ➤ BATTERY 03

CONTENTS:

TEST

|    |                      |
|----|----------------------|
| CJ | LDH                  |
| EA | PARENCHYMAL 1.SGPT   |
| EB | 2.SGOT               |
| ED | EXCRETORY 1.ALK PHOS |
| EG | 4.GGTP               |
| GC | CPK                  |
| EF | EXCRETORY 3.BILI DIR |
| FO | BUN                  |
| IE | URIC ACID            |
| HA | CALCIUM              |
| ZA | GLUCOSE TOLERANCE    |

ELECTROPHORESIS BATTERY

Example:

PATIENT: BURDELL GEORGE P.      FILE: M12345.01  
COMMAND > BATTERY 04

CONTENTS:

|    |                       |
|----|-----------------------|
| CC | TOTAL PROTEIN         |
| CD | SERUM PROTEIN ELECTRO |
| CE | 1. ALBUMIN            |
| CF | 2. ALPHA 1 GLOBULIN   |
| CG | 3. ALPHA 2 GLOBULIN   |
| CH | 4. BETA GLOBULIN      |
| CI | 5. GAMMA GLOBULIN     |
| BB | LDH FRACTION I        |
| EC | PARENCHYMAL 3. LDH V  |
| LB | HEMOGLOBIN ELECTRO    |
| LC | 1. HEMOGLOBIN A-1     |
| LD | 2. HEMOGLOBIN A-2     |
| LE | 3. HEMOGLOBIN - OTHER |

LIPIDS BATTERY

Example:

PATIENT: BURDELL GEORGE P.      FILE: M12345.01  
COMMAND > BATTERY 05

CONTENTS:

TEST

|    |                    |
|----|--------------------|
| DA | CHOLESTEROL        |
| DB | HDL CHOLESTEROL    |
| DC | TRIGLYCERIDE       |
| DD | PHOSPHOLIPIDS OMIT |
| DE | TOTAL LIPIDS OMIT  |

URINALYSIS BATTERY

Example:

PATIENT: BURDELL GEORGE P.      FILE: M12345.01  
COMMAND > BATTERY 06

CONTENTS:

TEST

|    |                           |
|----|---------------------------|
| FA | COLOR                     |
| FB | SPECIFIC GRAVITY          |
| FC | PH                        |
| FD | PROTEIN                   |
| FE | GLUCOSE                   |
| FF | ACETONE                   |
| FG | BLOOD                     |
| FH | BILE                      |
| FI | MICRO 1. CASTS A. HYALNE  |
| FJ | B. F GRAN                 |
| FK | C. OTHER                  |
| FL | 2. WBC                    |
| FM | 3. RBC                    |
| FN | 4. OTHER                  |
| FR | CULTURE                   |
| SA | OCCULT BLOOD STOOL        |
| ZB | GLUCOSE TOLERANCE (URINE) |

24 HR URINE BATTERY

Example:

PATIENT: BURDELL GEORGE P.      FILE: M12345.01  
COMMAND → BATTERY 07

CONTENTS:

TEST

|    |                          |
|----|--------------------------|
| FQ | CREATININE CLEARANCE     |
| FS | 24 HR URINE PROTEIN      |
| FT | 24 HR URINE TOTAL VOLUME |
| IF | 24 HR URINE URIC ACID    |
| IG | 24 HR URINE TOTAL VOLUME |
| HD | 24 HR URINE PHOSPHOROUS  |
| HE | 24 HR URINE CALCIUM      |
| HF | 24 HR URINE MAGNESIUM    |
| HG | 24 HR URINE TOTAL VALUME |

THREE GLASS URINALYSIS BATTERY

Example:

PATIENT: BURDELL GEORGE P.      FILE: M12345.01  
COMMAND > BATTERY 08

CONTENTS:

TEST

|    |                            |
|----|----------------------------|
| WA | COLOR                      |
| WB | SPECIFIC GRAVITY           |
| WC | PH                         |
| WD | PROTEIN                    |
| WE | GLUCOSE                    |
| WF | ACETONE                    |
| WG | BLOOD                      |
| WH | BILE                       |
| WI | MICRO - G1 1. CASTS HYALNE |
| WJ | FGRAN                      |
| WK | OTHER                      |
| WL | 2. WBC                     |
| WM | 3. RBC                     |
| WN | 4. OTHER                   |
| WO | CULTURE - GLASS 1 24 HR    |
| XA | MICRO - G2 1. CASTS HYALNE |
| XB | FGRAN                      |
| XC | OTHER                      |
| XD | 2. WBC                     |
| XE | 3. RBC                     |
| XF | 4. OTHER                   |
| XG | CULTURE - GLASS 2 24 HOUR  |
| XI | MICRO - G3 1. CASTS HYALNE |
| XJ | FGRAN                      |
| XK | OTHER                      |
| XL | 2. WBC                     |
| XM | 3. RBC                     |
| XN | 4. OTHER                   |
| XO | CULTURE - GLASS 3 24 HR    |

MISCELLANEOUS BATTERY

Example:

PATIENT: BURDELL GEORGE P.      FILE: M12345.01  
COMMAND > BATTERY 09

CONTENTS:

TEST

|    |                          |
|----|--------------------------|
| PA | RHEUMATOID FACTOR        |
| PB | ANTINUCLEAR ANTIBODY     |
| OF | BLEEDING TIME            |
| OG | CLOTTING TIME            |
| OH | FIBRINOGEN               |
| KA | THROAT                   |
| YC | VMA                      |
| YD | 17 KETOSTEROIDS          |
| YE | HYDROXYCARTICOSTEROIDS   |
| YO | 24 HR URINE TOTAL VOLUME |
| MA | URINE OSMOLALITY         |
| MB | SERUM OSMOLALITY         |
| MC | 24HR URINE TOTAL VOLUME  |
| ZE | SERUM COPPER FBS TO 5HR  |
| ZF | SERUM ZINC FBS TO 5 HR   |

THYROID PROFILE BATTERY

Example:

PATIENT: BURDELL GEORGE P.      FILE: M12345.01  
COMMAND > BATTERY 10

CONTENTS:

TEST

|    |     |
|----|-----|
| KA | T36 |
| KB | T4  |
| KC | FT1 |
| KD | TSH |

BATTERY Data Base Data - Rules for Each Test

| Test Name              | Code | Phase 2 | Phase 3<br>Healthy |       | Phase 2 |        |
|------------------------|------|---------|--------------------|-------|---------|--------|
|                        |      | MIN     | MIN                | MAX   | MAX     |        |
| HEMATOCRIT             | AA   | 30      | 38                 | 52    | 60      | %      |
| HEMOGLOBIN             | AB   | 0       | 12.8               | 17.8  | 20      | GM     |
| RBC                    | AC   | 3       | 4.1                | 6.1   | 8       | M/CCM% |
| MCV                    | AD   | 60      | 80                 | 98    | 110     | CU     |
| MCH                    | AE   | 20      | 26                 | 34    | 45      | PG *   |
| MCHC                   | AF   | 20      | 27                 | 37    | 45      | %      |
| WBC                    | AG   | 2000    | 3600               | 10600 | 18000   | CCM    |
| NEUTROPHILS            | AH   | 10      | 40                 | 75    | 95      | %      |
| BANDS                  | AI   | 0       | 0                  | 4     | 10      | %      |
| LYMPHOCYTES            | AJ   | 5       | 15                 | 50    | 90      | %      |
| MONOS                  | AK   | 0       | 0                  | 12    | 25      | %      |
| EOS                    | AL   | 0       | 0                  | 6     | 25      | %      |
| BASOS                  | AM   | 0       | 0                  | 1     | 10      | %      |
| TOTAL EOSINOPHIL COUNT | AN   | 50      | 150                | 400   | 1000    | CCM    |
| RBC MORPHOLOGY         | AO   | N       | A                  | -2    | 1       |        |
| LYMPHOCYTE MORPHOLOGY  | AP   | N       | A                  | -2    | 1       |        |
| ATYPICAL LYMPHOCYTES   | AQ   | 0       | 0                  | 20    | 90      | %      |
| MONOCYTE MORPHOLOGY    | AR   | N       | A                  | -2    | 1       |        |
| NEUTROPHIL MORPHOLOGY  | AS   | N       | A                  | -2    | 1       |        |
| MONO SPOT TEST         | AT   | N       | P                  | -2    | 2       |        |
| RETICULOCYTE COUNT     | BA   | 0       | 0.2                | 1.5   | 9       | %      |
| LDH FRACTION I         | BB   | 10      | 11                 | 32    | 50      | %      |
| INDIRECT BILIRUBIN     | BC   | .1      | .4                 | .8    | 5.0     | MG%    |
| G-6-PDH                | BD   | .5      | 5                  | 10    | 50      | IU     |
| SEDIMENTATION RATE     | CA   | 0       | 0                  | 10    | 60      | MM/HR  |
| HAPTOGLOBIN            | CB   | 10      | 20                 | 270   | 600     | MG%    |
| TOTAL PROTEIN          | CC   | 4       | 6                  | 8.3   | 9.5     | GM%    |
| SERUM PROTEIN ELECTRO  | CD   | N       | A                  | -2    | 1       |        |
| ALBUMIN                | CE   | 3.3     | 4.1                | 5.3   | 6.3     | GM%    |
| 2. ALPHA 1 GLOBULIN    | CF   | .19     | .20                | .40   | .5      | GM%    |
| 3. ALPHA 2 GLOBULIN    | CG   | .15     | .4                 | .8    | 1.3     | GM%    |
| 4. BETA GLOBULIN       | CH   | .3      | .6                 | 1.2   | 1.5     | GM%    |
| 5. GAMMA GLOBULIN      | CI   | .3      | .6                 | 1.5   | 2.4     | GM%    |
| LDH                    | CJ   | 50      | 115                | 217   | 1500    | IU     |
| CHOLESTEROL            | DA   | 0       | 0                  | 250   | 1000    | MG%    |
| HDL CHOLESTEROL        | DB   | 20      | 25                 | 200   | 200     | MG%    |
| TRIGLYCERIDE           | DC   | 0       | 0                  | 150   | 3000    | MG%    |
| PHOSPHOLIPIDS          | DD   | 0       | 0                  | 300   | 1000    | MG%    |
| TOTAL LIPIDS           | DE   | 0       | 0                  | 850   | 3500    | MG%    |
| PARENCHYMAL 1. SGPT    | EA   | 0       | 0                  | 40    | 300     | IU     |
| PARENCHYMAL 2. SGOT    | EB   | 4       | 11                 | 32    | 250     | IU     |
| PARENCHYMAL 3. LDH V   | EC   | 0       | 3                  | 11    | 35      | %      |
| EXCRETORY 1. ALK PHOS  | ED   | 5       | 10                 | 75    | 300     | IU     |

| Test Name               | Phase 2 |       | Phase 3<br>Healthy |       | Phase 2 |         |
|-------------------------|---------|-------|--------------------|-------|---------|---------|
|                         | Code    | MIN   | MIN                | MAX   | MAX     |         |
| EXCRETORY 2. BILI TOT   | EE      | 0     | .1                 | 1.2   | 4.0     | MG%     |
| EXCRETORY 3. BILI DIR   | EF      | 0     | 0                  | .4    | 2       | MG%     |
| GGTP                    | EG      | 2     | 5                  | 48    | 300     | IU      |
| ALK PHOS HEAT INACT     | EH      | N     | A                  | -2    | 1       |         |
| COLOR                   | FA      | N     | A                  | -2    | 1       |         |
| SPECIFIC GRAVITY        | FB      | 1.001 | 1.010              | 1.035 | 1.050   |         |
| PH                      | FC      | 3     | 5                  | 7     | 10      |         |
| PROTEIN                 | FD      | N     | T                  | -3    | 0       |         |
| GLUCOSE                 | FE      | N     | T                  | -3    | 1       |         |
| ACETONE                 | FF      | N     | T                  | -3    | 1       |         |
| BLOOD                   | FG      | N     | T                  | -3    | 1       |         |
| BILE                    | FH      | N     | T                  | -3    | 1       |         |
| MICRO 1.CASTS A.HYALINE | FI      | 0     | 0                  | 2     | 110     | /LPF    |
| MICRO 1.CASTS B.GRAIN   | FJ      | 0     | 0                  | 2     | 110     | /LPF    |
| MICRO 1.CASTS C.OTHER   | FK      | N     | P                  | -5    | 9301    |         |
| MICRO 2. WBC            | FL      | 0     | 0                  | 5     | 500     | /HPF    |
| MICRO 3. RBC            | FM      | 0     | 0                  | 2     | 500     | /HPF    |
| MICRO 4. OTHER          | FN      | N     | P                  | -5    | 0323    |         |
| BUN                     | FO      | 4     | 5                  | 24    | 35      | MG%     |
| CREATININE              | FP      | .1    | .9                 | 1.5   | 2.5     | MG%     |
| CREATININE              | FQT     | 30    | 97                 | 137   | 170     | CC/MIN  |
| CULTURE                 | FR      | N     |                    | -5    | 9345    | .       |
| 24HR URINE PROTEIN      | FS      | 0     | 6                  | 150   | 600     | MG      |
| 24HR URINE TOT VOL      | FT      | 300   | 600                | 1600  | 4000    | ML/24HR |
| RPR                     | GA      | N     | P                  | -2    | 2       |         |
| BLOOD GROUP-RH FACTOR   | GB      | A+    | 0-                 | -4    |         |         |
| CPK                     | GC      | 5     | 26                 | 109   | 600     | IU      |
| SERUM CALCIUM           | HA      | 8     | 8.8                | 10.3  | 12.2    | MG%     |
| 24HR URINE CALCIUM      | HBC     | 30    | 50                 | 300   | 800     | MG/24HR |
| INORGANIC PHOSPHORUS    | HC      | 1.0   | 2.4                | 4.6   | 8.0     | MG%     |
| PHOSPHORUS CLEARANCE    | HD      | 0     | 5                  | 15    | 30      | ML/MIN  |
| SERUM MAGNESIUM         | HE      | 1.5   | 1.8                | 2.4   | 3.0     | MG%     |
| 24HR URINE MAGNESIUM    | HFG     | 30    | 60                 | 300   | 500     | MG/24HR |
| 24HR URINE TOT VOL      | HG      | 300   | 600                | 1600  | 4000    | ML/24HR |
| SODIUM                  | IA      | 120   | 136                | 145   | 160     | MEQ/L   |
| POTASSIUM               | IB      | 2.0   | 3.5                | 4.6   | 6.0     | MEQ/L   |
| CO2                     | IC      | 10    | 19                 | 30    | 40      | MEQ/L   |
| CL                      | ID      | 80    | 99                 | 110   | 130     | MEQ/L   |

| Test Name               | Code | Phase 2 |     | Phase 3<br>Healthy |      | Phase 2 |          |
|-------------------------|------|---------|-----|--------------------|------|---------|----------|
|                         |      | MIN     | MAX | MIN                | MAX  | MAX     |          |
| URIC ACID               | IE   | .5      |     | 2.0                | 8.0  | 12.0    | MG%      |
| 24HR URINE URIC ACID    | IFG  | 150     |     | 250                | 750  | 1300    | MG/24HR  |
| 24HR URINE TOT VOL      | IG   | 300     |     | 600                | 1600 | 4000    | ML/24HR  |
| MALARIAL SMEAR          | JA   | N       |     | P                  | -2   | 2       |          |
| RED CELL 1. PAT-INIT    | JB   | .3      |     | .4                 | .46  | .6      | % *      |
| RED CELL 2. PAT-FINAL   | JC   | .2      |     | .3                 | .36  | .5      | % *      |
| RED CELL 3. CNTL-INIT   | JD   | .3      |     | .4                 | .46  | .6      | % *      |
| RED CELL 4. CNTL-FINAL  | JE   | .2      |     | .3                 | .36  | .5      | % *      |
| NASAL SMEAR FOR EOS     | JF   | N       |     | P                  | -2   | 2       |          |
| T3 UPTAKE               | KA   | 0       |     | 35                 | 45   | 100     | %        |
| T4 RIA                  | KB   | 0       |     | 5.5                | 11.5 | 75      | MCG/DL   |
| TSH RIA                 | KC   | 0       |     | 1                  | 10   | 40      | MCIU/ML  |
| FTI(T4*T3U)             | KD   | 0       |     | 2.2                | 4.7  | 20      | MCG/DL   |
| SICKLEDEX               | LA   | N       |     | P                  | -2   | 2       |          |
| HEMOGLOBIN ELECTRO      | LB   | N       |     | A                  | -2   | 1       |          |
| 1. HEMOGLOBIN A-1       | LC   | .5      |     | 94.8               | 96.7 | 99.5    | %        |
| 2. HEMOGLOBIN A-2       | LD   | .5      |     | 1.3                | 3.5  | 25      | MG%      |
| 3. HEMOGLOBIN - OTHER   | LE   | N       |     | P                  | -2   | 2       |          |
| 24HR URINE UROBILINOGEN | LF   | 0       |     | .3                 | 1    | 10      | EU       |
| DIRECT COOMBS           | LG   | N       |     | P                  | -2   | 2       |          |
| INDIRECT COOMBS         | LH   | N       |     | P                  | -2   | 2       |          |
| OSMOTIC FRAGILITY       | LI   | N       |     | A                  | -2   | 1       |          |
| URINE OSMOLALITY        | MA   | 300     |     | 800                | 1400 | 1700    | MOSM *   |
| SERUM OSMOLALITY        | MB   | 150     |     | 280                | 290  | 400     | MOSM *   |
| 24HR URINE TOT VOL      | MC   | 300     |     | 600                | 1600 | 4000    | ML/24HR  |
| CELL COUNT              | NA   | 0       |     | 0                  | 10   | 100     | LYMPH/CC |
| GLUCOSE                 | NB   | 15      |     | 40                 | 75   | 150     | MG%      |
| PROTEIN                 | NC   | 5       |     | 15                 | 45   | 150     | MG%      |
| GRAM STAIN              | ND   | N       |     | P                  | -2   | 2       |          |
| INDIA INK PREP          | NE   | N       |     | P                  | -2   | 2       |          |
| CULTURE                 | NF   | N       |     | P                  | -2   | 2       |          |
| PROTEIN ELECTRO         | NG   | N       |     | A                  | -2   | 1       |          |
| ALBUMIN                 | NH   | 50      |     | 56.8               | 76.4 | 82      | %        |
| ALPHA 1 GLOBULIN        | NI   | .5      |     | 1.1                | 6.6  | 7.6     | %        |
| ALPHA 2 GLOBULIN        | NJ   | 1.5     |     | 3                  | 12.6 | 14.6    | %        |
| BETA GLOBULIN           | NK   | 5.3     |     | 7.3                | 17.9 | 19.9    | %        |
| GAMMA GLOBULIN          | NL   | 1       |     | 3                  | 13   | 20      | %        |
| IGG                     | NM   | 0       |     | .2                 | 5    | 6.5     | MG%      |
| VDRL                    | NN   | N       |     | P                  | -2   | 2       |          |
| FTA                     | NO   | N       |     | P                  | -2   | 2       |          |
| PLATELETS               | OA   | 100     |     | 135                | 381  | 500     | K/CMM    |
| PROTHROMBIN TIME 1.PAT  | OB   | 8       |     | 10                 | 14   | 16      | SEC      |

| Test Name               | Code | Phase 2 |     | Phase 3<br>Healthy |      | Phase 2 |            |
|-------------------------|------|---------|-----|--------------------|------|---------|------------|
|                         |      | MIN     | MAX | MIN                | MAX  | MAX     |            |
| PROTHROMBIN TIME 2.CON  | OC   | 8       | 10  | 14                 | 18   |         | SEC        |
| PART THROMB TIME 1.PAT  | OD   | 17      | 21  | 29                 | 33   |         | SEC *      |
| PART THROMB TIME 2.CON  | OE   | 10      | 25  | 35                 | 45   |         | SEC        |
| BLEEDING TIME           | OF   | 0.5     | 1   | 6                  | 10   |         | *          |
| CLOTTING TIME           | OG   | 1       | 5   | 11                 | 15   |         | *          |
| FIBRINOGEN              | OH   | 50      | 110 | 400                | 900  |         | MG%        |
| CLOT RETRACTION/LYSIS   | OI   | N       | A   | -2                 | 1    |         |            |
| RHEUMATOID FACTOR       | PA   | N       | P   | -2                 | 2    |         |            |
| ANTINUCLEAR ANTIBODY    | PB   | N       | P   | -2                 | 2    |         |            |
| FREE FATTY ACIDS        | QA   | 5       | 9   | 57                 | 200  |         | MG%        |
| SERUM COPPER            | RA   | 30      | 70  | 130                | 300  |         | UG%        |
| URINE COPPER            | RBM  | 10      | 30  | 90                 | 400  |         | UG/24HR    |
| SERUM ZINC              | RC   | 35      | 75  | 120                | 300  |         | UG%        |
| URINE ZINC              | RDM  | 50      | 300 | 600                | 1000 |         | UG/24HR    |
| SERUM CHROMIUM          | RE   | .02     | .03 | .2                 | 1.5  |         | UG%        |
| URINE CHROMIUM          | RFM  | 2       | 10  | 20                 | 50   |         | UG/24HR    |
| SERUM CADMIUM           | RG   | .01     | .02 | 1                  | 3    |         | UG%        |
| URINE CADMIUM           | RHM  | 4       | 7   | 30                 | 150  |         | UG/24HR    |
| SERUM IRON              | RI   | 20      | 80  | 160                | 400  |         | UG%        |
| TOTAL IRON BIND CAPAC   | RJ   | 100     | 250 | 500                | 700  |         | UG%        |
| URINE IRON              | RKM  | 40      | 100 | 300                | 500  |         | UG/24HR    |
| BLOOD LEAD              | RL   | 0       | 0   | 50                 | 150  |         | UG%        |
| 24HR URINE TOT VOL      | RM   | 0       | 600 | 1600               | 4000 |         | ML/24HR    |
| OCCULT BLOOD            | SA   | N       | T   | -3                 |      |         |            |
| OVA & PARASITES         | SB   | N       | P   | -2                 | 2    |         |            |
| FAT SCREEN              | SC   | N       | T   | -3                 |      |         |            |
| 72HR STOOL FAT          | SD   | 0.5     | .6  | 6                  | 20   |         | GM%        |
| CULTURE                 | SE   | N       | P   | -5                 | 9367 |         |            |
| EXCRE FUN ICG           | TA   | 2       | 2.1 | 9                  | 25   |         | %          |
| UNBOUND SERUM CALCIUM   | UA   | 1       | 3.7 | 6.3                | 9    |         | MG%        |
| ALK PHOS HEAT INACT     | UB   | N       | A   | -2                 | 1    |         |            |
| ACID PHOSPHATASE        | VA   | 0       | 0   | 1.6                | 30   |         | IU *       |
| D-XYLOSE EXCRETION      | VB   | 4       | 16  | 33                 | 50   |         | % *        |
| 5HR TOTAL VOLUME        | VC   | 50      | 100 | 300                | 600  |         | ML         |
| KOH PREP                | VD   | N       | P   | -2                 | 2    |         |            |
| SERUM AMYLASE           | VE   | 0       | 23  | 85                 | 200  |         | IU/L       |
| URINE AMYLASE           | VFT  | 20      | 35  | 260                | 600  |         | UNITS/HR * |
| 1. TOTAL VOLUME         | VG   | 300     | 600 | 1600               | 4000 |         | ML/24HR    |
| FTA ABS                 | VH   | N       | P   | -2                 | 2    |         |            |
| HEPATITIS ASSOC ANTIGEN | VI   | N       | P   | -2                 | 2    |         |            |
| COCCIIDIOMYCOSIS TITER  | VJ   | N       | P   | -2                 | 2    |         |            |
| HISTOPLASMOSIS TITER    | VK   | N       | P   | -2                 | 2    |         |            |

| Test Name                | Code | Phase 2 |     | Phase 3<br>Healthy |       | Phase 2 |     |            |
|--------------------------|------|---------|-----|--------------------|-------|---------|-----|------------|
|                          |      | MIN     | MAX | MIN                | MAX   | MIN     | MAX |            |
| ALPHA 1 ANTITRYPSIN      | VL   | 0       |     | 85                 | 213   | 500     |     | MG% *      |
| TOXOPLASMOSIS TITER      | VM   | N       |     | P                  | -2    | 2       |     |            |
| URINE COPROPORPHYRINAGEN | VN   | 0       |     | 60                 | 280   | 500     |     | UG/24HR *  |
| DELTA AMINMO LEVUL ACID  | VO   | 0       |     | 1                  | 7     | 20      |     | MG/24HR *  |
| ALDOLASE                 | VP   | .5      |     | 1                  | 6     | 50      |     | IU         |
| TRP                      | VQ   | 65      |     | 80                 | 90    | 95      |     | %          |
| SERUM CAROTENE           | VR   | 25      |     | 50                 | 300   | 400     |     | UG%        |
| THYROGLOBULIN ANTIBODY   | VS   | N       |     | P                  | -2    | 2       |     |            |
| 24HR URINE TOT VOL       | VT   | 300     |     | 600                | 1600  | 4000    |     | ML/24HR    |
| COLOR                    | WA   | N       |     | A                  | -2    | 1       |     |            |
| SPECIFIC GRAVITY         | WB   | 1.003   |     | 1.012              | 1.049 | 1.050   |     |            |
| PH                       | WC   | 3       |     | 5                  | 7     | 10      |     |            |
| PROTEIN                  | WD   | N       |     | T                  | -3    | 0       |     |            |
| GLUCOSE                  | WE   | N       |     | T                  | -3    | 1       |     |            |
| ACETONE                  | WF   | N       |     | T                  | -3    | 1       |     |            |
| BLOOD                    | WG   | N       |     | T                  | -3    | 1       |     |            |
| BILE                     | WH   | N       |     | T                  | -3    | 1       |     |            |
| MICRO-G1 1.CASTS HYALINE | WI   | 0       |     | 0                  | 2     | 110     |     | /LPF       |
| MICRO-G1 1.CASTS B.GRAN  | WJ   | 0       |     | 0                  | 2     | 110     |     | /LPF       |
| MICRO-G1 1.CASTS OTHER   | WK   | N       |     | P                  | -5    | 9401    |     |            |
| MICRO-G1 2. WBC          | WL   | 0       |     | 0                  | 5     | 100     |     | /HPF       |
| MICRO-G1 3. RBC          | WM   | 0       |     | 0                  | 2     | 500     |     | /HPF       |
| MICRO-G1 4. OTHER        | WN   | N       |     | P                  | -5    | 9423    |     |            |
| CULTURE-GLASS 1 (24HR)   | WO   | N       |     | T                  | -5    | 9445    |     | K COL/CC * |
| CULTURE-GLASS 1 (48HR)   | WP   | N       |     | T                  | -5    | 9467    |     | K COL/CC * |
| MICRO-G2 1.CASTS HYALINE | XA   | 0       |     | 0                  | 2     | 110     |     | /LPF       |
| MICRO-G2 1.CASTS B.GRAN  | XB   | 0       |     | 0                  | 2     | 110     |     | /LPF       |
| MICRO-G2 1.CASTS OTHER   | XC   | N       |     | P                  | -5    | 9501    |     |            |
| MICRO-G2 2. WBC          | XD   | 0       |     | 0                  | 5     | 500     |     | /HPF       |
| MICRO-G2 3. RBC          | XE   | 0       |     | 0                  | 2     | 500     |     | /HPF       |
| MICRO-G2 4. OTHER        | XF   | N       |     | P                  | -5    | 9523    |     |            |
| CULTURE-GLASS 2(24HR)    | XG   | N       |     | 0                  | -5    | 9545    |     | K COL/CC * |
| CULTURE-GLASS 2(48HR)    | XH   | N       |     | 0                  | -5    | 9567    |     | K COL/CC * |
| MICRO-G3 1.CASTS HYALINE | XI   | 0       |     | 0                  | 2     | 110     |     | /LPF       |
| MICRO-G3 1.CASTS B.GRAN  | XJ   | 0       |     | 0                  | 2     | 110     |     | /LPF       |
| MICRO-G3 1.CASTS OTHER   | XK   | N       |     | P                  | -5    | 9601    |     |            |
| MICRO-G3 2. WBC          | XL   | 0       |     | 0                  | 5     | 500     |     | /HPF       |
| MICRO-G3 3. RBC          | XM   | 0       |     | 0                  | 2     | 500     |     | /HPF       |
| MICRO-G3 4. OTHER        | XN   | N       |     | P                  | -5    | 9623    |     |            |
| CULTURE GLASS 3(24HR)    | XO   | N       |     | 0                  | -5    | 9645    |     | K COL/CC * |
| CULTURE GLASS 3(48HR)    | XP   | N       |     | 0                  | -5    | 9667    |     | K COL/CC * |
| 24HR URINE SODIUM        | YAO  | 40      |     | 80                 | 180   | 400     |     | MEQ/L *    |

| Test Name               | Code | Phase 2 |     | Phase 3<br>Healthy |      | Phase 2 |           |
|-------------------------|------|---------|-----|--------------------|------|---------|-----------|
|                         |      | MIN     | MAX | MIN                | MAX  | MAX     |           |
| 24HR URINE POTASSIUM    | YB   | 10      |     | 25                 | 100  | 250     | MEQ/L *   |
| VMA                     | YC   | 0       |     | 0                  | 10   | 50      | MG/24HR * |
| 17 KETOSTEROIDS         | YDO  | 2       |     | 8                  | 20   | 70      | MG/24HR * |
| HYDROXYCORTICOSTEROIDS  | YEO  | 2       |     | 6                  | 24   | 70      | MG/24HR * |
| CREATININE CLEARANCE    | YFO  | 3       |     | 97                 | 137  | 170     | CC/MIN *  |
| URINE OSMOLALITY        | YG   | 300     |     | 800                | 1400 | 1700    | MOSM      |
| SERUM OSMALALITY        | YH   | 150     |     | 280                | 290  | 400     | MOSM      |
| PLASMA CORTISOL (0730)  | YI   | 0       |     | 9                  | 30   | 50      | UG%       |
| PLASMA CORTISOL (0930)  | YJ   | 0       |     | 5                  | 15   | 30      | UG%       |
| RENIN 1.SODIUM LOAD     | YK   | N       |     | A                  | -2   | 1       |           |
| UPRIGHT 2.SODIUM DEPL   | YL   | N       |     | A                  | -2   | 1       |           |
| RENIN 1.SODIUM LOAD     | YM   | N       |     | A                  | -2   | 1       | YN        |
| RECLINE 2.SODIUM DEPL   | YN   | N       |     | A                  | -2   | 1       |           |
| 24HR URINE TOT VOL      | YO   | 300     |     | 600                | 1600 | 4000    | ML/24HR   |
| PLASMA CORTISOL (1600)  | YP   | 0       |     | 4                  | 15   | 30      | UG% *     |
| GLUCOSE TOLERANCE       | ZA   | 40      |     | 70                 | 120  | 600     | MG%       |
| GLUCOSE TOLERANCE - FBS | ZAA  |         |     |                    |      |         | MG%       |
| GLUCOSE TOLERANCE .5 HR | ZAB  |         |     |                    |      |         | MG%       |
| GLUCOSE TOLERANCE 2 HR  | ZAC  |         |     |                    |      |         | MG%       |
| GLUCOSE TOLERANCE 3 HR  | ZAD  |         |     |                    |      |         | MG%       |
| GLUCOSE TOLERANCE 4 HR  | ZAE  |         |     |                    |      |         | MG%       |
| GLUCOSE TOLERANCE 5 HR  | ZAF  |         |     |                    |      |         | MG%       |
| URINE GLUCOSE           | ZB   | N       |     | T                  | -3   | 0       |           |
| URINE GLUCOSE - FBS     | ZBA  |         |     |                    |      |         | NEGATIVE  |
| URINE GLUCOSE .5 HR     | ZBB  |         |     |                    |      |         | NEGATIVE  |
| URINE GLUCOSE 1 HR      | ZBC  |         |     |                    |      |         | NEGATIVE  |
| URINE GLUCOSE 1.5 HR    | ZBD  |         |     |                    |      |         | NEGATIVE  |
| URINE GLUCOSE 2 HR      | ZBE  |         |     |                    |      |         | NEGATIVE  |
| URINE GLUCOSE 3 HR      | ZBF  |         |     |                    |      |         | NEGATIVE  |
| URINE GLUCOSE 4 HR      | ZBG  |         |     |                    |      |         | NEGATIVE  |
| URINE GLUCOSE 5 HR      | ZBH  |         |     |                    |      |         | NEGATIVE  |
| PLASMA FFA              | ZC   | 0       |     | 9                  | 57   | 500     | UG%       |
| PLASMA FFA - FBS        | ZCA  |         |     |                    |      |         | UG%       |
| PLASMA FFA .5 HR        | ZCB  |         |     |                    |      |         | UG%       |
| PLASMA FFA 2 HR         | ZCC  |         |     |                    |      |         | UG%       |
| PLASMA FFA 3 HR         | ZCD  |         |     |                    |      |         | UG%       |
| PLASMA FFA 4 HR         | ZCE  |         |     |                    |      |         | UG%       |
| PLASMA FFA 5 HR         | ZCF  |         |     |                    |      |         | UG%       |

| Test Name              | Code | Phase 2 |     | Phase 3<br>Healthy |     | Phase 2 |     |
|------------------------|------|---------|-----|--------------------|-----|---------|-----|
|                        |      | MIN     | MAX | MIN                | MAX | MAX     | UG% |
| PLASMA CORTISOL        | ZD   | 0       |     | 9                  | 30  | 50      | UG% |
| PLASMA CORTISOL - FBS  | ZDA  |         |     |                    |     |         | UG% |
| PLASMA CORTISOL .5 HR  | ZDB  |         |     |                    |     |         | UG% |
| PLASMA CORTISOL 1 HR   | ZDC  |         |     |                    |     |         | UG% |
| PLASMA CORTISOL 1.5 HR | ZDD  |         |     |                    |     |         | UG% |
| PLASMA CORTISOL 2 HR   | ZDE  |         |     |                    |     |         | UG% |
| PLASMA CORTISOL 3 HR   | ZDF  |         |     |                    |     |         | UG% |
| PLASMA CORTISOL 4 HR   | ZDG  |         |     |                    |     |         | UG% |
| PLASMA CORTISOL 5 HR   | ZDH  |         |     |                    |     |         | UG% |
| SERUM COPPER           | ZE   | 0       |     | 70                 | 130 | 400     | UG% |
| SERUM COPPER - FBS     | ZEA  |         |     |                    |     |         | UG% |
| SERUM COPPER 1.5 HR    | ZEB  |         |     |                    |     |         | UG% |
| SERUM COPPER 2 HR      | ZEC  |         |     |                    |     |         | UG% |
| SERUM COPPER 3 HR      | ZED  |         |     |                    |     |         | UG% |
| SERUM COPPER 4 HR      | ZEE  |         |     |                    |     |         | UG% |
| SERUM COPPER 5 HR      | ZEF  |         |     |                    |     |         | UG% |
| SERUM ZINC             | ZF   | 0       |     | 75                 | 120 | 400     | UG% |
| SERUM ZINC - FBS       | ZFA  |         |     |                    |     |         | UG% |
| SERUM ZINC .5 HR       | ZFB  |         |     |                    |     |         | UG% |
| SERUM ZINC 1 HR        | ZFC  |         |     |                    |     |         | UG% |
| SERUM ZINC 1.5 HR      | ZFD  |         |     |                    |     |         | UG% |
| SERUM ZINC 2 HR        | ZFE  |         |     |                    |     |         | UG% |
| SERUM ZINC 3 HR        | ZFF  |         |     |                    |     |         | UG% |
| SERUM ZINC 4 HR        | ZFG  |         |     |                    |     |         | UG% |
| SERUM ZINC 5 HR        | ZFH  |         |     |                    |     |         | UG% |
| SERUM CHROMIUM         | ZG   | 0       |     | 0.03               | 0.2 | 20      | UG% |
| SERUM CHROMIUM - FBS   | ZGA  |         |     |                    |     |         | UG% |
| SERUM CHROMIUM .5 HR   | ZGB  |         |     |                    |     |         | UG% |
| SERUM CHROMIUM 2 HR    | ZGC  |         |     |                    |     |         | UG% |
| SERUM CHROMIUM 3 HR    | ZGD  |         |     |                    |     |         | UG% |
| SERUM CHROMIUM 4 HR    | ZGE  |         |     |                    |     |         | UG% |
| SERUM CHROMIUM 5 HR    | ZGF  |         |     |                    |     |         | UG% |

| Test Name             |    | Code | Phase 2 | Phase 3 |      | Phase 2 |     |
|-----------------------|----|------|---------|---------|------|---------|-----|
|                       |    |      | MIN     | Healthy | MAX  | MAX     |     |
| SERUM CALCIUM         |    | ZH   | 6       | 9.1     | 10.5 | 13      | MG% |
| SERUM CALCIUM - FBS   |    | ZHA  |         |         |      |         | MG% |
| SERUM CALCIUM .5      | HR | ZHB  |         |         |      |         | MG% |
| SERUM CALCIUM 1       | HR | ZHC  |         |         |      |         | MG% |
| SERUM CALCIUM 1.5     | HR | ZHD  |         |         |      |         | MG% |
| SERUM CALCIUM 2       | HR | ZHE  |         |         |      |         | MG% |
| SERUM CALCIUM 3       | HR | ZHF  |         |         |      |         | MG% |
| SERUM CALCIUM 4       | HR | ZHG  |         |         |      |         | MG% |
| SERUM CALCIUM 5       | HR | ZHH  |         |         |      |         | MG% |
|                       |    |      |         |         |      |         |     |
| SERUM MAGNESIUM       |    | ZI   | 0       | 1.8     | 2.4  | 24      | MG% |
| SERUM MAGNESIUM - FBS |    | ZIA  |         |         |      |         | MG% |
| SERUM MAGNESIUM .5    | HR | ZIB  |         |         |      |         | MG% |
| SERUM MAGNESIUM 2     | HR | ZIC  |         |         |      |         | MG% |
| SERUM MAGNESIUM 3     | HR | ZID  |         |         |      |         | MG% |
| SERUM MAGNESIUM 4     | HR | ZIE  |         |         |      |         | MG% |
| SERUM MAGNESIUM 5     | HR | ZIF  |         |         |      |         | MG% |
|                       |    |      |         |         |      |         |     |
| SERUM CADMIUM         |    | ZJ   | 0       | .02     | 1    | 10      | UG% |
| SERUM CADMIUM - FBS   |    | ZJA  |         |         |      |         | UG% |
| SERUM CADMIUM .5      | HR | ZJB  |         |         |      |         | UG% |
| SERUM CADMIUM 1       | HR | ZJC  |         |         |      |         | UG% |
| SERUM CADMIUM 1.5     | HR | ZJD  |         |         |      |         | UG% |
| SERUM CADMIUM 2       | HR | ZJE  |         |         |      |         | UG% |
| SERUM CADMIUM 3       | HR | ZJF  |         |         |      |         | UG% |
| SERUM CADMIUM 4       | HR | ZJG  |         |         |      |         | UG% |
| SERUM CADMIUM 5       | HR | ZJH  |         |         |      |         | UG% |

| Test Name                | Code | Phase 2 |     | Phase 3<br>Healthy |      | Phase 2 |     |       |
|--------------------------|------|---------|-----|--------------------|------|---------|-----|-------|
|                          |      | MIN     | MAX | MIN                | MAX  | MIN     | MAX |       |
| SERUM INSULIN            | ZK   | 0       |     | 5                  | 50   | 250     |     | UU/ML |
| SERUM INSULIN - FBS      | ZKA  |         |     |                    |      |         |     | UU/ML |
| SERUM INSULIN .5 HR      | ZKB  |         |     |                    |      |         |     | UU/ML |
| SERUM INSULIN 2 HR       | ZKC  |         |     |                    |      |         |     | UU/ML |
| SERUM INSULIN 3 HR       | ZKD  |         |     |                    |      |         |     | UU/ML |
| SERUM INSULIN 4 HR       | ZKE  |         |     |                    |      |         |     | UU/ML |
| SERUM INSULIN 5 HR       | ZKF  |         |     |                    |      |         |     | UU/ML |
| SERUM GROWTH HORM        | ZL   | 0       |     | 0                  | 5    | 12      |     | NG/ML |
| SERUM GROWTH HORM - FBS  | ZLA  |         |     |                    |      |         |     | NG/ML |
| SERUM GROWTH HORM .5 HR  | ZLB  |         |     |                    |      |         |     | NG/ML |
| SERUM GROWTH HORM 1 HR   | ZLC  |         |     |                    |      |         |     | NG/ML |
| SERUM GROWTH HORM 1.5 HR | ZLD  |         |     |                    |      |         |     | NG/ML |
| SERUM GROWTH HORM 2 HR   | ZLE  |         |     |                    |      |         |     | NG/ML |
| SERUM GROWTH HORM 3 HR   | ZLF  |         |     |                    |      |         |     | NG/ML |
| SERUM GROWTH HORM 4 HR   | ZLG  |         |     |                    |      |         |     | NG/ML |
| SERUM GROWTH HORM 5 HR   | ZLH  |         |     |                    |      |         |     | NG/ML |
| SERUM GLUCAGON           | ZM   | 0       |     | 200                | 2000 | 5000    |     | PG/ML |
| SERUM GLUCAGON - FBS     | ZMA  |         |     |                    |      |         |     | PG/ML |
| SERUM GLUCAGON .5 HR     | ZMB  |         |     |                    |      |         |     | PG/ML |
| SERUM GLUCAGON 2 HR      | ZMC  |         |     |                    |      |         |     | PG/ML |
| SERUM GLUCAGON 3 HR      | ZMD  |         |     |                    |      |         |     | PG/ML |
| SERUM GLUCAGON 4 HR      | ZME  |         |     |                    |      |         |     | PG/ML |
| SERUM GLUCAGON 5 HR      | ZMF  |         |     |                    |      |         |     | PG/ML |
| SERUM CALCITONIN         | ZN   | 100     |     | 100                | 400  | 1000    |     | PG/ML |
| SERUM CALCITONIN - FBS   | ZNA  |         |     |                    |      |         |     | PG/ML |
| SERUM CALCITONIN .5 HR   | ZNB  |         |     |                    |      |         |     | PG/ML |
| SERUM CALCITONIN 1 HR    | ZNC  |         |     |                    |      |         |     | PG/ML |
| SERUM CALCITONIN 1.5 HR  | ZND  |         |     |                    |      |         |     | PG/ML |
| SERUM CALCITONIN 2 HR    | ZNE  |         |     |                    |      |         |     | PG/ML |
| SERUM CALCITONIN 3 HR    | ZNF  |         |     |                    |      |         |     | PG/ML |
| SERUM CALCITONIN 4 HR    | ZNG  |         |     |                    |      |         |     | PG/ML |
| SERUM CALCITONIN 5 HR    | ZNH  |         |     |                    |      |         |     | PG/ML |

| <u>Test Name</u>         | <u>Code</u> | Phase 2    |            | Phase 3<br>Healthy |            | Phase 2    |       |
|--------------------------|-------------|------------|------------|--------------------|------------|------------|-------|
|                          |             | <u>MIN</u> | <u>MAX</u> | <u>MIN</u>         | <u>MAX</u> | <u>MAX</u> |       |
| TOT VOL                  | ZO          | 10         |            | 15                 | 800        | 900        | ML    |
| TOT VOL 2HR PRE PRAND    | ZOA         |            |            |                    |            |            | ML    |
| TOT VOL 2HR POST PRAND   | ZOB         |            |            |                    |            |            | ML    |
| CREAT                    | ZP          | 10         |            | 100                | 200        | 500        | MG/TV |
| CALCIUM                  | ZQ          | 0          |            | 1                  | 60         | 90         | MG/TV |
| CALCIUM 2HR PRE PRAND    | ZQA         |            |            |                    |            |            | MG/TV |
| CALCIUM 2HR POST PRAND   | ZQB         |            |            |                    |            |            | MG/TV |
| CHROMIUM                 | ZR          | 0          |            | 1                  | 5          | 50         | UG/TV |
| CHROMIUM 2HR PRE PRAND   | ZRA         |            |            |                    |            |            | UG/TV |
| CHROMIUM 2HR POST PRAND  | ZRB         |            |            |                    |            |            | UG/TV |
| COPPER                   | ZS          | 0          |            | 5                  | 20         | 200        | UG/TV |
| COPPER 2HR PRE PRAND     | ZSA         |            |            |                    |            |            | UG/TV |
| COPPER 2HR POST PRAND    | ZSB         |            |            |                    |            |            | UG/TV |
| MAGNESIUM                | ZT          | 0          |            | 1                  | 60         | 90         | MG/TV |
| MAGNESIUM 2HR PRE PRAND  | ZTA         |            |            |                    |            |            | UG/TV |
| MAGNESIUM 2HR POST PRAND | ZTB         |            |            |                    |            |            | UG/TV |
| ZINC                     | ZU          | 0          |            | 50                 | 100        | 500        | UG/TV |
| ZINC 2HR PRE PRAND       | ZUA         |            |            |                    |            |            | UG/TV |
| ZINC 2HR POST PRAND      | ZUB         |            |            |                    |            |            | UG/TV |
| CADMIUM                  | ZV          | 0          |            | 1                  | 5          | 50         | UG/TV |
| CADMIUM 2HR PRE PRAND    | ZVA         |            |            |                    |            |            | UG/TV |
| CADMIUM 2HR POST PRAND   | ZVB         |            |            |                    |            |            | UG/TV |

Panel to Test Reference

PANEL A - HEMOGRAM

| <u>Test Code</u> | <u>Test Name</u>       | <u>Accuracy/Result</u> |
|------------------|------------------------|------------------------|
| AA               | HEMATOCRIT             | (39-51%)               |
| AB               | HEMOGLOBIN             | (12.8-17.8GM%)         |
| AC               | RBC                    | (4.1-6.1M/CCM)         |
| AD               | MCV                    | (80-98FL)              |
| AE               | MCH                    | (26-34PG)              |
| AF               | MCHC                   | (27-37GM%)             |
| AG               | WBC                    | (4000-9300/CMM)        |
| AH               | NEUTROPHILS            | (23-64%)               |
| AI               | BANDS                  | (0-14%)                |
| AJ               | LYMPHOCYTES            | (15-50%)               |
| AK               | MONOS                  | (0-12%)                |
| AL               | EOS                    | (0-6%)                 |
| AM               | BASOS                  | (0-1%)                 |
| AN               | TOTAL EOSINOPHIL COUNT | (150-400/CMM)          |
| AO               | RBC MORPHOLOGY         | NORMAL                 |
| AP               | LYMPHOCYTE MORPHOLOGY  | NORMAL                 |
| AQ               | ATYPICAL LYMPHOCYTES   | (0-20% OF WBC)         |
| AR               | MONOCYTE MORPHOLOGY    | NORMAL                 |
| AS               | NEUTROPHIL MORPHOLOGY  | NORMAL                 |
| AT               | MONO SPOT TEST         | NEGATIVE               |

PANEL B - HEMOLYTIC SCREEN

| <u>Test Code</u> | <u>Test Name</u>   | <u>Accuracy/Result</u> |
|------------------|--------------------|------------------------|
| BA               | RETICULOCYTE COUNT | (.2-1.5% OF RBC)       |
| BB               | LDH FRACTION I     | (25-30%)               |
| BC               | INDIRECT BILIRUBIN | (.4-.8MG%)             |
| BD               | G-6-PDH            | (5-10IU)               |

PANEL C - TISSUE DESTRUCT SCREEN

| <u>Test Code</u> | <u>Test Name</u>      | <u>Accuracy/Result</u> |
|------------------|-----------------------|------------------------|
|                  | SEDIMENTATION RATE    | (6.5-8.1GM%)           |
| CD               | SERUM PROTEIN ELECTRO | NORMAL                 |
| CE               | ALBUMIN               | (3.8-5.1GM%)           |
| CF               | ALPHA-1 GLOBULIN      | (.2-.4GM%)             |
| CG               | ALPHA-2 GLOBULIN      | (.4-.8GM%)             |
| CH               | BETA GLOBULIN         | (.6-1.2GM%)            |
| CI               | GAMMA GLOBULIN        | (.6-1.5GM%)            |
| CJ               | LDH                   | (112-192IU/L)          |

PANEL D - CARDIOVASCULAR SCREEN

| <u>Test Code</u> | <u>Test Name</u> | <u>Accuracy/Result</u> |
|------------------|------------------|------------------------|
| DA               | CHOLESTERAL      | (134-274MG%)           |
| DB               | HDL CHOLESTERAL  | (25-70MG%)             |
| DC               | TRIGLYCERIDE     | (35-210MG%)            |
| DD               | PHOSPHOLIPIDS    | (0-300MG%)             |
| DE               | TOTAL LIPIDS     | (0-850MG%)             |

PANEL E - HEPATIC SCREEN

| <u>Test Code</u> | <u>Test Name</u>          | <u>Accuracy/Result</u> |
|------------------|---------------------------|------------------------|
| EA               | PARENCHYMAL: SGPT         | (10-39IU/L)            |
| EB               | PARENCHYMAL: SGOT         | (8-26IU/L)             |
| EC               | PARENCHYMAL: LDH V        | (7-10%)                |
| ED               | EXCRETORY: ALK PHOS       | (26-64IU/L)            |
| EE               | EXCRETORY: TOT. BILIRUBIN | (.33-1.2MG%)           |
| EF               | EXCRETORY: DIR. BILIRUBIN | (0-.4MG%)              |
| EG               | GGTP                      | (7-36IU/L)             |
| EH               | ALK PHOS HEAT INACT       | NORMAL                 |

CLINICAL PATHOLOGY

PANEL F - RENAL SCREEN

| <u>Test Code</u> | <u>Test Name</u>      | <u>Accuracy/Result</u> |
|------------------|-----------------------|------------------------|
| FA               | COLOR                 | NORMAL                 |
| FB               | SPECIFIC GRAVITY      | (1.01-1.035)           |
| FC               | PH                    | (5-7)                  |
| FD               | PROTEIN               | NEGATIVE (0)           |
| FE               | GLUCOSE               | NEGATIVE (0)           |
| FF               | ACETONE               | NEGATIVE (0)           |
| FG               | BLOOD                 | NEGATIVE (0)           |
| FH               | BILE                  | NEGATIVE (0)           |
| FI               | MICRO: HYALINE CASTS  | (0-2 /LPF)             |
| FJ               | MICRO: GRANULAR CASTS | (0-2 /LPF)             |
| FK               | MICRO: OTHER CASTS    |                        |
| FL               | MICRO: WBC            | (0-5 /HPF)             |
| FM               | MICRO: RBC            | (0-2 /HPF)             |
| FN               | MICRO: OTHER          |                        |
| FO               | BUN                   | (7-23MG%)              |
| FP               | CREATININE            | (.85-1.6MG%)           |
| FQ               | CREATININE CLEARANCE  | (70-137ML/MIN)         |
| FR               | CULTURE               |                        |
| FS               | 24HR URINE PROTEIN    | (6-15-MG/24HR)         |
| FT               | 24HR URINE TOT VOL    | (600-1600ML/24HR)      |

PANEL G - MISCELLANEOUS

| <u>Test Code</u> | <u>Test Name</u>      | <u>Accuracy/Result</u> |
|------------------|-----------------------|------------------------|
| GA               | RPR                   | NEGATIVE               |
| GB               | BLOOD GROUP-RH FACTOR |                        |
| GC               | CPK                   | (15-85IU/L)            |

PANEL H - PARATHYROID SCREEN

| <u>Test Code</u> | <u>Test Name</u>     | <u>Accuracy/Result</u> |
|------------------|----------------------|------------------------|
| HA               | SERUM CALCIUM        | (8.8-10.3MG%)          |
| HB               | 24HR URINE CALCIUM   | (50-300MG/24HR)        |
| HC               | INORGANIC PHOSPHORUS | (2.6-4.5MG%)           |
| HD               | PHORPHORUS CLEARANCE | (5-15ML/MIN)           |
| HE               | SERUM MAGNESIUM      | (1.8-2.4MG%)           |
| HF               | 24HR URINE MAGNESIUM | (60-300MG/24HR)        |
| HG               | 24HR URINE TOT VOL   | (600-1600ML/24HR)      |

PANEL I - METABOLIC SCREEN

| <u>Test Code</u> | <u>Test Name</u>     | <u>Accuracy/Result</u> |
|------------------|----------------------|------------------------|
| IA               | SODIUM               | (136-144MEQ/L)         |
| IB               | POTASSIUM            | (3.5-4.7MEQ/L)         |
| IC               | CO2                  | (22.2-31.4MEQ/L)       |
| ID               | CL                   | (99-110MEQ/L)          |
| IE               | URIC ACID            | (3.5-7.8MG%)           |
| IF               | 24HR URINE URIC ACID | (250-750MG/24HR)       |
| IG               | 24HR URINE TOT VOL   | (600-1600ML/24HR)      |

PANEL J - HEMOGRAM

| <u>Test Code</u> | <u>Test Name</u>       | <u>Accuracy/Result</u> |
|------------------|------------------------|------------------------|
| JA               | MALARIAL SMEAR         | (.3-.36% *)            |
| JB               | RED CELL 3. CNTL-INIT  | (.4-.46% *)            |
| JC               | RED CELL 4. CNTL-FINAL | (.3-.36% *)            |
| JD               | NASAL SMEAR FOR EOS    | NEGATIVE               |

PANEL K - THYROID PROFILE

| <u>Test Code</u> | <u>Test Name</u> | <u>Accuracy/Result</u> |
|------------------|------------------|------------------------|
| KA               | T3 UPTAKE        | (35-45%)               |
| KB               | T4 RIA           | (5.5-11.5MCG/DL)       |
| BC               | TSH BY RIA       | (.4-4.8MCIU/ML)        |
| KD               | FTI(T4*T3U)      | (1.9-5.2MCG/DL)        |

PANEL L - HEMOLYTIC SCREEN

| <u>Test Code</u> | <u>Test Name</u>        | <u>Accuracy/Result</u> |
|------------------|-------------------------|------------------------|
| LA               | SICKLEDEX               | NEGATIVE               |
| LB               | HEMOGLOBIN ELECTRO      | NORMAL                 |
| LC               | 1. HEMOGLOBIN A-1       | (94.8-96.7%)           |
| LD               | 2. HEMOGLOBIN A-2       | (1.3-3.5MG%)           |
| LE               | 3. HEMOGLOBIN - OTHER   | NEGATIVE               |
| LF               | 24HR URINE UROBILINOGEN | (.3-1EU)               |
| LG               | DIRECT COOMBS           | NEGATIVE               |
| LH               | INDIRECT COOMBS         | NEGATIVE               |
| LI               | OSMOTIC FRAGILITY       | NORMAL                 |

PANEL M - RENAL SCREEN

| <u>Test Code</u> | <u>Test Name</u>   | <u>Accuracy/Result</u> |
|------------------|--------------------|------------------------|
| MA               | URINE OSMOLALITY   | (800-1400MOSM)         |
| MB               | SERUM OSMOLALITY   | (280-290MOSM)          |
| MC               | 24HR URINE TOT VOL | (600-1600ML/24HR)      |

PANEL N - CEREBROSPINAL FLUID

| <u>Test Code</u> | <u>Test Name</u> | <u>Accuracy/Result</u> |
|------------------|------------------|------------------------|
| NA               | CELL COUNT       | (0-10LYMPH/CC)         |
| NB               | GLUCOSE          | (40-75MG%)             |
| NC               | PROTEIN          | (15-45MG%)             |
| ND               | GRAM STAIN       | NEGATIVE               |
| NE               | INDIA INK PREP   | NEGATIVE               |
| NF               | CULTURE          | NEGATIVE               |
| NG               | PROTEIN ELECTRO  | NORMAL                 |
| NH               | ALBUMIN          | (56.8-76.4%)           |
| NI               | ALPHA 1 GLOBULIN | (1.1-6.6%)             |
| NJ               | ALPHA 2 GLOBULIN | (3-12.6%)              |
| NK               | BETA GLOBULIN    | (7.3-17.9%)            |
| NL               | GAMMA GLOBULIN   | (3-13%)                |
| NM               | IGG              | (.2-5MG%)              |
| NN               | VDRL             | NEGATIVE               |
| NO               | FTA              | NEGATIVE               |

PANEL O - COAGULATION SCREEN

| <u>Test Code</u> | <u>Test Name</u>          | <u>Accuracy/Result</u> |
|------------------|---------------------------|------------------------|
| OA               | PLATELETS                 | (135-381K/CMM)         |
| OB               | PROTHROMBIN TIME: PATIENT | (10-14SEC)             |
| OC               | PROTHROMBIN TIME: CONTROL | (10-14SEC)             |
| OD               | PROTHROMBIN TIME: PATIENT | (21-30.2SEC)           |
| OE               | PROTHROMBIN TIME: CONTROL | (25-35SEC)             |
| OF               | BLEEDING TIME             | (1-6*)                 |
| OG               | CLOTTING TIME             | (5-11*)                |
| OH               | FIBRINOGEN                | (110-400MG%)           |
| OI               | CLOT RETRACTION/LYSIS     | NORMAL                 |

PANEL P - TISSUE DESTRUCT SCREEN

| <u>Test Code</u> | <u>Test Name</u>     | <u>Accuracy/Result</u> |
|------------------|----------------------|------------------------|
| PA               | RHEUMATOID FACTOR    | NEGATIVE               |
| PB               | ANTINUCLEAR ANTIBODY | NEGATIVE               |

PANEL Q - CARDIOVASCULAR SCREEN

| <u>Test Code</u> | <u>Test Name</u> | <u>Accuracy/Result</u> |
|------------------|------------------|------------------------|
| QA               | FREE FATTY ACIDS | (9-57MG%)              |

PANEL R - TRACE METALS

| <u>Test Code</u> | <u>Test Name</u>      | <u>Accuracy/Result</u> |
|------------------|-----------------------|------------------------|
| RA               | SERUM COPPER          | (70-130UG%)            |
| RB               | URINE COPPER          | (30-90UG/24HR)         |
| RC               | SERUM ZINC            | (75-120UG%)            |
| RD               | URINE ZINC            | (300-600UG/24HR)       |
| RE               | SERUM CHROMIUM        | (.03-.2UG%)            |
| RF               | URINE CHROMIUM        | (10-20UG/24HR)         |
| RG               | SERUM CADMIUM         | (.02-1UG%)             |
| RH               | URINE CADMIUM         | (7-30UG/24HR)          |
| RI               | SERUM IRON            | (41-132UG%)            |
| RJ               | TOTAL IRON BIND CAPAC | (146-464UG%)           |
| RK               | URINE IRON            | (100-300UG/24HR)       |
| RL               | BLOOD LEAD            | (0-50UG%)              |
| RM               | 24HR URINE TOT VOL    | (600-1600UG/24HR)      |

PANEL S - STOOL EXAMINATION

| <u>Test Code</u> | <u>Test Name</u> | <u>Accuracy/Result</u> |
|------------------|------------------|------------------------|
| SA               | OCCULT BLOOD     | NEGATIVE (0)           |
| SB               | OVA & PARASITES  | NEGATIVE               |
| SC               | FAT SCREEN       | NEGATIVE (0)           |
| SD               | 72HR STOOL FAT   | (.6-6GM%)              |
| SE               | CULTURE          |                        |

PANEL T - HEPATIC SCREEN

| <u>Test Code</u> | <u>Test Name</u> | <u>Accuracy/Result</u> |
|------------------|------------------|------------------------|
| TA               | EXCRE FUN ICG    | (2.1-9%)               |

PANEL U - PARATHYROID SCREEN

| <u>Test Code</u> | <u>Test Name</u> | <u>Accuracy/Result</u> |
|------------------|------------------|------------------------|
|------------------|------------------|------------------------|

UA  
UB

UNBOUND SERUM CALCIUM  
ALK PHOS HEAT INACT

(3.7-6.3MG%)  
NORMAL

PANEL V - MISCELLANEOUS

| <u>Test Code</u> | <u>Test Name</u>         | <u>Accuracy/Result</u> |
|------------------|--------------------------|------------------------|
| VA               | ACID PHOSPHATASE         | (0-1.6IU *)            |
| VB               | D-XYLOSE EXCRETION       | (16-33% *)             |
| VC               | SHR TOTAL VOLUME         | (100-300ML)            |
| VD               | KOH PREP                 | NEGATIVE               |
| VE               | SERUM AMYLASE            | (23-85IU/L)            |
| VF               | URINE AMYLASE            | (35-260UNITS/HR *)     |
| VG               | 1. TOTAL VOLUME          | (600-1600ML/24HR)      |
| VH               | FTA ABS                  | NEGATIVE               |
| VI               | HEPATITIS ASSOC ANTIGEN  | NEGATIVE               |
| VJ               | COCCIDIOMYCOSIS TITER    | NEGATIVE               |
| VK               | HISTOPLASMOSIS TITER     | NEGATIVE               |
| VL               | ALPHA 1 ANTITRYPSIN      | (85-213MG% *)          |
| VM               | TOXOPLASMOSIS TITER      | NEGATIVE               |
| VN               | URINE COPROPORPHYRINOGEN | (60-280UG/24HR)        |
| VO               | DELTA AMINO LEVUL ACID   | (1-7MG/24HR)           |
| VP               | ALDOLASE                 | (1-6IU)                |
| VQ               | TRP                      | (80-90%)               |
| VR               | SERUM CAROTENE           | (50-300UG%)            |
| VS               | THYROGLOBULIN ANTIBODY   | NEGATIVE               |
| VT               | 24HR URINE TOT VOL       | (600-1600ML/24HR)      |

PANEL W - THREE GLASS URINALYSIS

| <u>Test Code</u> | <u>Test Name</u>         | <u>Accuracy/Result</u> |
|------------------|--------------------------|------------------------|
| WA               | COLOR                    | NORMAL                 |
| WB               | SPECIFIC GRAVITY         | (1.01-1.035)           |
| WC               | PH                       | (5-7)                  |
| WD               | PROTEIN                  | NEGATIVE (0)           |
| WE               | GLUCOSE                  | NEGATIVE (0)           |
| WF               | ACETONE                  | NEGATIVE (0)           |
| WG               | BLOOD                    | NEGATIVE (0)           |
| WH               | BILE                     | NEGATIVE (0)           |
| WI               | MICRO-G1: HYALINE CASTS  | (0-2/LPF)              |
| WJ               | MICRO-G1: GRANULAR CASTS | (0-2/LPF)              |
| WK               | MICRO: OTHER CASTS       |                        |
| WL               | MICRO-G1: WBC            | (0-5/HPF)              |
| WM               | MICRO-G1: RBC            | (0-2/HPF)              |
| WN               | MICRO: OTHER             |                        |
| WO               | CULTURE-GLASS 1 (24HR)   |                        |
| WP               | CULTURE-GLASS 1 (48HR)   |                        |

PANEL X - THREE GLASS URINALYSIS

| <u>Test Code</u> | <u>Test Name</u>         | <u>Accuracy/Result</u> |
|------------------|--------------------------|------------------------|
| XA               | MICRO-G2: HYALINE CASTS  | (0-2/LPH)              |
| XB               | MICRO-G2: GRANULAR CASTS | (0-2/LPF)              |
| XC               | MICRO-G2: OTHER CASTS    |                        |
| XD               | MICRO-G2: WBC            | (0-5/LPF)              |
| XE               | MICRO-G2: RBC            | (0-2/LPF)              |
| XF               | MICRO-G2: OTHER          |                        |
| XG               | CULTURE-GLASS 2(24HR)    |                        |
| XH               | CULTURE-GLASS 2(48HR)    |                        |
| XI               | MICRO-G3: HYALINE CASTS  | (0-2/LPH)              |
| XJ               | MICRO-G3: GRANULAR CASTS | (0-2/LPF)              |
| XK               | MICRO-G3: OTHER CASTS    |                        |
| XL               | MICRO-G3: WBC            | (0-5/LPF)              |
| XM               | MICRO-G3: RBC            | (0-2/LPF)              |
| XN               | MICRO-G3: OTHER          |                        |
| XO               | CULTURE-GLASS 3(24HR)    |                        |
| XP               | CULTURE-GLASS 3(48HR)    |                        |

PANEL Y - HYPERTENSIVE SCREEN

| <u>Test Code</u> | <u>Test Name</u>       | <u>Accuracy/Result</u> |
|------------------|------------------------|------------------------|
|                  | 24HR URINE SODIUM      | (0-10MG/24 HR)         |
| YD               | 17 KETOSTEROIDS        | (3-24MG/24 HR)         |
| YE               | HYDROXYCORTICOSTEROIDS | (3.6-11.6MG/24 HR)     |
| YF               | CREATININE CLEARANCE   | (97-137CCMIN *)        |
| YG               | URINE OSMOLALITY       | (800-1400MOSM)         |
| YH               | SERUM OSMOLALITY       | (280-290MOSM)          |
| YI               | PLASMA CORTISOL (0730) | (9-30UG% *)            |
| YJ               | PLASMA CORTISOL (0930) | (5-15UG% *)            |
| YK               | RENIN 1. SODIUM LOAD   | NORMAL                 |
| YL               | UPRIGHT 2. SODIUM DEPL | NORMAL                 |
| YM               | RENIN 1. SODIUM LOAD   | NORMAL                 |
| YN               | RECLINE 2. SODIUM DEPL | NORMAL                 |
| YO               | 24HR URINE TOT VOL     | (600-1600ML/24HR)      |
| YP               | PLASMA CORTISOL (1600) | (4-15UG% *)            |

PANEL Z1 - GLUCOSE TOLERANCE PART 1

| <u>Test Code</u> | <u>Test Name</u>        | <u>Accuracy/Result</u> |
|------------------|-------------------------|------------------------|
| ZAA              | GLUCOSE TOLERANCE - FBS | (83-116MG%)            |
| ZAB              | GLUCOSE TOLERANCE .5 HR | (60-220)               |
| ZAC              | GLUCOSE TOLERANCE 2 HR  | (49-129MG%)            |
| ZAD              | GLUCOSE TOLERANCE 3 HR  | (60-120MG%)            |
| ZAE              | GLUCOSE TOLERANCE 4 HR  | (60-120MG%)            |
| ZAF              | GLUCOSE TOLERANCE 5 HR  | (60-120MG%)            |
| <br>             |                         |                        |
| ZBA              | URINE GLUCOSE - FBS     | NEGATIVE (0)           |
| ZBB              | URINE GLUCOSE .5 HR     | NEGATIVE (0)           |
| ZBC              | URINE GLUCOSE 1 HR      | NEGATIVE (0)           |
| ZBD              | URINE GLUCOSE 1.5 HR    | NEGATIVE (0)           |
| ZBE              | URINE GLUCOSE 2 HR      | NEGATIVE (0)           |
| ZBF              | URINE GLUCOSE 3 HR      | NEGATIVE (0)           |
| ZBG              | URINE GLUCOSE 4 HR      | NEGATIVE (0)           |
| ZBH              | URINE GLUCOSE 5 HR      | NEGATIVE (0)           |
| <br>             |                         |                        |
| ZCA              | PLASMA FFA - FBS        | (9-57UG%)              |
| ZCB              | PLASMA FFA .5 HR        | (9-57UG%)              |
| ZCC              | PLASMA FFA 2 HR         | (9-57UG%)              |
| ZCD              | PLASMA FFA 3 HR         | (9-57UG%)              |
| ZCE              | PLASMA FFA 4 HR         | (9-57UG%)              |
| ZCF              | PLASMA FFA 5 HR         | (9-57UG%)              |
| <br>             |                         |                        |
| ZDA              | PLASMA CORTISOL - FBS   | (9-30UG%)              |
| ZDB              | PLASMA CORTISOL .5 HR   | (9-30UG%)              |
| ZDC              | PLASMA CORTISOL 1 HR    | (9-30UG%)              |
| ZDD              | PLASMA CORTISOL 1.5 HR  | (9-30UG%)              |
| ZDE              | PLASMA CORTISOL 2 HR    | (9-30UG%)              |
| ZDF              | PLASMA CORTISOL 3 HR    | (9-30UG%)              |
| ZDG              | PLASMA CORTISOL 4 HR    | (9-30UG%)              |
| ZDH              | PLASMA CORTISOL 5 HR    | (9-30UG%)              |

PANEL Z1 - GLUCOSE TOLERANCE PART 1 (continued)

| <u>Test Code</u> | <u>Test Name</u>      | <u>Accuracy/Result</u> |
|------------------|-----------------------|------------------------|
| ZEA              | SERUM COPPER - FBS    | (70-130UG%)            |
| ZEB              | SERUM COPPER 1.5 HR   | (70-130UG%)            |
| ZEC              | SERUM COPPER 2 HR     | (70-130UG%)            |
| ZED              | SERUM COPPER 3 HR     | (70-130UG%)            |
| ZEE              | SERUM COPPER 4 HR     | (70-130UG%)            |
| ZEF              | SERUM COPPER 5 HR     | (70-130UG%)            |
| ZFA              | SERUM ZINC - FBS      | (75-120UG%)            |
| ZFB              | SERUM ZINC .5 HR      | (75-120UG%)            |
| ZFC              | SERUM ZINC 1 HR       | (75-120UG%)            |
| ZFD              | SERUM ZINC 1.5 HR     | (75-120UG%)            |
| ZFE              | SERUM ZINC 2 HR       | (75-120UG%)            |
| ZFF              | SERUM ZINC 3 HR       | (75-120UG%)            |
| ZFG              | SERUM ZINC 4 HR       | (75-120UG%)            |
| ZFH              | SERUM ZINC 5 HR       | (75-120UG%)            |
| ZGA              | SERUM CHROMIUM - FBS  | (.03-.2UG%)            |
| ZGB              | SERUM CHROMIUM .5 HR  | (.03-.2UG%)            |
| ZGC              | SERUM CHROMIUM 2 HR   | (.03-.2UG%)            |
| ZGD              | SERUM CHROMIUM 3 HR   | (.03-.2UG%)            |
| ZGE              | SERUM CHROMIUM 4 HR   | (.03-.2UG%)            |
| ZGF              | SERUM CHROMIUM 5 HR   | (.03-.2UG%)            |
| ZHA              | SERUM CALCIUM - FBS   | (9.1-10.5MG%)          |
| ZHB              | SERUM CALCIUM .5 HR   | (9.1-10.5MG%)          |
| ZHC              | SERUM CALCIUM 1 HR    | (9.1-10.5MG%)          |
| ZHD              | SERUM CALCIUM 1.5 HR  | (9.1-10.5MG%)          |
| ZHE              | SERUM CALCIUM 2 HR    | (9.1-10.5MG%)          |
| ZHF              | SERUM CALCIUM 3 HR    | (9.1-10.5MG%)          |
| ZHG              | SERUM CALCIUM 4 HR    | (9.1-10.5MG%)          |
| ZHH              | SERUM CALCIUM 5 HR    | (9.1-10.5MG%)          |
| ZIA              | SERUM MAGNESIUM - FBS | (1.8-2.4MG%)           |
| ZIB              | SERUM MAGNESIUM .5 HR | (1.8-2.4MG%)           |
| ZIC              | SERUM MAGNESIUM 2 HR  | (1.8-2.4MG%)           |
| ZID              | SERUM MAGNESIUM 3 HR  | (1.8-2.4MG%)           |
| ZIE              | SERUM MAGNESIUM 4 HR  | (1.8-2.4MG%)           |
| ZIF              | SERUM MAGNESIUM 5 HR  | (1.8-2.4MG%)           |

PANEL Z1 - GLUCOSE TOLERANCE PART 1 (continued)

| <u>Test Code</u> | <u>Test Name</u>         | <u>Accuracy/Result</u> |
|------------------|--------------------------|------------------------|
| ZJA              | SERUM CADMIUM - FBS      | (.02-1UG%)             |
| ZJB              | SERUM CADMIUM .5 HR      | (.02-1UG%)             |
| ZJC              | SERUM CADMIUM 1 HR       | (.02-1UG%)             |
| ZJD              | SERUM CADMIUM 1.5 HR     | (.02-1UG%)             |
| ZJE              | SERUM CADMIUM 2 HR       | (.02-1UG%)             |
| ZJF              | SERUM CADMIUM 3 HR       | (.02-1UG%)             |
| ZJG              | SERUM CADMIUM 4 HR       | (.02-1UG%)             |
| ZJH              | SERUM CADMIUM 5 HR       | (.02-1UG%)             |
| ZKA              | SERUM INSULIN - FBS      | (5-50UU/ML)            |
| ZKB              | SERUM INSULIN .5 HR      | (5-50UU/ML)            |
| ZKC              | SERUM INSULIN 2 HR       | (5-50UU/ML)            |
| ZKD              | SERUM INSULIN 3 HR       | (5-50UU/ML)            |
| ZKE              | SERUM INSULIN 4 HR       | (5-50UU/ML)            |
| ZKF              | SERUM INSULIN 5 HR       | (5-50UU/ML)            |
| ZLA              | SERUM GROWTH HORM - FBS  | (0-5NG/ML)             |
| ZLB              | SERUM GROWTH HORM .5 HR  | (0-5NG/ML)             |
| ZLC              | SERUM GROWTH HORM 1 HR   | (0-5NG/ML)             |
| ZLD              | SERUM GROWTH HORM 1.5 HR | (0-5NG/ML)             |
| ZLE              | SERUM GROWTH HORM 2 HR   | (0-5NG/ML)             |
| ZLF              | SERUM GROWTH HORM 3 HR   | (0-5NG/ML)             |
| ZLG              | SERUM GROWTH HORM 4 HR   | (0-5NG/ML)             |
| ZLH              | SERUM GROWTH HORM 5 HR   | (0-5NG/ML)             |
| ZMA              | SERUM GLUCAGON - FBS     | (200-2000PG/ML)        |
| ZMB              | SERUM GLUCAGON .5 HR     | (200-2000PG/ML)        |
| ZMC              | SERUM GLUCAGON 2 HR      | (200-2000PG/ML)        |
| ZMD              | SERUM GLUCAGON 3 HR      | (200-2000PG/ML)        |
| ZME              | SERUM GLUCAGON 4 HR      | (200-2000PG/ML)        |
| ZMF              | SERUM GLUCAGON 5 HR      | (200-2000PG/ML)        |
| ZNA              | SERUM CALCITONIN - FBS   | (100-400PG/ML)         |
| ZNB              | SERUM CALCITONIN .5 HR   | (100-400PG/ML)         |
| ZNC              | SERUM CALCITONIN 1 HR    | (100-400PG/ML)         |
| ZND              | SERUM CALCITONIN 1.5 HR  | (100-400PG/ML)         |
| ZNE              | SERUM CALCITONIN 2 HR    | (100-400PG/ML)         |
| ZNF              | SERUM CALCITONIN 3 HR    | (100-400PG/ML)         |
| ZNG              | SERUM CALCITONIN 4 HR    | (100-400PG/ML)         |
| ZNH              | SERUM CALCITONIN 5 HR    | (100-400PG/ML)         |

PANEL Z2 - GLUCOSE TOLERANCE PART 2

| <u>Test Code</u> | <u>Test Name</u>         | <u>Accuracy/Result</u> |
|------------------|--------------------------|------------------------|
| ZOA              | TOT VOL 2HR PRE PRAND    | (15-800ML)             |
| ZOB              | TOT VOL 2HR POST PRAND   | (15-800ML)             |
| ZQA              | CALCIUM 2HR PRE PRAND    | (1-60MG/TV)            |
| ZQB              | CALCIUM 2HR POST PRAND   | (1-60MG/TV)            |
| ZRA              | CHROMIUM 2HR PRE PRAND   | (1-5UG/TV)             |
| ZRB              | CHROMIUM 2HR POST PRAND  | (1-5UG/TV)             |
| ZSA              | COPPER 2HR PRE PRAND     | (5-20UG/TV)            |
| ZSB              | COPPER 2HR POST PRAND    | (5-20UG/TV)            |
| ZTA              | MAGNESIUM 2HR PRE PRAND  | (1-60UG/TV)            |
| ZTB              | MAGNESIUM 2HR POST PRAND | (1-60UG/TV)            |
| ZUA              | ZINC 2HR PRE PRAND       | (50-100UG/TV)          |
| ZUB              | ZINC 2HR POST PRAND      | (50-100UG/TV)          |
| ZVA              | CADMIUM 2HR PRE PRAND    | (1-5UG/TV)             |
| ZVB              | CADMIUM 2HR POST PRAND   | (1-5UG/TV)             |

\*\*\*\*\* EXPLANATION OF NUMBERED MESSAGES \*\*\*\*\*

- |                              |                                         |
|------------------------------|-----------------------------------------|
| 1.ABNORMAL TEST              | 8. EXTREME VALUE - ENTERED UPON         |
| 2.LAB ERROR                  | APPROVAL OF CHIEF OF CLINICAL PATHOLOGY |
| 3.PATIENT IMPROPERLY PREPPED | 9. SEE NOTE PERTAINING TO PANEL CODE    |
| *****                        |                                         |

Panel Table: LABPANTBL

PANEL A - HEMOGRAM  
PANEL B - HEMOLYTIC SCREEN  
PANEL C - TISSUE DESTRUCT SCREEN  
PANEL D - CARDIOVASCULAR SCREEN  
PANEL E - HEPATIC SCREEN  
PANEL F - RENAL SCREEN  
PANEL G - MISCELLANEOUS  
PANEL H - PARATHYROID SCREEN  
PANEL I - METABOLIC SCREEN  
PANEL J - HEMOGRAM  
PANEL K - THYROID PROFILE  
PANEL L - HEMOLYTIC SCREEN  
PANEL M - RENAL SCREEN  
PANEL N - CEREBROSPINAL FLUID  
PANEL O - COAGULATION SCREEN  
PANEL P - TISSUE DESTRUCT SCREEN  
PANEL Q - CARDIOVASCULAR SCREEN  
PANEL R - TRACE METALS  
PANEL S - STOOL EXAMINATION  
PANEL T - HEPATIC SCREEN  
PANEL U - PARATHYROID SCREEN  
PANEL V - MISCELLANEOUS  
PANEL W - THREE GLASS URINALYSIS  
PANEL X - THREE GLASS URINALYSIS  
PANEL Y - HYPERTENSIVE SCREEN  
PANEL Z1 - GLUCOSE TOLERANCE PART 1  
PANEL Z2 - GLUCOSE TOLERANCE PART 2

APPENDIX B: SPIROMETRY CALCULATIONS

FVC

$$\text{Women} \quad 0.115 \text{ Ht}_{\text{in}} - 0.024A - 2.852$$

$$\text{Men} \quad 0.148 \text{ Ht}_{\text{in}} - 0.025A - 4.241$$

FeV 0.5

$$\begin{aligned} \text{Women -- less than 20 yrs.} \\ (\text{Ht}_{\text{cm}})0.03 + (A)0.043 - 3.054 \end{aligned}$$

$$\begin{aligned} \text{over 20 yrs.} \\ (\text{Ht}_{\text{cm}})0.019 - 0.014(A) - .406 \end{aligned}$$

$$\begin{aligned} \text{Men -- less than 25 yrs.} \\ (\text{Ht}_{\text{cm}})0.03 + (A)0.043 - 3.054 \end{aligned}$$

$$\begin{aligned} \text{over 25 yrs.} \\ (\text{Ht}_{\text{cm}})0.037 - (A)0.027 - 4.203 \end{aligned}$$

Fef 25-75

$$\text{Women} \quad 0.060 \text{ Ht}_{\text{in}} - 0.030A + 0.551$$

$$\text{Men} \quad 0.047 \text{ Ht}_{\text{in}} - 0.045A + 2.513$$

VMax 50

$$\begin{aligned} \text{Women -- 11 yrs. to less than 20 yrs.} \\ -2.3040 + (0.0288 \times \text{Ht}_{\text{cm}}) + (0.1111 \times A) \end{aligned}$$

$$\begin{aligned} \text{20 yrs or older} \\ -0.4371 + (0.0321 \times \text{Ht}_{\text{cm}}) + (-0.024 \times A) \end{aligned}$$

$$\begin{aligned} \text{Men -- 12 yrs to less than 25 yrs.} \\ -6.3851 + (0.0543 \times \text{Ht}_{\text{cm}}) + (0.115 \times A) \end{aligned}$$

$$\begin{aligned} \text{25 yrs. or older} \\ -5.5409 + (0.0684 \times \text{Ht}_{\text{cm}}) + (-0.0366 \times A) \end{aligned}$$

Spirometry Calculations (continued)

VMax 75

Women -- 11 yrs. to less than 20 yrs.

$$-4.4009 + (0.0243 \times Ht_{cm}) + (0.2923 \times A) + (-0.0075 \times A)$$

20 yrs. or older

$$1.1177 + (0.0096 \times Ht_{cm}) + (-0.0259 \times A)$$

Men -- 12 yrs to less than 25 yrs.

$$-4.2421 + (0.0397 \times Ht_{cm}) + (-0.0057 \times A)$$

25 yrs. or older

$$-2.4827 + (0.031 \times Ht_{cm}) + (-0.023 \times A)$$

Pef

Women -- between 18 to 20 yrs.

$$(Ht_{cm})0.049 + A(0.157) - 3.916$$

older than 20 yrs.

$$0.035(Ht_{cm}) - 0.013A - 0.444$$

Men -- between 18 to 25 yrs.

$$(Ht_{cm})0.078 + A(0.166) - 8.06$$

older than 25 yrs.

$$(Ht_{cm})0.094 - 0.35A - 5.993$$

DIFFUSION CAPACITY

DLCO

Women --  $21.9 \times Ht_{in} - (0.115 \times A) - 5.97$  ,

Men --  $14.2 \times Ht_{in} - (0.232 \times A) + 16.3$

# He DILUTION/LUNG VOLUMES

## PIF

$$\text{Women} \quad \frac{(15.7(\text{Ht}_{\text{in}}) - 3.3(\text{A}) - 545) \times 0.7}{60}$$

$$\text{Men} \quad \frac{15.7(\text{Ht}_{\text{in}}) - 3.3(\text{A}) - 545}{60}$$

## TLC

$$\text{Women} \quad \begin{array}{l} \text{-- between 18 to 20 yrs.} \\ 0.079(\text{Ht}_{\text{cm}}) - 0.008(\text{A}) - 7.49 \end{array}$$

$$\begin{array}{l} \text{older than 20 yrs.} \\ 0.079(\text{Ht}_{\text{cm}}) - 0.008(\text{A}) - 7.49 \end{array}$$

$$\text{Men} \quad \begin{array}{l} \text{-- between 18 to 25 yrs.} \\ 0.094(\text{Ht}_{\text{cm}}) - 0.015(\text{A}) - 9.167 \end{array}$$

$$\begin{array}{l} \text{older than 25 yrs.} \\ 0.094(\text{Ht}_{\text{cm}}) - 0.015(\text{A}) - 9.167 \end{array}$$

## FRC

$$\text{Women} \quad \begin{array}{l} \text{-- between 18 to 20 yrs.} \\ 0.122(\text{Ht}_{\text{in}}) - 5.01 \end{array}$$

$$\begin{array}{l} \text{older than 20 yrs.} \\ 0.053(\text{Ht}_{\text{cm}}) - 0.017(\text{Wt}_{\text{lb}}) - 4.74 \end{array}$$

$$\text{Men} \quad \begin{array}{l} \text{-- between 18 to 25 yrs.} \\ 0.1295(\text{Ht}_{\text{in}}) - 5.19 \end{array}$$

$$\begin{array}{l} \text{older than 25 yrs.} \\ 0.081(\text{Ht}_{\text{cm}}) - 1.792(\text{BSA}) - 7.11 \end{array}$$

## RV

$$\text{Women} \quad \begin{array}{l} \text{-- between 18 to 20 yrs.} \\ 0.0183(\text{Ht}_{\text{cm}}) + 0.009(\text{A}) - 3.9 \end{array}$$

$$\begin{array}{l} \text{older than 20 yrs.} \\ 0.032(\text{Ht}_{\text{cm}}) + 0.009(\text{A}) - 3.9 \end{array}$$

$$\text{Men} \quad \begin{array}{l} \text{-- all ages over 18 yrs.} \\ 0.032(\text{Ht}_{\text{cm}}) + 0.017(\text{A}) - 3.447 \end{array}$$

APPENDIX C: TMINTTBL

Edit Validation Table: TMINTTBL

Table for INTERPRETATION (TM - C36)

| <u>COL1</u> | <u>COL2</u>                                                       |
|-------------|-------------------------------------------------------------------|
| 320         | 320 - SUBMAX TM ETT NORMAL                                        |
| 321         | 321 - SUBMAX TM ETT BORDERLINE ST DEPRESSION                      |
| 32A         | 32A - SUBMAX TM ETT BDL ST DEPRESSION PLUS SIGNIFICANT ARRHYTHMIA |
| 32B         | 32B - SUBMAX TM ETT BDL ST DEPRESSION PLUS SYMPTOMS OF ANGINA     |
| 322         | 322 - SUBMAX TM ETT ABNORMAL ST DEPRESSION                        |
| 323         | 323 - SUBMAX TM ETT ABN ST DEPRESSION PLUS SIGNIFICANT ARRHYTHMIA |
| 324         | 324 - SUBMAX TM ETT ABN ST DEPRESSION PLUS SYMPTOMS OF ANGINA     |
| 326         | 326 - SUBMAX TM ETT ABN BP RESPONSE TO STRESS                     |
| 327         | 327 - SUBMAX TM ETT NORMAL ST RESPONSE BUT SIGNIFICANT ARRHYTHMIA |
| 328         | 328 - SUBMAX TM ETT ABN DUE TO SYMPTOMS ONLY                      |
| 329         | 329 - SUBMAX TM ETT OTHER                                         |
| 340         | 340 - MAX TM ETT NORMAL                                           |
| 341         | 341 - MAX TM ETT BORDERLINE ST DEPRESSION                         |
| 34A         | 34A - MAX TM ETT BDL ST DEPRESSION PLUS SIGNIFICANT ARRHYTHMIA    |
| 34B         | 34B - MAX TM ETT BDL ST DEPRESSION PLUS SYMPTOMS OF ANGINA        |
| 342         | 342 - MAX TM ETT ABNORMAL ST DEPRESSION                           |
| 343         | 343 - MAX TM ETT ABN ST DEPRESSION PLUS SIGNIFICANT ARRHYTHMIA    |
| 344         | 344 - MAX TM ETT ABN ST DEPRESSION PLUS SYMPTOMS OF ANGINA        |
| 346         | 346 - MAX TM ETT ABN BP RESPONSE TO STRESS                        |
| 347         | 347 - MAX TM ETT NORMAL ST RESPONSE BUT SIGNIFICANT ARRHYTHMIA    |
| 348         | 348 - MAX TM ETT ABN DUE TO SYMPTOMS ONLY                         |
| 349         | 349 - MAX TM ETT OTHER                                            |

APPENDIX D: TMARRTBL

**Edit Validation Table: TMARRTBL**

Table for ARRHYTHMIA (TM - C39)

| <u>COL1</u> | <u>COL2</u>                                |
|-------------|--------------------------------------------|
| A           | A - Supraventricular                       |
| B           | B - Ventricular                            |
| C           | C - Ventricular multifocal                 |
| D           | D - Mixed origin                           |
| E           | E - Uncertain origin                       |
| G           | G - Sinus Pause Without Ventricular Escape |
| H           | H - Sinus Pause With Ventricular Escape    |

APPENDIX E: TMONSTBL

Edit Validation Table: TMONSTBL

Table for ONSET (TM - C391)

| <u>COL1</u> | <u>COL2</u>                                              |
|-------------|----------------------------------------------------------|
| R           | R - Recumbent                                            |
| H           | H - Hyperventilation                                     |
| U           | U - Early Upright                                        |
| S           | S - End of Standing                                      |
| E           | E - Early Exercise                                       |
| M           | M - Mid Exercise                                         |
| L           | L - Late Exercise                                        |
| 1           | 1 - Immediate Recovery                                   |
| 2           | 2 - Recovery MIN 2                                       |
| 3           | 3 - Recovery MIN 3                                       |
| 4           | 4 - Recovery MIN 4                                       |
| 5           | 5 - Recovery MIN 5                                       |
| 6           | 6 - Recovery MIN 6                                       |
| 7           | 7 - Recovery MIN 7                                       |
| 8           | 8 - Recovery MIN 8                                       |
| A           | A - Throughout Pre-stress Period                         |
| B           | B - Mid Stress and Late Recovery Only                    |
| C           | C - Progressing thru Stress and Persisting thru Recovery |
| D           | D - Late Stress and Immediate Recovery                   |
| F           | F - Thru Mid and Late Stress                             |
| G           | G - All Periods Without Change                           |
| T           | T - Late Stress thru Late Recovery                       |
| J           | J - Rest Ectopy Suppressed by Exercise                   |
| K           | K - Rest Ectopy Increasing with Exercise                 |

APPENDIX F: TMFRETBL

Edit Validation Table: TMFRETBL

Table for FREQUENCY (TM - C392)

| <u>COL1</u> | <u>COL2</u>                                             |
|-------------|---------------------------------------------------------|
| 0           | 0 - Ectopic once                                        |
| 1           | 1 - Ectopy occasional                                   |
| 2           | 2 - Ectopy frequent                                     |
| 3           | 3 - Ectopic couplet only                                |
| 4           | 4 - Ectopic triplet only                                |
| 5           | 5 - 4 or more consecutive ectopics only                 |
| 6           | 6 - Ectopic couplet plus frequent ectopy                |
| 7           | 7 - Ectopic triplet plus frequent ectopy                |
| 8           | 8 - 4 or more consecutive ectopics plus frequent ectopy |
| 9           | 9 - Other                                               |
| K           | K - Bundle branch or 2ND or 3RD degree block            |

APPENDIX G: TMLEATBL

Edit Validation Table: TMLEATBL

Table for LEAD (TM - C41)

| <u>COL1</u> | <u>COL2</u>                               |
|-------------|-------------------------------------------|
| X           | X - X only                                |
| Y           | Y - new Y only                            |
| Z           | Z - Z only                                |
| V           | V - any V4 thru V6 only                   |
| L           | L - I alone or with any V4 thru V6 only   |
| I           | I - any AVF or II only                    |
| F           | F - Y plus any AVF or II only             |
| P           | P - X with any V4 thru V6 regardless of I |
| Q           | Q - X and Y with or without Z             |
| R           | R - Other combinations                    |
| K           | K - Old Y                                 |

APPENDIX H: IMPERTBL

Edit Validation Table: TMPERTBL (same as TMONSTBL)

Table for PERIOD (TM - C441)

| <u>COL1</u> | <u>COL2</u>                                              |
|-------------|----------------------------------------------------------|
| R           | R - Recumbent                                            |
| H           | H - Hyperventilation                                     |
| U           | U - Early Upright                                        |
| S           | S - End of Standing                                      |
| E           | E - Early Exercise                                       |
| M           | M - Mid Exercise                                         |
| L           | L - Late Exercise                                        |
| 1           | 1 - Immediate Recovery                                   |
| 2           | 2 - Recovery MIN 2                                       |
| 3           | 3 - Recovery MIN 3                                       |
| 4           | 4 - Recovery MIN 4                                       |
| 5           | 5 - Recovery MIN 5                                       |
| 6           | 6 - Recovery MIN 6                                       |
| 7           | 7 - Recovery MIN 7                                       |
| 8           | 8 - Recovery MIN 8                                       |
| A           | A - Throughout Pre-stress Period                         |
| B           | B - Mid Stress and Late Recovery Only                    |
| C           | C - Progressing thru Stress and Persisting thru Recovery |
| D           | D - Late Stress and Immediate Recovery                   |
| F           | F - Thru Mid and Late Stress                             |
| G           | G - All Periods Without Change                           |
| T           | T - Late Stress thru Late Recovery                       |
| J           | J - Rest Ectopy Suppressed by Exercise                   |
| K           | K - Rest Ectopy Increasing with Exercise                 |

APPENDIX I: TMREPTBL

Edit Validation Table: TMREPTBL

Table for REPOLARIZATION (TM - C442)

| <u>COL1</u> | <u>COL2</u>                                                    |
|-------------|----------------------------------------------------------------|
| A           | A - T wave inversion                                           |
| B           | B - Less than 0.5 mm flat ST depression                        |
| C           | C - J pt depression over 0.9 mm with slope over 0.9 mm per sec |
| D           | D - J pt depression with inadequate HR adjusted slope          |
| E           | E - 0.5 to 0.9 mm flat or downward ST depression               |
| F           | F - 1.0 to 1.9 mm flat or downward ST depression               |
| G           | G - Over 1.9 mm flat or downward ST depression                 |
| H           | H - Over 0.9 mm of ST coving                                   |
| I           | I - Over 0.9 mm of ST elevation                                |
| N           | N - Abnormal ST becomes normal                                 |
| P           | P - Labile repolarization                                      |